

# RWE

## High Grove Solar

### Preliminary Environmental Information Report

### Appendix 14.3 Preliminary Water Environment Regulations (WER) Compliance Assessment

April 2025

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# 1 Introduction

- 1.1.1.1 RWE Renewables UK Solar and Storage Ltd (the Applicant) has carried out a Preliminary Water Environment Regulations (WER) compliance assessment (also referred to as a Water Framework Directive (WFD) compliance assessment) for High Grove Solar (the Proposed Development). This report forms an appendix to Chapter 14 Water Resources and Flood Risk of the Preliminary Environmental Information Report (PEIR) published as part of statutory consultation.
- 1.1.1.2 This report presents an assessment of the potential impact of the Proposed Development on WER objectives. The report provides a summary of the Proposed Development, the assessment methodology and preliminary results of the assessment. The assessment has been undertaken in accordance with relevant WER legislative context and guidance and has involved a desk-based study using readily available Environment Agency WER baseline information and internal datasets held by the EA. The assessment is based on the currently available design information for the Proposed Development.
- 1.1.1.3 The assessment is preliminary and a final assessment will be provided as part of the Environmental Statement to be submitted with the application for Development Consent Order (DCO).

## 2 Assessment Methodology

### 2.1 Legislative context

- 2.1.1.1 The Water Environment (Water Framework Directive) (England and Wales) Regulations (amended 2017) [1] is currently the largest and most influential piece of UK legislation for the water environment and transposes the EC Water Framework Directive (WFD) into English and Welsh law. The Environment Agency is the competent authority responsible for delivering the requirements of the WER in England.
- 2.1.1.2 The WER aims to protect and enhance the quality of the water environment and takes a holistic approach to the sustainable management of water by considering the interactions between surface water, groundwater and water-dependent ecosystems. Under the WER, 'water bodies' are the basic management units and are defined as all or part of a river system or aquifer. These water bodies form part of a larger River Basin District (RBD), for which River Basin Management Plans (RBMPs) are developed and environmental objectives are set. These RBMPs are produced every six years, in accordance with the river basin management planning cycle.
- 2.1.1.3 The WER requires the classification of the current condition or 'status or potential' of surface water and groundwater bodies and the setting of a series of objectives for maintaining or improving conditions so that water bodies reach and/or maintain 'good status or potential'. These overall Environmental Objectives are to:
- Prevent the deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters.
  - Aim to achieve at least 'Good' status for all water bodies by 2015. Where this has not been possible and is subject to the criteria set out in the Directive/Regulations, aim to achieve Good status by 2021 or 2027
  - Meet the requirements of Protected Areas;
  - Promote sustainable use of water as a natural resource.
  - Conserve habitats and species that depend directly on water.
  - Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment.
  - Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
  - Contribute to mitigating the effects of floods and droughts.
- 2.1.1.4 All activities with the potential to impact upon the water environment now need to be guided by the requirements of the WER. This includes ensuring that no changes occur that causes a deterioration of current status of a water body or prevents the achievement of the future status objectives of a water body.

- 2.1.1.5 Further background details regarding the water body status classification process, the requirements of WER Compliance Assessments, and relevant guidance are provided in Annex A of this report.

## 2.2 Scope of the assessment

- 2.2.1.1 WER compliance assessments comprise a stepped process undertaken in parallel with the design development for a Proposed Development. This includes the following key steps:
- Screening assessment
  - Scoping assessment
  - Detailed impact assessment (where deemed required)
  - Application of Regulation 19 derogation assessment (where deemed required).
- 2.2.1.2 These key steps are described in Annex A of this report.
- 2.2.1.3 This preliminary assessment comprises the screening and scoping assessment elements of the process. A site walkover will be undertaken and results reported within the final WER compliance assessment submitted with the DCO application.
- 2.2.1.4 The spatial scope of the assessment includes all WER designated surface water and groundwater bodies potentially affected by the Proposed Development. The study area therefore comprises of the footprint of the Proposed Development and a 1 km buffer. This considers the potential impacts of the Proposed Development on all the relevant quality elements associated with the surface water and groundwater bodies affected, at the water body scale.
- 2.2.1.5 The assessment focuses on the permanent impacts of the Proposed Development. Temporary impacts are not considered to result in deterioration in WER status and so have not been considered within the assessment in accordance with current guidance [2]. In this sense, impacts are not considered to result in a deterioration of the status if the water body:
- is only impacted for a short time period;
  - is likely to recover within a short time period;
  - is likely to recover without the need for any restoration measures.

## 2.3 Data sources

- 2.3.1.1 The following Environment Agency WER datasets and resources are readily available online and have been collated to support this assessment:
- Environment Agency, “Cycle 3 River Basin Management Plan (RBMP), Anglian River Basin Management Plan”, 2022. [3]
  - Anglian Cycle 3 RBMP 2022 and 2019 water body status classification and status objectives data (taken from the Environment Agency’s Catchment Data Explorer website [4]).

- WER Protected Area data (taken from the Environment Agency's Catchment Data Explorer website [4]).
- Freshwater biological survey datasets for invertebrates, macrophytes and diatoms, including monitoring site locations, dates and results (taken from the EA's BIOSYS dataset on the Environment Agency's Ecology & Fish Data Explorer [5]).
- Freshwater fish survey data collated from fisheries monitoring work, including monitoring site locations, dates and fish species count results (taken from the EA's National Fish Populations Database (NFPD) on the Environment Agency's Ecology and Fish Data Explorer [5]).
- Water quality monitoring datasets, including monitoring site locations, dates and results (taken from the Environment Agency's water quality data archive [6]).

2.3.1.2 A data request was submitted to the Environment Agency on 11 October 2024 to request relevant information which is not publicly available. This includes:

- Latest "Reasons for Not Achieving Good" (RNAG) investigation reporting for the relevant water bodies (where available); and
- Latest Waterbody Level Measure Actions and Heavily Modified Water Body (HMWB) Mitigation Measure Assessments (where available / applicable).

2.3.1.3 The following additional, key sources of data have also been used to inform this WER Assessment:

- MAGIC Map [7]
- Satellite imagery [8]
- British Geological Society (BGS) Geo Index viewer [9]

## 2.4 Other relevant environmental reports

2.4.1.1 This assessment should be read in conjunction with the following PEIR documents available at statutory consultation which have been used to inform this assessment:

- PEIR Chapter 2: The Proposed Development
- PEIR Chapter 6: Biodiversity
- PEIR Chapter 14: Water Resources and Flood Risk
- Appendix 14.1: Preliminary Flood Risk Assessment
- Appendix 14.2: Preliminary Drainage Strategy
- Draft Outline Construction Environmental Management Plan (oCEMP)

## 2.5 Watercourse receptor valuation

- 2.5.1.1 Activities associated with the Proposed Development have the potential to affect a number of watercourse receptors. The watercourses present within each WER water body catchment that have the potential to be affected by the Proposed Development have therefore been identified, assessed and assigned a receptor value using desk-top information and professional judgement. The criteria used to classify watercourse receptor value is summarised in Table 1.

**Table 1** *Watercourse receptor values and criteria*

| Receptor value | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Very High      | <ul style="list-style-type: none"> <li>• Main River.</li> <li>• Part of main WER river water body extent.</li> <li>• Within or in close hydraulic connectivity with a statutory designated site (e.g. Site of Special Scientific Interest (SSSI) or Special Area of Conservation (SAC)).</li> <li>• Permanent baseflow. Definable flow types.</li> <li>• Evidence of active fluvial geomorphological processes and features (e.g. fluvial bank erosion and bars).</li> <li>• Supports freshwater fish, macroinvertebrate and/or macrophyte communities. Subject to Environment Agency freshwater monitoring regime.</li> <li>• Channel may be subject to physical modifications (e.g. historically straightened or reprofiled).</li> <li>• Riparian zone typically exhibits some structural diversity. May be impacted or heavily modified by adjacent land uses (e.g. agricultural) and/or vegetation maintenance.</li> </ul> |
| High           | <ul style="list-style-type: none"> <li>• Main River or significant Ordinary watercourse.</li> <li>• Part of main WER water body extent.</li> <li>• Permanent baseflow. Definable flow types.</li> <li>• Evidence of active fluvial geomorphological processes and features (e.g. fluvial bank erosion and bars).</li> <li>• Supports freshwater fish, macroinvertebrate and/or macrophyte communities. Typically to Environment Agency freshwater monitoring regime.</li> <li>• Channel may be subject to physical modifications (e.g. historically straightened or reprofiled)</li> <li>• Riparian zone may be impacted or heavily modified by adjacent land uses (e.g. agricultural) and/or regular vegetation maintenance.</li> </ul>                                                                                                                                                                                       |
| Moderate       | <ul style="list-style-type: none"> <li>• Ordinary watercourse.</li> <li>• Tributary of main WER water body.</li> <li>• Some limited baseflow. Generally shallow flows with limited hydraulic diversity.</li> <li>• Some limited evidence of active fluvial geomorphological processes and features (e.g. fluvial bank erosion and bars).</li> <li>• Potential to support some freshwater fish, macroinvertebrate and/or macrophyte communities (but typically low diversity and/or abundance). Generally, not subject to Environment Agency freshwater monitoring regime.</li> <li>• Channel may be subject to physical modifications (e.g. historically straightened or reprofiled)</li> <li>• Riparian zone may be impacted or heavily modified by adjacent land uses (e.g. agricultural) and/or regular vegetation maintenance.</li> </ul>                                                                                  |

| Receptor value | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low            | <ul style="list-style-type: none"><li>• Ordinary watercourse.</li><li>• Minor tributary (within WER water body catchment). Typically comprising artificially created drainage ditch or small and/or ephemeral channel.</li><li>• Little or no baseflow. Largely very shallow and/or ponded flows under normal conditions, with potential to dry-out during periods of dry weather.</li><li>• Little evidence of active fluvial geomorphological processes and features (e.g. fluvial bank erosion and bars).</li><li>• Little or no potential to support freshwater fish, macroinvertebrate and/or macrophyte communities. Not subject to Environment Agency freshwater monitoring.</li><li>• Riparian zone typically impacted or heavily modified by adjacent land uses (e.g. agricultural).</li></ul> |

## 3 Existing Site

### 3.1 Site Location

- 3.1.1.1 The Proposed Development is located in the county of Norfolk as shown in Figures 1.1 and 2.1 of the PEIR. It is situated between Narborough and Dereham, with the furthest eastern extent at NGR TF973102 and the furthest west extent of the Proposed Development located at NGR TF750085. The Central Panel Area is located around 1.5km north of the centre of Swaffham and the Eastern Panel Area is located around 2.5km southwest of the neighbouring town of Dereham.

### 3.2 Site Description

#### 3.2.1 Land Use

- 3.2.1.1 The existing land use is predominantly arable farmland with some highways including the A1122 and A47 passing through the draft Order Limits. There are also several small villages also located within the study area.

#### 3.2.2 Existing Topography

- 3.2.2.1 The draft Order Limits has an undulating topography which varies by approximately 70m across the area. There are topographic highs of 80-90m above Ordnance Datum (mAOD) towards the east around the Eastern and Southern Panel Areas, and lows of 10-20 mAOD at the Western Panel Area.

#### 3.2.3 Watercourses

- 3.2.3.1 There are nine watercourses within 1 km of the draft Order Limits as shown on Figure 14.4 of the PEIR. These can be divided into two categories: those that drain southwest from the site and discharge into the River Great Ouse system, and those that drain east of the site and discharge into the Yare river system (see Table 2).

**Table 2**      *Watercourses in the vicinity of the site*

| Watercourse Name | Watercourse Designation | Drainage Direction | Parent Catchment |
|------------------|-------------------------|--------------------|------------------|
| Wendling Beck    | Main River              | East               | Yare             |
| Blackwater River | Main River              | East               | Yare             |
| Tud              | Main River              | East               | Yare             |
| River Wissey     | Main River              | South West         | River Great Ouse |
| River Nar        | Main River              | South West         | River Great Ouse |
| River Gadder     | Ordinary Water Course   | South West         | River Great Ouse |
| Swan River       | Ordinary Water Course   | South West         | River Great Ouse |
| Ketlam Drain     | Ordinary Water Course   | South West         | River Great Ouse |
| Oxborough Drain  | Ordinary Water Course   | South West         | River Great Ouse |

### 3.2.4 Geology

- 3.2.4.1 The BGS 1:50,000 scale mapping [9] indicates the bedrock geology is white chalk in all Panel Areas. Age varies with the bedrock at all Panel Areas except the Western area being dated at 100.5 – 66 Ma. The Western Panel Area is instead dated at 100.5 – 89.8 Ma (Figure 14.2 of the PEIR).
- 3.2.4.2 The superficial geology in the study area predominantly consists of chalky till, with localised accumulations of sand and gravel and alluvium (clay, silt, sand and gravel) also deposited (Figure 14.3 of the PEIR).

# 4 Proposed Development

## 4.1 Overview

- 4.1.1.1 The Proposed Development is a renewable energy scheme, comprising five distinct Panel Areas covering an area of approximately 1,700 hectares (ha), including solar photovoltaic (PV) panels, on-site Battery Energy Storage Systems (BESS), underground cabling and associated infrastructure including substations and environmental mitigation and enhancement areas. The Proposed Development will also include underground Cable Corridors, which are still being refined, connecting the Panel Areas to one another and to the point of connection. The Proposed Development will have the capacity to generate over 50 Megawatts (MW) of alternating current (AC) electricity. The Proposed Development is located between Narborough and Dereham in the county of Norfolk in the East of England.
- 4.1.1.2 The Proposed Development includes five main Panel Areas (Central, Northern, Eastern, Western and Southern). Panel Areas are defined as an area that contains a group of solar PV panels. These panels will either be fixed or have a tracking design and at a minimum will be located 0.4 m above the ground surface.
- 4.1.1.3 The Proposed Development would include seven onsite 132 kV substations. Each 132 kV substation will have a 4000m<sup>2</sup> area of hardstanding with drainage provided so it is not fully impermeable. 132 kV substations are proposed in all Panel Areas except the Northern Panel Area, with two substations in each of the Central, Eastern and Southern Panel Areas, and one 132 kV substation in the Western Panel Area. The substations will have a regular piled foundation up to 2m below ground level.
- 4.1.1.4 The Proposed Development will include 33 kV underground cabling between the Panel Areas and 132 kV substations. 132 kV cables will connect the 132 kV substations to the new 400 kV substation to be delivered by National Grid. A cable plough or open cut trench may be used to lay the cables. This assessment assumes an open cut trench will be used as a worst-case scenario with a maximum cable trench dimension of 1.6m depth x 2m wide.
- 4.1.1.5 New crossings of watercourses should be avoided insofar as reasonably practicable, with a preference to reuse existing crossing points and structures wherever possible.
- 4.1.1.6 It is assumed for this assessment that Horizontal Directional Drilling (HDD) would be undertaken where a 33kV or 132kV cable crosses a main river<sup>1</sup>, or higher value ordinary watercourse.. Where HDD is used beneath a watercourse, cables will be installed at an appropriate depth to ensure the integrity of the watercourse is not

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<sup>1</sup> Main rivers are usually larger rivers and streams. They are designated as such, and shown on the EA's Main River Map. The Environment Agency carries out maintenance, improvement or construction work on main rivers to manage flood risk. Other rivers are called 'ordinary watercourses'. Lead local flood authorities, district councils and internal drainage boards carry out flood risk management work on ordinary watercourses.

impacted. All other watercourses are assumed to be crossed via open cut trenching at this stage.

- 4.1.1.7 If a new access crossing structure is required over a watercourse, it is assumed for this assessment that a crossing structure suitable to the receptor value will be utilised (such as a clear span bridge for a high value watercourse). It is assumed that a box culvert will be installed if a new access crossing structure is required over a watercourse with a receptor value of low.
- 4.1.1.8 No new crossing structures are required of watercourses with a high value at this time. Further assessment work is required to be undertaken on the structural integrity of the existing crossing of the Wendling Beck. Should it be found to be insufficient, remedial works or a new crossing will be required.
- 4.1.1.9 Appropriate crossing methods will be confirmed for the ES following reconnaissance surveys to confirm the receptor value of the relevant watercourses and the likely impact; which may include clear span bridges or HDD.
- 4.1.1.10 A range of supporting infrastructure comprising of BESS, transformers and invertors and storage containers will also be required. There could be some stand-alone invertors and BESS units spread across the site. However, the majority would be arranged together as a hybrid pack with a footprint of 13m x 22m. The foundations of all units consist of a 0.3m deep concrete slab with gravel on-top. Multiple hybrid packs will be located in each Panel Area.
- 4.1.1.11 Security measures such as fencing, CCTV and lighting will also be located across the site. Access tracks will also be required during construction and for post-construction maintenance. These would utilise points of access of the existing highway network and be permeable to allow water to infiltrate and maintain greenfield run off rates. Access tracks will be up to 4.5m wide.
- 4.1.1.12 A full description of the Proposed Development and a detailed description of the design and environmental mitigation is provided in PEIR Chapter 2 The Proposed Development.

## 4.2 Summary of Drainage Strategy

- 4.2.1.1 Appendix 14.2 of the PEIR outlines the drainage strategy to support the application. The strategy outlines how surface water will be managed during the operational phases of the Proposed Development and provides an overview maintenance plan for the drainage mitigations proposed. It also considers foul and surface water drainage requirements in the temporary scenario including during the construction phase. A summary of the drainage strategy for each aspect of the Proposed Development is provided below.

### 4.2.2 Solar PV modules

- 4.2.2.1 It is proposed that surface water will drain freely off the solar PV modules onto the surrounding vegetated ground, promoting natural land drainage around the structures; formal soakaways are deemed unnecessary for the site. This method is

considered appropriate as the solar PV modules are anticipated to be ground-mounted and elevated above the ground, and do not cover the entire site.

4.2.2.2 Surface water is proposed to be managed according to the existing site conditions, with no introduction of hard infrastructure such as pipework or manholes..

4.2.2.3 Runoff quality from the Panel Areas is expected to be comparable to that from roofs, so no extra water quality treatment measures are deemed necessary.

### 4.2.3 BESS units

4.2.3.1 There would be approximately 189 hybrid packs and 331 standalone inverters for the Proposed Development.

4.2.3.2 It is proposed that surface water from the hardstanding areas will drain freely onto the surrounding gravel aprons, promoting natural land drainage around the structures. This practice is common for solar farms, where the scale of these impermeable areas is relatively small compared to the surrounding rural landscape.

4.2.3.3 Similar to the solar PV modules, the BESS units will receive rainfall and are not expected to generate additional pollutant loads. Maintenance operations are considered to pose minimal pollution risks. The stone apron will help capture and treat low-risk pollutants, such as oils from maintenance machinery. Currently, no other planned maintenance activities are known that present an increased risk of pollution.

4.2.3.4 Numerous safety measures are proposed to prevent a fire occurring within the BESS. However, in the event that a fire occurs at a BESS unit, the containers are to be fitted with an automated fire-suppression system, and this system would use an automatic clean agent (aerosol). In the event of a fire, this would mitigate the risk of contaminated water filling the BESS container. Water is typically only used to cool adjacent BESS in the event of a BESS fire to prevent the spread of fire to other units, and therefore only used when multiple BESS are installed in a central location on a site in close proximity to each other. The Proposed Development has BESS spread throughout the Panel Areas over a large geographic area; therefore, cooling water is not expected to be used in the event of a fire.

4.2.3.5 The Applicant is continuing to develop the drainage strategy in discussion with the Environment Agency including in relation to BESS.

4.2.3.6 Other pollution prevention measures such as oil and chemical spill kits should also be available on site.

### 4.2.4 Substations and transformers

4.2.4.1 Seven on-site substations (132 kV) are proposed within the draft Order Limits.

- 4.2.4.2 Some of these elements of the Proposed Development inherently pose a high-pollution risk due to the presence and decanting of oil/fuel, and as such, special consideration must be given to the drainage of these areas.
- 4.2.4.3 The drainage design related to these areas must ensure adequate collection, storage and treatment is provided during both normal operation, refuelling, and a spill scenario. Treatment may be provided through the inclusion of appropriately sized oil water separators (OWS) in the drainage network.
- 4.2.4.4 The design for the on-site substations would include a bund designed to accommodate at least 110% of the oil volume present.
- 4.2.4.5 Transformer bays should include a bund and sump to contain any oil spillage in the event of a leak. Under normal conditions, any rainwater collected within the sump will be removed using specialised Bund Water Control Unit pumps that automatically shut off if they detect the presence of oil. These pumps will be connected to control and monitoring systems that will raise alarms if oil is detected.
- 4.2.4.6 Other areas of hardstanding related to the substations, which pose a low pollution risk, can be managed through direct infiltration via a gravel apron or similar or via SuDS features including, for example, infiltration trenches. Any attenuation required will need to be designed to accommodate the runoff from a 1 in 100-year plus climate change event and be attenuated to greenfield discharge rates.
- 4.2.4.7 Regarding foul drainage, all foul water generated should be appropriately discharged into a foul sewer, if available and agreed with Anglian Water, or collected in sealed storage tanks and regularly emptied and disposed of by a licensed waste contractor in accordance with regulatory requirements.

## 4.2.5 Access roads

- 4.2.5.1 Access to the site is proposed largely via existing access points from the local highway network. Regular vehicular movements during operation and maintenance will be kept to designated access tracks as far as practicable, to reduce the risk of soil compaction. Any internal access tracks that are required are proposed to be of permeable construction (e.g. gravel medium), using compacted gravel. Careful consideration be given to the construction of any tracks and the materials selected, so that water is allowed to infiltrate through the gravel and maintain greenfield runoff rates.

## 4.3 Design Mitigation and Assumptions

- 4.3.1.1 The Proposed Development has embedded mitigation measures included within the design. Those relevant to this assessment include:
- 15m buffer from panels to woodland and ancient woodland.
  - The construction compounds will be located on low diversity (NERC s.41 Priority) habitat.

- Minimum 9m offset from all infrastructure (including fencing) from bank top of all riparian boundaries and watercourses (except where crossing). Access tracks will be permeable using compacted gravel to allow water to infiltrate through and maintain greenfield runoff rates.
- New crossings of watercourses should be avoided insofar as reasonably practicable, with a preference to reuse existing crossing points and structures wherever possible. Appropriate crossing methods will be confirmed for the ES following reconnaissance surveys to confirm the receptor value of the watercourse and likely impact which may include clear span bridges or HDD..
- Any access tracks, cable routing and fencing will be located to pass through existing gates and gaps in hedgerows where practicable.
- Where possible, underground cables would be installed using a cable plough or trenching. These are considered the most efficient methods of cable installation.
- Suitable site drainage to control runoff rates and manage surface water in the event of an incident at the BESS storage facilities will be developed via the Outline Drainage Strategy. Sustainable Drainage Systems (SuDS) will be provided at source, ensuring that surface water run-off is managed consistently with existing site conditions.
- Where ground excavations are required for structures, it is assumed that these will be shallow foundations to a maximum depth of 2m below ground level.

## 4.4 Construction Mitigation Measures

### 4.4.1 Overview

- 4.4.1.1 An oCEMP will be submitted with the DCO application which sets out the measures, commitments and actions identified in the ES to manage environmental effects during construction. These measures, commitments and actions would be carried forward to a detailed CEMP which will be secured by a Requirement of the DCO. The CEMP will be developed substantially in accordance with the oCEMP and submitted for approval by relevant local planning authorities prior to commencement of construction at stage one.
- 4.4.1.2 The oCEMP would outline environmental issues identified within the draft Order Limits; provide a register of relevant legislation and consents requirements; define agreed mitigation measures in work method statements to ensure compliance with current legislation, works licences and permits, planning approvals, and best practice guidance. It is assumed that this will be adopted and implemented during the construction phase by the Applicant.
- 4.4.1.3 The CEMP should include measures to avoid and minimise impacts to the water environment during construction of the Proposed Development, in alignment with EA guidance and best practice. For the basis of this assessment, it is assumed at this stage that reference will be made in the CEMP, where necessary, to the environmental good practice advice in the Pollution Prevention Guidelines (PPG),

together with the replacement guidance series, Guidance for Pollution Prevention (GPP). Whilst PPGs and GPPs do not provide regulatory guidance in England, they form environmental good practice guidance for the whole UK. Key aspects are summarised in the following sections.

## **4.4.2 Pollution Control**

4.4.2.1 Best practice will be adopted in line with GPP 5 [10] to minimise the risk of silt pollution to nearby watercourses during construction activities. This will involve the identification of potential sources and pathways, and the application of appropriate measures, where necessary, to avoid or control silt runoff. For example, this may include:

- Seeding or covering exposed ground and sediment stockpiles
- Only removing vegetation from areas that need to be exposed in the near future.
- Minimising the amount of time soil stockpiles are exposed for
- All plant and wheel washing to be carried out in a designated area at least 10 m from any water body or surface drain
- Runoff to be collected in lagoons or settlement tanks (or similar) to allow suspended solids to settle and be removed to appropriate levels before discharge to the nearby watercourse
- Any runoff water containing silt or other pollutants to be treated appropriately before discharge back to the water environment

## **4.4.3 Spillages**

4.4.3.1 A pollution risk assessment should be carried out for the site of the Proposed Development ahead of construction, considering both the storage and transportation of materials used. This would identify potentially hazardous materials or activities and assess the probability and magnitude of potentially harmful effects. From this, a pollution incident response plan (see GPP 21 [11]), or equivalent, would be compiled to identify the specific measures needed to reduce the likelihood of a spillage happening, and to minimise the impact of any spills that may occur.

## **4.4.4 Managing contamination risk**

4.4.4.1 The site history and previous ground investigation data suggest that the made ground beneath the site may contain a range of contaminants including localised areas of asbestos and Polycyclic aromatic hydrocarbons (PAHs). Whilst it is not anticipated that the geo-environmental risks at the Proposed Development pose a risk to the water environment appropriate controls and good practice measures should be implemented through the detailed CEMP. This should include further ground investigation to help inform a detailed risk assessment, remediation options appraisal and remediation strategy (if appropriate) and inspection of materials for any evidence of further contamination. Should any further evidence of contamination be identified this should be further assessed and tested as

appropriate to enable any required additional controls/works to be determined. Such measures should mitigate potential environmental impacts associated with the potential mobilisation of contaminated soils at the site during construction.

#### **4.4.5 Minimising disturbance**

4.4.5.1 Appropriate measures should be included within the work method statements to reduce potential environmental impacts of in-channel and marginal construction activities. This should include measures to:

- minimise the footprint of any in-channel works as far as reasonable possible to reduce the degree of physical disturbance of the riverbed and banks;
- reinstate any impacted in-channel and/or marginal habitats where necessary and practicable;
- reduce any associated noise, vibration, and artificial lighting impacts where practicable;
- where feasible, control the timing of works so that any in-channel works are programmed to take place outside of sensitive times of year for fish in consultation with EA fisheries specialists (typically October to May for salmonid waters and March to June for cyprinid waters).

#### **4.4.6 Biosecurity**

4.4.6.1 Good biosecurity practices are vital for preventing the spread of invasive non-native species (INNS) and pathogens such as waterborne fish diseases. Measures should be adopted so that the construction activities do not lead to the spread of invasive non-native species or pathogens.

4.4.6.2 An invasive non-native plant species (INNS) method statement will be produced if INNS are identified as present during pre-construction surveys to inform the management of invasive plant species found within the draft Order Limits.

# 5 Screening and Baseline assessment

## 5.1 Overview

- 5.1.1.1 The screening and baseline assessment stage has identified the relevant WER water bodies that will potentially be affected by the Proposed Development. These water bodies are summarised in the sections below along with the latest available Environment Agency WER baseline data.

## 5.2 River Basin Management Plan

- 5.2.1.1 The Proposed Development is located within the 'Anglian' River Basin District (RBD) [12]. The management and operational catchments of the surface water and groundwater bodies are summarised in Table 3.

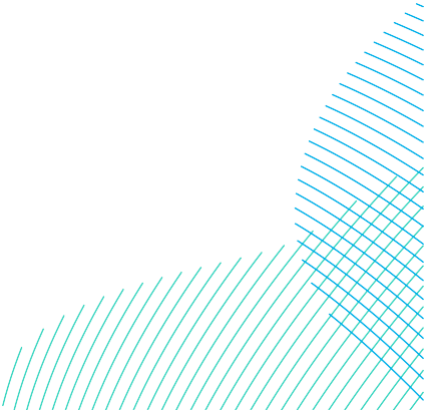
## 5.3 Relevant Water Bodies

- 5.3.1.1 There are ten surface water bodies and three groundwater bodies present within the study area, as summarised in Table 3 and shown in Figures 14.4 and 14.5 of the PEIR.
- 5.3.1.2 Three surface water bodies and three groundwater bodies are screened into the assessment due to the potential for impacts to arise from the Proposed Development. The baseline information for these water bodies is detailed in Sections 5.4.1 to 5.4.6.

Given the nature and location of the proposed works, the Proposed Development is not anticipated to affect the other seven surface water bodies in the study area. Therefore, these surface water bodies have been screened out of the scoping assessment, as summarised in Table 3. Further justification for screen waterbodies out or in for further consideration is provided in sections 5.3.2 and 5.3.3 respectively.

**Table 3**      **Relevant WER water bodies of the Proposed Development (water body catchment areas intersect with the draft Order Limits)**

| Water Body Name                                          | Water Body ID  | Management and Operational Catchment      | Water Body Type | Hydromorphological Designation     | Catchment Area / Length    | Screening decision |
|----------------------------------------------------------|----------------|-------------------------------------------|-----------------|------------------------------------|----------------------------|--------------------|
| Tud                                                      | GB105034051020 | Broadland Rivers; Wensum                  | River           | Heavily modified water body        | 70.2km² / 28.3km           | Screened out       |
| Wendling Beck                                            | GB105034051020 | Broadland Rivers; Wensum                  | River           | Heavily modified water body        | 79.4km² / 17.8km           | Screened in        |
| Stringside Stream                                        | GB105033047810 | Cam and Ely Ouse; Wissey                  | River           | Heavily modified water body        | 50.2km² / 10.0km           | Screened out       |
| Watton Brook                                             | GB105033047870 | Cam and Ely Ouse; Wissey                  | River           | Heavily modified water body        | 70.2km² / 21.0km           | Screened in        |
| Nar<br>Upstream of Abbey Farm                            | GB105033047791 | North West Norfolk; West Norfolk Rivers   | River           | Not heavily modified or artificial | 154.3km² / 29.6km          | Screened out       |
| Old Carr Stream                                          | GB105033047820 | Cam and Ely Ouse; Wissey                  | River           | Not heavily modified or artificial | 52.3km² / 84km             | Screened out       |
| Gadder                                                   | GB105033047880 | Cam and Ely Ouse; Wissey                  | River           | Not heavily modified or artificial | 53.9km² / 10.4km           | Screened out       |
| Wissey-<br>Upper                                         | GB105033047890 | Cam and Ely Ouse; Wissey                  | River           | Not heavily modified or artificial | 87.7km² / 21.2km           | Screened in        |
| Blackwater (Yare)                                        | GB105034051260 | Broadland Rivers; Yare                    | River           | Not heavily modified or artificial | 48.5km² / 14.9km           | Screened out       |
| Yare (u/s confluence with Tiffey – GB105034051270 Upper) |                | Broadland Rivers; Yare                    | River           | Not heavily modified or artificial | 23.9km² / 9.8km            | Screened out       |
| Cam and Ely Ouse Chalk                                   | GB40501G400500 | Anglian GW; Cam and Ely Ouse Chalk        | Groundwater     | Not applicable                     | 2995.8km² / not applicable | Screened in        |
| North West Norfolk Chalk                                 | GB40501G400200 | Anglian GW; North West Norfolk Chalk      | Groundwater     | Not applicable                     | 336.3km²/ not applicable   | Screened in        |
| Broadland Rivers Chalk & Crag                            | GB40501G400300 | Anglian GW; Broadland Rivers Chalk & Crag | Groundwater     | Not applicable                     | 307.9km²/ not applicable   | Screened in        |



## 5.3.2 Screened out water bodies

5.3.2.1 As outlined in Table 3, the following water bodies have been screened out of further assessment at this stage. The reasons for this are provided below:

- Tud
  - While the Eastern Panel Area extends into the Tud WER water body catchment, the Proposed Development represents a very small portion of the overall catchment. There are no watercourses within or in close proximity to the draft Order Limits which could be impacted, and no apparent pathways to these watercourses from the Proposed Development. No works are proposed that would directly impact the Tud WER water body. No other indirect impact pathways are anticipated for this water body. Therefore, the Tud WER water body has been screened out of further assessment.
- Stringside Stream
  - The watercourse is located approximately 4.5km southwest of the draft Order Limits and no works are planned to take place within the water body catchment. Therefore, no works are planned that would directly impact the water body, and no other indirect impact pathways are anticipated for this water body. Therefore, Stringside Stream has been screened out of further assessment.
- Nar Upstream of Abbey Farm
  - While the Central and Eastern Panel Areas extend into the Nar Upstream of Abbey Farm WER water body catchment, the Proposed Development represents a very small portion of the overall catchment. The water course is located approximately 3km north of the Proposed Development. Therefore, there are no watercourses within or in close proximity to the draft Order Limits which could be impacted, and no apparent pathways to these watercourses within the proposals. No works are proposed that would directly impact the water body. No other indirect impact pathways are anticipated for this water body. Therefore, the Nar Upstream of Abbey Farm has been screened out of further assessment.
- Old Carr Stream
  - While the Eastern Panel Area extends into the Old Carr Stream water body catchment, the Proposed Development represents a very small portion of the overall catchment. The watercourse is located approximately 3.5km south of the closest Panel Area, meaning there are no watercourses within or in close proximity to the draft Order Limits which could be impacted, and no apparent pathways to these watercourses within the proposals. No works are proposed that would directly impact the water body and no other indirect impact pathways are anticipated for this water body. Therefore, the Old Carr Stream WER water body has been screened out of further assessment.

- **Gadder**
  - While the Central Panel Area extends into the Gadder water body catchment, the Proposed Development represents a very small portion of the overall catchment. The water course is located approximately 6km south of the draft Order Limits of the Proposed Development, meaning there are no watercourses within or in close proximity to the draft Order Limits which could be impacted, and no apparent pathways to these watercourses within the proposals. No works are proposed that would directly impact the water body and no other indirect impact pathways are anticipated for this water body. Therefore, the Gadder WER water body has been screened out of further assessment.
- **Blackwater (Yare)**
  - While the Southern Panel Area extends into the Blackwater (Yare) water body catchment, the Proposed Development represents a very small portion of the overall catchment. The water course is located approximately 1 km from the draft Order Limits, meaning there are no watercourses within or in close proximity to the draft Order Limits which could be impacted, and no apparent pathways to these watercourses within the proposals. No planned works are proposed that would directly impact the water body and no other indirect impact pathways are anticipated for this water body. Therefore, the Blackwater (Yare) WER water body has been screened out of further assessment.
- **Yare (u/s confluence with Tiffey – Upper)**
  - The Yare (u/s confluence with Tiffey – Upper) water body catchment is located approximately 800 m east of the closest (Southern) Panel Area. Therefore, neither the water course or the Yare water body catchment is located within the draft Order Limits of the Proposed Development, meaning there are no apparent pathways to this water body within the proposal. No works are proposed that would directly impact the water body and no other indirect impact pathways are anticipated for this water body. Therefore, the Yare (u/s confluence with Tiffey – Upper) has been screened out of further assessment.

### 5.3.3 Screened in water bodies

5.3.3.1 There is potential for the Proposed Development to affect the following water bodies. These water bodies have therefore been screened in for preliminary (scoping) assessment at this stage:

- Wendling Beck
- Watton Brook
- Wissey – Upper
- Cam and Ely Ouse Chalk
- North West Norfolk Chalk

- Broadland Rivers Chalk and Crag

5.3.3.2 The current WER baseline data for each of these water bodies is summarised in the following section.

## 5.4 WER water body baseline data

### 5.4.1 Wendling Beck (GB105034051020)

#### Status and Objectives

5.4.1.1 Wendling Beck is designated as a heavily modified water body in recognition of significant anthropogenic influences that have resulted in a change of the river character. It is currently assessed as having an Overall Status of Moderate, with an Ecological Potential of Moderate and a Chemical Status of Fail. The water body is therefore currently failing the overarching Good Overall Status objective under the WER.

5.4.1.2 A breakdown of the current status and status objectives for the water body are provided in Table 4. The quality elements currently limiting the Ecological Potential of the water body are fish (Moderate), macrophytes (Moderate), dissolved oxygen (Moderate) and phosphate (Moderate). The quality element limiting the Chemical status of the water body are polybrominated diphenyl ethers (PBDE) (Fail).

**Table 4** *WER status and status objectives for Wendling Beck (GB105034051020) water body*

| Classification Item                      | Status (2019/2022) <sup>2</sup> | Status Objective (by which year) |
|------------------------------------------|---------------------------------|----------------------------------|
| <b>Ecological Potential</b>              | Moderate                        | Good (2015)                      |
| <b>Biological quality elements</b>       | Moderate                        | Moderate (2021)                  |
| Fish                                     | Moderate                        | Moderate (2021)                  |
| Invertebrates                            | High                            | Good (2015)                      |
| Macrophytes and Phytobenthos Combined    | Not assessed                    | Not assessed                     |
| Macrophytes Sub Element                  | Moderate                        | Not assessed                     |
| <b>Physico-chemical quality elements</b> | Moderate                        | Good (2015)                      |
| Acid Neutralising Capacity               | High                            | Good (2015)                      |
| Ammonia (Phys-Chem)                      | High                            | Good (2015)                      |
| Biochemical Oxygen Demand (BOD)          | High                            | Not assessed                     |

<sup>2</sup> Ecological Potential elements were last assessed in 2022, whereas the Chemical Status elements were last assessed in 2019. This is because Chemical Status is only assessed once during each 6-year RBMP cycle and therefore did not require assessment in 2022.

| Classification Item                                  | Status (2019/2022) <sup>2</sup> | Status Objective (by which year) |
|------------------------------------------------------|---------------------------------|----------------------------------|
| Dissolved oxygen                                     | Moderate                        | Good (2015)                      |
| Phosphate                                            | Moderate                        | Good (2015)                      |
| Temperature                                          | High                            | Good (2015)                      |
| pH                                                   | High                            | Good (2015)                      |
| <b><i>Hydromorphological Supporting Elements</i></b> | Supports good                   | Supports good (2015)             |
| Hydrological Regime                                  | Supports good                   | Supports good (2015)             |
| <b><i>Supporting elements (Surface Water)</i></b>    | Good                            | Good (2015)                      |
| Mitigation Measures Assessment                       | Good                            | Good (2015)                      |
| <b><i>Specific pollutants</i></b>                    | High                            | High (2015)                      |
| Arsenic                                              | High                            | High (2015)                      |
| Iron                                                 | High                            | High (2015)                      |
| Manganese                                            | High                            | High (2015)                      |
| <b>Chemical Status</b>                               | Fail                            | Good (2063)                      |
| <b><i>Priority hazardous substances</i></b>          | Fail                            | Good (2063)                      |
| Benzo(a)pyrene                                       | Good                            | Good (2015)                      |
| Dioxins and dioxin-like compounds                    | Good                            | Good (2015)                      |
| Heptachlor and cis-Heptachlor epoxide                | Good                            | Good (2015)                      |
| Hexabromocyclododecane (HBCDD)                       | Good                            | Good (2015)                      |
| Hexachlorobenzene                                    | Good                            | Good (2015)                      |
| Hexachlorobutadiene                                  | Good                            | Good (2015)                      |
| Mercury and Its Compounds                            | Good                            | Good (2015)                      |
| Perfluorooctane sulphonate (PFOS)                    | Good                            | Good (2015)                      |
| Polybrominated diphenyl ethers (PBDE)                | Fail                            | Good (2063)                      |
| <b><i>Priority substances</i></b>                    | Good                            | Good (2015)                      |
| Cypermethrin (Priority)                              | Good                            | Good (2015)                      |
| Fluoranthene                                         | Good                            | Good (2015)                      |
| <b><i>Other Pollutants</i></b>                       | Does not require assessment     | Does not require assessment      |

## Protected Areas

5.4.1.3 Under the WER, 'Protected Areas' are defined as areas requiring special protection because of their sensitivity to pollution or due to their particular economic, social,

or environmental importance. These areas are water bodies or parts of them that are:

- Used for the abstraction of water intended for human consumption (Drinking Water Protected Area).
- Supporting economically significant shellfish or freshwater fish stocks (Freshwater Fish Water; Shellfish Water).
- Where a large number of people are expected to bathe (Bathing Water).
- Supporting habitats or species of international biodiversity conservation importance (Special Area of Conservation (SAC) Special Protection Area (SPA)).
- Sensitive to nutrient enrichment (Nitrate Vulnerable Zone (NVZ); Urban Waste Water Treatment Directive (UWWTD) Sensitive Zone).

5.4.1.4 The specific environmental designations, measures and actions for these Protected Areas have been established under previous European Directives and their associated domestic legislation/ regulations, which set out the requirements to ensure the protection of the area's water environment or protection of wildlife that is directly dependent on that water environment.

5.4.1.5 There are five protected areas within the water body catchment. These include the Norfolk Valley Fens Special Area of Conservation (SAC) as well as three protected areas relating to NVZs designated under the Nitrates Directive and one relating to a UWWTD Zone on the River Wensum. Site details are provided in Table 5.

**Table 5**      ***Protected Areas for the Wendling Beck (GB105034051020) water body***

| Protected Area Name            | ID        | Directive                             |
|--------------------------------|-----------|---------------------------------------|
| Norfolk Valley Fens            | UK0012892 | Special Area of Conservation          |
| Anglian Chalk                  | G71       | Nitrates Directive                    |
| Wendling Beck NVZ              | S398      | Nitrates Directive                    |
| River Wensum                   | UKENRI73  | Urban Waste Water Treatment Directive |
| Blackwater (Wendling Beck) NVZ | S822      | Nitrates Directive                    |

### **Environment Agency Biological Monitoring Data**

5.4.1.6 There are three Environment Agency biological monitoring sites found within the Wendling Beck water body extent (shown in Figure 14.15 of the PEIR) that have been surveyed within the last five years (Site IDs 75583, 198078, 54959, respectively). Two of these relate to river invertebrate surveys and one relates to a freshwater fish survey. The freshwater fish survey site (Foxburrow farm, US bridge) is located 8.3km downstream of the closest (Eastern) Panel Area. The most recent fish survey carried out at this site on the 20 October 2020 recorded the presence of brown / sea trout, bullhead and 3 spined stickleback.

### **Reasons for Not Achieving Good Status (RNAG)**

- 5.4.1.7 The Environment Agency's RNAG datasets identify the key pressures and activities that are currently considered to be limiting the status of the various water body status elements that are not currently achieving their 'Good' status objective. Each RNAG is linked to a 'Surface Water Management Issue' (SWMI), which have been identified via the catchment management planning process.
- 5.4.1.8 There are five RNAGs and one Reason for Deterioration (RFD) for the water body. The significant water management issues for these RNAGs include point and diffuse source pollution and physical modification. Full details are provided in Table 6.

**Table 6 RNAGs for the Wendling Beck (GB105034051020) water body**

| Failing Element                       | RNAG   |                                       |                       |                                                         |                                        |
|---------------------------------------|--------|---------------------------------------|-----------------------|---------------------------------------------------------|----------------------------------------|
|                                       | ID     | Category                              | Business Sector       | SWMI                                                    | Activity                               |
| Polybrominated diphenyl ethers (PBDE) | 584986 | No sector responsible                 | Not applicable        | measures delivered to address reason, awaiting recovery | Not applicable                         |
| Phosphate                             | 561187 | Agriculture and rural land management | Agriculture - Arable  | Diffuse source                                          | Poor nutrient management               |
| Phosphate                             | 561186 | Water Industry                        | Waste water treatment | Point source                                            | Sewage discharge (continuous)          |
| Fish                                  | 561184 | Other                                 | Not applicable        | Physical modification                                   | Barriers - ecological discontinuity    |
| Fish                                  | 588180 | Agriculture and rural land management |                       | Physical modification                                   | Land drainage - operational management |
| Phosphate (RFD)                       | 561188 | Water Industry                        | Waste water treatment | Point source                                            | Sewage discharge (continuous)          |

### Water Body Measures and Actions

- 5.4.1.9 The actions identified by the Environment Agency for the Wendling Beck WER surface water are presented in Table 7. The actions are largely generic and no further details or location information is available currently.

**Table 7** *Measures and Actions for the Wendling Beck (GB105034051020) water body*

| Action ID | Description                                                                                                  | Status       |
|-----------|--------------------------------------------------------------------------------------------------------------|--------------|
| 14080     | Generic Barriers to Migration: manage modified habitats to remove or ease barriers to fish migration         | Not provided |
| 14082     | Generic Action for Surface Run-off and Drainage: maintain, control and treat runoff                          | Not provided |
| 14083     | Generic action - Field & Crop - arable soils: improve land management practices                              | Not provided |
| 14085     | Generic Increase in channel morphological diversity: Improve condition of channel/bed and/or banks/shoreline | Not provided |
| 14090     | Generic action - Field and Crop – Livestock: Reduce diffuse pollution at source                              | Not provided |
| 14091     | Generic action - Field & Crop - Nutrients/ Other Rural Nutrient Sources: Reduce diffuse pollution at source  | Not provided |
| 14394     | WB Action for Surface Run-Off and Drainage: Manage, contain and treat runoff                                 | Not provided |
| 14395     | WB increase in channel morphological diversity: Improve condition of channel/bed and/or banks/shoreline      | Not provided |
| 14396     | WB Barriers to Migration: Remove or ease barriers to fish migration                                          | Not provided |
| 14397     | WB Field & Crop Arable Soils: Improve land management practices                                              | Not provided |
| 14398     | WB Field & Crop Livestock : reduce diffuse pollution at source                                               | Not provided |
| 14399     | WB Field & Crop Nutrients/other rural nutrient sources: reduce diffuse pollution at source                   | Not provided |
| 32839     | Appropriate Channel Maintenance Strategy: Improve operational and maintenance regimes                        | Not provided |

## 5.4.2 Watton Brook (GB105033047870)

### Status and Objectives

- 5.4.2.1 Watton Brook is designated as a heavily modified water body in recognition of significant anthropogenic influences that have resulted in a change of the river character. It is currently assessed as having as an Overall Status of Moderate, with an Ecological Potential of Moderate and a Chemical Status of Fail. The water body is therefore currently failing the overarching Good Overall Status objective under the WER.
- 5.4.2.2 A breakdown of the current status and status objectives for the water body are provided in Table 8. The quality elements currently limiting the Ecological Potential of the water body are Fish (Poor), Macrophytes Sub Element (Moderate), Ammonia (Phys-Chem) (Moderate), Dissolved Oxygen (Moderate) and Phosphate (Moderate). The quality element limiting the Chemical status of the water body are Polybrominated diphenyl ethers (PBDE) (Fail).

**Table 8**      **WER status and status objectives for Watton Brook (GB105033047870) water body**

| Classification Item                           | Status (2019/2022) <sup>3</sup> | Status Objective (by which year) |
|-----------------------------------------------|---------------------------------|----------------------------------|
| <b>Ecological Potential</b>                   | Moderate                        | Good (2027)                      |
| <b>Biological quality elements</b>            | Poor                            | Good (2015)                      |
| Fish                                          | Poor                            | Good (2015)                      |
| Invertebrates                                 | Good                            | Good (2015)                      |
| Macrophytes and Phytobenthos Combined         | Not assessed                    | Not assessed                     |
| Macrophytes Sub Element                       | Moderate                        | Not assessed                     |
| <b>Physico-chemical quality elements</b>      | Moderate                        | Good (2027)                      |
| Acid Neutralising Capacity                    | High                            | Good (2015)                      |
| Ammonia (Phys-Chem)                           | Moderate                        | Good (2015)                      |
| Dissolved oxygen                              | Moderate                        | Good (2027)                      |
| Phosphate                                     | Moderate                        | Good (2027)                      |
| Temperature                                   | High                            | Good (2015)                      |
| pH                                            | High                            | Good (2015)                      |
| <b>Hydromorphological Supporting Elements</b> | Supports good                   | Supports good                    |
| Hydrological Regime                           | Supports good                   | Supports good                    |
| <b>Supporting elements (Surface Water)</b>    | Moderate                        | Good (2027)                      |
| Mitigation Measures Assessment                | Moderate or less                | Good (2027)                      |
| <b>Specific pollutants</b>                    | High                            | High (2015)                      |
| Iron                                          | High                            | High (2015)                      |
| <b>Chemical Status</b>                        | Fail                            | Good (2063)                      |
| <b>Priority hazardous substances</b>          | Fail                            | Good (2063)                      |
| Benzo(a)pyrene                                | Good                            | Good (2015)                      |
| Dioxins and dioxin-like compounds             | Good                            | Good (2015)                      |
| Heptachlor and cis-Heptachlor epoxide         | Good                            | Good (2015)                      |
| Hexabromocyclododecane (HBCDD)                | Good                            | Good (2015)                      |
| Hexachlorobenzene                             | Good                            | Good (2015)                      |
| Hexachlorobutadiene                           | Good                            | Good (2015)                      |

<sup>3</sup> Ecological Potential elements were last assessed in 2022, whereas the Chemical Status elements were last assessed in 2019. This is because Chemical Status is only assessed once during each 6 year RBMP cycle and therefore did not require assessment in 2022.

| Classification Item                   | Status (2019/2022) <sup>3</sup> | Status Objective (by which year) |
|---------------------------------------|---------------------------------|----------------------------------|
| Mercury and Its Compounds             | Good                            | Good (2015)                      |
| Perfluorooctane sulphonate (PFOS)     | Good                            | Good (2015)                      |
| Polybrominated diphenyl ethers (PBDE) | Fail                            | Good (2063)                      |
| <b>Priority substances</b>            | Good                            | Good (2015)                      |
| Cypermethrin (Priority)               | Good                            | Good (2015)                      |
| Fluoranthene                          | Good                            | Good (2015)                      |
| <b>Other Pollutants</b>               | Does not require assessment     | Does not require assessment      |

## Protected Areas

5.4.2.3 There are four protected areas within the water body catchment including the Breckland Special Area of Conservation and River Wissey Urban Waste Water Treatment Directive. The other two protected areas relate to the Nitrates Directive. Full details can be found in Table .

**Table 9**      **Protected Areas for the Watton Brook (GB105033047870) water body**

| Protected Area Name              | ID        | Directive                             |
|----------------------------------|-----------|---------------------------------------|
| Ely Ouse and Cut-off channel NVZ | S390      | Nitrates Directive                    |
| Anglian Chalk                    | G71       | Nitrates Directive                    |
| Breckland                        | UK0019865 | Special Area of Conservation          |
| River Wissey                     | UKENRI85  | Urban Waste Water Treatment Directive |

## Environment Agency Biological Monitoring Data

5.4.2.4 There are three Environment Agency biological monitoring stations found within the Watton Brook water body (shown in Figure 14.15 of the PEIR) that have been surveyed within the last five years (Site IDs: 4751, 4750 and 56326 respectively). Two of these relate to freshwater fish surveys and one relates to a river invertebrate survey. The closest fish monitoring site (Lt Cressingham) is located 3.2km downstream of the Southern Panel Area. The most recent fish survey carried out at this site on the 14 May 2024 found brown / sea trout, bullhead, 3 spined stickleback and European eels.

## Reasons for Not Achieving Good Status

- 5.4.2.5 There are six RNAGs for this water body. The significant water management issues for these RNAGs include physical modification and point and diffuse source pollution. Full details can be found in Table 10.

**Table 10** RNAGs for the 'Watton Brook' water body (GB105033047870)

| Failing Element                       | RNAG   |                                       |                         |                                                         |                               |
|---------------------------------------|--------|---------------------------------------|-------------------------|---------------------------------------------------------|-------------------------------|
|                                       | ID     | Category                              | Business Sector         | SWMI                                                    | Activity                      |
| Polybrominated diphenyl ethers (PBDE) | 584774 | No sector responsible                 | Not applicable          | measures delivered to address reason, awaiting recovery | Not applicable                |
| Mitigation Measures Assessment        | 588169 | Agriculture and rural land management |                         | Physical modification                                   | Other                         |
| Mitigation Measures Assessment        | 558455 | Local and Central Government          | Not applicable          | Physical modification                                   | Other                         |
| Phosphate                             | 558454 | Local and Central Government          | Not applicable          | Point source                                            | Sewage discharge (continuous) |
| Phosphate                             | 558452 | Water Industry                        | Waste water treatment   | Point source                                            | Sewage discharge (continuous) |
| Phosphate                             | 558451 | Agriculture and rural land management | Agriculture - Livestock | Diffuse source                                          | Poor nutrient management      |

## Measures and Actions

- 5.4.2.6 The Environment Agency's water body level measures and actions currently identified for the 'Watton Brook' WER water body are summarised in Table 11. A number of the actions are included multiple times in the data but for clarity have only been presented once in the table below. The action IDs were not provided in the received data and no further details or location information is available currently.

**Table 11** Measures and Actions for the 'Watton Brook' water body (GB105033047870)

| Action ID    | Description                                                                            | Status      |
|--------------|----------------------------------------------------------------------------------------|-------------|
| Not provided | Action is required to control the spread of Himalayan balsam                           | Opportunity |
| Not provided | Native crayfish present, require protection from encroaching invasive signal crayfish. | Opportunity |
| Not provided | Appropriate techniques to prevent transfer of invasive species                         | Opportunity |

| Action ID    | Description                                                                                             | Status      |
|--------------|---------------------------------------------------------------------------------------------------------|-------------|
| Not provided | Influence and educate landowners on sensitive management practices                                      | Opportunity |
| Not provided | Enable fish to access waters upstream and downstream of impoundment                                     | Opportunity |
| Not provided | Increase in-channel morphological diversity                                                             | Opportunity |
| Not provided | Increase in-channel morphological diversity reach 1-7                                                   | Opportunity |
| Not provided | Address diffuse agricultural pollution within CSF priority area<br>At risk due to Metaldehyde 72.3 sqkm | Opportunity |
| Not provided | Assess options for AMP6/AMP7                                                                            | Opportunity |
| Not provided | Assess options for STW nutrient reduction                                                               | Opportunity |
| Not provided | Prohibit/control uses of certain substances/chemicals:                                                  | Opportunity |
| Not provided | Appropriate techniques to prevent transfer of invasive species                                          | Opportunity |
| Not provided | Countryside Stewardship measures to address water quality issues                                        | Opportunity |

### 5.4.3 Wissey - Upper (GB105033047890)

#### Status and Objectives

- 5.4.3.1 The Wissey-Upper water body is not designated as artificial or heavily modified in recognition of lack of anthropogenic influence on the water course. It is currently achieving an Overall Status of Moderate, with an Ecological Status of Moderate and a Chemical Status of Fail. The water body is therefore currently failing the overarching Good Overall Status objective under the WER.
- 5.4.3.2 A breakdown of current status and status objectives for the water body are provided in Table 12. The quality elements limiting the Ecological Status are Fish (Moderate), Macrophytes and Phytobenthos combined (Moderate), Macrophytes sub element (Moderate), Phosphate (Moderate) and Hydrological Regime (Does not support good). The quality element limiting the Chemical Status of the water body is Polybrominated diphenyl ethers (PBDE) (Fail).

**Table 12** *WER status and status objectives for Wissey - Upper (GB105033047890) water body*

| Classification Item         | Status (2019/2022) <sup>4</sup> | Status Objective (by which year) |
|-----------------------------|---------------------------------|----------------------------------|
| Ecological Status           | Moderate                        | Good (2027)                      |
| Biological quality elements | Moderate                        | Good (2027)                      |
| Fish                        | Moderate                        | Good (2027)                      |

<sup>4</sup> Ecological Status elements were last assessed in 2022, whereas the Chemical Status elements were last assessed in 2019. This is because Chemical Status is only assessed once during each 6 year RBMP cycle and therefore did not require assessment in 2022.

| Classification Item                    | Status (2019/2022) <sup>4</sup> | Status Objective (by which year) |
|----------------------------------------|---------------------------------|----------------------------------|
| Invertebrates                          | High                            | Good (2015)                      |
| Macrophytes and Phytobenthos Combined  | Moderate                        | Good (2027)                      |
| Macrophytes Sub Element                | Moderate                        | Good (2027)                      |
| Physico-chemical quality elements      | Moderate                        | Good (2015)                      |
| Ammonia (Phys-Chem)                    | High                            | Good (2027)                      |
| Dissolved oxygen                       | Good                            | Good (2027)                      |
| Phosphate                              | Moderate                        | Good (2015)                      |
| Temperature                            | Good                            | Good (2015)                      |
| pH                                     | High                            | Supports good (2015)             |
| Hydromorphological Supporting Elements | Supports Good                   | Supports good (2021)             |
| Hydrological Regime                    | Does Not Support Good           | Not assessed                     |
| Morphology                             | Supports Good                   | Not assessed                     |
| Chemical Status                        | Fail                            | Good (2063)                      |
| Priority hazardous substances          | Fail                            | Good (2063)                      |
| Benzo(a)pyrene                         | Good                            | Good (2015)                      |
| Dioxins and dioxin-like compounds      | Good                            | Good (2015)                      |
| Heptachlor and cis-Heptachlor epoxide  | Good                            | Good (2015)                      |
| Hexabromocyclododecane (HBCDD)         | Good                            | Good (2015)                      |
| Hexachlorobenzene                      | Good                            | Good (2015)                      |
| Hexachlorobutadiene                    | Good                            | Good (2015)                      |
| Mercury and Its Compounds              | Good                            | Good (2015)                      |
| Perfluorooctane sulphonate (PFOS)      | Good                            | Good (2015)                      |
| Polybrominated diphenyl ethers (PBDE)  | Fail                            | Good (2063)                      |
| Priority substances                    | Good                            | Good (2015)                      |
| Cypermethrin (Priority)                | Good                            | Good (2015)                      |
| Fluoranthene                           | Good                            | Good (2015)                      |
| Other Pollutants                       | Does not require assessment     | Does not require assessment      |

## Protected Areas

- 5.4.3.3 There are five protected areas within the water body catchment. Three of these relate to the Nitrates Directive and two of these are Special Areas of Conservation. Full details are provided in Table 13.

**Table 13** *Protected Areas for the Wissey-Upper (GB105033047890) water body*

| Protected Area Name              | ID        | Directive                    |
|----------------------------------|-----------|------------------------------|
| Ely Ouse and Cut-off channel NVZ | S390      | Nitrates Directive           |
| Norfolk Valley Fens              | UK0012892 | Special Area of Conservation |
| Anglian Chalk                    | G71       | Nitrates Directive           |
| Breckland                        | UK0019865 | Special Area of Conservation |
| Yare NVZ                         | S400      | Nitrates Directive           |

### Environment Agency Biological Monitoring Data

- 5.4.3.4 There are six Environment Agency biological monitoring stations found within the Wissey – Upper water body (shown in Figure 14.15 of the PEIR) that have been surveyed within the last five years (Site IDs: 56325, 36522, 56327, 36520, 4814, 4815 respectively). Four of these relate to freshwater fish surveys and two relate to river invertebrate surveys. The closest fish monitoring site (Erneford Bridge) is located 2.1km downstream of the Central Panel Area and 2.2km downstream of the Southern Panel Area. The most recent fish survey carried out at this site on the 10 April 2024 found brown / sea trout, bullhead and 3 spined stickleback. Other monitoring stations within the catchment have also observed European Eels (elvers) and Brook Lamprey (ammocoete).

### Reasons for Not Achieving Good Status (RNAG)

- 5.4.3.5 There are twelve RNAGs for this water body. The significant water management issues associated with these include physical modification, diffuse and point source pollution, and suspect data. Full details are provided in Table 14.

**Table 14** *RNAGs for the Wissey-Upper (GB105033047890) water body*

| Failing Element                       | RNAG   |                                       |                       |                                                         |                               |
|---------------------------------------|--------|---------------------------------------|-----------------------|---------------------------------------------------------|-------------------------------|
|                                       | ID     | Category                              | Business Sector       | SWMI                                                    | Activity                      |
| Polybrominated diphenyl ethers (PBDE) | 584779 | No sector responsible                 | Not applicable        | measures delivered to address reason, awaiting recovery | Not applicable                |
| Phosphate                             | 584778 | Agriculture and rural land management | Agriculture - Arable  | Diffuse source                                          | Poor nutrient management      |
| Phosphate                             | 584777 | Water Industry                        | Waste water treatment | Point source                                            | Sewage discharge (continuous) |

| Failing Element                        | RNAG   |                                       |                         |                       |                                     |
|----------------------------------------|--------|---------------------------------------|-------------------------|-----------------------|-------------------------------------|
|                                        | ID     | Category                              | Business Sector         | SWMI                  | Activity                            |
| Phosphate                              | 584776 | Agriculture and rural land management | Agriculture - Livestock | Diffuse source        | Poor nutrient management            |
| Fish                                   | 558469 | Agriculture and rural land management | Agriculture - Arable    | Diffuse source        | Poor nutrient management            |
| Fish                                   | 558467 | Other                                 | Not applicable          | Physical modification | Barriers - ecological discontinuity |
| Fish                                   | 558466 | Other                                 | Not applicable          | Physical modification | Flood protection - structures       |
| Macro-phytes and Phytobenthos Combined | 558474 | Agriculture and rural land management | Agriculture - Arable    | Physical modification | Land drainage                       |
| Macro-phytes and Phytobenthos Combined | 558473 | Water Industry                        | Waste water treatment   | Point source          | Sewage discharge (continuous)       |
| Macro-phytes and Phytobenthos Combined | 558472 | Agriculture and rural land management | Agriculture - Livestock | Diffuse source        | Poor nutrient management            |
| Hydrological Regime                    | 558471 | No sector responsible                 | Not applicable          | Suspect data          | Not applicable                      |
| Fish                                   | 558470 | Agriculture and rural land management | Agriculture - Arable    | Physical modification | Land drainage                       |

## Measures and Actions

5.4.3.6 The Environment Agency's water body level measures and actions currently identified for the 'Wissey – Upper' water body are summarised in Table 15. A number of the actions are included multiple times in the data but for clarity have only been presented once in the table below. The action IDs were not provided in the received data and no further details or location information is available currently.

**Table 15 Measures and Actions for the Wissey-Upper (GB105033047890) water body**

| CPS Action ID | Description                  | Status      |
|---------------|------------------------------|-------------|
| Not provided  | Data collection and analysis | Opportunity |

| CPS Action ID | Description                                                                                                                                        | Status      |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Not provided  | Native crayfish present, require protection from encroaching invasive signal crayfish.                                                             | Opportunity |
| Not provided  | Habitat creation                                                                                                                                   | Opportunity |
| Not provided  | Appropriate channel maintenance strategies and techniques - minimise disturbance to channel bed and margins                                        | Opportunity |
| Not provided  | Enable fish to access waters upstream and downstream of impoundment                                                                                | Opportunity |
| Not provided  | Increase in-channel morphological diversity                                                                                                        | Opportunity |
| Not provided  | Address diffuse agricultural pollution within CSF target area                                                                                      | Opportunity |
| Not provided  | At risk due to Metaldehyde 86.3 sqkm                                                                                                               | Opportunity |
| Not provided  | Further investigation                                                                                                                              | Opportunity |
| Not provided  | Prohibit/control uses of certain substances/chemicals:                                                                                             | Opportunity |
| Not provided  | Effluent loss from grass plots at Swaffham STW to groundwater. AWS finding significant levels of ammonia in GW. Possible leaky sewers in Swaffham. | Opportunity |
| Not provided  | Investigate possible contamination from Bernard Matthews site. Management of manure storage.                                                       | Opportunity |
| Not provided  | Use of Deep borehole soak aways in the Swaffham area.                                                                                              | Opportunity |
| Not provided  | River enhancements are planned for the Wissey downstream of Foulden Common                                                                         | Opportunity |
| Not provided  | CamEO Slowing the flow and reducing impacts of sediment                                                                                            | Opportunity |
| Not provided  | Diffuse Pollution in the Wissey                                                                                                                    | Opportunity |
| Not provided  | Countryside Stewardship measures to address water quality issues                                                                                   | Opportunity |
| Not provided  | Wissey Catchment Plan Implementation                                                                                                               | Opportunity |
| Not provided  | Countryside Stewardship measures to address water quality issues                                                                                   | Opportunity |

## 5.4.4 Cam and Ely Ouse Chalk (GB40501G400500)

### Status and Objectives

- 5.4.4.1 The groundwater body is currently assessed as having a Poor overall Status with a Poor Quantitative status and a Poor Chemical Status. The ground water body is therefore currently failing the overarching Good Overall Status objective under the WER.
- 5.4.4.2 A breakdown of current status and future status objectives for the groundwater body is provided in Table 16. The quality element limiting the Quantitative status element is the Quantitative Dependent Surface Water Body Status (Poor). The quality elements limiting the Chemical Status include the Chemical Drinking Water Protected Area (Poor), General Chemical Test (Poor) and the Trend Assessment (Upward Trend).

**Table 16** *WER status and status objectives for Cam and Ely Ouse Chalk (GB40501G400500) groundwater body*

| Classification Item                              | Status (2019) | Status Objective (by which year) |
|--------------------------------------------------|---------------|----------------------------------|
| <b>Overall Water Body</b>                        | Poor          | Good (2015)                      |
| <b>Quantitative</b>                              | Poor          | Good (2027)                      |
| <i>Quantitative Status element</i>               | Poor          | Good (2027)                      |
| Quantitative Dependent Surface Water Body Status | Poor          | Good (2027)                      |
| Quantitative GWDTEs test                         | Good          | Good (2027)                      |
| Quantitative Saline Intrusion                    | Good          | Good (2015)                      |
| Quantitative Water Balance                       | Good          | Good (2021)                      |
| <b>Chemical (GW)</b>                             | Poor          | Poor (2015)                      |
| <i>Chemical Status element</i>                   | Poor          | Poor (2015)                      |
| Chemical Saline Intrusion                        | Good          | Good (2015)                      |
| Chemical Dependent Surface Water Body Status     | Good          | Good (2015)                      |
| Chemical GWDTEs test                             | Good          | Good (2015)                      |
| General Chemical Test                            | Poor          | Poor (2015)                      |
| Chemical Drinking Water Protected Area           | Poor          | Poor (2015)                      |
| <i>Supporting Elements (groundwater)</i>         |               |                                  |
| Prevent and Limit Objective                      | Active        |                                  |
| Trend Assessment                                 | Upward Trend  |                                  |

## Protected Areas

5.4.4.3 There are 36 protected areas within the groundwater catchment. Four of these relate to Special Areas of Conservation, eleven relate to a safeguard zone, one to a drinking water protected area, 18 relate to the Nitrates Directive and two relate to Ramsar sites. Full details are provided in Table 17.

**Table 17** *Protected Areas for the Cam and Ely Ouse Chalk (GB40501G400500) groundwater body*

| Protected Area Name               | ID        | Directive                    |
|-----------------------------------|-----------|------------------------------|
| Breckland                         | UK0019865 | Special Area of Conservation |
| Waveney & Little Ouse Valley Fens | UK0012882 | Special Area of Conservation |
| Euston                            | GWSGZ0003 | Safeguard Zone               |
| Buntingford Chalk                 | G141      | Nitrates Directive           |

| Protected Area Name              | ID               | Directive                     |
|----------------------------------|------------------|-------------------------------|
| Linton                           | GWSGZ0007        | Safeguard Zone                |
| Clavering                        | G720             | Nitrates Directive            |
| Relief Channel/Polver drain NVZ  | S834             | Nitrates Directive            |
| Yare NVZ                         | S400             | Nitrates Directive            |
| Bretenham                        | GWSGZ0002        | Safeguard Zone                |
| Tas NVZ                          | S395             | Nitrates Directive            |
| Wendling Beck NVZ                | S398             | Nitrates Directive            |
| Stansted Mountfitchet            | G152             | Nitrates Directive            |
| Lower Stour NVZ                  | S424             | Nitrates Directive            |
| River Chelmer NVZ                | S428             | Nitrates Directive            |
| Fleam Dyke                       | GWSGZ0004        | Safeguard Zone                |
| Fowlmere                         | GWSGZ0005        | Safeguard Zone                |
| River Gipping NVZ                | S416             | Nitrates Directive            |
| Sandringham Sands South          | G150             | Nitrates Directive            |
| Morden Grange                    | GWSGZ0009        | Safeguard Zone                |
| LEE NVZ                          | S443             | Nitrates Directive            |
| Ely Ouse and Cut-off channel NVZ | S390             | Nitrates Directive            |
| Chippenham Fen                   | UK11014          | Ramsar Site                   |
| Redgrave & South Lopham Fens     | UK11056          | Ramsar Site                   |
| Anglian Chalk                    | G71              | Nitrates Directive            |
| Great Ouse NVZ                   | S391             | Nitrates Directive            |
| River Waveney NVZ                | S396             | Nitrates Directive            |
| Fenland                          | UK0014782        | Special Area of Conservation  |
| Melbourn                         | GWSGZ0008        | Safeguard Zone                |
| Risby                            | GWSGZ0011        | Safeguard Zone                |
| Sandlings and Chelmsford         | G78              | Nitrates Directive            |
| Fulbourn                         | GWSGZ0006        | Safeguard Zone                |
| North Pickenham                  | GWSGZ0010        | Safeguard Zone                |
| Norfolk Valley Fens              | UK0012892        | Special Area of Conservation  |
| River Blackwater NVZ             | S434             | Nitrates Directive            |
| Babraham                         | GWSGZ0001        | Safeguard Zone                |
| Cam and Ely Ouse Chalk           | UKGB40501G400500 | Drinking Water Protected Area |

### Reasons for Not Achieving Good Status (RNAG)

5.4.4.4 There are 16 RNAGs for this water body. The significant water management issues associated with these include point and diffuse pollution and groundwater abstraction effects on flow regime. Full details are provided in Table 18.

**Table 18** *RNAGs for the Cam and Ely Ouse Chalk (GB40501G400500) groundwater body*

| Failing Element                                  | RNAG   |                                       |                         |                |                               |
|--------------------------------------------------|--------|---------------------------------------|-------------------------|----------------|-------------------------------|
|                                                  | ID     | Category                              | Business Sector         | SWMI           | Activity                      |
| General Chemical Test                            | 574729 | Water Industry                        | Not applicable          | Point source   | Sewage discharge (continuous) |
| Trend Assessment                                 | 574739 | Agriculture and rural land management | Agriculture - Arable    | Diffuse source | Poor nutrient management      |
| General Chemical Test                            | 574728 | Industry                              | Not applicable          | Diffuse source | Transport Drainage            |
| General Chemical Test                            | 574726 | Agriculture and rural land management | Agriculture - Livestock | Diffuse source | Poor nutrient management      |
| General Chemical Test                            | 574725 | Agriculture and rural land management | Agriculture - Arable    | Diffuse source | Poor nutrient management      |
| Quantitative Water Balance                       | 574735 | Industry                              | Not applicable          | Flow           | Groundwater abstraction       |
| Chemical Drinking Water Protected Area           | 574724 | Industry                              | Not applicable          | Diffuse source | Transport Drainage            |
| Quantitative Water Balance                       | 574734 | Water Industry                        | Not applicable          | Flow           | Groundwater abstraction       |
| Chemical Drinking Water Protected Area           | 574723 | Agriculture and rural land management | Agriculture - Arable    | Diffuse source | Poor nutrient management      |
| Quantitative Dependent Surface Water Body Status | 574733 | Industry                              | Not applicable          | Flow           | Groundwater abstraction       |
| Quantitative Dependent Surface Water Body Status | 574732 | Water Industry                        | Water supply            | Flow           | Groundwater abstraction       |

| Failing Element                                  | RNAG   |                                       |                 |                |                                                   |
|--------------------------------------------------|--------|---------------------------------------|-----------------|----------------|---------------------------------------------------|
|                                                  | ID     | Category                              | Business Sector | SWMI           | Activity                                          |
| Quantitative GWDTEs test                         | 574731 | Other                                 | Not applicable  | Flow           | Groundwater abstraction                           |
| General Chemical Test                            | 574730 | Domestic General Public               | Not applicable  | Point source   | Sewage discharge (continuous)                     |
| Trend Assessment                                 | 574740 | Other                                 | Not applicable  | Diffuse source | Other (not in list, must add details in comments) |
| Quantitative Water Balance                       | 588363 | Agriculture and rural land management |                 | Flow           | Groundwater abstraction                           |
| Quantitative Dependent Surface Water Body Status | 588362 | Agriculture and rural land management |                 | Flow           | Groundwater abstraction                           |

## Measures and Actions

5.4.4.5 The Environment Agency's water body level measures and actions currently identified for the 'Cam and Ely Ouse Chalk' groundwater body are summarised in Table 19. A number of the actions are included multiple times in the data but for clarity have only been presented once in the table below. The action IDs were not provided in the received data and no further details or location information is available currently.

**Table 19 Measures and Actions for the Cam and Ely Ouse Chalk (GB40501G400500) groundwater body**

| Action ID    | Description                                                                                | Status      |
|--------------|--------------------------------------------------------------------------------------------|-------------|
| Not provided | Address diffuse agricultural pollution (Nitrate) by extending CSF priority areas           | Opportunity |
| Not provided | Address diffuse agricultural pollution (Nitrate) within SGZs                               | Opportunity |
| Not provided | Increase conceptual understanding of the catchment of an abstraction                       | Opportunity |
| Not provided | Investigate waste recovery to land operations, Both land spreading and landfilling.        | Opportunity |
| Not provided | reduce high nitrate concentration                                                          | Opportunity |
| Not provided | Remediation works at Sawston utilising Enhanced Reductive Dechlorination (ERD) techniques. | Opportunity |
| Not provided | Address pesticides pressure on the groundwater body in this catchment                      | Opportunity |
| Not provided | Further investigation                                                                      | Opportunity |
| Not provided | groundwater investigation in partnership with St Edmundsbury council                       | Opportunity |

|              |                                                                                   |             |
|--------------|-----------------------------------------------------------------------------------|-------------|
| Not provided | Identify effectiveness of measures in SGZs                                        | Opportunity |
| Not provided | Eco-Pig and Pig-wise initiatives being implemented by regional agricultural teams | Opportunity |
| Not provided | Investigate waste recover to land operations both land spreading and land filling | Opportunity |
| Not provided | reduce high nitrate concentration                                                 | Opportunity |
| Not provided | The use of The Wissey WFD pilot catchment group to engage with stakeholders       | Opportunity |

## 5.4.5 North West Norfolk Chalk (GB40501G400200)

### Status and Objectives

- 5.4.5.1 The groundwater body is currently assessed as having a Poor Overall Status with a Quantitative status of Poor and a Chemical status of Poor. The ground water body is therefore currently failing the overarching Good Overall Status objective under the WER.
- 5.4.5.2 A breakdown of current status and future status objectives for the groundwater body is provided in Table 20. The quality element limiting the Quantitative status element is the Quantitative Dependent Surface Water Body Status (Poor). The quality elements limiting the Chemical Status include the Chemical Drinking Water Protected Area (Poor), General Chemical Test (Poor) and the Trend Assessment (Upward Trend).

**Table 20** *WER status and status objectives for North West Norfolk Chalk (GB40501G400200) groundwater body*

| Classification Item                              | Status (2019) | Status Objective (by which year) |
|--------------------------------------------------|---------------|----------------------------------|
| <b>Overall Water Body</b>                        | Poor          | Poor (2015)                      |
| <b>Quantitative</b>                              | Poor          | Good (2027)                      |
| <i>Quantitative Status element</i>               | Poor          | Good (2015)                      |
| Quantitative Dependent Surface Water Body Status | Good          | Good (2027)                      |
| Quantitative GWDTEs test                         | Good          | Good (2015)                      |
| Quantitative Saline Intrusion                    | Good          | Good (2015)                      |
| Quantitative Water Balance                       | Good          | Good (2021)                      |
| <b>Chemical (GW)</b>                             | Poor          | Poor (2015)                      |
| <i>Chemical Status element</i>                   | Poor          | Poor (2015)                      |
| Chemical Saline Intrusion                        | Good          | Good (2015)                      |
| Chemical Dependent Surface Water Body Status     | Poor          | Good (2015)                      |
| Chemical GWDTEs test                             | Good          | Good (2015)                      |

|                                          |              |              |
|------------------------------------------|--------------|--------------|
| General Chemical Test                    | Poor         | Poor (2015)  |
| Chemical Drinking Water Protected Area   | Poor         | Poor (2015)  |
| <i>Supporting Elements (groundwater)</i> |              |              |
| Prevent and Limit Objective              | Active       | Not assessed |
| Trend Assessment                         | Upward Trend | Not assessed |

## Protected Areas

5.4.5.3 There are 21 protected areas within the groundwater catchment. These include two Special Areas of Conservation, two Special Areas of Protection, one Ramsar site, one Drinking water protected area and fifteen Nitrates Directives. Full details are provided in Table 21.

**Table 21** *Protected Areas for the North West Norfolk Chalk (GB40501G400200) groundwater body*

| Protected Area Name              | ID               | Directive                     |
|----------------------------------|------------------|-------------------------------|
| The Wash & North Norfolk Coast   | UK0017075        | Special Area of Conservation  |
| Wensum (to Tatterford) NVZ       | S823             | Nitrates Directive            |
| Sandringham Sands North          | G718             | Nitrates Directive            |
| Nar upstream of Abbey Farm NVZ   | S389             | Nitrates Directive            |
| Country Drain NVZ                | S388             | Nitrates Directive            |
| The Wash                         | UK9008021        | Special Protection Area       |
| Ely Ouse and Cut-off channel NVZ | S390             | Nitrates Directive            |
| Blackwater (Wendling Beck) NVZ   | S822             | Nitrates Directive            |
| North West Norfolk Chalk         | UKGB40501G400200 | Drinking Water Protected Area |
| Anglian Chalk                    | G71              | Nitrates Directive            |
| Ingol NVZ                        | S392             | Nitrates Directive            |
| Babingley River NVZ              | S383             | Nitrates Directive            |
| Relief Channel/Polver drain NVZ  | S834             | Nitrates Directive            |
| Gaywood River NVZ                | S385             | Nitrates Directive            |
| The Wash                         | UK11072          | Ramsar Site                   |
| Wendling Beck NVZ                | S398             | Nitrates Directive            |
| Heacham River NVZ                | S393             | Nitrates Directive            |
| Sandringham Sands South          | G150             | Nitrates Directive            |
| Norfolk Valley Fens              | UK0012892        | Special Area of Conservation  |
| Greater Wash                     | UK9020329        | Special Protection Area       |

| Protected Area Name | ID   | Directive          |
|---------------------|------|--------------------|
| Mintlyn Stream NVZ  | S384 | Nitrates Directive |

### Reasons for Not Achieving Good Status (RNAG)

- 5.4.5.4 There are seven RNAGs for this groundwater body. The significant water management issues associated with these include point and diffuse pollution and flow. Full details are provided in Table 22.

**Table 22** *RNAGs for the North West Norfolk Chalk (GB40501G400200) groundwater body*

| Failing Element                                  | RNAG   |                                       |                         |                |                                 |
|--------------------------------------------------|--------|---------------------------------------|-------------------------|----------------|---------------------------------|
|                                                  | ID     | Category                              | Business Sector         | SWMI           | Activity                        |
| Quantitative Dependent Surface Water Body Status | 574719 | Water Industry                        | Other (not in list)     | Flow           | Groundwater abstraction         |
| General Chemical Test                            | 574718 | Agriculture and rural land management | Agriculture - Arable    | Diffuse source | Poor nutrient management        |
| General Chemical Test                            | 574717 | Agriculture and rural land management | Agriculture - Livestock | Diffuse source | Poor nutrient management        |
| General Chemical Test                            | 574715 | Domestic General Public               | Not applicable          | Point source   | Sewage discharge (intermittent) |
| Quantitative Water Balance                       | 574720 | Water Industry                        | Other (not in list)     | Flow           | Groundwater abstraction         |
| Quantitative Water Balance                       | 588361 | Agriculture and rural land management |                         | Flow           | Groundwater abstraction         |
| Quantitative Dependent Surface Water Body Status | 588360 | Agriculture and rural land management |                         | Flow           | Groundwater abstraction         |

### Measures and Actions

- 5.4.5.5 The Environment Agency's water body level measures and actions currently identified for the 'North West Norfolk Chalk' groundwater body are summarised in Table 23. A number of the actions are included multiple times in the data but for clarity have only been presented once in the table below. The action IDs were not provided in the received data and no further details or location information is available currently.

**Table 23** *Measures and Actions for the North West Norfolk Chalk (GB40501G400200) groundwater body*

| Action ID    | Description                                                          | Status      |
|--------------|----------------------------------------------------------------------|-------------|
| Not provided | Address diffuse agricultural pollution (Nitrate) within SGZs         | Opportunity |
| Not provided | Address diffuse agricultural pollution in CSF priority areas         | Opportunity |
| Not provided | Further investigation                                                | Opportunity |
| Not provided | Increase conceptual understanding of the catchment of an abstraction | Opportunity |
| Not provided | Reduce high nitrate concentration                                    | Opportunity |

## 5.4.6 Broadland Rivers Chalk and Crag (GB40501G400300)

### Status and Objectives

- 5.4.6.1 The groundwater body is currently assessed as having a Poor Overall Status with a Quantitative status of Poor and a Chemical status of Poor. The ground water body is therefore currently failing the overarching Good Overall Status objective under the WER.
- 5.4.6.2 A breakdown of current status and future status objectives for the groundwater body is provided in Table 24. The quality element limiting the Quantitative status element is the Quantitative GWDTEs (Poor). The quality elements limiting the Chemical Status include the Chemical Drinking Water Protected Area (Poor) and the Trend Assessment (Upward Trend).

**Table 24** *WER status and status objectives for Broadland Rivers Chalk and Crag (GB40501G400300) groundwater body*

| Classification Item                              | Status (2019) | Status Objective (by which year) |
|--------------------------------------------------|---------------|----------------------------------|
| <b>Overall Water Body</b>                        | Poor          | Good (2027)                      |
| <b>Quantitative</b>                              | Poor          | Good (2027)                      |
| <i>Quantitative Status element</i>               | Poor          | Good (2027)                      |
| Quantitative Dependent Surface Water Body Status | Good          | Good (2015)                      |
| Quantitative GWDTEs test                         | Poor          | Good (2027)                      |
| Quantitative Saline Intrusion                    | Good          | Good (2015)                      |
| Quantitative Water Balance                       | Good          | Good (2015)                      |
| <b>Chemical (GW)</b>                             | Poor          | Good (2027)                      |
| <i>Chemical Status element</i>                   | Poor          | Good (2027)                      |
| Chemical Saline Intrusion                        | Good          | Good (2015)                      |
| Chemical Dependent Surface Water Body Status     | Good          | Good (2027)                      |

| Classification Item                      | Status (2019) | Status Objective (by which year) |
|------------------------------------------|---------------|----------------------------------|
| Chemical GWDTEs test                     | Good          | Good (2015)                      |
| General Chemical Test                    | Good          | Good (2015)                      |
| Chemical Drinking Water Protected Area   | Poor          | Good (2015)                      |
| <i>Supporting Elements (groundwater)</i> | Not assessed  | Not assessed                     |
| Prevent and Limit Objective              | Active        | Not assessed                     |
| Trend Assessment                         | Upward Trend  | Not assessed                     |

## Protected Areas

5.4.6.3 There are forty-seven protected areas within the groundwater catchment. Thirty-four of these relate to the Nitrates Directive, four to a Special Area of Conservation, two to a Ramsar site, five to a Special Protection Area and one to a Drinking Water Protected Area. Full details are provided in Table 25.

**Table 25** *Protected Areas for the Broadland Rivers Chalk and Crag (GB40501G400300) groundwater body*

| Protected Area Name                                | ID        | Directive                    |
|----------------------------------------------------|-----------|------------------------------|
| River Waveney NVZ                                  | S396      | Nitrates Directive           |
| Sandlings and Chelmsford                           | G78       | Nitrates Directive           |
| Bure Broads Eutrophic lake NVZ                     | EL107     | Nitrates Directive           |
| Tud NVZ                                            | S397      | Nitrates Directive           |
| Blyth NVZ                                          | S417      | Nitrates Directive           |
| Norfolk Valley Fens                                | UK0012892 | Special Area of Conservation |
| Outer Thames Estuary                               | UK9020309 | Special Protection Area      |
| Barton Broad Eutrophic lake NVZ                    | EL105     | Nitrates Directive           |
| Glaven NVZ                                         | S402      | Nitrates Directive           |
| Broadland                                          | UK11010   | Ramsar Site                  |
| Lound Mill Water & Fritton Lake Eutrophic lake NVZ | EL127     | Nitrates Directive           |
| The Broads                                         | UK0013577 | Special Area of Conservation |
| Greater Wash                                       | UK9020329 | Special Protection Area      |
| Mun NVZ                                            | S404      | Nitrates Directive           |
| Tas NVZ                                            | S395      | Nitrates Directive           |
| Alde NVZ                                           | S411      | Nitrates Directive           |
| Trinity Broads                                     | EL150     | Nitrates Directive           |

| Protected Area Name                    | ID               | Directive                     |
|----------------------------------------|------------------|-------------------------------|
| Yare NVZ                               | S400             | Nitrates Directive            |
| Burn NVZ                               | S401             | Nitrates Directive            |
| Breydon Water                          | UK11008          | Ramsar Site                   |
| Lothingland Hundred NVZ                | S414             | Nitrates Directive            |
| Cromes Broad Eutrophic lake NVZ        | EL106            | Nitrates Directive            |
| Deben NVZ                              | S419             | Nitrates Directive            |
| Heacham River NVZ                      | S393             | Nitrates Directive            |
| Breydon Water                          | UK9009181        | Special Protection Area       |
| Anglian Chalk                          | G71              | Nitrates Directive            |
| Ely Ouse and Cut-off channel NVZ       | S390             | Nitrates Directive            |
| Broadland                              | UK9009253        | Special Protection Area       |
| Great Yarmouth North Denes             | UK9009271        | Special Protection Area       |
| River Chet NVZ                         | S399             | Nitrates Directive            |
| Winterton-Horsey Dunes                 | UK0013043        | Special Area of Conservation  |
| South Walsham Broad Eutrophic lake NVZ | EL108            | Nitrates Directive            |
| Horsey Mere Eutrophic lake NVZ         | EL104            | Nitrates Directive            |
| Wendling Beck NVZ                      | S398             | Nitrates Directive            |
| Saxthorpe                              | G171             | Nitrates Directive            |
| Hempnall Beck NVZ                      | S394             | Nitrates Directive            |
| Blackwater (Wendling Beck) NVZ         | S822             | Nitrates Directive            |
| River Wensum                           | UK0012647        | Special Area of Conservation  |
| Hickling Broad Eutrophic lake NVZ      | EL103            | Nitrates Directive            |
| River Gipping NVZ                      | S416             | Nitrates Directive            |
| Norwich Crag and Gravels               | G79              | Nitrates Directive            |
| Wensum (to Tatterford) NVZ             | S823             | Nitrates Directive            |
| Rockland Broad Eutrophic lake NVZ      | EL147            | Nitrates Directive            |
| Broadland Rivers Chalk & Crag          | UKGB40501G400300 | Drinking Water Protected Area |
| OULTON BROAD NVZ                       | S659             | Nitrates Directive            |
| Nar upstream of Abbey Farm NVZ         | S389             | Nitrates Directive            |

### Reasons for Not Achieving Good Status (RNAG)

- 5.4.6.4 There are three RNAGs for this groundwater body. The significant water management issues for these relate to suspect data and flow, Full details are provided in Table 26.

**Table 26** *RNAGs for the Broadland Rivers Chalk and Crag (GB40501G400300) groundwater body*

| Failing Element                        | RNAG   |                                       |                      |              |                         |
|----------------------------------------|--------|---------------------------------------|----------------------|--------------|-------------------------|
|                                        | ID     | Category                              | Business Sector      | SWMI         | Activity                |
| Trend Assessment                       | 574722 | No sector responsible                 | Not applicable       | Suspect data | Not applicable          |
| Chemical Drinking Water Protected Area | 574721 | No sector responsible                 | Not applicable       | Suspect data | Not applicable          |
| Quantitative GWDTEs test               | 559501 | Agriculture and rural land management | Agriculture - Arable | Flow         | Groundwater abstraction |

### Measures and Actions

- 5.4.6.5 The Environment Agency's water body level measures and actions currently identified for the 'Broadland Rivers Chalk and Crag' groundwater body are summarised in Table 27. These comprise generic actions related to managing chemical pollutant concentrations in related surface waters. No further details or location information is available currently.

**Table 27** *Measures and Actions for the Broadland Rivers Chalk and Crag (GB40501G400300) groundwater body*

| Action ID | Description                                  | Status       |
|-----------|----------------------------------------------|--------------|
| 42697     | Measures to manage Mercury in surface waters | Not provided |
| 42698     | Measures to manage PBDEs in surface waters   | Not provided |

## 5.5 Watercourse baseline and receptor valuation

- 5.5.1.1 Activities associated with the Proposed Development have been reviewed against the watercourses present within or in the vicinity of the draft Order Limits. A provisional receptor value has been assigned to each of the relevant watercourses which have the potential to be impacted by the Proposed Development, based on the available desktop information and expert judgement (as described in Section 2.5). The relevant watercourses and their receptor valuations are summarised in the sections below.

- 5.5.1.2 Reconnaissance surveys have not been undertaken at the time of writing. Targeted reconnaissance surveys will be undertaken prior to the final assessment as part of the Environmental Statement in order to verify the hydromorphological condition and aquatic habitat potential of the watercourses. Receptor values will be reviewed and confirmed following conclusion of these site visits for the Environmental Statement.

## 5.5.2 Wendling Beck (GB105034051020)

- 5.5.2.1 A total of 13 watercourses are located within the catchment of the Wendling Beck (GB105034051020) water body within the draft Order Limits of the Proposed Development. These are listed in Table 28 below and shown in Figure 14.6 of the PEIR.
- 5.5.2.2 The majority of these resources are considered to be of Low receptor value, with limited baseflow, fluvial geomorphological processes, or potential to support WER biological quality elements, and are located in the upper-mid catchment.
- 5.5.2.3 One high value watercourse, the Wendling Beck, is a designated Main River and part of the WER water body extent. It is anticipated that this watercourse has the potential to support Biological quality elements and exhibit some evidence of active fluvial geomorphological processes and sediment dynamics. The watercourse is located in the mid-catchment. Three watercourses are assessed to be moderate value at this stage, as they are tributaries of the main channel and have a relatively large catchment area. It is anticipated these watercourses will have some limited baseflow and will exhibit some minor evidence of active fluvial geomorphological processes and sediment transport.

**Table 28** *Watercourses in the Wendling Beck (GB105034051020) water body catchment within the draft Order Limits.*

| Watercourse name             | Designation                       | Receptor value |
|------------------------------|-----------------------------------|----------------|
| High House Farm Channel 1    | Ordinary watercourse              | Low            |
| High House Farm Channel 2    | Ordinary watercourse              | Low            |
| High House Farm Channel 3    | Ordinary watercourse              | Low            |
| Holme Farm Channel           | Ordinary watercourse              | Low            |
| Jubys Farm Channel           | Ordinary watercourse              | Low            |
| Scarn Head Cottage Channel 1 | Ordinary watercourse              | Low            |
| Scarn Head Cottage Channel 2 | Ordinary watercourse              | Low            |
| Scarn Head Cottage Channel 3 | Ordinary watercourse              | Low            |
| Scarn Head Cottage Channel 4 | Ordinary watercourse              | Low            |
| Wendling Beck                | Main River, WER water body extent | High           |
| Wendling Beck Tributary 1    | Ordinary watercourse              | Moderate       |
| Wendling Beck Tributary 2    | Ordinary watercourse              | Moderate       |
| White House Farm Channel 1   | Ordinary watercourse              | Moderate       |

## 5.5.3 Watton Brook (GB105033047870)

- 5.5.3.1 A total of six watercourses are located within the catchment of the Watton Brook (GB105033047870) water body in the draft Order Limits of the Proposed

Development. These are listed in Table 29 below and shown in Figure 14.7 of the PEIR.

- 5.5.3.2 All of the watercourses are considered to be of Low receptor value, with limited baseflow, fluvial geomorphological processes, or potential to support WER biological quality elements. These watercourses are all Ordinary watercourses and are located in the upper part of the catchment.

**Table 29** *Watercourses in the Watton Brook (GB105033047870) water body catchment within the draft Order Limits.*

| Watercourse name          | Designation          | Receptor value |
|---------------------------|----------------------|----------------|
| Hale Road Channel 1       | Ordinary watercourse | Low            |
| Hale Road Channel 2       | Ordinary watercourse | Low            |
| Highwood Barn Channel     | Ordinary watercourse | Low            |
| Hills Road Channel        | Ordinary watercourse | Low            |
| Lower Homestead Channel 1 | Ordinary watercourse | Low            |
| Lower Homestead Channel 2 | Ordinary watercourse | Low            |

#### 5.5.4 Wissey - Upper (GB105033047890)

A total of 22 watercourses are located within the catchment of the Wissey - Upper (GB105033047890) water body in the draft Order Limits of the Proposed Development. These are listed in Table 30 below and shown in Figure 14.8 of the PEIR.

- 5.5.4.1 The majority of these resources are considered to be of Low receptor value, with limited baseflow, fluvial geomorphological processes, or potential to support WER biological quality elements.
- 5.5.4.2 A high value has been assigned to River Wissey watercourse based on its anticipated potential to support Biological quality elements and exhibit evidence of sediment transport, in addition to its relative location in the catchment. While the River Wissey is designated as Ordinary watercourse at this location, it is located in the upper-mid catchment and forms part of the WER water body extent. Four watercourses are assessed to be moderate value at this stage, as they are tributaries of main River Wissey and have a relatively large catchment area. It is anticipated these watercourses will have some limited baseflow and will exhibit some minor evidence of active fluvial geomorphological processes and sediment transport.

**Table 30** *Watercourses in the Wissey - Upper (GB105033047890) water body catchment within the draft Order Limits.*

| Watercourse name          | Designation          | Receptor value |
|---------------------------|----------------------|----------------|
| Allotment Farm Channel    | Ordinary watercourse | Low            |
| Ashill Common Channel     | Ordinary watercourse | Low            |
| Cutbush Farm Channel      | Ordinary watercourse | Low            |
| Field Barn Channels       | Ordinary watercourse | Low            |
| Grounds Cottage Channel 1 | Ordinary watercourse | Low            |
| High Farm Channel 1       | Ordinary watercourse | Low            |

|                         |                                                                                      |          |
|-------------------------|--------------------------------------------------------------------------------------|----------|
| High Grove Channel 1    | Ordinary watercourse                                                                 | Low      |
| High Grove Channel 2    | Ordinary watercourse                                                                 | Low      |
| High Grove Channel 3    | Ordinary watercourse                                                                 | Low      |
| Leys Farm Channel 1     | Ordinary watercourse                                                                 | Low      |
| Leys Farm Channel 2     | Ordinary watercourse                                                                 | Low      |
| Lodge Farm Channel      | Ordinary watercourse                                                                 | Low      |
| Necton Wood Channel     | Ordinary watercourse                                                                 | Low      |
| River Wissey            | Significant Ordinary watercourse at crossing location, part of WER water body extent | High     |
| St Andrews Lane Channel | Ordinary watercourse                                                                 | Low      |
| Top Farm Channel        | Ordinary watercourse                                                                 | Low      |
| West End Channel        | Ordinary watercourse                                                                 | Low      |
| Wissey Tributary 1      | Ordinary watercourse                                                                 | Moderate |
| Wissey Tributary 2      | Ordinary watercourse                                                                 | Moderate |
| Wissey Tributary 3      | Ordinary watercourse                                                                 | Moderate |
| Wissey Tributary 4      | Ordinary watercourse                                                                 | Moderate |
| Wissey Tributary 5      | Ordinary watercourse                                                                 | Low      |

## 6 Scoping assessment

### 6.1 Overview

- 6.1.1.1 A scoping assessment has been undertaken to establish the likely effects of the Proposed Development on the WFD status elements of the water bodies screened in for assessment.
- 6.1.1.2 Effects have been considered with regard to the risk of the Proposed Development:
- causing a deterioration in current status of the water body, whether individual quality elements or for the water body as a whole; and/or
  - preventing the future achievement of water body status objectives.
- 6.1.1.3 The assessment process for determining the potential risk of status deterioration uses the following-coloured rating system to assign the magnitude of the likely effect anticipated on each of the quality elements of the affected water bodies:
- **Dark Blue:** beneficial effect of a scale sufficient to increase status class for the quality element at water body scale.
  - **Light Blue:** minor/localised beneficial effect resulting in a localised improvement but insufficient to increase status class for the quality element at water body scale.
  - **Green:** negligible effect on (or no measurable change to) status class for the quality element at water body scale.
  - **Yellow:** minor localised adverse effect when balanced against mitigation included in the design – insufficient to affect status class for the quality element at water body scale.
  - **Amber:** an adverse effect is possible when balanced against mitigation included in the design – the extent of effect is uncertain, and there remains a potential to affect status class for the quality element at water body scale. Additional mitigation and residual effects need to be considered.
  - **Red:** adverse effect of sufficient scale to impact on status class for the quality element at a water body scale (certain). Additional mitigation or re-design required to avoid non-compliance.
- 6.1.1.4 Whilst individual minor/localised effects are not considered to have the potential to deteriorate status, the forward design development should seek to integrate localised mitigation measures to minimise the relevant impacts as much as practicable. More severe or widespread adverse (amber or red) effects may pose a risk of non-compliance as a result of causing a deterioration of status or preventing future attainment of the objectives. Where such effects are identified, further detailed impact assessment is deemed required and additional mitigation requirements and/or design changes should be developed.

- 6.1.1.5 Where any residual adverse (amber or red) effects remain following consideration of additional mitigation, Regulation 19 derogation assessment requirements should be considered in consultation with the Environment Agency.

## 6.2 Relevant components

### 6.2.1 Construction phase

- 6.2.1.1 A feasible approach of the construction methodology and outline activities for the Proposed Development are described in Chapter 2 of the PEIR. Activities will be required during construction to install the Proposed Development, such as ground excavations for foundations associated with sub-stations and pylons, and installation of underground cables. Ground excavations for the Proposed Development are to be relatively shallow, with foundations of 0.3-2m below ground level depending on the structure type. Groundworks and excavations could lead to localised changes to surface water flow pathways, release fine sediment and/or provide a source for potential contaminants (such as hydrocarbons) to enter the water environment. It is anticipated that these groundworks and excavations will only directly influence the shallow aquifer and will not affect the underlying Cam and Ely Ouse Chalk, North West Norfolk Chalk and Broadland Rivers Chalk and Crag WER groundwater bodies.
- 6.2.1.2 As described in Section 4.4, a CEMP will be produced and implemented for construction of the Proposed Development. The CEMP will include pollution prevention practices, details of appropriate construction drainage and a groundwater management plan. An overview of key construction mitigation measures relevant to the water environment to be included with in the CEMP is provided in Section 4.4.
- 6.2.1.3 Assuming embedded and statutory construction mitigation methods are implemented during the construction phase through the CEMP (and associated groundwater management plan) to manage and reduce potential impacts, potential impacts arising from construction are anticipated to be temporary in nature with no significant effects on the WER status or objectives of the relevant water bodies.

### 6.2.2 Permanent components of the Proposed Development

- 6.2.2.1 The relevant components of the Proposed Development that have the potential to impact upon water bodies screened in are:
- Five Panel Areas (Northern, Eastern, Western, Southern and Central) which will require mounting poles 1 m into the ground.
  - Seven 132 kV substations each requiring a hardstanding area of 4,000m<sup>2</sup>, and piled foundations up to 2m below ground level.
  - Supporting infrastructure units including BESS and transformers, predominantly in hybrid packs with a footprint of 13m x 22m, requiring 0.3m deep concrete slab foundation.

- New permanent access tracks which will largely make use of existing highway connections.
- Associated infrastructure for operation of the solar farm, e.g. new pylons, fencing and CCTV poles which penetrate the ground.
- Underground cabling required between the Panel Areas and on-site substations. At this stage it is assumed that open cut trenching methods are to be used on watercourses with a receptor value of low. It is assumed a HDD method will be used for cables required underneath watercourses with a high receptor value (including all Main Rivers and main WER water body watercourses).
- Where watercourse crossings are required for access tracks, it is assumed that existing crossing infrastructure, where available, will be sufficient and utilised. If a new access crossing structure is required over a watercourse, it is assumed for this assessment that a crossing structure suitable to the receptor value will be utilised (such as a clear span bridge for a high value watercourse). It is assumed that a box culvert will be installed if a new access crossing structure is required over a watercourse with a receptor value of low.

### 6.2.3 Potential effects on water environment

6.2.3.1 Embedded mitigation for the Proposed Development is outlined in Section 4.3. The potential effects from permanent components (identified in Section 6.2.2) on surface water and groundwater WER water bodies, factoring in consideration of the embedded mitigation measures, are summarised below:

- The physical footprint of the Proposed Development is not anticipated to affect watercourses directly, due to the 9 m offset of development to watercourse bank tops (with the exception of the access track watercourse crossings).
- Installation of hardstanding (required for infrastructure such as substations and BESS facilities) and Panel Areas required for the Proposed Development have the potential to alter surface water runoff to watercourses due to changes in permeability, existing ground elevations and land drainage systems.
- Infrastructure associated with the Proposed Development (such as BESS facilities and drainage infrastructure) could provide a source and pathway for potential contaminants to enter the water environment, whether through routine use or through response to a potential incident.
- Cables will need to cross watercourses. HDD methods will be used to pass cables beneath certain watercourses (Main River and main WER water body watercourses). Cables buried beneath watercourses have the potential to affect fish behaviours due to the electromagnetic fields (EMF) generated by currents passing through the cables.
- Access tracks will need to cross watercourses in places, which may require the construction of new crossing structures. This has the potential to effect local in-channel habitats as well as flow and sediment continuity and/or fish passage.

- Below ground infrastructure, such as foundations for infrastructure and cables installed below ground levels, have the potential to effect local groundwater flows and/or levels, which may in turn have indirect effects on dependent surface water bodies and/or habitats. It is assumed that any below ground works will be shallow and only enter the superficial deposits, therefore not impacting bedrock groundwater/aquifers.

6.2.3.2 A summary of permanent components of the Proposed Development and their potential effects on surface water bodies and groundwater bodies is provided in Table 31 and in Table 32, respectively.

**Table 31** Permanent Components of the Proposed Development and their potential effects on surface water bodies. A tick (✓) indicates a potential effect may arise and a dash (-) indicates no effect.

| Proposed Development Component:    |                                         | Panel Areas                                                                                                               | Substations                                                                                                          |                                                                      | BESS and transformers                                                                                                      |                                                                                                                      |                                                                      | Permanent access tracks                                                                                                    |                                                                                                                      |                                                                      | Underground cables                                                                        |                                                                                     |                                                                                                                            |
|------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Potential Effects                  |                                         | Infrastructure/ hardstanding causing alteration of surface water flow permeability, flow paths and runoff to watercourses | Infrastructure/ hardstanding causing alteration of surface water permeability, flow paths and runoff to watercourses | Source and pathway for potential contaminants runoff to watercourses | Below ground infrastructure causing alteration of shallow groundwater flows/levels potentially affecting watercourse flows | Infrastructure/ hardstanding causing alteration of surface water permeability, flow paths and runoff to watercourses | Source and pathway for potential contaminants runoff to watercourses | Below ground infrastructure causing alteration of shallow groundwater flows/levels potentially affecting watercourse flows | Infrastructure/hards tanding causing alteration of surface water permeability, flow paths and runoff to watercourses | Source and pathway for potential contaminants runoff to watercourses | New watercourse crossings structures affecting local hydromorphology and river continuity | Buried cable crossings beneath watercourses (production of electro-magnetic fields) | Below ground infrastructure causing alteration of shallow groundwater flows/levels potentially affecting watercourse flows |
| WER surface water quality elements | Biological quality elements             | ✓                                                                                                                         | ✓                                                                                                                    | ✓                                                                    | ✓                                                                                                                          | ✓                                                                                                                    | ✓                                                                    | ✓                                                                                                                          | -                                                                                                                    | ✓                                                                    | ✓                                                                                         | ✓                                                                                   | ✓                                                                                                                          |
|                                    | Hydromorph-ological Supporting Elements | ✓                                                                                                                         | ✓                                                                                                                    | -                                                                    | ✓                                                                                                                          | ✓                                                                                                                    | -                                                                    | ✓                                                                                                                          | ✓                                                                                                                    | -                                                                    | ✓                                                                                         | ✓                                                                                   | ✓                                                                                                                          |
|                                    | Physico-chemical quality elements       | -                                                                                                                         | -                                                                                                                    | ✓                                                                    | -                                                                                                                          | -                                                                                                                    | ✓                                                                    | -                                                                                                                          | -                                                                                                                    | ✓                                                                    | -                                                                                         | -                                                                                   | -                                                                                                                          |
|                                    | Specific Pollutants                     | -                                                                                                                         | -                                                                                                                    | ✓                                                                    | -                                                                                                                          | -                                                                                                                    | ✓                                                                    | -                                                                                                                          | -                                                                                                                    | ✓                                                                    | -                                                                                         | -                                                                                   | -                                                                                                                          |
|                                    | Chemical Status                         | -                                                                                                                         | -                                                                                                                    | ✓                                                                    | -                                                                                                                          | -                                                                                                                    | ✓                                                                    | -                                                                                                                          | -                                                                                                                    | ✓                                                                    | -                                                                                         | -                                                                                   | -                                                                                                                          |

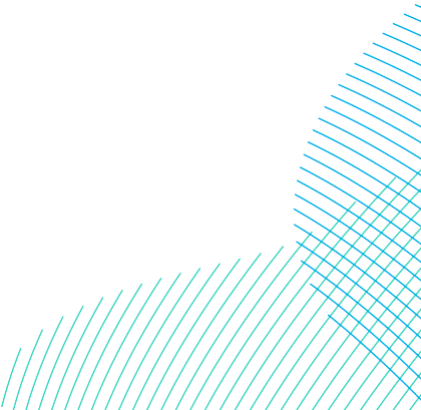
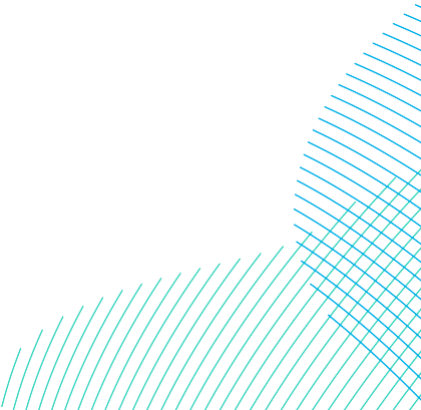


Table 32 Permanent Proposed Development Components and their potential effects on groundwater bodies. A tick (✓) indicates a potential effect may arise and a dash (-) indicates no effect.

| Proposed Development Component   |                                    | Panel Areas                                                                                            | Substations                                                                                            |                                                              | BESS and transformers                                                                          |                                                                                                        |                                                              |                                                                                                | Underground cabling                                          |                                                                                    |
|----------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------|
| Potential Effects                |                                    | Infrastructure/hardstanding causing alteration of surface permeability and infiltration to groundwater | Infrastructure/hardstanding causing alteration of surface permeability and infiltration to groundwater | Source and pathway for potential contaminants to groundwater | Below ground infrastructure/foundations causing alteration of shallow groundwater flows/levels | Infrastructure/hardstanding causing alteration of surface permeability and infiltration to groundwater | Source and pathway for potential contaminants to groundwater | Below ground infrastructure/foundations causing alteration of shallow groundwater flows/levels | Source and pathway for potential contaminants to groundwater | Below ground infrastructure causing alteration of shallow groundwater flows/levels |
| WER groundwater quality elements | Quantitative Status element        | ✓                                                                                                      | ✓                                                                                                      | -                                                            | ✓                                                                                              | ✓                                                                                                      | -                                                            | ✓                                                                                              | -                                                            | ✓                                                                                  |
|                                  | Chemical Status element            | -                                                                                                      | -                                                                                                      | ✓                                                            | -                                                                                              | -                                                                                                      | ✓                                                            | -                                                                                              | ✓                                                            | -                                                                                  |
|                                  | Supporting elements (Ground-water) | -                                                                                                      | -                                                                                                      | -                                                            | -                                                                                              | -                                                                                                      | -                                                            | -                                                                                              | -                                                            | -                                                                                  |



## 6.3 Potential effects on current status

- 6.3.1.1 The scoping assessment has considered the potential effects of the key permanent components of the Proposed Development on the current status of the surface and groundwater bodies screened in. These are described in the sections below.
- 6.3.1.2 The assessment is based on the currently available desk study and outline design information and should be reviewed and updated, where necessary, in the final WER compliance assessment as part of the Environmental Statement.

### 6.3.2 Potential effects on surface water bodies

#### Changes to surface water runoff to watercourses

- 6.3.2.1 The proposed Panel Areas, Substations, BESS and transformers, and permanent access tracks have the potential to reduce infiltration and alter existing surface water runoff and land drainage pathways. The proposed Panel Areas could alter the spatial distribution of infiltration, whilst the Substations, BESS and transformers, and permanent access tracks could reduce surface permeability by increasing hardstanding areas and result in the physical loss of existing land drains within their footprint.
- 6.3.2.2 These changes have the potential to impact watercourse flows, in turn affecting fluvial geomorphological processes and aquatic habitats. Such impacts therefore have the potential to affect the Hydromorphological and Biological status of the relevant surface water bodies.
- 6.3.2.3 As summarised in Section 4, embedded mitigation is incorporated into the design for the Proposed Development to minimise potential impacts of surface water runoff on the adjacent watercourses. This includes:
- The Panel Areas, Substations, BESS and transformers will all be set back 9m from the bank top of watercourses. Furthermore, Substations are only close (within 500m) to watercourses in the Wendling Beck and Wissey – Upper catchments. The relevant watercourses are the River Wissey Tributaries 1 and 2, High Grove Channels 2 and 3 and High House Farm Channel 3. Each 132 kV substation only requires 0.004km<sup>2</sup> of hardstanding area, which is negligible in relation to the water body catchment area (Wendling Beck catchment area = 79.4km<sup>2</sup>, Wissey – Upper catchment area = 87.7km<sup>2</sup>).
  - The preliminary drainage strategy outlined in Appendix 14.2 to the PEIR promotes the discharge of surface water runoff from the Panel Areas, Substations, BESS and transformers directly to ground, to mimic existing infiltration and land drainage as much as practicable. For the areas of hardstanding associated with the BESS and transformers this includes the provision of gravel aprons around these structures, whilst surface water will be allowed to drain freely off the solar PV modules to infiltrate into the surrounding vegetated ground, maintaining existing land drainage.

- The permanent access tracks will be designed to be permeable, allowing water to infiltrate through and maintain a greenfield runoff rate.

6.3.2.4 The Panel Areas, Substations, BESS and access tracks are predominantly within the vicinity of low value drainage ditches (see Table 33, Table 34 and Table 35). Table 34 Summary of anticipated effects of Proposed Development components on WER status elements of relevant watercourses in the Watton Brook (GB105033047870) river water body catchment. A dash (-) represents no effect anticipated. As summarised in Section 5.5, these low value drainage ditches that are anticipated to have limited baseflow, minimal geomorphological processes and low aquatic habitat potential for biological quality elements. As such any localised changes in surface water runoff within the catchment areas of these watercourses are anticipated to have negligible effects on hydromorphological and biological status at the water body scale.

6.3.2.5 However, there are some moderate and high value watercourses which have Panel Areas, Substations, BESS and access tracks in proximity to them. These watercourses are likely to have some baseflow, active geomorphological processes and high aquatic potential for biological quality elements. Embedded mitigation will ensure any localised changes in surface water runoff will result in negligible effects on hydromorphological and biological status. There are two high value watercourses within the vicinity of components with the potential to affect surface water runoff. The River Wissey has panels, access tracks and substations and Wendling Beck have panels and access tracks. There are four moderate value watercourses within the vicinity of some components with the potential to affect surface water runoff. The Wendling Beck tributaries 1 and 2 have Panel Areas and access tracks, the Wissey Tributary 1 has Panel Areas, access tracks and Substations within the vicinity and the Wissey Tributary 2 has Panel Areas and Substations within the vicinity (see Figures 14.6, 14.7 and 14.8 of the PEIR). Given the embedded mitigation measures and drainage design, the baseline receptor value and sensitivity of the nearby watercourses, and the magnitude of change in the context of scale of the relevant water body catchments, the proposed Panel areas, Substations, BESS facilities, and permanent access tracks are anticipated to have a negligible effect on the Hydromorphological and Biological quality elements of the relevant surface water bodies.

### **Potential sources of contaminant runoff to watercourses**

- 6.3.2.6 The proposed Substations, BESS infrastructure, and permanent access tracks for the Proposed Development could provide a source and pathway for potential contaminants (oil, firewaters and hydrocarbons respectively) to enter the water environment.
- 6.3.2.7 This has the potential to impact on the water quality of watercourses downstream, which in turn could adversely affect the Biological, Physico-chemical, Specific Pollutants and Chemical Status of the relevant surface water bodies.
- 6.3.2.8 As summarised in Section 4, embedded mitigation is incorporated into the design for the Proposed Development to minimise potential impacts of potential contaminant releases to nearby watercourses. This includes:

- For substations, the drainage strategy includes a bund and sump design with automated monitoring and pump systems to contain pollutants and stop the discharge of surface water if the presence of oil contaminants is detected.
- For BESS facilities, numerous safety measures are proposed to prevent a fire occurring. However, in the event that a fire does occur, the containers are to be fitted with an automated fire-suppression system, using an automatic clean agent (aerosol), which would mitigate the risk of contaminated water filling the BESS container. Water is typically only used to cool adjacent BESS in the event of a BESS fire to prevent the spread of fire to other units, and therefore only used when multiple BESS are installed in a central location on a site in close proximity to each other. The Proposed Development has BESS spread throughout the Panel Areas over a large geographic area; therefore, cooling water would not be used in the event of a fire.
- During normal site usage, it is anticipated the site will be low traffic resulting in a low potential for new contaminants to enter the water environment via access tracks.

6.3.2.9 The Applicant is continuing to develop the drainage strategy in discussion with the Environment Agency including in relation to BESS. Given the embedded mitigation and the proposed site operating regime, the baseline receptor value and sensitivity of the nearby watercourses, and the location and scale of the proposed infrastructure in the context of scale of the relevant water body catchments, it is anticipated at this stage that the potential for the introduction of source and pathways is low and so the Proposed development will have a negligible effect on Biological and Physico-chemical quality elements, Specific Pollutants and Chemical Status.

### **Watercourse crossings**

- 6.3.2.10 Watercourse crossing structures will be required for access tracks associated with the Proposed Development. These have the potential to impact on river continuity (flow, sediment and fish passage), which could affect the Hydromorphological Supporting Elements and Biological status of the relevant surface water bodies.
- 6.3.2.11 Existing crossing structures are present on Wendling Beck, Wissey Tributary 1 and Wissey Tributary 2. Where existing crossing structures are present, it is assumed at this stage that these will be suitable for continued use as part of the Proposed Development, and therefore no effects are anticipated.
- 6.3.2.12 No new crossing structures are required of watercourses with a high value at this point. Further assessment is required on the structural integrity of the existing crossing of the Wendling Beck. Should it be found to be insufficient remedial works or a new crossing will be required. However, new access track crossing structures are required for nine low and moderate value watercourses. These watercourses are Cutbush Farm Channel, Gadder Tributary, Hills Road Channel, Jubys Farm Channel, Wissey Tributary 1, Allotment Farm Channel, High House Farm Channel 1 and Wendling Beck Tributaries 1 and 2 (see Figures 14.6, 14.7 and 14.8 of the PEIR). At this stage, it is assumed that an appropriate crossing method will be

confirmed for the moderate value watercourses following reconnaissance surveys to confirm the receptor value of the watercourses and the likely impacts on hydromorphological processes and aquatic habitats, which may comprise clear span crossing structures. At this stage, it is assumed that the new watercourse crossings on low value watercourses will comprise new box culverts. Given the nature of these watercourse, and assuming box culverts are appropriately designed and sized (e.g. culvert invert to be buried below the river bed, not affect hydraulics), it is anticipated that the new watercourse crossing structures will have a negligible effect with no measurable change on the Hydromorphological Supporting Elements or Biological status of the relevant water bodies.

- 6.3.2.13 Cables will pass beneath watercourses using either HDD or open-cut trenching methods, depending on the watercourse.
- 6.3.2.14 At this stage, it is assumed that an appropriate crossing method will be confirmed for the moderate value watercourses to be crossed (including the Wendling Beck Tributaries 1 and 2, the Wissey Tributaries 2, 3 and 4, and White House Farm Channel 1 watercourses), following reconnaissance surveys to confirm the receptor value of the watercourses and the likely impacts on hydromorphological processes and aquatic habitats/biota. This may comprise HDD methods. HDD methods will be used for any crossings of high value watercourses (comprising Main Rivers and/or main WFD river water bodies) (including Wendling Beck and the River Wissey). This will prevent any impacts to Hydromorphological Supporting Elements. However, EMF can be generated when electricity passes through cables, which could induce both a behavioural response in migratory fish swimming over the cable as well as negatively impact individual organisms during the embryonic and larval life stages. This therefore has the potential to affect the Biological status of the water bodies. A potential minor localised adverse effect on the Biological status of these water bodies has therefore been identified at this stage. Further assessment and consultation with the Environment Agency will be undertaken as part of design development prior to the DCO application in order to seek to avoid or minimise this potential impact of EMF on fish behaviour and movements.
- 6.3.2.15 All remaining watercourse receptors with cable crossings are low value, meaning open-cut trenching methods will be used. These watercourses affected are the West End Channel, Top Farm Channel, High Grove Channel 2, Scarn Head Cottage Channel 4, Hale Road Channel 1, High House Farm Channels 2 and 3 and St Andrews Lane Channel 1 (see Figures 14.6, 14.7 and 14.8 of the PEIR). Open-cut trenching would result in some localised physical modification within the channel and the riparian zones of the watercourse. This is anticipated to have a negligible effect on the Biological and Hydromorphological status of the relevant water bodies, given the low value nature of the watercourses affected with little/no baseflows, limited geomorphological processes and low aquatic habitat potential for sustaining biological quality element communities.
- 6.3.2.16 For all watercourses, cable crossings are anticipated to have no permanent effects on Physico-chemical quality elements, Specific Pollutants and Chemical Status.

- 6.3.2.17 Reconnaissance walkover surveys will be undertaken to confirm the receptor value of the affected watercourses, likely impacts and therefore the appropriate crossing method, in consultation with the Environment Agency.

### **6.3.3 Potential effects on groundwater bodies**

- 6.3.3.1 The Panel Areas could alter the spatial distribution of infiltration, whilst the Substations and BESS and transformers could reduce surface permeability by increasing hardstanding areas. This, in turn, could lead to some local changes in the rate of recharge to the underlying aquifers, which has the potential to affect Groundwater Quantitative Status. At the scale of the relevant WER groundwater bodies the area of proposed impermeable hardstanding is negligible, whilst the ground beneath the Panel Areas will still be permeable. Therefore, the Proposed Development is anticipated to have a negligible effect on groundwater Quantitative Status.
- 6.3.3.2 Associated infrastructure such as BESS units could provide a risk of pollutants entering the water environment in the case of an incident and therefore present a risk to groundwater Chemical Status. Whilst the drainage strategy in relation to the BESS units is continuing to be developed in discussions with the Environment Agency at this stage, it is understood that the containers are to be fitted with an automated fire-suppression system, using an automatic clean agent (aerosol), which would mitigate the risk of contaminated water filling the BESS container. Water is typically only used to cool adjacent BESS in the event of a BESS fire to prevent the spread of fire to other units, and therefore only used when multiple BESS are installed in a central location on a site in close proximity to each other. The Proposed Development has BESS spread throughout the Panel Areas over a large geographic area; therefore, cooling water would not be needed in the event of a fire. This approach therefore minimises the potential for pollutants to enter the water environment. Taking into account the embedded mitigation measures in the drainage strategy at this stage, and the scale of the groundwater body, associated infrastructure (including the BESS units) are anticipated to have a negligible effect on groundwater Chemical Status.
- 6.3.3.3 The creation of new permanent access tracks has the potential to result in the introduction of new pollutants to the water environment, such as hydrocarbons, associated with operational phase traffic. This therefore has the potential to affect groundwater Chemical Status. However, during normal usage it is anticipated site access requirements will be limited, meaning the site will have a low traffic volume. There will therefore be a low potential for new contaminants to enter the groundwater environment from operational phase site traffic. At the water body scale, this is anticipated to have a negligible effect on the Chemical Status of the groundwater bodies present at the site.
- 6.3.3.4 The permanent below ground infrastructure for operation of the Proposed Development is likely to encompass shallow building foundations and cable installations. As these components will be located in the shallow superficial aquifer, it is anticipated that these would have no effect on the Quantitative Status or Chemical Status of the groundwater bodies present at the site.

### **6.3.4 Summary of effects on current status**

- 6.3.4.1 Summaries of the anticipated effects of the Proposed Development on WER surface water bodies provided in Table 33, Table 34, and Table 35).
- 6.3.4.2 A summary of the anticipated effects of the Proposed Development on the WER groundwater bodies is provided in a single table (Table 36).

**Table 33** *Summary of anticipated effects of Proposed Development on WER status elements of relevant watercourses in the Wendling Beck (GB105034051020) river water body catchment. A dash (-) represents no effect anticipated.*

| Wendling Beck watercourses | Receptor value | Relevant component                                                                      | Biological Status               | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall effect at watercourse level                           |
|----------------------------|----------------|-----------------------------------------------------------------------------------------|---------------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|---------------------------------------------------------------|
| Home Farm Channel          | Low            | Panels                                                                                  | -                               | Negligible                             | -                                 | -                   | -               | Negligible - no measurable change                             |
| Wendling Beck              | High           | Panels                                                                                  | -                               | Negligible                             | -                                 | -                   | -               | Minor / localised adverse effect (no deterioration of status) |
|                            |                | Access tracks                                                                           | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | Cable crossings (HDD)                                                                   | Minor /localised adverse effect | -                                      | -                                 | -                   | -               |                                                               |
| Wendling Beck Tributary 1  | Moderate       | Panels                                                                                  | -                               | Negligible                             | -                                 | -                   | -               | Minor / localised adverse effect (no deterioration of status) |
|                            |                | Existing pylons                                                                         | -                               | -                                      | -                                 | -                   | -               |                                                               |
|                            |                | Access tracks                                                                           | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | New water-course crossing (appropriate structure type to be confirmed following survey) | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                               |
|                            |                | Cable crossings (construction method to be confirmed following survey)                  | Minor /localised adverse effect | -                                      | -                                 | -                   | -               |                                                               |

| Wendling Beck watercourses       | Receptor value | Relevant component                                                                      | Biological Status               | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall effect at watercourse level                           |
|----------------------------------|----------------|-----------------------------------------------------------------------------------------|---------------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|---------------------------------------------------------------|
| <b>Wendling Beck Tributary 2</b> | Moderate       | Panels                                                                                  | -                               | Negligible                             | -                                 | -                   | -               | Minor / localised adverse effect (no deterioration of status) |
|                                  |                | Access tracks                                                                           | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                                  |                | New water-course crossing (appropriate structure type to be confirmed following survey) | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                               |
|                                  |                | Cable crossings (construction method to be confirmed following survey)                  | Minor /localised adverse effect | -                                      | -                                 | -                   | -               |                                                               |
| <b>High House Farm Channel 1</b> | Low            | Panels                                                                                  | -                               | Negligible                             | -                                 | -                   | -               | Negligible - no measurable change                             |
|                                  |                | BESS                                                                                    | Negligible                      | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                               |
|                                  |                | Access tracks                                                                           | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                                  |                | New water-course crossing (box culvert)                                                 | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                               |
| <b>High House Channel 2</b>      | Low            | Panels                                                                                  | -                               | Negligible                             | -                                 | -                   | -               | Negligible - no measurable change                             |
|                                  |                | Substation                                                                              | -                               | Negligible                             | -                                 | -                   | -               |                                                               |

| Wendling Beck watercourses | Receptor value | Relevant component                                                     | Biological Status               | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall effect at watercourse level                           |
|----------------------------|----------------|------------------------------------------------------------------------|---------------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|---------------------------------------------------------------|
|                            |                | BESS                                                                   | Negligible                      | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | Access tracks                                                          | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | Cable crossings (open-cut trench)                                      | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                               |
| High House Farm Channel 3  | Low            | Panels                                                                 | -                               | Negligible                             | -                                 | -                   | -               | Negligible - no measurable change                             |
|                            |                | Substation                                                             | -                               | Negligible                             | -                                 | -                   | -               |                                                               |
|                            |                | BESS                                                                   | Negligible                      | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | Access tracks                                                          | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | Cable crossings (open-cut trench)                                      | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                               |
| White House Farm Channel 1 | Moderate       | Cable crossings (construction method to be confirmed following survey) | Minor /localised adverse effect | -                                      | -                                 | -                   | -               | Minor / localised adverse effect (no deterioration of status) |
| Juby's Farm Channel        | Low            | Panels                                                                 | -                               | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                             |
|                            |                | Access tracks                                                          | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                               |
|                            |                | New water-course crossing (box culvert)                                | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                               |

| Wendling Beck watercourses                                       | Receptor value | Relevant component                                 | Biological Status               | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall effect at watercourse level                           |
|------------------------------------------------------------------|----------------|----------------------------------------------------|---------------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|---------------------------------------------------------------|
| Scarn Head Cottage Channel 1                                     | Low            | No permanent components in vicinity of watercourse | -                               | -                                      | -                                 | -                   | -               | No effects expected                                           |
| Scarn Head Cottage Channel 2                                     | Low            | No permanent components in vicinity of watercourse | -                               | -                                      | -                                 | -                   | -               | No effects expected                                           |
| Scarn Head Cottage Channel 3                                     | Low            | No permanent components in vicinity of watercourse | -                               | -                                      | -                                 | -                   | -               | No effects expected                                           |
| Scarn Head Cottage Channel 4                                     | Low            | Cable crossings (open-cut trench)                  | Negligible                      | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                             |
| <b>CUMULATIVE EFFECT ON QUALITY ELEMENTS / WATER BODY STATUS</b> |                |                                                    | Minor /localised adverse effect | Negligible                             | Negligible                        | Negligible          | Negligible      | Minor / localised adverse effect (no deterioration of status) |

**Table 34** *Summary of anticipated effects of Proposed Development components on WER status elements of relevant watercourses in the Watton Brook (GB105033047870) river water body catchment. A dash (-) represents no effect anticipated.*

| Watton Brook watercourses                                        | Receptor value | Relevant Proposed Development component                | Biological Status | Hydromorphological Supporting Elements | Physico-chemical Status | Specific Pollutants | Chemical Status | Overall impact                    |
|------------------------------------------------------------------|----------------|--------------------------------------------------------|-------------------|----------------------------------------|-------------------------|---------------------|-----------------|-----------------------------------|
| Highwood Barn Channel                                            | Low            | No permanent components in the vicinity of watercourse | -                 | -                                      | -                       | -                   | -               | No effect expected                |
| Lower Homestead Channel 1                                        | Low            | Panels                                                 | -                 | Negligible                             | -                       | -                   | -               | Negligible – no measurable change |
|                                                                  |                | Access Tracks                                          | -                 | Negligible                             | -                       | -                   | -               |                                   |
| Lower Homestead Channel 2                                        | Low            | Panels                                                 | -                 | Negligible                             | -                       | -                   | -               | Negligible – no measurable change |
|                                                                  |                | BESS                                                   | Negligible        | Negligible                             | Negligible              | Negligible          | Negligible      |                                   |
|                                                                  |                | Access tracks                                          | -                 | Negligible                             | -                       | -                   | -               |                                   |
| Hale Road Channel 1                                              | Low            | Cable crossings (open-cut trench)                      | Negligible        | Negligible                             | -                       | -                   | -               | Negligible – no measurable change |
| Hale Road Channel 2                                              | Low            | No permanent components in the vicinity of watercourse | -                 | -                                      | -                       | -                   | -               | No effect expected                |
| Hills Road Channel                                               | Low            | Panels                                                 | -                 | Negligible                             | -                       | -                   | -               | Negligible – no measurable change |
| <b>CUMULATIVE EFFECT ON QUALITY ELEMENTS / WATER BODY STATUS</b> |                |                                                        | Negligible        | Negligible                             | Negligible              | Negligible          | Negligible      | Negligible                        |

**Table 35** *Summary of anticipated effects of Proposed Development components on WER status elements of relevant watercourses in the Wissey – Upper (GB105033047890) river water body. A dash (-) represents no effect anticipated.*

| Wissey-Upper watercourses | Receptor value | Proposed Development component                                                         | Biological Status               | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall impact                                               |
|---------------------------|----------------|----------------------------------------------------------------------------------------|---------------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|--------------------------------------------------------------|
| <b>Wissey Tributary 1</b> | Moderate       | Panels                                                                                 | -                               | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                            |
|                           |                | Substation                                                                             | -                               | Negligible                             | -                                 | -                   | -               |                                                              |
|                           |                | BESS                                                                                   | Negligible                      | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                              |
|                           |                | Access tracks                                                                          | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                              |
|                           |                | New watercourse crossing (appropriate structure type to be confirmed following survey) | Negligible                      | Negligible                             | -                                 | -                   | -               |                                                              |
| <b>Wissey Tributary 2</b> | Moderate       | Panels                                                                                 | -                               | Negligible                             | -                                 | -                   | -               | Minor /localised adverse effect (no deterioration of status) |
|                           |                | Substation                                                                             | -                               | Negligible                             | -                                 | -                   | -               |                                                              |
|                           |                | Access tracks                                                                          | -                               | -                                      | Negligible                        | Negligible          | Negligible      |                                                              |
|                           |                | Cable crossings (construction method to be confirmed following survey)                 | Minor /localised adverse effect | -                                      | -                                 | -                   | -               |                                                              |
| <b>Wissey Tributary 3</b> | Moderate       | Cable crossings (construction method to be confirmed following survey)                 | Minor /localised adverse effect | -                                      | -                                 | -                   | -               | Minor /localised adverse effect (no deterioration of status) |
| <b>Wissey Tributary 4</b> | Moderate       | Cable crossings (construction method to be confirmed following survey)                 | Minor                           | -                                      | -                                 | -                   | -               | Minor                                                        |

| Wissey-Upper watercourses | Receptor value | Proposed Development component         | Biological Status         | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall impact                                         |
|---------------------------|----------------|----------------------------------------|---------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|--------------------------------------------------------|
|                           |                | be confirmed following survey)         | /localised adverse effect |                                        |                                   |                     |                 | /localised adverse effect (no deterioration of status) |
| Wissey Tributary 5        | Low            | Panels                                 | -                         | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                      |
| Allotment Farm Channel    | Low            | Panels                                 | -                         | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                      |
|                           |                | BESS                                   | -                         | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                        |
|                           |                | Access tracks                          | -                         | -                                      | Negligible                        | Negligible          | Negligible      |                                                        |
|                           |                | New watercourse crossing (box culvert) | Negligible                | Negligible                             | -                                 | -                   | -               |                                                        |
| Ashill Common Channel     | Low            | Panels                                 | -                         | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                      |
|                           |                | BESS                                   | Negligible                | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                        |
|                           |                | Access tracks                          | -                         | -                                      | Negligible                        | Negligible          | Negligible      |                                                        |
| Cutbush Channel           | Low            | Panels                                 | -                         | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                      |
|                           |                | BESS                                   | Negligible                | Negligible                             | Negligible                        | Negligible          | Negligible      |                                                        |
|                           |                | Access tracks                          | -                         | -                                      | Negligible                        | Negligible          | Negligible      |                                                        |
|                           |                | New watercourse crossing (box culvert) | Negligible                | Negligible                             | -                                 | -                   | -               |                                                        |
|                           | Low            | Panels                                 | -                         | Negligible                             | -                                 | -                   | -               |                                                        |

| Wissey-Upper watercourses | Receptor value | Proposed Development component    | Biological Status | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall impact                    |
|---------------------------|----------------|-----------------------------------|-------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|-----------------------------------|
| Field Barn Channels       |                | Access tracks                     | -                 | -                                      | Negligible                        | Negligible          | Negligible      | Negligible – no measurable change |
| Grounds Cottage Channel   | Low            | Panels                            | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | BESS                              | Negligible        | Negligible                             | Negligible                        | Negligible          | Negligible      |                                   |
| High Farm Channel 1       | Low            | Panels                            | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | BESS                              | Negligible        | Negligible                             | Negligible                        | Negligible          | Negligible      |                                   |
|                           |                | Access tracks                     | -                 | -                                      | Negligible                        | Negligible          | Negligible      |                                   |
| High Grove Channel 1      | Low            | Panels                            | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | Access tracks                     | -                 | -                                      | Negligible                        | Negligible          | Negligible      |                                   |
| High Grove Channel 2      | Low            | Substation                        | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | Cable crossings (open-cut trench) | Negligible        | Negligible                             | -                                 | -                   | -               |                                   |
| High Grove Channel 3      | Low            | Panels                            | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | Substation                        | -                 | Negligible                             | -                                 | -                   | -               |                                   |
|                           |                | BESS                              | Negligible        | Negligible                             | Negligible                        | Negligible          | Negligible      |                                   |
|                           |                | Access tracks                     | -                 | -                                      | Negligible                        | Negligible          | Negligible      |                                   |
| Leys Farm Channel 1       | Low            | Panels                            | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | Access tracks                     | -                 | -                                      | Negligible                        | Negligible          | Negligible      |                                   |
| Leys Farm Channel 2       | Low            | Panels                            | -                 | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change |
|                           |                | BESS                              | Negligible        | Negligible                             | Negligible                        | Negligible          | Negligible      |                                   |
|                           |                | Access tracks                     | -                 | -                                      | Negligible                        | Negligible          | Negligible      |                                   |

| Wissey-Upper watercourses                                 | Receptor value | Proposed Development component                         | Biological Status              | Hydromorphological Supporting Elements | Physico-chemical quality elements | Specific Pollutants | Chemical Status | Overall impact                                               |
|-----------------------------------------------------------|----------------|--------------------------------------------------------|--------------------------------|----------------------------------------|-----------------------------------|---------------------|-----------------|--------------------------------------------------------------|
| Lodge Farm Channel                                        | Low            | Panels                                                 | -                              | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                            |
| Necton Wood Channel                                       | Low            | No permanent components in the vicinity of watercourse | -                              | -                                      | -                                 | -                   | -               | No effect expected                                           |
| River Wissey                                              | High           | Panels                                                 | -                              | Negligible                             | -                                 | -                   | -               | Minor /localised adverse Effect (no deterioration of status) |
|                                                           |                | Access tracks                                          | -                              | -                                      | Negligible                        | Negligible          | Negligible      |                                                              |
|                                                           |                | Cable crossings (HDD)                                  | Minor Adverse Localised Effect | -                                      | -                                 | -                   | -               |                                                              |
| St Andrews Lane Channel 1                                 | Low            | Cable crossings (open-cut trench)                      | Negligible                     | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                            |
| Top Farm Channel                                          | Low            | Cable crossings (open-cut trench)                      | Negligible                     | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                            |
| West End Channel                                          | Low            | Cable crossings (open-cut trench)                      | Negligible                     | Negligible                             | -                                 | -                   | -               | Negligible – no measurable change                            |
| CUMULATIVE EFFECT ON QUALITY ELEMENTS / WATER BODY STATUS |                |                                                        | Minor Adverse Localised Effect | Negligible                             | Negligible                        | Negligible          | Negligible      | Minor /localised adverse effect (no deterioration of status) |

**Table 36** *Summary of the anticipated effects of relevant Proposed Development components on the status elements of WER groundwater bodies (Cam and Ely Ouse Chalk (GB40501G400500), North West Norfolk Chalk (GB40501G400200), Broadland Rivers Chalk and Crag (GB40501G400300))*

| Relevant Proposed Development components                         | Quantitative Status | Chemical Status | Supporting Elements (groundwater) | OVERALL EFFECT                    |
|------------------------------------------------------------------|---------------------|-----------------|-----------------------------------|-----------------------------------|
| Hardstanding, Panel Areas                                        | Negligible          | -               | -                                 | Negligible - no measurable change |
| Associated infrastructure, including BESS units                  | -                   | Negligible      | -                                 | Negligible -no measurable change  |
| Access tracks                                                    | -                   | Negligible      | -                                 | Negligible – no measurable change |
| Below ground infrastructure                                      | Negligible          | -               | -                                 | Negligible – no measurable change |
| <b>CUMULATIVE EFFECT ON QUALITY ELEMENTS / WATER BODY STATUS</b> | Negligible          | Negligible      | -                                 | Negligible – no measurable change |

## 6.4 Potential effects on future status objectives

### 6.4.1 Effects on existing pressures on status

6.4.1.1 The Proposed Development is not anticipated to exacerbate any existing RNAGs for the 'Wendling Beck', 'Watton Brook' or 'Wissey – Upper' surface water bodies. The RNAGs for these water bodies are described in Sections 5.4.1.8, 5.4.2.5 and 5.4.3.5, respectively. These RNAGs relate to physical modification from in-channel barriers, flood protection and agricultural land drainage; point and diffuse pollution from agriculture and sewage discharges; and suspect data. As highlighted in Section 6.3, new access track crossings will largely be on low value watercourses, which are anticipated to have limited to no baseflow, with minimal active fluvial geomorphic processes or potential to support fish populations. Where new access track crossings are required on moderate value watercourses, suitable crossing structures will be designed to minimise any impacts on hydromorphological processes and aquatic ecology (including fish passage), following the completion of reconnaissance surveys. No new crossing structures are required of watercourses with a high value at this time. Therefore, the Proposed Development will not exacerbate the existing physical modification RNAGs.

6.4.1.2 The Proposed Development will also not exacerbate the existing RNAGs identified for the 'Cam and Ely Ouse Chalk', 'North West Norfolk Chalk' and 'Broadland Rivers Chalk and Crag' groundwater bodies. The RNAGs for these groundwater bodies are described in Sections 5.4.4.4, 5.4.5.4 and 5.4.6.4 respectively. These RNAGs relate to diffuse and point source pollution from sewage, agriculture and domestic general public; and flow changes from groundwater abstraction for industry and agriculture. As highlighted in Section 6.3, some components of the Proposed Development that involve hard standings and below ground infrastructure may cause some localised changes in shallow groundwater flows/levels. However, this will be negligible at the water body scale and not affect the underlying bedrock aquifer or any sensitive dependent surface water receptors. Therefore, the Proposed Development is not expected to exacerbate existing flow RNAGs.

### 6.4.2 Effects on water body measures and actions

6.4.2.1 The latest available water body level measures and actions provided by the Environment Agency have been reviewed for the relevant WER water bodies. These measures are summarised in Section 5. Whilst the Proposed Development will not contribute towards the achievement of these water body level measures and actions, it will not affect or prevent the implementation of these measure in the future.

## 6.5 Mitigation requirements and compliance

- 6.5.1.1 Based on the latest design information available at this stage, there is the potential for the Proposed Development to have minor, localised adverse effects on the Biological status of the Wendling Beck and Wissey – Upper river water bodies. This relates to the proposed cable crossings of some moderate and high value watercourses and the associated potential impact of EMF from buried cables beneath the watercourses on the behaviour and movement of fish. At the scale of the water bodies, these effects are deemed unlikely to result in a deterioration in the current status of the water bodies. However, further assessment and EA consultation is required to inform the forward design development prior to the DCO application in order to avoid or minimise any potential localised impacts from the EMF on fish behaviour and movement as far as practicable. Subject to further assessment and design development, the residual effect of EMF on fish and the Biological status of the relevant river water bodies is anticipated to be negligible.
- 6.5.1.2 The remaining components of the Proposed Development are anticipated to have negligible effects on the Wendling Beck, Watton Brook, and Wissey – Upper river water bodies.
- 6.5.1.3 The Proposed Development is also anticipated to have negligible effects on the Cam and Ely Ouse Chalk, North West Norfolk Chalk, and Broadland Rivers Chalk and Crag groundwater bodies present at the site.
- 6.5.1.4 As such, **the Proposed Development is considered to be compliant with the WER** and no additional mitigation is expected to be required at this stage to avoid the risk of a deterioration in the current status of the water bodies, or the prevention of the future achievement of status objectives.
- 6.5.1.5 Whilst the Proposed Development is not deemed to pose a risk of non-compliance at this stage, opportunities for environmental enhancements should be considered during the next design stage, following the completion of walkover surveys and in conjunction with the Biodiversity Net Gain assessment to be submitted with the DCO application.

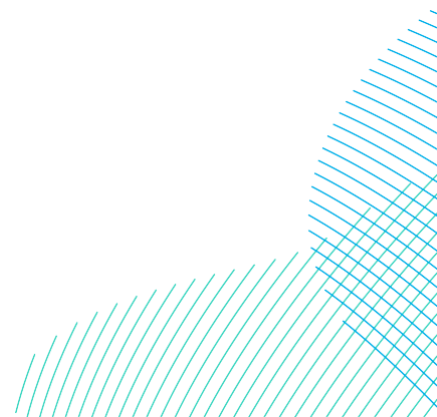
## 7 Conclusions

- 7.1.1.1 An assessment of the compliance of the Proposed Development with the objectives of the WER has been undertaken.
- 7.1.1.2 This has included a baseline and screening assessment to identify the relevant WER water bodies potentially affected and collate available data regarding water body baseline condition and WER status and objectives. This has also included identification of the relevant permanent Proposed Development components with the potential to affect the water bodies, together with the relevant embedded construction and design mitigation developed at this stage.
- 7.1.1.3 The screening assessment has concluded that the Proposed Development has the potential to affect the following WER water bodies:
- Wendling Beck (GB105034051020);
  - Watton Brook (GB105033047870);
  - Wissey – Upper (GB105033047890);
  - Cam and Ely Ouse Chalk (GB40501G400500);
  - North West Norfolk Chalk (GB40501G400200); and
  - Broadland Rivers Chalk and Crag (GB40501G400300).
- 7.1.1.4 A preliminary (scoping) assessment has been undertaken to identify the potential effects of the Proposed Development on the current status and status objectives of these water bodies. This assessment has been based on the currently available site and design information, and assumptions regarding best practice and mitigation to be developed and included within the CEMP for the Proposed Development at the construction stage.
- 7.1.1.5 For the Wendling Beck, Watton Brook, and the Wissey-Upper river water bodies a desk-based study has been undertaken at this stage to identify and determine receptor values for all watercourses within the water body catchments within the vicinity of the Proposed Development.
- 7.1.1.6 Based on the currently available design information, the Proposed Development has the potential to have some minor, localised adverse effects on the Wendling Beck and Wissey – Upper river water bodies, associated with the cable crossings of moderate and high value watercourses which have the potential to cause an EMF impact on fish. These potential effects are not anticipated to result in a deterioration in the current status of the water bodies or prevent the future achievement of status objectives. However, further assessment and consultation with the Environment Agency is recommended to seek to avoid or minimise any potential effects of the cable crossings on fish within these moderate and high value water courses within the water bodies.
- 7.1.1.7 The Proposed Development is anticipated to have only negligible effects on the quality elements of the Watton Brook river water body and Cam and Ely Ouse

Chalk North West Norfolk Chalk and Broadland Rivers Chalk and Crag groundwater bodies.

- 7.1.1.8 The Proposed Development is therefore not anticipated to pose a risk of causing a deterioration in status or preventing the future attainment of status objectives for the relevant water bodies screened in for assessment. As such, the Proposed Development is deemed to be compliant with the requirements and objectives of the WER.
- 7.1.1.9 This WER preliminary assessment provides an indication of the likely compliance of the Proposed Development at the time the assessment was prepared. This assessment will be updated alongside the ES prior to DCO submission and the construction stages of the project. This will account for:
- new baseline information that becomes available for the site and/or the relevant WER water bodies present at the site (including the completion of reconnaissance walkover surveys of the relevant watercourses affected by the proposed access track and cable crossings); and
  - any updates to the design details and construction methodology for the Proposed Development.

# **Annex A WER Background Information – water body status determination and compliance assessment process**



# Water Environment Regulations background

## A.1 Determination of WER status

### Introduction

- A.1.1 Surface water bodies and groundwater bodies are defined within WER legislation. There are three types of surface water body, as follows:
- natural water bodies;
  - heavily modified water bodies (HMWBs);
  - artificial water bodies (AWBs).
- A.1.1 The Overall Status of natural surface water bodies is determined on the basis of their Ecological Status and Chemical Status. The overall status of heavily modified and artificial water bodies is classified based on their ecological potential and chemical status. The overall status of groundwater bodies is determined on the basis of their Quantitative Status and Chemical Status.
- A.1.1 Groundwater bodies are defined within WER legislation and their status is determined on the basis of quantitative and chemical sub-elements.
- A.1.1 The means by which these determinations are made for both surface water and ground water bodies is described in this section.

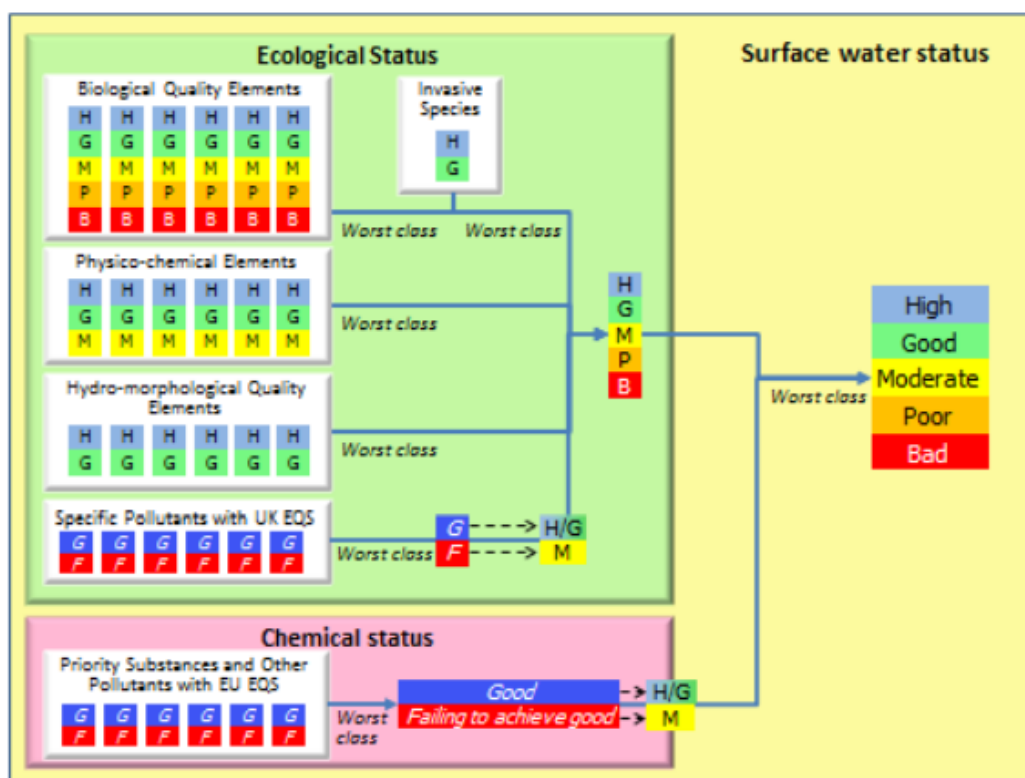
### Surface water bodies

#### *Ecological status*

- A.1.1 Ecological Status is defined by the overall quality of the structure and functioning of aquatic ecosystems associated with surface waters, i.e. the condition of the water-course. This is assigned on a scale of high, good, moderate, poor or bad, and on the basis of four classification elements or 'tests', as follows:
- Biological - this test is designed to assess the status indicated by a biological quality element such as fish, invertebrates, macrophytes or Phytobenthos (diatoms). The biological quality elements can influence an overall water body status from bad through to high. It is also important to note that the presence of invasive species prevents a water body from achieving high status when all other elements attain high;
  - Physicochemical - this test is designed to assess the status indicated by physicochemical quality elements such as dissolved oxygen, phosphorus and ammonia, against environmental standards. The physicochemical quality elements can only influence an overall water body status from moderate through to high; and
  - Hydromorphology - for natural surface water bodies this test is undertaken by the EA during classification when the biological and physicochemical tests indicate that a water body may be of high Overall Status. It specifically assesses

hydromorphological quality elements such as water flow, sediment composition and movement, continuity, and structure of the habitat against reference or 'largely undisturbed' conditions. If the hydromorphological quality elements do not support high Ecological Status, then the status of the water body is limited to good Overall Status. Hydromorphological assessments are used to determine 'high' Overall Status only and are not used to drive a water body status class below good. The 'does not support good' classification should be reported for the purposes of identifying water bodies which fail the flow test.

- A.1.1 The worst-case classification is assigned as the overall surface water body status, in a 'one-out all-out' system. This system is summarised in Inset 1.



*Inset 1 Ecological status classification process (Source: Environment Agency (2015) [13])*

## Chemical status

- A.1.1 Chemical Status is defined by compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances, in accordance with the Environmental Quality Standards Directive (2013/39/EU) [14]. This is assigned on a scale of good or fail.
- A.1.1 Surface water bodies are only monitored for priority substances where there are known discharges of these pollutants; otherwise, surface water bodies are reported as being of good Chemical Status.

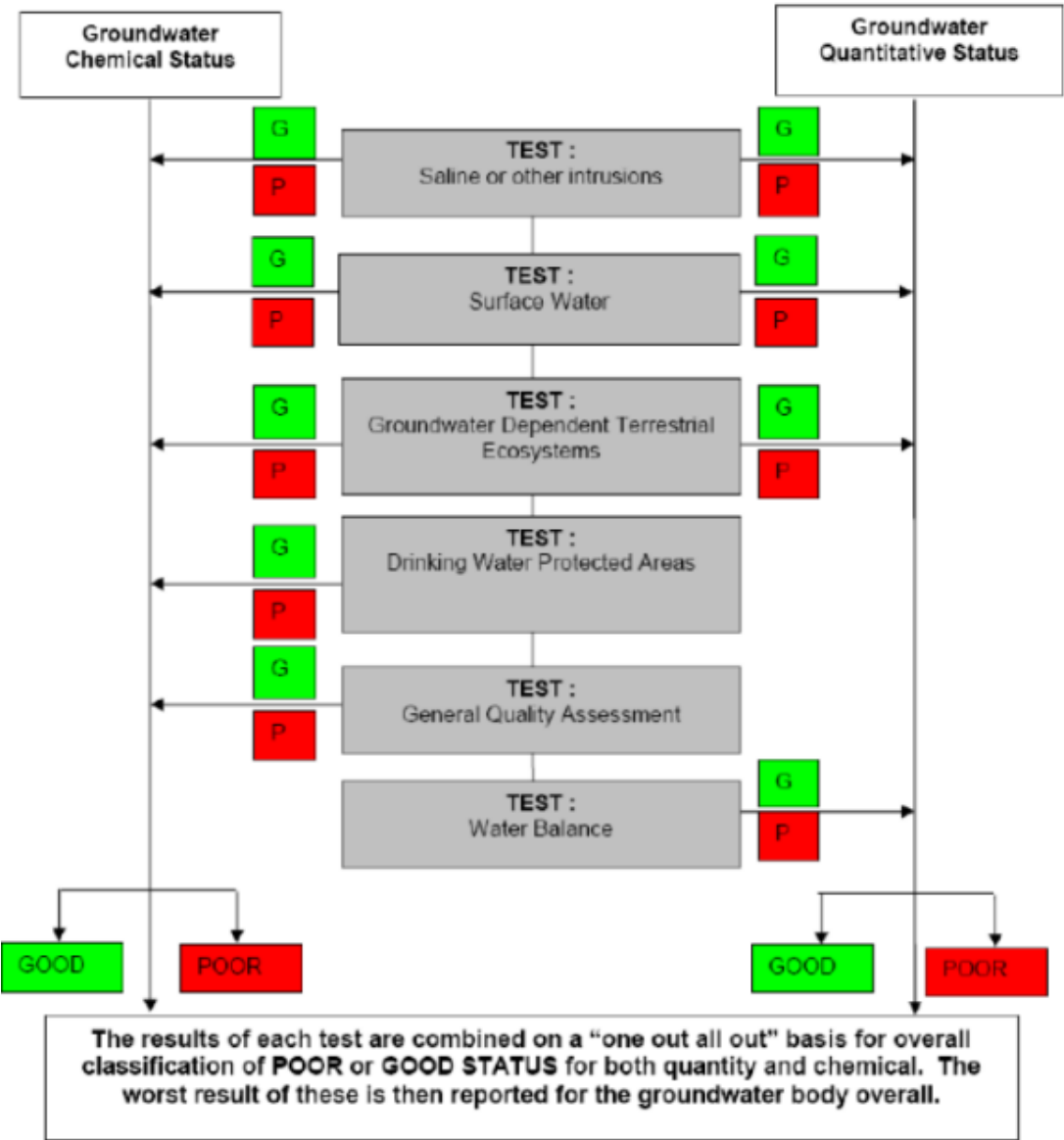
## ***Ecological potential for heavily modified (and artificial) water bodies***

- A.1.1 Ecological Potential is assigned to AWB (such as reservoirs and canals), or natural water bodies which, as a result of physical alterations by human activity, are substantially changed in character. The latter are termed HMWB. The term 'ecological potential' is used to classify AWBs and HMWBs as it may be impossible for these water bodies to achieve good Ecological Status (GES) because of their creation or modification for a specific use, such as navigation, water supply or flood protection. The Ecological Potential of an AWB or HMWB represents the degree to which the quality of the water body approaches the optimum condition it could achieve given its artificial or heavily modified state.
- A.1.1 AWB and HMWB are subject to an additional set of rules that need to be implemented prior to running the one-out-all-out process. These rules determine which biological quality elements should be used in the water body Ecological Potential classification. Under normal circumstances, AWB and HMWB are classified according to an assessment of Mitigation Measures, which defines good Ecological Potential (GEP) in waterbodies where all applicable mitigation is in place, and moderate ecological potential in water bodies where some or all relevant mitigation is missing. However, to prevent AWB and HMWB being incorrectly classified as good potential in situations where all mitigation is in place, but other pressures are causing an impact (e.g. nutrient enrichment or pollution from toxic substances), the methodology adopted in the UK additionally considers biological indicators providing they are not sensitive to the heavily modified nature of the water body.
- A.1.1 AWB and HMWB hydromorphological elements are assessed using a three-stage process, firstly looking at flow, then Mitigation Measures and biological quality elements. Flow conditions are assessed initially on a fail or pass basis to determine which of the biological and physicochemical quality elements should be used in the classification of Ecological Potential.
- A.1.1 Where the flow conditions are unaffected by the physical modification (flow conditions pass), the water body Ecological Potential is determined by the worst of either the Mitigation Measures Assessment, or any element that is not sensitive to the modified nature of the water body.
- A.1.1 Where the flow conditions are significantly impacted by the physical modification (flow conditions fail), the water body Ecological Potential is determined by the worst of any of the Mitigation Measures Assessments or the assessment of biological quality elements, physicochemical quality elements or specific pollutants.
- A.1.1 Where a water body is designated as artificial or heavily modified for water resources usage, either solely or jointly with other uses, the flow condition is assumed to be good (pass).

## ***Groundwater bodies***

- A.1.1 Under the WER, groundwater body Overall Status is classified on the basis of Quantitative Status and Chemical Status.

A.1.1 The worst-case classification dictates the Overall Status, via a ‘one-out all-out’ system. This system is summarised below in Insert 2.



*Inset 2 Groundwater body status classification (Source: UKTAG (2012) [15])*

## ***Quantitative status***

A.1.1 Quantitative Status is defined by the quantity of groundwater available as base flow to watercourses and water-dependent ecosystems and as 'resource' available for use as drinking water and other consumptive purposes. It is assigned on a scale of good or poor, and on the basis of four classification elements or 'tests' as follows:

- *saline or other intrusions* - this test is designed to identify groundwater bodies where the intrusion of poor quality water, such as saline water or water of different chemical composition, as a result of groundwater abstraction is leading to sustained upward trends in pollutant concentrations or significant impact on one or more groundwater abstractions;
- *surface water* - this test is designed to identify groundwater bodies where groundwater abstraction is leading to a significant diminution of the Ecological Status of associated surface water bodies;
- *Groundwater Dependent Terrestrial Ecosystems (GWDTE)* - this test is designed to identify groundwater bodies where groundwater abstraction is leading to significant damage to associated GWDTE; and
- *water balance* - this test is designed to identify groundwater bodies where groundwater abstraction exceeds the 'available groundwater resource', defined as the rate of overall recharge to the groundwater body itself less the rate of flow required to meet the ecological needs of associated surface water bodies and GWDTE.

## ***Chemical status***

A.1.1 Chemical Status is defined by the concentrations of a range of key pollutants, by the quality of groundwater feeding into watercourses and water-dependent ecosystems and by the quality of groundwater available for drinking water purposes. This is assigned on a scale of good or poor, and on the basis of five classifications elements or 'tests', as follows:

- *saline or other intrusions* - this test is designed to identify groundwater bodies where the intrusion of poor quality water, such as saline water or water of different chemical composition, as a result of groundwater abstraction is leading to sustained upward trends in pollutant concentrations or significant impact on one or more groundwater abstractions;
- *surface water* - this test is designed to identify groundwater bodies where groundwater is leading to a significant diminution of the Chemical Status of associated surface water bodies;
- *GWDTE* - this test is designed to identify groundwater bodies where groundwater is leading to significant damage to associated GWDTE;
- *Drinking Water Protected Areas (DrWPA)* - this test is designed to identify groundwater bodies failing to meet the DrWPA objectives defined in Article 7 of the WER or at risk of failing in the future. The aim is no deterioration in quality of waters for human consumption, and

- *general quality assessment* - this test is designed to identify groundwater bodies where widespread deterioration in quality has, or will, compromise the strategic use of groundwater. The aim is no significant impairment of human use of groundwater and no significant environmental risk from pollutants across a groundwater body. Status is assessed primarily using data collected from the EA monitoring network; therefore, the scale of assessment means that groundwater status is mainly influenced by larger scale effects such as significant abstraction or widespread diffuse pollution.

## Environmental standards

- A.1.1 Under the WER, a range of environmental standards and condition limits are applied in order to help the classification of water body status and the setting of status objectives via the RBMP process. These environmental standards define the range of environmental conditions that support “healthy” aquatic life. For instance, standards are set for the composition of biological communities, the physicochemical water quality parameters, the concentration of pollutants, and the level of flows in rivers (as described above).
- A.1.1 These standards [16] inform the EA on the implementation of the RBMP process, including the identification of measures required to support the achievement of the GES / GEP objectives, as well as underpinning efforts to protect the water environment by helping to regulate activities that could cause adverse impacts.

## A.2 WER Assessment requirements for new developments

- A.2.1 To ensure compliance with the WER, decision makers must consider whether proposals for new developments have the potential to:
- cause a deterioration of a water body from its current status or potential;
  - prevent future attainment of good status or potential where not already achieved;
  - impact on protected or priority species and habitats; and/or
  - provide opportunities to improve the water environment.
- A.2.1 A ruling by the European Union Court of Justice on 1 July 2015 [17] has significant implications for projects that may impact water bodies, namely:
- consent for development must not be granted by an authorising authority – unless a derogation is granted - where the project may cause a deterioration in the status of a body of surface water or where it jeopardises the attainment of good Ecological Status or of good Ecological Potential and good Chemical Status by the date laid down in the Directive;
  - that deterioration of the status of the relevant body of surface water includes a fall by one class of any element of the quality elements within the meaning of

Annex V of the WER even if the fall does not result in a fall of the classification of the body of surface water as a whole; and

- if the quality element is already in the lowest class, any deterioration of that element represents deterioration of status within the meaning of Article 4(1)(a)(i).

## Guidance

- A.2.1 Whilst there is no established methodology for assessing compliance with WER legislation, the WER Compliance Assessment will be based upon expert judgement, established best practice and consultation with the EA and will be undertaken in accordance with relevant EA guidance [18] and the advisory guidance provided by The Planning Inspectorate [19].

## WER Assessment Process

### A.3 Overview

- A.3.1 WER Compliance Assessment is undertaken as an iterative, stepped process, which typically includes the following:
- Step 1: Screening assessment;
  - Step 2: Scoping assessment;
  - Step 3: Detailed impact assessment (where deemed required); and
  - Step 4: Application of Regulation 19 (where deemed required).
- A.3.1 These key process steps are described in further detail in the following sections. Consultation with regulatory authority should be undertaken to share the findings of each step, where necessary/applicable.

### A.4 Screening and baseline assessment

- A.4.1 The key objective of the screening assessment is to identify the relevant WER surface water and groundwater bodies (including any undesignated tributary water-courses) potentially affected by the Proposed Development and to establish their baseline condition.
- A.4.2 The water body baseline condition of relevant water bodies has been identified via desk-top assessment, utilising readily available information and environmental, asset and operations data obtained from relevant stakeholders, including the EA.
- A.4.3 WER baseline datasets have been obtained from the EA's Catchment Data Explorer website and through internal data request to the EA. This includes:
- Cycle 3 current status and status objectives data;
  - Protected Areas data;
  - Reasons for to achieving good status (RNAG) data;
  - Measures / actions data; and

- Mitigation Measures data (if applicable).

- A.4.4 The Cycle 3 2019 and 2022 water body status data has been used to inform the assessment. These data are considered to provide the current best estimate of status and the formal baseline against which the EA will assess compliance with the 'no deterioration' objective. Where baseline data is limited, professional judgement has been used in the assessment and a precautionary approach taken.
- A.4.5 The relevant WER water bodies present within the potential zone of influence of the Proposed Development are taken through to the subsequent scoping assessment stage.

## A.5 A.2.3 Scoping assessment

- A.5.1 The objective of the scoping assessment is to establish the relevant likely effects of the Proposed Development on the WER status elements of the relevant WER surface water and groundwater bodies. This includes identification of potential impact types and any relevant mitigation embedded within the design of Proposed Development at this stage.
- A.5.2 The scoping assessment considers both the beneficial and adverse effects of the relevant elements of the Proposed Development and applies a risk-based method in line with existing EA guidance.
- A.5.3 Effects are considered with regard to the risk of the Proposed Development causing a deterioration in current status and/or a failure to achieve status objectives. The assessment identifies those scheme components /impacts that pose a risk current status or status objectives and thus may require more detailed impact assessment. The preliminary assessment therefore comprises two parts, as follows:
- likely effects on current status or potential, involving:
    - identification of relevant scheme components with potential to impact upon water body status;
    - identification of likely potential impact and magnitude of effects of the relevant scheme components on the current status of the water body (taking account of any 'embedded' mitigation; and
    - identification of potential risks of deterioration in current status and associated requirements for additional mitigation and/or further detailed assessment.
  - likely effects on status objectives, involving:
    - scoping of the relevant scheme components to identify where the Proposed Development may pose a risk of worsening existing pressures responsible for current status failures (RNAGs) and/or prevent the implementation of measures identified by the EA to address existing status failures; and
    - scoping of relevant scheme components against any available EA HMWB / AWB 'mitigation measure assessment' outputs, in order to identify where the Proposed Development may pose a potential risk of inhibiting the implementation of measures derived to mitigate the impacts of existing

physical modifications and operational regimes to support the achievement of good Ecological Potential objectives.

## A.6 Detailed impact assessment

- A.6.1 Where deemed required, the objective of the detailed impact assessment is to establish the nature and anticipated magnitude of the effects of relevant elements of the Proposed Development on the WER quality elements of the surface water and groundwater bodies affected. These effects are considered in terms of the potential for deterioration of current status and/or the prevention of status objectives. This detailed assessment may be based on targeted baseline surveys, monitoring or modelling assessments completed at the impact sites.
- A.6.2 As with the preliminary assessment stage, the detailed impact assessment is therefore comprised of two key parts, as follows:
- assessment of effects on current status of quality element; and
  - assessment of effects on status objectives, with regards to any water body RNAG or measures/actions identified as potentially being at risk from the Proposed Development under the preceding preliminary (scoping) assessment. This is done via expert judgement and consultation with the EA, based on the currently available information.
- A.6.3 Where significant effects are identified with regard to the risk of status deterioration and/or the prevention of status objectives, the assessment should identify 'further mitigation' required in order to avoid and/or minimise risks and the residual effects on quality elements at the water body scale.
- A.6.4 The detailed impact assessment will also identify if Regulation 19 tests need to be prepared for affected water bodies, where a residual risk to status deterioration and/or prevention of future status objectives has been identified.
- A.6.5 A detailed impact assessment has not been deemed required for the Proposed Development, based on the information available at this stage.

## A.7 Regulation 19 tests

A.7.1 Regulation 19 of the WER states that the appropriate agency will not be in breach of the Directive when failure to meet its environmental objectives is the result of either new modifications to the physical characteristics of a water body or as a result of new human sustainable development, on the proviso that the modifications or new development proposed are compliant with the four key conditions listed below. In doing so, Regulation 19 provides a means whereby a derogation for a proposed modification or sustainable development may be granted where it meets these four conditions.

- 1) all practicable steps have been taken to mitigate the adverse impact on the status of the water body;
- 2) the reasons for the modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development; and
- 3) the beneficial objectives served by the modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.
- 4) the reasons for the modifications or alterations are clearly identified to the Environment Agency, so that they can be specifically set out and explained in the relevant RBMP, and the environmental objectives must be reviewed every six years.

A.7.2 Regulation 19 tests are not deemed required for the Proposed Development, based on the information available at this stage.

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- [17] *Case 461/13 Bund für – Umwelt Und Naturschutz Deutschland v Bundesrepublik Deutschland (‘the Bund case’) concerning the interpretation of Article 4(1)(a)(i) to (iii) of the Water Framework Directive 2000/60/EC (WFD)*.
- [18] Environment Agency, “Assessing new modifications for compliance with WFD: detailed supplementary guidance,” 2010.
- [19] The Planning Inspectorate, “Advice note eighteen: The Water Framework Directive,” 2017.

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