Meridian Solar Farm

EN010169

Volume 6

Environmental Statement

6.3 ES Appendix 11-2: Water Framework Directive Report

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

March 2026

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1. Introduction

1.1. Background

1.1.1. The Scheme would comprise the construction, operation (including maintenance) and decommissioning of a solar PV electricity generating station with associated infrastructure, including co-located Battery Energy Storage System (BESS), Inter-Array Connections to link the land parcels that form the Solar Development Areas, and an up to 13km overhead line Grid Connection (with one short undergrounded section) which would run north towards a point of connection (PoC) at the proposed Weston Marsh B National Grid Electricity Transmission (NGET) substation, to the north of Weston.

1.1.2. The Solar PV generating station, associated BESS, on-site substations and other associated infrastructure would be located within four land parcels (A, B, C and D) referred to collectively as the Solar Development Area, as shown in **ES Figure 1-1** (Doc Ref. 6.2).

1.1.3. The Inter-Arrays would be the areas within which 132kV connection cables (the 'Inter-Array Connections') would link the land parcels of the Solar Development Area. The configuration of the Inter-Array Connections would comprise underground cabling between Land Parcels A and B ('the Underground Inter-Array') and an overhead line between Land Parcels C and D ('the Overground Inter-Array').

1.1.4. The Grid Connection Route would be the area between the Solar Development Area and the National Grid Weston Marsh B Substation in which a 400kV overhead line (the 'Grid Connection') would be located. There is one section where the Grid Connection would route underground to avoid conflicts with an existing 132kV overhead line. Cable Sealing End Compounds (CSECs) would join the proposed underground cable at that section with the proposed overhead line.

1.1.5. The Site constitutes the total land area within the Order Limits of the Scheme, including the Solar Development Area, Inter-Array Connections and Grid Connection Route. A summary of the areas for each part of the Scheme is provided below:

- Solar Development Area - Land Parcel A: 197ha;
- Solar Development Area - Land Parcel B: 335ha;
- Solar Development Area - Land Parcel C: 205ha;
- Solar Development Area - Land Parcel D: 330ha;

- Underground Inter-Array between Land Parcel A & B: 15ha;
- Overhead Inter-Array between Land Parcel C & D: 46ha;
- Grid Connection Route: 510ha; and
- Site (total): 1616ha[1].

1.1.6. Full details of the Scheme and its components are provided in **ES Chapter 2: The Scheme** (Doc Ref. 6.1)**.**

1.1.7. In accordance with the Planning Inspectorate's Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive, a three-stage approach has been adopted to complete the WFD Assessment: Screening, Scoping and Impact Assessment. Each step is described in section 2 of this report. This report covers all of these three stages.

1.2. Study Area

1.2.1. The Site is located within south east Lincolnshire, north of Crowland and east of Spalding. The surrounding area is characterised by arable land farmed by the surrounding towns, villages, and hamlets.

1.2.2. For the purposes of this assessment, and consistent with **ES Chapter 11: Hydrology and Flood Risk** (Doc Ref. 6.1)**,** a general Study Area of 1 km from the Order Limits has been considered in order to identify water bodies that are hydrologically connected to the Scheme, and potential works associated with the Scheme, that could cause direct impacts. However, given that watercourses flow and water quality impacts propagate downstream, where relevant the assessment also considers a wider study area to as far downstream as a potential impact may influence the quality or quantity of the water body. Professional judgement has been applied to identify the extent to which such features are considered.

1.2.3. The Study Area is shown in **ES Figure 11-1: Surface Water Features and their Attributes** (Doc Ref. 6.2).

1.2.4. The Study Area falls within the following surface water body catchments as shown in **ES Figure 11-5: WFD Catchments** (Doc Ref. 6.2):

[1] Note the sum of parts for the areas of the Scheme exceeds the total area of the Order Limits due to an overlap of the Grid Connection Route with Solar Development Area Land Parcel B.

- South Holland Main Drain Water Body.
- Glen Water Body.
- Moulton Water Body.
- North Level Main Drain Water Body.
- Vernatt's Drain Water Body.

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

1.2.6. There are no WFD groundwater bodies that underly the Study Area.

1.3. Introduction to the Water Framework Directive

1.3.1. The Water Environment (England and Wales) Regulations 2017[2], commonly referred to as the Water Framework Directive (WFD), aims to protect and enhance the water environment.

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

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

[2] The Water Environment (Water Framework Directive) (England Wales) Regulations, 2017, available online at: https://www.legislation.gov.uk/uksi/2017/407/contents/made. [Accessed 10 October 2025]

[3] Environment Agency, (2022) Anglian river basin district management plan: updated 2022. [online] Available at: https://www.gov.uk/guidance/anglian-river-basin-district-river-basin-management-plan-updated-2022 [Accessed 10 October 2025]

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

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

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

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

1.3.7. Regulation 33 of the Water Environment Regulations 2017 (i.e. the WFD) states that public bodies "must, in exercising their functions so far as affecting a river basin district, have regard to - (a) the river basin management plan for that district as approved under regulation 31, and (b) any supplementary plan prepared under regulation 32." The Scheme must therefore reflect water body improvement priorities as outlined in the Anglian RBMP[3].

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

2. Methodology

2.1. WFD Methodology

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

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

- Environment Agency (2016a). Water Framework Directive risk assessment. How to assess the risk of your activity[4].
- Environment Agency (2016b). Protecting and improving the water environment. Water Framework Directive compliance of physical works in rivers[5].
- The Planning Inspectorate (2024), Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive[6].

2.1.3. A stepwise approach consisting of screening, scoping and impact assessment phases is generally followed in order to: (a) rationalise the levels of WFD assessment and impact mitigation that are required; and (b) verify that proposals meet the requirements of the WFD. The general approach is described by the Planning Inspectorate (2024): Advice on the Water Framework Directive[7] and briefly summarised below. The stepwise approach means that not all WFD assessment stages are necessarily required.

[4] Environment Agency, (2016a). Water Framework Directive risk assessment: How to assess the risk of your activity. [online] Available at: https://www.gov.uk/government/publications/water-framework-directive-how-to-assess-the-risk-of-your-activity [Accessed 11 August 2025].

[5] Environment Agency (2016b). Protecting and improving the water environment. Water Framework Directive compliance of physical works in rivers.

[6] Planning Inspectorate, (2024). *Advice on the Water Framework Directive.* Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive [Accessed 10 October 2025]

[7] Planning Inspectorate, (2024). *Advice on the Water Framework Directive.* Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive [Accessed 10 October 2025]

Stage 1: Screening

2.1.4. Screening identifies the extent to which a scheme is likely to affect water bodies. Where impacts are 'screened out' from further assessment, this is clearly justified.

2.1.5. The screening stage:

- Shows all relevant WFD water bodies on a map or plan.
- Identifies the zone or zones of influence based on specific activities and/or characteristics of a scheme that could affect the identified water bodies.
- Identifies any specific activities and/or characteristics of the scheme that have been screened out and why.

2.1.6. Screening may find that no further consideration of WFD matters is needed. For example, where water bodies are not located within the scheme's zone of influence or where no impact pathways exist

Stage 2: Scoping

2.1.7. After screening, the scope of further assessment is determined if required. The scoping stage involves:

- An initial assessment to identify the risks from a scheme to receptors within the zone of influence, based on the relevant water bodies and their water quality elements.
- Identification of those water bodies where a more detailed impact assessment is needed.

2.1.8. The scoping stage of the stepwise approach is included in this report.

Stage 3: Impact Assessment

2.1.9. The impact assessment is a detailed assessment of the water bodies and activities carried forward from the WFD screening and scoping. It is set within the context of the appropriate RBMPs and includes:

- Identification of water bodies that are potentially affected, directly or indirectly, or at risk from a scheme.
- The baseline characteristics of the water bodies affected.
- A description of the scheme and the aspects of the scheme considered within the scope of the WFD assessment.
- The methods used to determine and quantify the scale of WFD impacts.

- An assessment of the risk of deterioration, where Article 4.7 may apply if the scheme may risk deterioration in status or prevent achievement of good status.
- An explanation of any mitigation required and how it is secured.
- An explanation of any enhancements and/or positive contributions to the RBMP objectives proposed and how they would be secured.
- Where a derogation is required, information to justify the case for derogation.
- Identification of any areas of non-compliance.

2.2. Mitigation Commitments

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

2.3. WFD Compliance Checks

2.3.1. All of the staged assessments summarised above consider potential risk sources, pathways and receptors with regards to the following checks for compliance with WFD objectives:

- works will not lead to deterioration in the quality of a water body.
- works will not prevent the future improvement of a water body.
- works will not significantly impact a protected nature conservation area or priority habitat.
- works will not significantly impact a protected or priority species.
- potential cumulative impacts have been considered.
- opportunities have been sought to improve the water environment.

2.4. WFD Derogation

2.4.1. Where WFD impact assessment identifies potential risks to WFD objectives that cannot reasonably be avoided or mitigated, the legislation includes mechanisms for derogation. WFD Regulation 17 and Regulation 19 set out stringent and 'last resort' planning and legal processes for WFD derogation that are case specific and beyond the scope of this assessment. Case review of any proposed

justification by an applicant would be a matter for the Secretary of State, and is likely to require a substantial body of multi-disciplinary evidence.

2.5. Desk study

2.5.1. A desk-based study was carried out to capture information pertaining to the Scheme and support the understanding of water environment baseline conditions. Review of relevant information relating to the Study Area was undertaken to develop a baseline overview for WFD catchments, water bodies and surrounding areas.

2.5.2. For a full summary of the baseline conditions for the Study Area refer to **ES Chapter 11: Hydrology and Flood Risk** (Doc Ref. 6.1).

2.6. Field survey

2.6.1. A site walkover was undertaken of the Grid Connection Route, Solar Development Areas and Inter-Array Connections on 21 July 2025 to establish baseline conditions of water bodies local to the Scheme.

2.6.2. The walkover focused on surface water bodies in the Study Area, observing their current character and condition, the presence of existing risks and any potential pathways for construction and operation impacts from the Scheme.

2.7. Assumptions and Limitations

2.7.1. This WFD assessment is based on the Scheme design set out in **ES Chapter 2: The Scheme** (Doc Ref. 6.1). Where optionality and/or flexibility has been retained in Scheme design for the detailed design stage, reasonable assumptions as to a worst-case scenario to assess have been made and these are described at relevant points within this assessment.

2.7.2. There may be minor ephemeral drainage channels which are within the Study Area which may not have been identified during the site visits. A desk study was undertaken to identify any additional mapped watercourses within the study area. Although it should not be ruled out that there are no additional unmapped watercourses that are present within the Study Area. Additionally, not all minor water features could be visited during the Site visit. However, by their nature their importance will be low and thus significant effects are unlikely.

2.7.3. For new permanent access crossings, options for culverting and bridge crossings will be considered at detailed design stage. However, for worst case assessment within the ES and this WFD report, the use of culverts is assumed and it is

expected that where culverts are necessary, the least impacting design that is reasonably practicable is proposed (e.g. arch rather than box culverts, and box culverts in preference to pipes).

2.7.4. For any temporary access crossings, the design will also be carried out post-DCO consent. However, the reasonable worst case option would be pipe culverts for the smaller watercourses, with clear span structures for any large watercourses, and these are what has been assessed. Note that these would be temporary structures and would be removed following completion of the works and the watercourse reinstated. A Pre-Works Hydromorphology and Riparian Corridor Survey is proposed to inform reinstatement. Enhancement will be considered, but this is subject to agreement with the Internal Drainage Boards and this for now has not been included in the final appraisal of compliance.

2.7.5. It is assumed that there will be two trenchless watercourse crossings within the Solar Development Area, however any other cabling to be carried across smaller watercourses and ditches is assumed to be subject to trenched crossings for the assessment of effects on water environment within the ES and this WFD report.

3. WFD Screening and Scoping

3.1. WFD Screening Overview

3.1.1. The purpose of the WFD screening stage, as outlined in the Planning Inspectorate's guidance Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive[6], is to identify a zone of influence of the Scheme and to determine whether that influence has the potential to adversely impact upon WFD water body receptors. This approach has been taken in this assessment and is outlined below.

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

3.1.3. The screening stage also identifies specific activities of the Scheme that could affect the water body WFD status of receptors, and which should be carried forward to subsequent stages of the assessment process. Justification is provided where water body receptors are screened out and are not carried forward through the assessment.

3.2. Screening of WFD Water Bodies

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

Table 3-1: Screening of WFD water bodies potentially impacted by the Scheme

Water body	Justification	Outcome
Welland - confluence Greatford Cut to tidal	Solar Development Area Land Parcels A-1, B-1, B-2, B-3, C-1 and C-2 (see **ES Figure 1-2** (Doc Ref. 6.2)) and the Underground Inter-Array Connection between Solar Development Areas A	Screened In

Water body	Justification	Outcome
	and B lie within this WFD water body catchment. Numerous 'watercourse crossing points' for permanent access tracks are proposed to be constructed across these areas, which may involve physical modification of watercourses with installation of a culvert or a bridge. Crossing locations also pose a risk of fine sediment and chemical contamination. Installation of underground cabling is also proposed, which may involve modification of watercourses and risk of fine sediment release. These impacts have the potential to affect main watercourses and, therefore, the works have the potential to impact its WFD status and objectives.	
Vernatt's Drain	This water body catchment is located approximately 200m west of the proposed works, on the opposing left bank of the River Welland (the River Welland is located within Welland - confluence Greatford Cut to tidal water body). Despite its proximity, the Vernatt's Drain water body is not directly hydrologically connected to the proposed works as the Vernatts Drain flows north-east to its only connection with the River Welland approximately 19km downstream (north) of the main site and as a result any environmental impacts from the proposed works are unlikely to impact this water body's WFD status and objectives and therefore it has been screened out.	Screened Out
South Holland Main Drain	B-5, D-1, D-2, D-3, D-4, D-5, D-6 Land Parcels and the Overhead Inter-Array Connection between Solar Development Area Land Parcel C and D and the majority of the Grid Connection Route are located within this water body's catchment area. Numerous 'watercourse crossing points' for permanent access tracks within the Solar Development Area and temporary access	Screened In

Water body	Justification	Outcome
	tracks within the Grid Connection Route are proposed to be constructed across these areas, which may involve physical modification of watercourses with installation of a culvert or a bridge. Crossing locations also pose a risk of fine sediment and chemical contamination. Installation of overhead pylons and underground cabling is also proposed, which may involve modification of watercourses and risk of fine sediment release. These impacts have the potential to affect main watercourses and, therefore, the works have the potential to impact its WFD status and objectives.	
North Level Main Drain	The proposed works will not take place within this water body catchment. It is noted that Solar Development Area C is located approximately 200m north of this water body catchment, on the northern side of the B1166 road which defines the boundary between the Welland - conf Greatford Cut to tidal and the North Level Main Drain water bodies, however the water body is not hydrologically connected to the proposed works. Therefore, works are unlikely to impact this water body, and it has therefore been screened out.	Screened Out
Glens	This WFD water body catchment is within 1km boundary of the Scheme, however, it is not crossed by the Order Limits nor is it hydrologically connected to the Scheme therefore can be screened out of further assessment.	Screened Out
Moulton River	The Grid Connection Route is located within this water body catchment. Numerous temporary access track crossings over watercourses will be constructed across this catchment. These will involve physical modification of watercourses with installation of a culvert or a bridge. Crossing locations also pose a risk of fine sediment and	Screened In

Water body	Justification	Outcome
	chemical contamination. Installation of overhead pylons is also proposed, which presents the risk of fine sediment release during construction of the pylons and supporting foundations. These impacts have the potential to affect watercourses within the catchment and, therefore, the works have the potential to impact its WFD status and objectives.	

3.2.2. A map of the Scheme in relation to the screened in water bodies above can be seen in **ES Figure 11-5** (Doc Ref. 6.2), and the WFD classification data for the screened in water bodies can be seen in Table 3-2.

Table 3-2: WFD summary for screened in WFD water bodies

WFD Parameter	Status/Summary		
Water Body ID	GB205031050685	GB205032050405	GB205031050755
Water Body Name	Welland – conf Greatford Cut to tidal Water Body	South Holland Main Drain	Moulton River
Water Body Type	River	River	River
Water Body Area (km^2)	71.2	169.37	24.28
Water Body Length (km)	33.25	36.12	5.56
Hydromorphological Designation	Heavily modified	Artificial	Artificial
Ecological Status or Potential	Moderate	Moderate	Moderate
Current Overall Status	Moderate	Moderate	Moderate
Biological Quality Elements	Good	Poor	N/A

WFD Parameter	Status/Summary		
Physico-chemical Quality Elements	Moderate	Moderate	Bad
Hydromorphological Quality Elements	Not high	Not high	Not high
Chemical	Does not require assessment	Does not require assessment	Does not require assessment

3.3. Screening of Activities

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

Table 3-3: Screening of the Scheme Against WFD water bodies

Activity	Description	Screening Outcomes	Justification
Solar PV modules and mounting structures	The minimum height of the lower edge of the solar PV module above ground level is 0.8m. In areas with higher potential for flooding, the maximum height of the lower edge of the solar PV module above ground level is 1.3m. Each row of solar PV modules would be mounted on a rack made of galvanised steel or other suitable design material available at the time of construction. Module mounting structure would be either mounted via galvanised steel poles driven into the ground, or on 'feet' supported on concrete footings. If via poles driven into the ground, this would be to a maximum depth of 3.5m, depending on ground conditions. This is the preferred method. The support legs for the solar PV Modules are located in pairs with one at the lower end of the panel, and the other at the higher end. These are spaced every 3-5m.	Out Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	Solar PV Panels and mounting structures would not be installed within 10m of watercourses; therefore, there are unlikely to be any direct hydromorphological impacts to these water bodies. During operation, there will be no pollution risk from runoff as Solar PV Panels do not contain any liquid (hazardous or not) that could contaminate rainwater. Where materials containing per-and polyfluoroalkyl substances (PFAS) are used, they will be embedded inside sealed layers that are not susceptible to leaching. These are chemically inert solid fluoropolymers and would not contaminate rainwater. Solar PV Panels are required to be cleaned once a year. This will use clean water

Activity	Description	Screening Outcomes	Justification
	If on feet, concrete pads would be installed at a depth below ground level up to approximately 0.3m. No concrete footings will be installed in areas of Flood Zone 3a and 3b.		with no added chemicals, sourced from local, third party, commercial potable water suppliers. In order to limit the potential for channelisation from rainfall dripping off the end of the panels, the areas between, under and surrounding the Solar PV Panels would be planted with native grassland. This planting would intercept and absorb rainfall running off the panels, preventing it from concentrating and potentially forming channels in the ground. The land will no longer require any fertilisation or other treatments for crop growing, therefore the current pollution associated with agriculture will be removed.

Activity	Description	Screening Outcomes	Justification
Solar stations: Inverters, Transformers and Switchgear	Solar stations would comprise of inverters, transformers and switchgear enclosed within container units. The maximum dimensions per solar station would be up to approximately 3.5m wide, 3.5m in height, and 16m in length, representing a maximum total footprint of 56m^2. The maximum height of any plinths used to raise solar stations above flood depths will be 0.8m. If the plinths do not raise the solar stations above the worst-case flood depths and provide 0.3m freeboard, the solar stations will either be bunded or a flood defense wall will be provided. This is with the exception of Parcel D-1, where the maximum height of plinths can be up to 1.35m and 0.6m freeboard would be provided for any solar stations located within the South Holland Main Drain Catchment Flood Zone 3b extent. Solar stations would be sited on a concrete foundation with a maximum	<u>Out</u> Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	Supporting infrastructure would not be located within close proximity (<10m) of surface water bodies so there is no mechanism for direct hydromorphological or water quality impacts to surface water bodies. Solar stations would be mounted on concrete foundations which would increase impermeable surfaces within the Order Limits leading to potential increase in surface water runoff. An FRA and Outline Drainage Strategy are provided as **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref. 6.3) and **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3), to provide for the attenuation of surface water runoff from areas of hardstanding associated with the solar stations. In

Activity	Description	Screening Outcomes	Justification
	depth of 2m, or piles to a maximum depth of 4m.		accordance with planning policy guidance, runoff from the Scheme would be attenuated to ensure no increase in surface water discharge rates, and suitable drainage measures provided to provide water quality treatment of runoff water. Therefore, this activity can be screened out of further assessment.
BESS Compound and 400kV Substation comprising: • A maximum area of 160m x 255m for the BESS compound; • A maximum area of 230m x 170m for the 400kV substation area; • Bunding around the 400kV substation	The BESS Compound and 400kV On-Site substation would be supported by electrical equipment including but not limited to inverters and switchgear, control, welfare and storage buildings, BESS fire suppression system, and parking including emergency vehicle rendezvous points. Switchgear would be required to help control, protect and isolate the BESS ensuring efficient operation and safety. The switchgear would assist with	Out Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	The BESS Compound is located more than 20m from the nearest surface water body, and so there are no mechanisms for hydromorphological impacts to surface. An FRA and Outline Drainage Strategy are provided as **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref. 6.3) and **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3), to provide for

Activity	Description	Screening Outcomes	Justification
and BESS areas, with a maximum height of 1.7m above ground level.	protection against overloads and faults within the BESS helping maintain stability. BESS units would be enclosed within containers, with maximum dimensions of 8m in length, 2m in width and 4m in height. Structural components of BESS units and the On-Site 400kV Substation would each be sited on a concrete foundation slab with a foundation depth up to 2m, or a piling solution may be required, depending on the results of geotechnical surveys. If this is the case, piles to a maximum depth of 12m would be used.		the attenuation of surface water runoff from areas of hardstanding associated with the BESS Compound. In the unlikely event of a malfunction to one of the BESS Containers, there is a range of integrated controls that would activate depending on the extent and severity of the event. BESS containers would have automatic fire detection systems in place along with fire suppression systems. Water storage tanks and hydrants would be provided to have a storage volume of up to 360,000 litres to allow a discharge rate of approximately 1,500 litres per minute over a 4-hour period. In the case of an incident, fire water would be contained within the attenuated subbase of the

Activity	Description	Screening Outcomes	Justification
			gravel compound by a penstock valve to be pumped out and disposed of off-site by a specialist contractor to ensure the surrounding area is not polluted. Further details regarding management of firewater is outlined in the **Outline Battery Safety Management Plan (OBSMP)** (Doc Ref. 7.18) and Outline Drainage Strategy is provided as **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3) On the basis of these controls, impacts from firewater can be screened out of further assessment.
132kV Substations	Each of the of three 132kV Substation Compounds would include, but not be limited to, the following equipment: • On-Site substation including transformers, switchgear and lightning protection;	Out Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain	The On-Site Substation compounds would not be located within 20m of surface water bodies, therefore there are no mechanisms for hydromorphological impacts to surface water bodies and this

Activity	Description	Screening Outcomes	Justification
	• Control, welfare and storage buildings; and • Parking. The structural components of the On-Site 132kV Substation Compounds would each be sited on a concrete foundation slab with a foundation depth up to 2m, or a piling solution may be required, depending on the results of geotechnical surveys. If this is the case, piles to a maximum depth of 12m would be used. The 132kV Substations will be protected against flooding. Bunding around these substations will be up to 2.5m above ground.	Moulton River	element is screened out of further assessment. An FRA and Outline Drainage Strategy are provided as **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref. 6.3) and **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3), to provide for the attenuation of surface water runoff from areas of hardstanding. Given the above mitigation, there are considered no mechanisms for impacts to surface water bodies.
On-Site Cabling	The majority of cabling will be installed within open cut trenches, with a minimum depth of 0.9m and a maximum depth of up to 2m. Trench width will be	In Welland – conf Greatford Cut to tidal Water Body	Smaller watercourse crossings for On-Site Cabling within the Solar Development Area will be crossed using open cut installation techniques and will

Activity	Description	Screening Outcomes	Justification
	dependent on the number of ducts that they contain. Trenchless crossings may be required at locations where existing watercourses, roads and utilities are crossed. Where trenchless crossings are required, these may include either Horizontal Directional Drilling (HDD) or thrust bore crossings. All watercourse crossings are listed within **ES Appendix 2-1** (Doc Ref. 6.3) and shown illustratively on **ES Figure 2-3** (Doc Ref. 6.2). For trenchless crossings, a maximum depth of 7m has been assumed. A minimum depth of 3m would also apply to any trenchless crossings below watercourses.	South Holland Main Drain Out Moulton River	likely have a temporary impact on hydromorphology of watercourses. There is a potential impact on watercourses within the Welland – conf Greatford Cut to tidal Water Body and the South Holland Main Drain WFD water body so this activity is screened in for further assessment for these water bodies. This activity will not impact on the Moulton River WFD water so can be screened out of further assessment. Water quality impacts related to construction or decommissioning runoff or spillages that have potential to enter watercourses would be adequately mitigated by measures detailed in the **Outline Construction Environmental Management**

Activity	Description	Screening Outcomes	Justification
			Plan (CEMP) (Doc Ref. 7.10), which will include a Water Management Plan (WMP), and **Outline Decommissioning Environmental Management Plan (DEMP)** (Doc Ref. 7.12), which are secured as a Requirement of the DCO.
Grid Connection Route	The Grid Connection would be 400kV and utilise a steel lattice pylon design, with a pylon located approximately every 350m. Each leg of the pylon will be supported by pylon foundations. Depending on ground conditions, this may comprise either a pad and column foundation or a piled foundation. One approximately 325 m long section of underground cabling has been identified within the Grid Connection Route, where it crosses an existing 132kV overhead line. If open cut trenching is used, the underground cable will be installed within	Out Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	In most cases, the construction working area for the bases of the overhead line supporting pylons would be located more than 10 m from the top of bank or the water's edge (whichever is greater) to avoid hydromorphological impacts to surface water bodies. However, there are eight instances where the construction working area of pylons will be located within 10 m of watercourses, as shown in **ES Figure 2-4** (Doc Ref.6.2), although any impacts will be adequately managed by

Activity	Description	Screening Outcomes	Justification
	a trench of up to 1.5m wide and 5m deep. A minimum depth of 0.9m will be maintained above the cable duct. A total width of 60m has been assumed for the undergrounded section. If trenchless crossing method is used, this may include either Horizontal Directional Drilling (HDD), thrust bore crossings or other types of trenchless crossing techniques. The following parameters would apply for the construction of trenchless crossings: • HDD Platform - These will require a granular platform 60m in length, 40m in width and 1m in depth for both drilling and receiving. • Thrust Bore Crossings - These will utilise entry and exit pits with approximate dimensions of 3.0m x 4.0m. For trenchless crossings, a maximum depth of 7m has been assumed. A minimum depth of 3m would also apply to		measures detailed in the **Outline Construction Environmental Management Plan (CEMP)** (Doc Ref. 7.10), which will include a Water Management Plan (WMP), and thus, this element is screened out of further assessment. An FRA and Outline Drainage Strategy are provided as **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref. 6.3) and **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3), to provide for the attenuation of surface water runoff from areas of hardstanding. Given the above mitigation, there are considered no mechanisms for impacts to surface water bodies.

Activity	Description	Screening Outcomes	Justification
	any trenchless crossings below watercourses.		
Inter Array Connections	The Inter-Array Connections would link the land parcels of the Solar Development Area. The Inter-Array Connections would cross roads (local and main roads including the A16 and B1168), watercourses (agricultural drainage ditches) and a series of fields in agricultural use. The Underground Inter-Array Connection between land parcels A and B will utilise an underground cable configuration, to be installed within trenches of up to 2m wide and 2m deep. The cable duct will be a minimum of 0.9m below ground. The total length of the Underground Inter-Array Connection between Land Parcels A and B is approximately 1.1km. Trenched intrusive techniques will be used in most cases. Trenchless crossings may be required at locations where existing watercourses,	In Welland – conf Greatford Cut to tidal Water Body Out South Holland Main Drain Moulton River	Overhead line wood poles would be located more than 10m from watercourses therefore there are no mechanisms for hydromorphological impacts to surface water bodies. Wood poles for the Overhead Inter Array Connections will be located within the South Holland Main Drain water body and therefore this element is screened out of further assessment for this WFD water body. Indicative trench depths for the Underground Inter-Array Connection specify a maximum depth of 2m, although trench depths would increase at crossings or to avoid obstacles.

Activity	Description	Screening Outcomes	Justification
	roads and utilities are crossed. Where trenchless crossings are required (refer to **ES Figure 2-3** (Doc Ref. 6.2) and **ES Appendix 2-1** (Doc Ref. 6.3) for assumed locations), these may include HDD, thrust bore crossings or other forms of trenchless techniques. The Overhead Inter-Array Connection between Land Parcels C and D, will utilise an overhead line configuration. It will comprise a single circuit overhead line, up to 132kV, with wood pole design, located every approximately 120m along the connection route. Open cut, trenched installation methods are typically utilised within open agricultural land. However, trenchless installation methods may be required at locations where existing watercourses, roads and utilities are crossed. Where they are required, these may include either HDD or thrust bore crossings.		Smaller watercourse crossings within the Welland – conf Greatford Cut to tidal Water Body will be crossed using open cut installation techniques and will likely have a temporary impact on hydromorphology of watercourses. Therefore, this activity will be screened in for impacts to the Welland – conf Greatford Cut to tidal Water Body. Water quality impacts related to construction or decommissioning runoff or spillages that have potential to enter watercourses would be adequately mitigated by measures detailed in the **Outline CEMP** (Doc Ref. 7.10), which will include a Water Management Plan (WMP), and **Outline DEMP** (Doc Ref. 7.12),

Activity	Description	Screening Outcomes	Justification
			which are secured as a Requirement of the DCO. The Inter Array Connection does not interact with the Moulton River and therefore this WFD water body can be screened out of assessment for this activity.
Fencing and Security	Deer wire mesh and wooden post security perimeter fence with a height up to approximately 2m would be utilised within the Solar Development Area. Mammal gates would be provided, where required. It is assumed fencing would be directly driven into the ground using a standard post driver with no excavation of foundations. 'Concreting in' of posts would be used in limited circumstances such as tension posts and/or corners. The On-Site Substation Compounds would be enclosed by fencing up to approximately 2.5m in height. Further fencing, up to approximately 3m in height, may be required to further	Out Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	Fencing will not be located within close proximity of surface water bodies (at least 10m away), therefore there are no mechanisms for hydromorphological impacts to surface water bodies and this element is screened out of further assessment. No other runoff or pollutant impacts to surface water bodies, or impacts to groundwater are considered possible from the fencing and security measures.

Activity	Description	Screening Outcomes	Justification
	enclose electrical equipment within each compound. Security lighting with motion detectors is proposed at the On-Site Substation Compounds for security purposes and emergency maintenance. Lighting will not be required for the solar PV modules during the operational phase of the Scheme.		
Access Tracks	<u>Solar Development Area</u> Internal access tracks within the Solar Development Area will facilitate construction and the operation of the Scheme. The majority of these will utilise existing farm tracks, upgrading surfaces as required. The creation of new access tracks will be minimised. The main operational access roads through the Solar Development Area, which will be up to a maximum of 6m wide. Areas where passing places are required will be up to 8 m. 1:2 gradient slopes will be provided on one or both sides. Soil stripping up to a depth of 0.6m (600mm) has been assumed to be required.	In Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	Access tracks would cross surface water bodies by extension/modification of culverts or new culverts (where required) within the Order Limits, providing a source of fine material and other contaminants which may have impacts on WFD water quality and hydromorphology element receptors. The construction of culverts and bridges across water bodies has the potential to impact the hydromorphological quality elements of watercourses and

Activity	Description	Screening Outcomes	Justification
	<u>Grid Connection Route</u> Within the Grid Connection Route, it is proposed for a temporary construction access track to follow the linear alignment to enable the construction works. The indicative design would be up to 21m wide, allowing flexibility for the detailed design stage for the inclusion of a stone access road, passing places, soil stockpile along the tracks, temporary drainage and fencing. Where it crosses watercourses between field parcels, these will be temporary culverts, where new, and likely of a pipe culvert design laid on gravel and a suitable geotextile. Permanent crossings will be in place for operational accesses and for field to highway watercourse crossings. Additionally, where existing culverts have been upgraded for construction access, this would likely be kept in place through the operational phase.		therefore is screened in for further assessment.

Activity	Description	Screening Outcomes	Justification
Surface Water Drainage	The **Outline Drainage Strategy** (refer to **ES Appendix 11-4** (Doc Ref. 6.3)) sets out the design principles for surface water drainage. The design will ensure compliance with planning policy with runoff from the Scheme to be attenuated to ensure no increase in surface water discharge rates and to provide water quality treatment of runoff water. Attenuation in the form of SuDS has been incorporated to control any increase in the rate of flow towards the receiving watercourses. Where possible, surface water will drain from the Scheme's drainage system to local receiving watercourses via a new ditch, or the	In Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	For the Solar Development Area, where practicable, surface water will drain from the Scheme's swale-based drainage system to local receiving watercourses via a new piped outfall or, where possible, via a new open green ditch at the QBar rate to watercourses within the Welland – conf Greatford Cut to tidal Water Body and South Holland Main Drain WFD water body. Therefore, this element is screened in for further assessment for these

Activity	Description	Screening Outcomes	Justification
	piped section will be shortened and the last 10m section of the outfall route will be open ditch unless this affects maintenance of the channel by the Internal Drainage Board. The drainage proposals for the BESS Compound also allows for fire water containment in a lined basin, where it will be held and tested before either being released into the surrounding watercourses or taken off site by a tanker for treatment elsewhere. The basin will then be cleaned of all contaminants. The basin will be underlain with an impermeable liner to prevent any contaminants entering the ground. The Grid Connection Route Surface Water Management Plan within **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3) outlines the principles, requirements and overall strategy for the drainage of surface water runoff from the proposed temporary construction access tracks, the		water bodies. A flow control device at the outlet of the swales will limit the discharge to the greenfield runoff rate for the site. The design has also considered the management of fire water and the likely contaminants associated with it. This means that infiltration is not allowed from the gravelled sections of the drainage system. To prevent potential contamination to the surrounding ground, the gravel basins will be non-infiltrating, underlain with an impermeable liner. Penstocks will also be in place at the outlets from the gravelled areas to hold any fire water in that cell of the system. This allows the stored water to be tested before release or, if necessary, removed by tanker and treated

Activity	Description	Screening Outcomes	Justification
	permanent overhead line (OHL) pylons, the permanent Cable Sealing End Connection (CSEC) compounds and the temporary construction compounds. The construction compounds and CSEC compounds are proposed to drain via gravel filter trenches to a detention basin prior to a restricted discharge to the nearest watercourse. The basins have been sized to retain adequate surface water runoff for the 1 in 100-year (1% AEP) plus climate change event to ensure no flooding occurs downstream and for sufficient time to allow the settlement of sediments and pollutants. The construction access tracks are proposed to drain to roadside swales which have been sized to retain adequate surface water runoff for the 1 in 100-year (1% AEP) plus climate change event to ensure no flooding occurs downstream and for sufficient time to allow the settlement of sediments and pollutants. The discharge of surface water runoff from the swales is proposed to the		offsite. Therefore there would unlikely to be impacts on WFD water bodies from the management of fire water and can be screened out of further assessment. As Solar PV Panels do not contain any liquid (hazardous or not) and where materials containing PFAS are used, they will be embedded inside sealed layers that are not susceptible to leaching, there will be no increase in these substances from surface water drainage within the Solar Development Area and would not impact on WFD water bodies and can be screened out of further assessment. For the Grid Connection Route, the construction compounds and Cable Sealing End Compounds are proposed to drain via gravel filter

Activity	Description	Screening Outcomes	Justification
	nearest appropriate open watercourse. Access tracks for the most part will be temporary and thus upon completion shall be removed.		trenches to a detention basin prior to a restricted discharge to the nearest watercourse. The discharge of surface water runoff from access track swales is proposed to the nearest appropriate open watercourse. This will impact on watercourses within the Welland – conf Greatford Cut to tidal Water Body and Moulton River Water Body, therefore this activity has been screened in for these WFD water bodies.
Foul Drainage	Once the Solar Development Area is operational, foul water drainage will be required for the staffed control buildings within the On-Site Substation Compounds. These buildings will only be used by a small number of staff (estimated 10 operational employees); therefore, the anticipated foul flows from the building will be low. The foul water flows will be captured by a sealed cesspit,	Out Welland – conf Greatford Cut to tidal Water Body South Holland Main Drain Moulton River	The foul water flows will be captured by a sealed cesspit, from where waste can be regularly pumped out by a specialist contractor for off-site disposal at a licenced waste facility (i.e. no discharges to ground or a watercourse are proposed). Therefore, there will be no

Activity	Description	Screening Outcomes	Justification
	from where waste can be regularly pumped out by a specialist contractor for off-site disposal at a licenced waste facility (i.e. no discharges to ground or a watercourse are proposed).		impact on WFD water bodies from this activity and this activity can be screened out of further assessment.
Areas of habitat management and permissive paths	Areas of habitat management areas, including landscaping, biodiversity and heritage mitigation and enhancement measures, will be established and managed in accordance with the **Outline Landscape and Ecological Management Plan (OLEMP)** (Doc Ref. 7.16).	Out	Landscape and biodiversity enhancements would not impart direct impacts to WFD quality element receptors. Replacing existing and use practices such as arable farming with native grasses would have indirect benefits to WFD receptors; therefore, this element is screened out of further assessment.

3.3.2. As per the assessment outlined in Table 3-3, the following components are deemed not to present a risk to the WFD status of any water bodies that interact with the Scheme and therefore are screened out with the application of embedded design mitigation (e.g. appropriate drainage and spillage risk prevention measures):

- Solar PV modules and mounting structures.
- Solar stations: inverters, transformers and switchgear.
- BESS and 400kV substation.
- 132kV substations.
- Grid Connection Route.
- Fencing and security.
- Areas of habitat management and permissive paths.

3.3.3. Four components were deemed to present a risk to the WFD status of some water bodies that interact with the Scheme and require scoping.

- On-site cabling is screened in for the following water bodies:
    - Welland – conf Greatford Cut to tidal Water Body.
    - South Holland Main Drain.
- The Inter-Array Connections are screened in for the following water bodies:
    - Welland – conf Greatford Cut to tidal Water Body.
- Access Tracks are screened in for the following water bodies:
    - Welland – conf Greatford Cut to tidal Water Body.
    - South Holland Main Drain.
    - Moulton River.
- Surface Water Drainage is screened in for the following water bodies:
    - Welland – conf Greatford Cut to tidal Water Body.
    - South Holland Main Drain.
    - Moulton River.

3.4. WFD Scoping

3.4.1. The WFD scoping stage defines the level of detail required for further WFD assessment. This includes identifying risks to the WFD receptors from the Scheme's components that were screened in as per Table 3-3. The scoping stage assessment is presented in Table 3-4-4.

Table 3-4: WFD Scoping of the Scheme's Components and Activities Against WFD Quality Elements

Water Quality Element	Scoping outcome	Justification
Biological Quality Elements		
Fish	In	Temporary blockages in longitudinal connectivity from watercourse crossings. Potential direct impact on fish populations from disturbance of the bed and/or release of contaminated construction site runoff. Potential for spread of invasive non-native species.
Invertebrates	In	Crossings of water bodies may cause direct mortality of invertebrates or the smothering of habitat with fine sediment and may interrupt continuity of invertebrate communities. Potential for spread of invasive non-native species.
Macrophytes and Phytobentos Combined	In	Crossings of water bodies may cause the removal of macrophytes, and removal of the bed or macrophytes supporting phytobenthos.
Physico-chemical Quality Elements		
Thermal conditions	Out	Intrusive crossing may alter the level of shading to water bodies following potential riparian vegetation removal, watercourse crossings for site access will also locally cause shading. However, this will be at a very local scale and would not alter the water body temperature.

Water Quality Element	Scoping outcome	Justification
Oxygen conditions	Out	Crossings of water bodies may increase loads of fine sediment and organic material to water bodies and decrease levels of dissolved oxygen. However, the **Outline CEMP** (Doc Ref. 7.10) and **Outline DEMP** (Doc Ref. 7.12) prescribes measures for controlling potential loads of fine sediment to the watercourse during construction / decommissioning.
Salinity	Out	During operation, surface water runoff from the Scheme may contain pollutants derived from impermeable surfaces (e.g. inert particulates, litter, hydrocarbons, metals, nutrients and de-icing salts) that may alter the salinity of water bodies. However, the **Outline OEMP** (Doc Ref. 7.11) and **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3) prescribes measures for controlling potentially polluting materials during construction and operation.
Acidification status	Out	The **Outline CEMP** (Doc Ref. 7.10) and **Outline DEMP** (Doc Ref. 7.12) prescribes measures for controlling potentially polluting materials during construction/decommissioning that have the potential to alter pH (e.g. cementitious substances).
Nutrient conditions	Out	Crossings of water bodies may increase sediment loads to watercourses and organic material from site clearance works. However, the impact will be localised, short term and temporary. Overall, the Scheme will likely reduce the flux of agricultural diffuse pollutants (sediment and excess nutrients) into watercourses as they flow through the Order Limits. Water quality impacts related to construction or decommissioning runoff or spillages that have potential to enter watercourses would be adequately mitigated by measures

Water Quality Element	Scoping outcome	Justification
		detailed in the **Outline CEMP** (Doc Ref. 7.10) and **Outline DEMP** (Doc Ref. 7.12).
Hydromorphological Supporting Elements		
Quality and Dynamics of Flow	Out	There is no mechanism for non-intrusive cable crossing to impact this element. There is the potential for intrusive cable crossings to impact on this WFD quality element. However, it is unlikely that there would be impacts beyond the short duration of the works and would be mitigated by measures detailed in the **Outline CEMP** (Doc Ref. 7.10). These measures include that intrusive crossings will preferably be carried out during periods of low flow or when the channel is dry. Where this is not possible, water flow will be maintained by installation of a pipe or flume or by over-pumping the flow for the relatively short duration of the works. New culverts or culvert extensions could have minor impacts on flow dynamics at a very local scale but as crossings will be over artificial, trapezoidal channels of low hydromorphological quality, impacts would not have significance at the WFD water body scale.
Connection to Groundwater Bodies	Out	Cables will cross beneath water bodies and other infrastructure but as there are no groundwater bodies in underlying the Scheme, this element will not require further assessment.
River Continuity	Out	Crossings will present a temporary blockage to continuity whilst excavation takes place. Watercourse crossings for Site access can also interrupt river continuity. However, the culverts will be sized at detailed design in order to not impact on flow conveyance and be sized to ensure capacity for the peak flow rate. Also to be

Water Quality Element	Scoping outcome	Justification
		considered at detailed design stage is to ensure the crossing is perpendicular to the flow, and connectivity is maintained for aquatic species and riparian mammals, with a mammal ledge if there is sufficient room. Perched inverts that create a drop from the structure to the downstream bed level will be avoided. There is no mechanism for non-intrusive crossings to affect this quality element.
River Depth and Width Variation	In	Crossings may lead to local changes in channel profile to impact this element. It is expected that where culverts are necessary, the least impacting design that is reasonably practicable is proposed (e.g. arch rather than box culverts, and box culverts in preference to pipes etc.).
Structure and Substrate of the Riverbed	In	Crossings may lead to local changes in bed substrate to impact this element. Watercourse crossings for site access can present an interruption to the natural bed substrate. It is expected that where culverts are necessary, the least impacting design that is reasonably practicable is proposed (e.g. arch rather than box culverts, and box culverts in preference to pipes etc.). New pipe outlets would result in some temporary disturbance to the bed and banks.

4. WFD Impact Assessment

4.1. Construction Impacts

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

- Pollution of surface water due to deposition or spillage of soils, sediments, oils, fuels, or other construction chemicals, or through uncontrolled site run-off;
- Temporary and permanent impacts on the hydromorphology of watercourses from works to culverts and over-pumping during intrusive trench crossings;
- Potential for the spread of INNS that could impact on fish and invertebrates;
- Temporary changes in flood risk from changes in surface water runoff (e.g., disruption of stream flows during any potential culvert construction works) and exacerbation of localised flooding, due to deposition of silt, sediment in drains, ditches; and
- Changes in flood risk due to temporary impermeable surfaces, which may alter runoff from the site.

4.2. Construction Mitigation

4.2.1. Where possible, potentially significant adverse impacts will be avoided through embedded design measures. Construction phase impacts will likely be mitigated through the implementation of standard construction techniques and mitigation measures, as are described in a wide range of good practice publications.

4.2.2. An **Outline CEMP** (Doc Ref. 7.10) has been prepared as part of the DCO application and sets out the mitigation measures that would be undertaken during construction. The **Outline CEMP** (Doc Ref. 7.10) will be used as the basis for the contractor to prepare a detailed CEMP prior to construction and following the detailed design of the Scheme.

4.2.3. The CEMP will be supported by a Water Management Plan (WMP) (which will be produced post-consent) that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction.

4.2.4. A Pre-works Hydromorphology and Riparian Corridor Survey (as described in the **Outline CEMP** (Doc Ref 7.10)) of the channel affected by temporary construction access will be undertaken prior to construction. The pre-works survey is to ensure that there is a formal record of the condition of each watercourse prior to commencement of works to install cables beneath the channel. The survey is a precautionary measure so that should there be any unforeseen adverse impacts there is a record against which any remedial action can be determined.

4.2.5. All new temporary crossings will be removed after completion of the construction works, however where existing crossing are upgraded, these would be left in place. Where crossings are removed, watercourses will be reinstated, informed by a Pre-works Hydromorphological and Riparian Corridor Survey. Reinstatement will aim to provide an improved channel form with enhancement works to be carried out (where relevant and appropriate to do so) between 5m and 15m upstream and downstream of the open trench or culverted access track crossing (within an easement of 15m either side) to ensure the reinstated improved channel form merges into the existing channel form. It is anticipated that enhancements will consist of soft engineering techniques (where suitable) and improvements to the riparian corridor to improve channel diversity and biodiversity. This is secured within the **Outline CEMP** (Doc Ref 7.10). However, any enhancement would be subject to agreement with the local IDBs who manage the watercourses, and would need to be compatible with any future planned works and routine maintenance.

4.2.6. Where an engineered outfall is required, the following standard mitigation will be adopted:

- The design of the final connection of these ditches to the receiving watercourse will be done post-planning permission and during applications for Secondary Consents where not disapplied or otherwise in accordance with Protected Provisions.
- Outfalls (and ditches) will be angled downstream to meet the channel at between 30° and 60° angle downstream, with the topography of the bed of the ditch graded to the bed level in the receiving watercourse.
- The number and size of engineered outfalls will be kept to a minimum.
- They would be located to avoid the apex of any meandered or significant changes in channel sinuosity, recessed slightly into the bank so as not to protrude into the channel and to avoid the creation of 'dead spaces'.
- It is expected that pre-fabricated headwalls can be used avoiding the need to pour wet concrete close to a watercourse.

4.2.7. Access tracks would cross surface water bodies by extension/modification of culverts or new culverts (where required) within the Order Limits, providing a source of fine material and other contaminants which may have impacts on WFD water quality and hydromorphology element receptors.

4.2.8. The construction of culverts and bridges across water bodies has the potential to impact the hydromorphological quality elements of watercourses and therefore is screened in for further assessment.

4.2.9. It is expected that where culverts are necessary, the least impacting design that is reasonably practicable is proposed (e.g. arch rather than box culverts, and box culverts in preference to pipes etc.). The crossings will be sized at detailed design in order to not impact on flow conveyance and be sized to ensure capacity for the peak flow rate. Also at detailed design stage the crossing will be designed to be (where practicable) perpendicular to the flow, and ensure connectivity is maintained for aquatic species and riparian mammals, with a mammal ledge if there is sufficient room. Perched inverts that create a drop from the structure to the downstream bed level will be avoided.

4.2.10. Where new watercourse crossings for access tracks in the form of bridges are required, these would follow the below design principles:

- Soffit height of the bridge must be a minimum of 0.6m (600mm) above the 1 in 100yrs + Climate change allowance flood level
- All abutments must be set back a minimum 1m from the top of bank and as minimal as possible
- All parapets and railings need to be permeable and open as possible with a minimum 0.1m (100mm) spacing.

4.2.11. The measures outlined below, which are included in the **Outline CEMP** submitted alongside the DCO application (Doc Ref. 7.10), will be required for the management of fine particulates in surface water runoff that may occur as a result of the construction activities:

- All reasonably practicable measures will be taken to prevent the deposition of fine sediment or other material in, and the pollution by sediment of, any existing watercourse, arising from construction activities. The measures will accord with the principles set out in industry guidelines including the Construction Information Research and Information Association (CIRIA)

report 'C532: Control of water pollution from construction sites[8] and CIRIA report 'C648 Control of water pollution from linear construction sites[9].

- A temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment. This will include identifying all land drains and water features in the Site and ensuring that they are adequately protected using drain covers, sand or pea gravel bags (the latter being more appropriate in or near watercourses), earth bunds, temporary lagoons, tanks, geotextile silt fences, straw bales, silt screens, and silt mats etc., or proprietary treatment (e.g. lamella clarifiers or flocculation if absolutely necessary and with the appropriate approvals from the Environment Agency) and road sweepers or wheel washes on entry and exit to the site. Infiltration to ground (e.g. by spraying water onto grass fields may also be an option). Consideration of the type of plant used, seeding or covering earth stockpiles, and the timing of works are all important factors contributing to the generation of fine sediment in runoff. Infiltration to ground (e.g. by spraying water onto grass fields may also be an option).
- Scheme construction foul drainage will provide appropriate pollution control measures as agreed with the sewerage undertaker or the Environment Agency as appropriate. Holding or settling tanks, separators and other measures as may be required, will be provided and maintained.
- The relevant sections of BS 6031: Code of Practice for Earthworks[10] will be followed for the general control of site drainage.
- Where practical, earthworks will be undertaken during the drier months of the year. When undertaking earth moving works periods of very wet weather will be avoided, where practicable, to minimise the risk of generating runoff contaminated with fine particulates. However, it is likely that some working during wet weather periods will be unavoidable, in which case other mitigation measures (see below) will be implemented to control

[8] CIRIA C532 (2001) Control of water pollution from construction sites – Guidance for consultants and contractors. Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532&Category=BOOK

[9] CIRIA 648 (2006) Control of water pollution from linear construction projects, technical guidance. Available at:https://cis.ihs.com/cis/document/279111

[10] British Standards Institute (2009) BS6031:2009 Code of Practice for Earth Works. Available at: https://knowledge.bsigroup.com/products/code-of-practice-for-earthworks

fine sediment laden runoff. Water may also be required to dampen earthworks during dry weather to reduce dust impacts, and any runoff generated will need to be appropriately managed by the Contractor in accordance with the pollution prevention principles described in this chapter.

- To protect watercourses from fine sediment runoff, topsoil/subsoil will be stored a minimum of 20m from watercourses on flat lying land. Where this will not be practicable, and it is to be stockpiled for longer than a three-week period, the material will either be covered with geotextile mats, seeded to promote vegetation growth, or runoff prevented from draining to a watercourse without prior treatment.
- Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided.
- Construction site runoff will either be treated on Site and discharged under a Water Discharge Activity Permit to Controlled Waters from the Environment Agency (potentially also including infiltration to ground though this is unlikely to be suitable based on the geology of the area) or to the nearest public sewer with sufficient capacity for treatment following discussions with Anglian Water, or else removed from site for disposal at an appropriate and licensed waste facility.
- Equipment and plant are to be washed out and cleaned in designated areas within the Scheme compounds only, where runoff can be isolated for treatment before disposal as outlined above.
- Mud deposits will be controlled at entry and exit points to the Site using wheel washing facilities and/or road sweepers operating during earthworks activities or other times as required.
- Debris and other material will be prevented from entering surface water drainage, through maintenance of a clean and tidy site, provision of clearly labelled waste receptacles, grid covers and the presence of site security fencing.
- A Silt Management Plan will be produced as part of the detailed CEMP.
- The WMP (which will be produced post consent) will include details of pre, during and post-construction water quality monitoring. This will be based on a combination of visual observations and reviews of the Environment Agency's automatic water quality monitoring network.

4.2.12. The measures outlined below will be implemented to manage the risk of accidental spillages within the Scheme, and the various construction compounds, and potential conveyance to nearby water features via surface runoff or land drains. The following mitigation measures related to the control of spillages and leaks are included within the **Outline CEMP** submitted alongside the DCO application (Doc Ref. 7.10) and will be adopted during the construction works:

- Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002[11], and the Control of Pollution (Oil Storage) (England) Regulations 2001[12]. Particular care will be taken with the delivery and use of concrete and cement as it is highly corrosive and alkaline.
- Fuel and other potentially polluting chemicals will either be in self-bunded leak proof containers or stored in a secure impermeable and bunded area (minimum capacity of 110% of the capacity of the containers, which includes 10% more capacity than is needed).
- Any plant, machinery or vehicles will be inspected before every use and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance and any repairs are to take place off site if possible or, if on-site, only at designated areas within the site compounds. Only construction equipment and vehicles free of all oil/fuel leaks will be permitted on the Site. Drip trays will be placed below static mechanical plant.
- All washing down of vehicles and equipment will take place in designated areas and wash water will be prevented from passing untreated into watercourses.
- All refuelling, oiling and greasing of plant will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling.
- As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses.

[11] https://www.legislation.gov.uk/uksi/2002/2677/contents
[12] https://www.legislation.gov.uk/uksi/2001/2954/contents

- All fixed plant used will be self-bunded.
- Mobile plant is to be in good working order, kept clean, fitted with absorbent plant 'nappies' at all times and are to carry spill kits.
- The WMP (which will be produced post consent) will include details for pollution prevention and will be prepared and included alongside the final CEMP. Spill kits and oil absorbent material will be carried by mobile plant and located at high risk locations across the Scheme and regularly topped up. All construction workers will receive spill response training and tool box talks.
- The area of construction will be secure to prevent any vandalism that could lead to a pollution incident. Construction waste/debris are to be prevented from entering any surface water drainage or water body.
- Surface water drains on public roads trafficked by plant or within the construction compounds will be identified and, where there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sand bags) or the road regularly cleaned by road sweeper.
- Suitable facilities for concrete wash water (e.g. geotextile wrapped sealed skip, container or earth bunded area) will be adequately contained, prevented from entering any drain, and removed from the Site for appropriate disposal at a suitably licenced waste facility.
- Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and can be dealt with effectively.

4.2.13. In addition, any site welfare facilities will be appropriately managed, and all foul waste disposed of by an appropriate Contractor to a suitably licensed facility if it is not possible to connect to the public sewer.

4.2.14. Biosecurity measures should be implemented during the construction phase of the Scheme to prevent the introduction and spread of INNS. Workers will be briefed on good biosecurity practices and will be equipped with necessary equipment, PPE and substances to implement biosecurity control measures.

4.2.15. It is anticipated that all WFD construction risks detailed in Section 3 would be adequately mitigated with the above measures. Therefore, there would be no detrimental impact to WFD water bodies during construction.

4.3. Potential Operational Impacts

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

- Impacts on surface water quality from site run-off and the potential for accidental spillages during maintenance activities;
- Impacts on surface water quality as a result of the use of firewater in the event of a fire in the battery storage areas (BESS);
- Impacts on hydrology including subsequent impacts on aquatic habitats and water-dependent nature conservation sites;
- Permanent hydromorphological impacts to watercourses;
- Impact on local water supplies from water usage in a 'water stressed' area;
- Impacts on the rate and volumes of surface water run-off entering local watercourses and subsequent increase in flood risk.

4.3.2. Further details are provided in **ES Chapter 11: Hydrology and Flood Risk** (Doc Ref. 6.1).

4.4. Operational Mitigation

4.4.1. The operation will take place in accordance with the **Outline OEMP** (Doc Ref. 7.11) submitted with the DCO Application. The aim of the Outline OEMP is to provide a clear and consistent approach to the control of operational and maintenance activities within the Order Limits.

4.4.2. The **Outline OEMP (**Doc Ref. 7.11**)** outlines how the operational mitigation measures included within the ES will be implemented and sets out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective.

4.4.3. The key elements of the Outline OEMP include:

- An overview of the Scheme and associated operation programme;
- Prior assessment of environmental impacts (through the EIA);
- Reduction of potential adverse impacts through design and other mitigation measures;
- Monitoring of effectiveness of mitigation measures;
- Corrective action procedure; and

- Links to other complementary plans and procedures.

4.4.4. Permanent impacts to watercourses, including the extension or creation of new crossings, would require compensation enhancements. Where this is a potential impact, mitigation should be provided on a length-for-length basis within the watercourse, i.e., where 10m of a watercourse is impacted, the compensation / improvement of a 10m stretch of the watercourse outside the area of impact would be investigated.

4.5. Potential Decommissioning Impacts

4.5.1. Potential impacts from the decommissioning of the Scheme are similar in nature to those during construction, as some ground works will be required to remove infrastructure installed. The mode of any underground cable decommissioning will be dependent upon Government policy, best practice and landowner agreement at that time. If required, the cables can be removed by opening the ground at regular intervals and pulling the cable through to the extraction point, avoiding the need to open up the entire length of the cable route. Decommissioning impacts would be mitigated by measures set out within the Outline DEMP submitted with the DCO Application.

4.5.2. As a result, it is considered the decommissioning impacts and effects will be no worse than those of the construction phase.

4.5.3. Further details are provided in **ES Chapter 11: Hydrology and Flood Risk** (Doc Ref. 6.1).

4.6. Decommissioning Mitigation

4.6.1. The decommissioning will take place in accordance with the with the **Outline DEMP** (Doc Ref 7.12) submitted with the DCO Application. It details the measures that would be undertaken during decommissioning to mitigate the temporary effects on the water environment.

5. Assessment of the Scheme against WFD

5.1. Assessment against Mitigation Measures

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

5.1.2. The Environment Agency was consulted on water body objectives and Heavily Modified Water Body mitigation measures which are actions that can be implemented by activities to protect and improve the water environment and help achieve the objectives set for each RBMP.

5.2. Assessment against WFD Objectives

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

- Whether the Scheme will cause deterioration in the Ecological Potential or Status of a water body;
- Whether the Scheme will compromise the ability of a water body to achieve Good Ecological Status or Potential;
- Whether the Scheme will cause a permanent exclusion or compromise achievement of the WFD objectives (e.g., mitigation measures) in other water bodies within the same RBD; and
- Whether the Scheme will contribute to the delivery of the WFD objectives (e.g., mitigation measures).

5.2.2. The WFD compliance assessment for the Scheme is summarised in Table 5-1; the Scheme is expected to be compliant with the objectives of the WFD.

Table 5-1: Compliance assessment of the Scheme

Compliance Elements	Water Body Assessment
Deterioration in the status/potential of the water body	The Scheme is not anticipated to cause a deterioration in potential due

Compliance Elements	Water Body Assessment
	to the embedded environmental mitigation.
Ability of the water body to achieve Good Ecological Potential/Status	The Scheme and associated mitigation would not cause deterioration in status of the water bodies and would not prevent the water bodies achieving Good Ecological Potential due to the embedded environmental mitigation.
Impact on the WFD objectives of other water bodies within the same RBD	No downstream or upstream impacts are anticipated associated with the Scheme and the mitigation measures proposed due to the embedded environmental mitigation.
Ability to contribute to the delivery of the WFD objectives	The Scheme does contribute to the delivery of WFD objectives within the Site through enhancements at the re-establishment stage.

6. Conclusion

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

- Welland – conf Greatford Cut to tidal Water Body.
- South Holland Main Drain.
- Moulton River.

6.1.2. It is considered that with embedded and standard mitigation, it is considered that that there would not be a deterioration in WFD status of water bodies. The risks of WFD impacts are low, due to the low quality and low sensitivity of watercourses which have the potential to be affected and it is likely that all WFD risks have be designed out or are mitigated. However, once detailed designs affecting water bodies including appropriate mitigation measures are confirmed (at the post consent, detailed design stage), it is proposed that the WFD Impact Assessment is reviewed to ensure that proposed mitigation measures remain adequate and WFD compliance is maintained.