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Peartree Hill Solar Farm

Environmental Statement

Volume 4

Appendix 5.5: Water Framework Directive Screening and Scoping Report

Revision 3

Planning Act 2008

Infrastructure Planning

(Applications: Prescribed Forms

and Procedure) Regulations 2009 –

Regulation 5(2)(a)

Application Document Ref: EN010157/APP/6.4

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Contents

1 Introduction

1.1 Background

1.1.1 This report provides an assessment of the likely impacts of the proposed Peartree Hill Solar Farm (hereafter referred to as the 'Proposed Development') and if these meet the requirements of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 **[Ref. WFD-1]**.

1.1.2 This report covers stage 1 (Screening) and stage 2 (Scoping) of the Water Framework Directive (WFD) assessment process only.

1.1.3 As explained below, this WFD Screening and Scoping Report is written in conjunction with the **Environmental Statement (ES)**.

1.2 The Proposed Development

1.2.1 The Proposed Development comprises the construction, operation (including maintenance) and decommissioning of a solar photovoltaic (PV) electricity generating facility with a total capacity of up to 320 megawatts (MW) direct current (DC) and export connection to the National Grid.

1.2.2 The principal components of the Proposed Development comprise the following:

- Solar photovoltaic (PV) modules and associated mounting structures;
- On-site supporting equipment including inverters, transformers, direct current (DC)-DC converters and switchgear;
- A battery energy storage system (BESS) including batteries and associated enclosures, monitoring systems, air conditioning, electrical cables and fire safety infrastructure;
- Two on-site 132kV substations, including transformers, switchgear, circuit breakers, control equipment buildings, control functions, material storage, parking, as well as wider monitoring and maintenance equipment;
- Low voltage and 33kV interconnecting cabling within the Land Areas to connect the solar PV modules together and to transmit electricity from the solar PV modules and BESS to one of the two on-site 132kV substations;
- 132 kV underground cables (two 132kV export cables) connecting the on-site substations to the National Grid Creyke Beck Substation;

- Works at the National Grid Creyke Beck Substation to facilitate the connection of the 132kV underground cabling into the substation;
- Associated infrastructure including access tracks, parking, security measures, gates and fencing, lighting, drainage infrastructure, storage containers, earthworks, surface water management, maintenance and welfare facilities, security cabins and any other works identified as necessary to enable the developments;
- Highways works to facilitate access for construction vehicles, comprising passing places where necessary to ensure that heavy goods vehicles (HGVs) can be safely accommodated amongst existing traffic, new or improved site accesses and visibility splays;
- A series of new permissive paths connecting to the existing public right of way network;
- Environmental mitigation and enhancement measures, including landscaping, habitat management, biodiversity enhancement and amenity improvements; and,
- Temporary development during the construction phase of the Proposed Development including construction compounds, parking and laydown areas.

1.2.3 The Proposed Development would be located across six Land Areas (B to F; note that Land Area A has been removed from the Proposed Development), which are identified as follows.

- Land Area B: Land north-west of Long Riston;
- Land Area C: Land west of Arnold;
- Land Area D: Land south of the A1035;
- Land Area E: Land east of Weel; and
- Land Area F: Land north of Wawne.

1.3 Site description

1.3.1 The Proposed Development is located on approximately 891 hectares (ha) of land near the town of Beverley, East Yorkshire (‘the Site’). The Site boundary is defined by the ‘Order Limits’, as shown on.

1.3.2 The majority of the Site is currently agricultural land, predominantly used for arable crops.

1.3.3 The Site is located approximately 11km north of the city of Hull and the Humber tidal estuary, 5km east of Beverley and 13km southwest of the seaside town of Hornsea.

1.3.4 **Figure 1-1** shows the regional context of the Site with the local context shown in **Figure 1-2**.

Figure 1-1 Regional Context

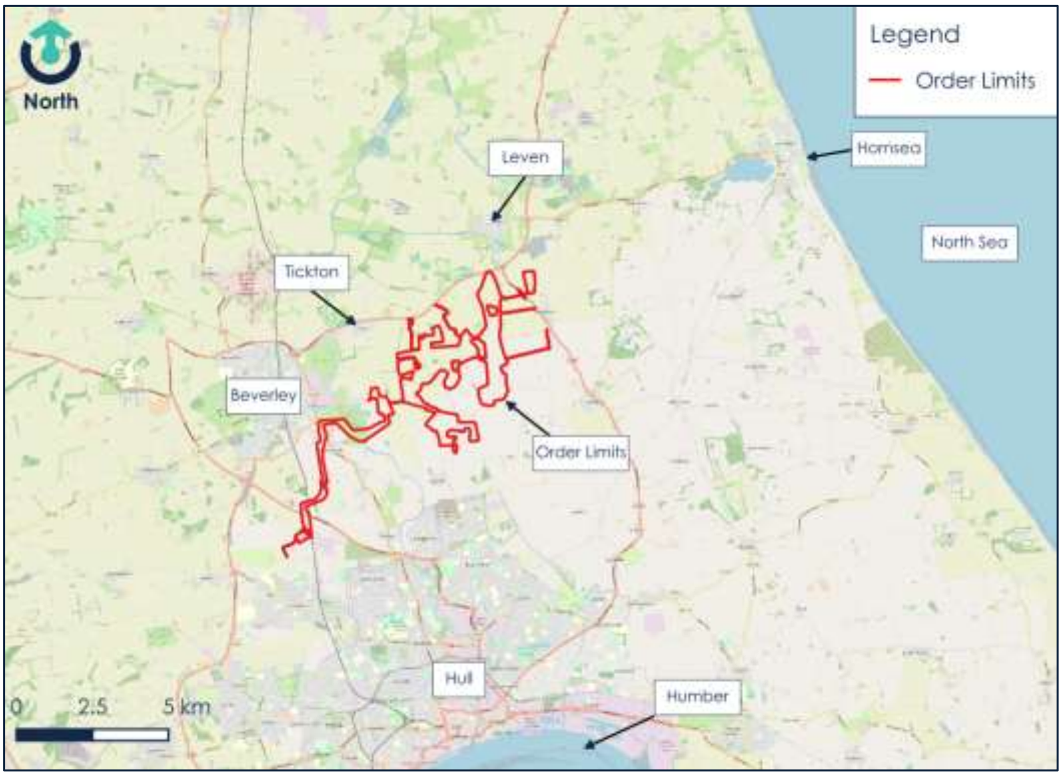
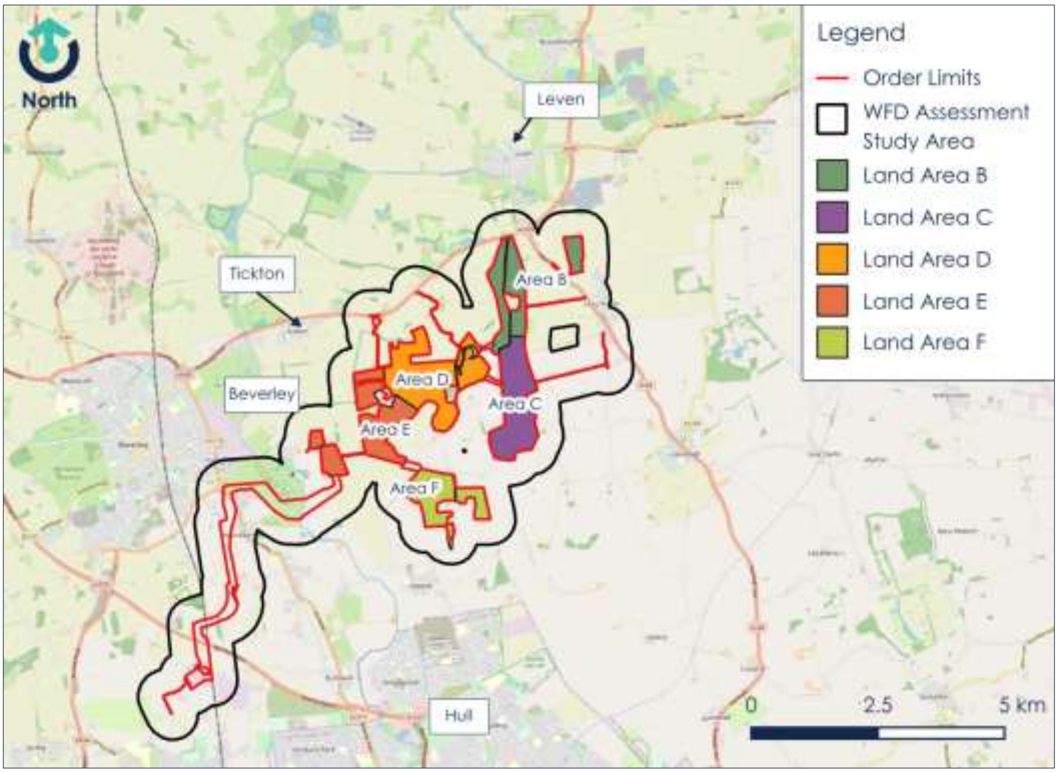


Figure 1-2 Local Context



Topography and Hydrology

1.3.5 There are five Main Rivers located through and around the Site:

- The River Hull, which runs to the west of Land Area E and crosses the Order Limits at the grid connection cable route;
- Beverley and Barmston Drain, which runs to the west of the River Hull and crosses the Order Limits at the grid connection cable route;
- Holderness Drain, which runs adjacent to Land Areas E and F and crosses the Order Limits at the interconnecting cable routes between two sections of Land Area E and between Land Area E and Land Area F;
- The Meaux and Routh East Drain, which runs outside of the Order Limits beside Land Areas B and C and crosses the Order Limits where Land Area B connects to Land Area C and at the interconnecting cable route between Land Area C and Land Area D;
- Monk Dike, which runs within the Order Limits through Land Areas B and C.

1.3.6 All five Main Rivers flow north to south, ultimately towards the Humber just south of Hull (see **Figure 1-3**).

1.3.7 **Figure 1-3** shows the alignment of the five Main Rivers listed above.

1.3.8 In addition to Main Rivers, there is a large network of Ordinary Watercourses within the Site. A significant portion of these watercourses fall under the jurisdiction of Beverley and North Holderness Internal Drainage Board (IDB). The IDB area and Ordinary Watercourses are shown along with the Order Limits in Figure 1-4.

Figure 1-3 Key Main Rivers

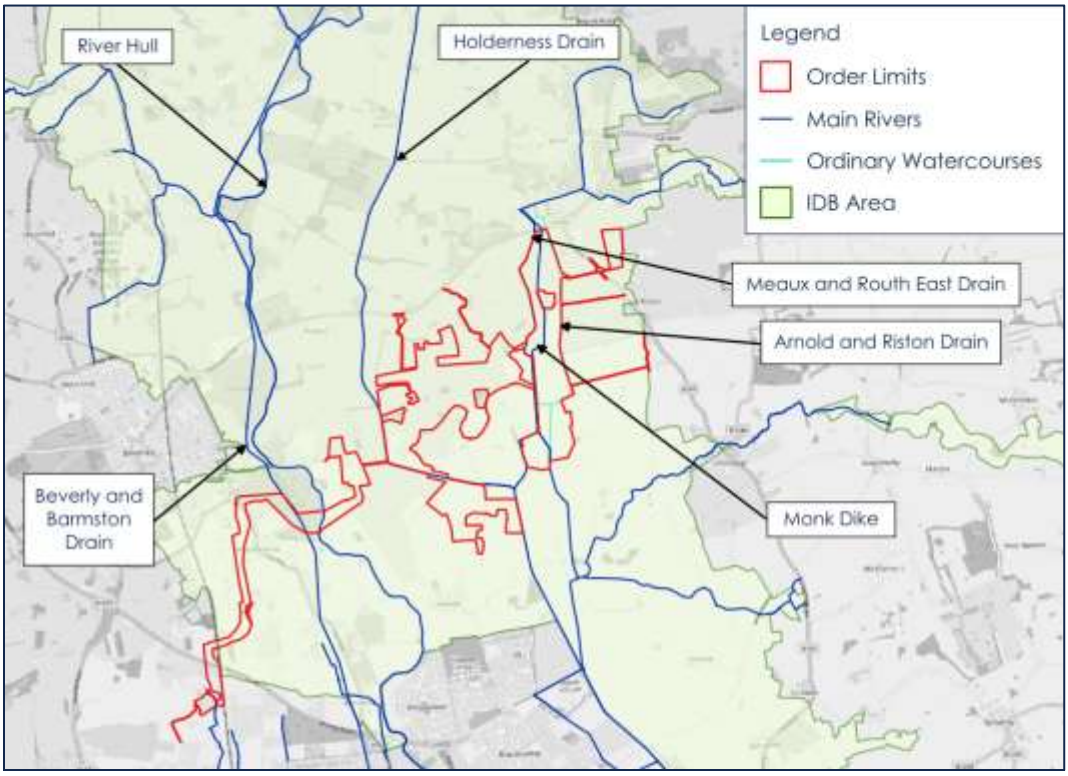
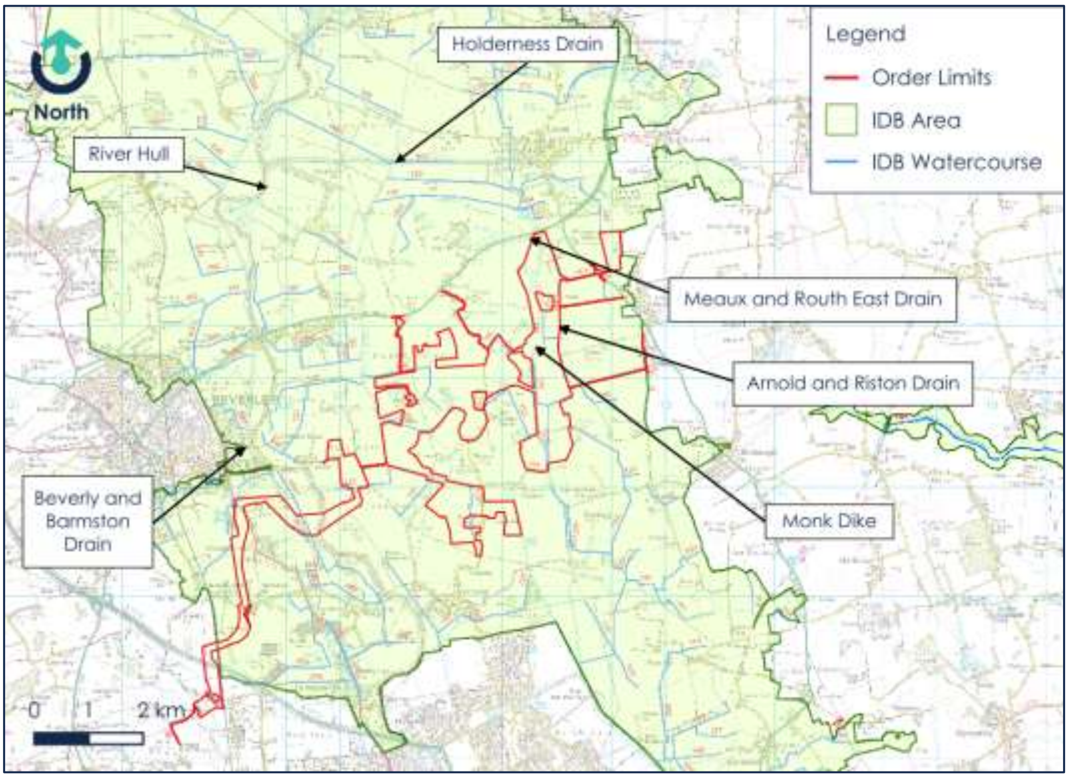


Figure 1-4 IDB Area and Watercourses

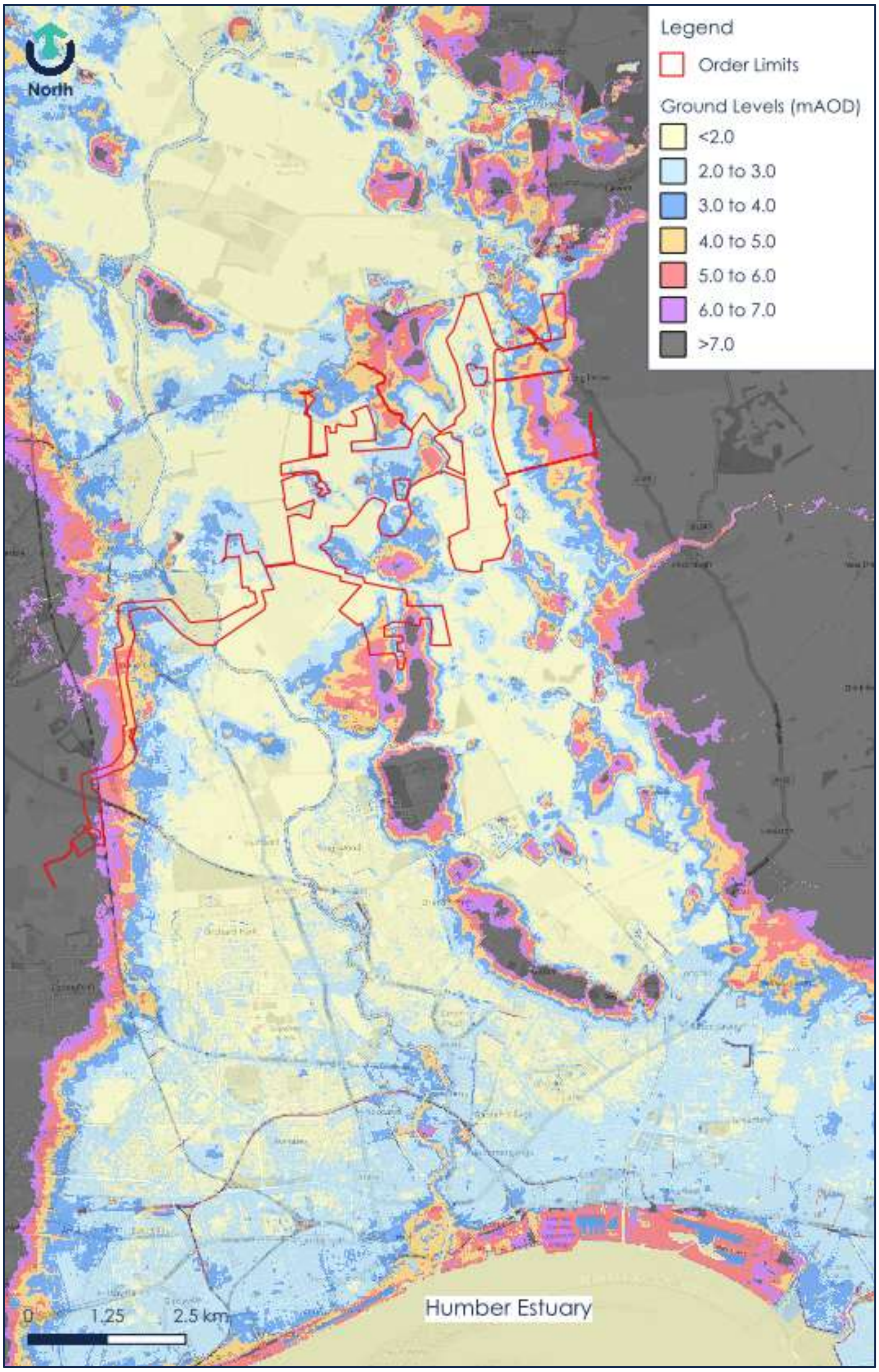


1.3.9 The IDB area is large and covers land that is generally below 7m Above Ordnance Datum (AOD). The extensive network of watercourses is managed using sluices and pumping stations for the purpose of drainage, flood risk, management, and environmental benefit.

1.3.10 Site levels generally vary between 0 and 8mAOD and the ground tends to be very flat. The cable route extends into higher ground to the southwest. The topography of the Site is demonstrated in **Figure 1-5**.

1.3.11 This demonstrates that the land proposed for the majority of the solar generation infrastructure (solar arrays, hybrid inverters, substations) is on ground that slopes very gently.

Figure 1-5 Topography



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1.4 Legislation, planning policy and guidance

Legislation

1.4.1 The primary legislation of relevance to this assessment is The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 **[Ref. WFD-1]**.

1.4.2 The overall aims of the WFD are to:

- Enhance the status and prevent further deterioration of surface water bodies, groundwater bodies and their ecosystems;
- Ensure progressive reduction of groundwater pollution;
- Reduce pollution of water;
- Contribute to mitigating the effects of floods and droughts;
- Achieve at least good surface water status for all surface water bodies and good chemical status in groundwater bodies by 2021 [**Ref. WFD-1]** (or good ecological potential in the case of artificial or heavily modified water bodies); and
- Promote sustainable water use.

1.4.3 The WFD requires a holistic approach to water management within defined River Basin Districts (RBDs), assessed, reported and monitored through River Basin Management Plans (RBMPs), which themselves are divided into Management Catchments, then Operational Catchments and finally Water Bodies.

Planning Policy

1.4.4 Given the status of the Proposed Development as a Nationally Significant Infrastructure Project, planning policies relevant to this assessment are primarily National Policy Statements (NPS). The Overarching NPS for Energy (EN-1) **[Ref. WFD-2]** refers to the potential for proposals to, without mitigation, adversely impact the water environment and therefore the WFD status. In addition, Section 5.8 of EN-1 (flood risk) explains the importance of ensuring proposed infrastructure is flood resilient.

1.4.5 The Overarching NPS for Renewable Energy Infrastructure (EN-3) **[Ref. WFD-3]** makes no specific reference to the WFD. However, water management is a clear theme throughout EN-3 and Paragraph 2.10.84 of EN-3 states that '*..as solar PV panels will drain to the existing ground, the impact will not, in general, be significant'.*

1.4.6 The NPS for Electricity Networks Infrastructure (EN-5) **[Ref. WFD-4],** paragraph 2.9.19 makes reference to the application of the Horlock Rules regarding location of substations. This includes protecting, as far as reasonably practicable, surface and ground water sources.

1.4.7 Section 2.3 of EN-5 requires applicants to ensure infrastructure, particularly substations that are vital to the network, is resilient to flooding and the projected impacts of climate change.

Guidance

1.4.8 With regard to guidance, the Planning Inspectorate's advice in respect of the Water Framework Directive as it applies to NSIPs ('Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive' ('WFD Advice')) **[Ref. WFD-5]** specifically refers to the WFD and provides advice as to how the WFD assessment can be applied in the preparation of a DCO Application. It should be noted this advice was updated on 14 November 2024, after the first draft of this WFD Screening and Scoping report was shared with the Environment Agency in July 2024. Therefore, although this report follows the advice and guidance, it does not, for example, include a specific scoping template.

1.4.9 The WFD Advice **[Ref. WFD-5]** confirms there is no specific or prescribed format to follow for WFD assessments. However, it makes reference to further guidance, namely the 'WFD assessment: estuarine and coastal waters' **[Ref. WFD-6]**. The WFD Advice **[Ref. WFD-5]** recognises that this additional guidance specifically refers to estuaries and coastal waters. However, the note also recognises that the process outlined in this guidance is applicable to all waters.

1.4.10 The WFD Advice **[Ref. WFD-5]** recommends a staged assessment:

- Stage 1 – Screening: Determine if there are any activities associated with the Proposed Development that do not require assessment, e.g., activities that have been ongoing since before the current RBMP cycle;
- Stage 2 – Scoping: Identify risks of the Proposed Development's activities to receptors based on the relevant water bodies and their water quality elements; and
- Stage 3 – Impact Assessment: Detailed assessment of water bodies and their quality elements considered likely to be affected by the Proposed Development. Identify areas of non-compliance, consideration of mitigation measures, enhancements and contributions to the RBMP objectives.

1.5 Stakeholder engagement

1.5.1 **Table 1-1** provides a summary of the stakeholder engagement activities undertaken by the Applicant in relation to Water Framework Directive Screening and Scoping separately from the non-statutory consultation, statutory consultation and targeted consultation process, as well as detailing the matters raised, how such matters have been addressed, and where they have been addressed within the DCO Application documentation.

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Table 1-1 Summary of stakeholder engagement

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
Environment Agency National Infrastructure Team	Meeting via Microsoft Teams on 26 March 2024	Agreed that water quality can be scoped out of the Environmental Statement (ES) on the basis that a separate Water Framework Directive Screening and Scoping Report would be prepared in accordance with the Planning Inspectorate's Advice on the Water Framework Directive **[Ref. WFD-5]**.	Reflected in this Water Framework Directive Screening and Scoping Report.	**ES Volume 4, Appendix 5.5: Water Framework Directive Screening and Scoping Report [EN010157/APP/6.4 Revision 3]**.
Environment Agency National Infrastructure Team	Meeting via Microsoft Teams on 22 July 2024 and follow up letter dated 05 August 2024.	Focus on Water Framework Directive assessment review and comments. Confirmed the Environment Agency do not necessarily expect water quality to be scoped into the assessment but that a Bentonite Breakout Plan would be required and consideration of battery fires. Raised specific issues for the Water Framework Directive Screening and Scoping Report to consider.	Reflected in this Water Framework Directive Screening and Scoping Report and its methodology/ scope. Specifically, scoping in the approach to watercourse crossings for both cables and vehicles and the management of contaminants released from battery fires.	**ES Volume 4, Appendix 5.5: Water Framework Directive Screening and Scoping Report [EN010157/APP/6.4 Revision 3]** **Outline Construction Environmental Management Plan (Outline CEMP) [EN010157/APP/7.2 Revision 5]** **Outline Battery Safety Management Plan [APP-157]**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
Environment Agency National Infrastructure Team	Meeting via Microsoft Teams on 20 January 2025 and follow up letter dated 22 January 2025.	Confirmed that Water can be scoped out entirely as a standalone ES chapter. Confirmed that a full Water Framework Directive Assessment is not required. Outstanding issues regarding groundwater and battery safety can be addressed elsewhere (for example **ES Volume 2, Chapter 10: Land, Soils and Groundwater [APP-046]**, **Outline CEMP [EN010157/APP/7.2 Revision 2]** and **Outline Battery Safety Management Plan [EN010157/APP/7.6 Revision 2]**).	Reflected in this Water Framework Directive Screening and Scoping report as well as **ES Volume 2, Chapter 10: Land, Soils and Groundwater [APP-046]**, **Outline CEMP [EN010157/APP/7.2 Revision 2]** and **Outline Battery Safety Management Plan [EN010157/APP/7.6 Revision 2]**.	**ES Volume 4, Appendix 5.5: Water Framework Directive Screening and Scoping Report [EN010157/APP/6.4 Revision 3]** **ES Volume 2, Chapter 10: Land, Soils and Groundwater [EN010157/APP/6.2]** **Outline CEMP [EN010157/APP/7.2 Revision 5]** **Outline Battery Safety Management Plan [APP-157]**
Environment Agency National Infrastructure Team	Regular, ongoing monthly meetings held on the 4th Thursday, commencing	Discussion regarding the mitigation of proposed battery units, specifically Calibro explaining the data and evidence presented in this Water Framework Directive Screening and Scoping.	Data and evidence regarding the low likelihood of battery fires, or release of contaminants, is reflected in this Water Framework Directive	**ES Volume 4, Appendix 5.5: Water Framework Directive Screening and Scoping Report [EN010157/APP/6.4 Revision 3]**

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Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
	on 24 April 2025		Screening and Scoping report.	
Environment Agency National Infrastructure Team	Letter dated 30 May 2025	Full list of EA Relevant Responses, including: - EA04 – Battery Safety Management Plan and how the water environment would be protected in the event of a fire - EA06 and 07 – Use of culverts and greater clarity regarding their location, installation, use and decommissioning - EA10 – Damage to Land Drains and new sediment pathways being created - EA16 – Surface Water Drainage and confirmation of the approach for the hybrid inverters/BESS units and substation compounds - EA20 – Abstraction and de-watering, particularly during HDD activities need clarification	The comments raised are reflected in this Water Framework Directive Screening and Scoping report as well as **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [REP5-054** and **ES Volume 2, Chapter 10: Land Soil and Groundwater [REP2-101].**	**ES Volume 4, Appendix 5.5: Water Framework Directive Screening and Scoping Report [EN010157/APP/6.4 Revision 3]**

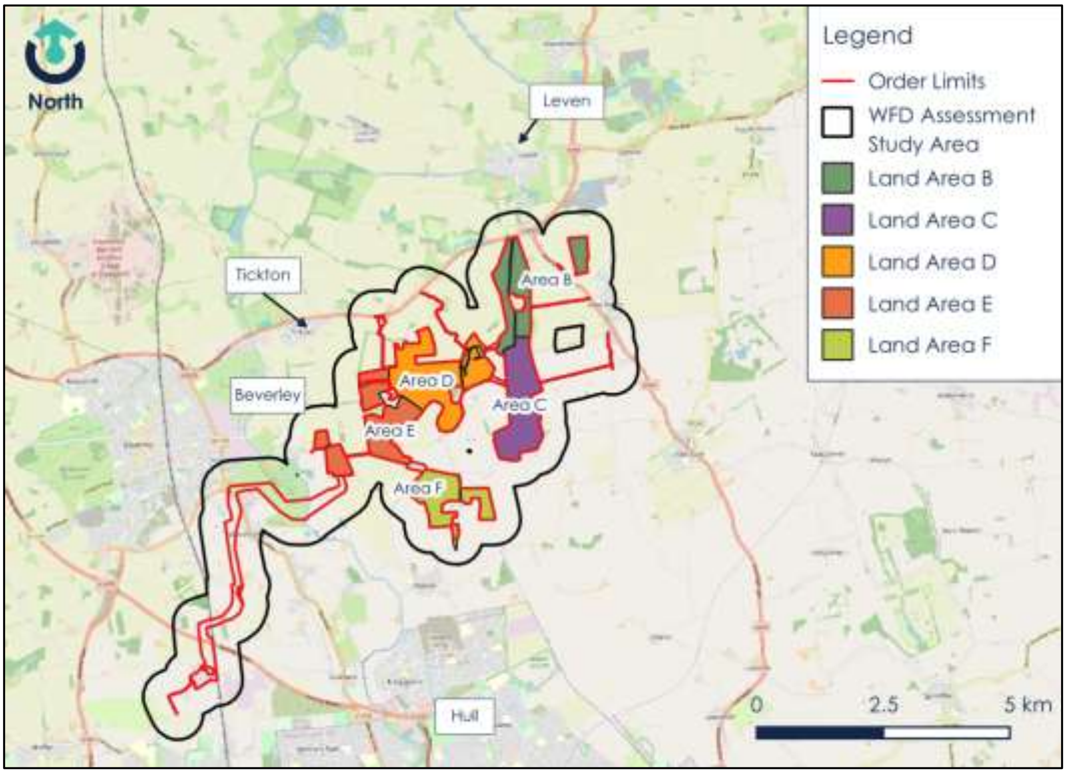
Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
		- EA25 – Below ground cables to b left in situ and an assessment if these could pose a source of contamination		

1.6 Study area

1.6.1 To ensure a catchment-based approach that reflects that water flows both to and from the Site, and for consistency with the Environmental Statement, the WFD assessment study area extends 500m from the Order Limits.

1.6.2 The Order Limits, Land Areas and WFD assessment study area are shown in **Figure 1-6**.

Figure 1-6 Land Areas and WFD Study Area



1.7 WFD water bodies

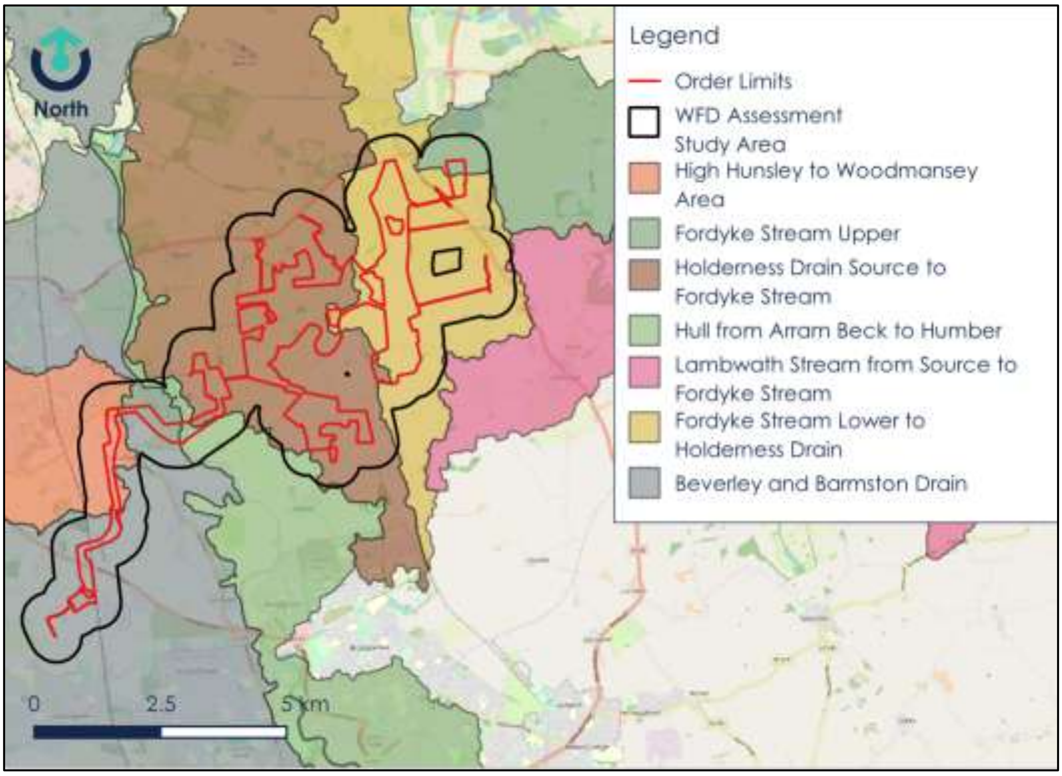
1.7.1 The WFD assessment study area falls within the Humber River Basin District, Hull and East Riding Management Catchment and Hull Lower Operational Catchment. The study area falls within the catchments of the following surface water bodies:

- Hull from Arram Beck to Humber;
- Holderness Drain Source to Foredyke Stream;
- Beverley and Barmston Drain;
- Foredyke Stream Lower to Holderness Drain;

- Foredyke Stream Upper;
- High Hunsley to Woodmansey Area; and
- Lambwath Stream from Source to Foredyke Stream.

1.7.2 Of the above, the WFD assessment study area predominantly falls within the Holderness Drain Source to Foredyke Stream, Beverley and Barmston Drain, Foredyke Stream Lower to Holderness Drain and Hull from Arram Beck to Humber water body catchments. The remaining catchments only cover a very small part of the WFD assessment study area, as shown in **Figure 1-7**, in particular the Lambwath Stream from Source to Foredyke Stream. It should be noted that only the proposed cable route passes through the Beverley and Barmston Drain and High Hunsley to Woodmansey Area water body areas.

Figure 1-7 WFD Water Bodies



1.7.3 In addition, the WFD assessment study area falls entirely within the Hull and East Riding Chalk groundwater body area (ID GB40401G700700).

1.7.4 In order to obtain data on the status of the groundwater and surface water bodies within the study area, the Environment Agency's online 'Catchment Data Explorer' has been utilised, using data from the 2023 update, the results of which are detailed below.

2 Screening

2.1.1 The guidance (WFD Advice **[Ref. WFD-5]** and the WFD assessment: estuarine and coastal waters **[Ref. WFD-6]**) recommends that screening identifies activities that do not require further consideration, for example activities that have been ongoing since before the water quality status was determined.

2.1.2 Other activities that are screened out would be categories listed as reasons for not achieving good ('RNAG') status other than agricultural and land management practices, such as water industry, domestic, urban and transport or waste treatment and disposal. The Proposed Development would have no impact on these existing activities.

2.1.3 The only activity considered relevant to the Proposed Development to be screened out of the assessment is watercourse maintenance. This is understood to be undertaken by the IDB or riparian owners, and primarily comprises routine vegetation cutback, weed removal, sludging (a type of dredging) and maintenance of water level management assets such as pumping stations. It is envisaged that such works would continue post-development and therefore maintenance access has been a central design requirement.

2.1.4 Therefore, the maintenance activities mentioned above have been screened out of the assessment, but all other activities associated with the Proposed Development are screened in.

2.1.5 All the water bodies identified above have been screened into the assessment. The reason being that although some water bodies interface with the cable route only, potential activities such as watercourse crossings could, without mitigation, potentially impact the watercourses. The scale of such impact, with or without mitigation, should be assessed as part of the scoping process.

3 Scoping

3.1.1 The scoping stage of the WFD assessment identifies the risks of the Proposed Development to the WFD receptors within the study area and the status of water bodies. It then concludes what, if any, likely effects may warrant a more detailed WFD impact assessment, when considering the mitigation embedded within the designs.

3.1.2 The PINS' WFD Advice **[Ref. WFD-5]** recommends that scoping should undertake *"an initial assessment to identify the risks from the Proposed Development to receptors within the zone of influence."* Risk is a function of probability and consequence. Therefore, this scoping assessment follows a similar methodology to the EIA for water to establish the likely significant effects through considering the sensitivity of receptors and the magnitude of change as a result of the Proposed Development, focussing on WFD receptors and status.

3.1.3 From a WFD perspective, the receptors are the various elements of the water environment as measured under the WFD classifications.

3.2 Surface water

3.2.1 The relevant surface water receptors, which will be the focus of this scoping assessment, are:

- Hydromorphology – includes the hydrology (i.e., flow) and 'geomorphology' (i.e., channel shape, size and structure);
- Water quality – includes aspects such as temperature, clarity, salinity, oxygen levels and nutrients (phosphate, ammonia or dissolved inorganic nitrogen);
- Biology – includes fish, invertebrates, macrophytes and phytoplankton; and

3.2.2 The WFD assessment also needs to consider potential impacts to protected areas that relate to that water body.

3.2.3 The WFD status and related protected areas for each surface water body in the study area is summarised in **Table 3-1** below.

Table 3-1 Surface Water Body Summary

Parameter	Water Body Status						
	Hull from Arram Beck to Humber	**Holderness Drain from Foredyke Stream to Humber**	**Beverley and Barmston Drain**	**Foredyke Stream Lower to Holderness Drain**	**Foredyke Stream Upper**	**High Hunsley to Woodmansey Area**	**Lambwath Stream from Source to Foredyke Stream Water Body**
ID	GB104026067212	GB104026066800	GB104026067211	GB104026066910	GB104026066890	GB104026066820	GB104026066860
Overall water body status (2022)	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Biological	High	Moderate	Moderate	Bad	Moderate	Moderate	Moderate
Physico-chemical	Moderate	Moderate	Moderate	Moderate	Moderate	Not available	Moderate
Hydromorphological Supporting elements	Supports Good	Supports Good	Supports Good	Supports Good	Supports Good	Supports Good	Supports Good
Supporting elements	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Chemical status (2019)	Fail	Fail	Fail	Fail	Fail	Fail	Fail
Target water body status and deadline	Good (2027)	Good (2027)	Good (2027)	Moderate (2015)	Good (2027)	Good (2027)	Moderate (2015)
Heavily modified water body and for what use	Heavily modified	Artificial	Artificial	Artificial	Artificial	Artificial	Heavily Modified
WFD protected areas	Yorkshire chalk and River Hull from Arram Beck to Humber NVZ – both nitrates	Holderness Drain from Fordyke Stream to Humber NVZ - nitrates	Yorkshire chalk and River Hull from Arram Beck to Humber NVZ – both nitrates	Holderness Drain from Fordyke Stream to Humber NVZ - nitrates	Holderness Drain from Fordyke Stream to Humber NVZ - nitrates	Yorkshire chalk and River Hull from Arram Beck to Humber NVZ – both nitrates	Yorkshire chalk and River Hull from Arram Beck to Humber NVZ – both nitrates

3.2.4 The water bodies have various RNAG, with activities from agriculture and rural land management being one of the most referenced reasons. Activities include 'poor nutrient management', 'land drainage', 'riparian/in-river activities' or 'poor soil management'.

3.2.5 Other known (i.e., not under investigation) RNAG are landfill leaching, septic tanks and sewage discharges.

3.2.6 The classification elements that these activities impact are predominantly dissolved oxygen, nutrients (phosphates and nitrates), ammonia, invertebrates and fish.

3.2.7 Generally, across the WFD assessment study area, the water bodies are heavily modified or artificial and have a moderate overall water body status.

3.3 Groundwater

3.3.1 The entire Site is underlain by Flamborough Chalk, which forms the Hull and East Riding Chalk WFD water body. There are superficial deposits across the Site, predominantly Alluvium – Clay, Silt, Sand and Gravel and Devensian Till but with bands of Glaciofluvial deposits – Sand and Gravel in Land Areas D and E.

3.3.2 According to BGS mapping and Defra's MAGIC mapping, the chalk bedrock is defined as a 'Highly productive aquifer' and is designated as a Principal Aquifer. The superficial deposits are designated as Secondary (A) or Secondary (undifferentiated) aquifers but these are understood to not form part of the WFD water body.

3.3.3 All the solar PV development Land Areas fall at least partially within a Source Protection Zone III (total catchment). The cable route to the southwest of the Land Areas is located within a Zone II (outer) with its western end falling within a Zone I (inner).

3.3.4 According to the BGS Parent Material European Soil Bureau Description **[Ref. WFD-7]**, there are three soil types across the Site, predominantly silty clays but bands of sands and gravels through the centre of the Site.

3.3.5 The data describes the soils as 'Deep' in all three types, which is the deepest of the categories, meaning the 'soil and subsoil can be easily dug to a depth of more than 1 metre'.

3.3.6 Both the quantitative and chemical status of the Hull and East Riding Chalk groundwater within the study area is recorded as having a poor overall status, with poor quantitative as well as chemical status. It has a RBMP objective to be of poor status by 2015.

3.3.7 The RBMP and catchment explorer data **[Ref. WFD-8]** shows there are no reasons for deterioration (RFD). The data does, however, provide reasons for not achieving good (RNAG). In addition to sewage discharges, abstractions and urban atmospheric deposition, many of the RNAG are 'poor nutrient management' from agriculture and rural land management practices.

3.4 Proposed Development activities

3.4.1 This section provides a description of the Proposed Development activities that could, without mitigation, impact the WFD receptors. The potential scale of the impact of these activities will be assessed later in this assessment, taking into account the embedded mitigation proposed.

Construction and decommissioning

3.4.2 During the construction and decommissioning phases of the Proposed Development, the predominant risk to the WFD receptors could occur in the form of localised compaction through vehicle movement, which could result in an increase in the rate of runoff to the watercourses, as well as increased migration of sediment to the watercourses.

3.4.3 Other activities could include piling the panel stanchions, groundworks associated with constructing the substations or hybrid inverters, or spillage of contaminants. Piling could create a preferential route (pathway) for water entry into the ground, which could encourage contaminants if they were to be used to migrate downwards. Spillage of hydrocarbons or chemicals on site could be a source of contaminants that could, subject to a suitable pathway existing, present a risk of contaminants entering the water bodies.

3.4.4 The majority of the containerised infrastructure would be raised on concrete pads or plinths below gravel bases. Concrete foundations may be required below the gravel bases. The two on-site substations will be placed on gravel bases but may include concrete foundations, which would require excavation. Inappropriate management of the arisings could release sediment to the watercourses, impacting hydromorphology, water quality, biology and fish receptors through sediment deposition and increased turbidity.

3.4.5 The cable route will be a buried service and will need to cross a number of watercourses. Depending on the method used, this has the potential to impact the hydromorphology, water quality, biology and fish receptors through the release of sediment or contaminants.

3.4.6 Similarly, constructing new vehicular watercourses crossings has the potential to impact the hydromorphology, water quality, biology and fish receptors through the release of sediment or contaminants.

3.4.7 Presuming the Site would return to arable farmed land, decommissioning would need careful consideration to ensure the benefits arising from the Proposed Development are retained. Without mitigation, decommissioning has the potential to reverse the minor benefits arising from the transition to a solar PV development, which are described below. Although not confirmed at this stage (due to the unknown regulatory landscape at the time of decommissioning), the requirement and scope of any mitigation is subject to details in terms of best practice available at the time.

Operation

3.4.8 The operational life of the Proposed Development is expected to be 40 years, before being decommissioned.

3.4.9 The Site would be remotely operated, not needing day-to-day physical interaction. During the operational (including maintenance) phase of the Proposed Development, on-site activities would be limited to maintenance activities and grazing. Maintenance activities are likely to include:

- Regular visual inspection of all infrastructure;
- Regular scheduled inspections and testing of equipment;
- Replacement of consumable items (e.g., inverter filters);
- Cleaning of solar PV modules, if required;
- Repair or replacement of solar modules or other components, if damaged;
- Delivery of spare parts, replacement equipment items and consumables;
- Water management (e.g., clearing of drainage ditches); and
- Vegetation management (e.g., cut back of grass, hedges, trees).

3.4.10 The Proposed Development would not include a centralised Battery Energy Storage System (BESS). Instead, batteries would be dispersed across the Site in hybrid packs. Each hybrid pack would comprise one inverter, four battery containers and four DC-DC converters, all of which would be containerised.

3.4.11 The specific BESS unit design, installation and therefore composition and safety mechanisms is dependent on the system procured but the general principles of battery safety is considered in this assessment.

3.4.12 Without mitigation, batteries have the potential to ignite (although evidence presented in this appendix demonstrates likelihood of this is extremely low), typically due to thermal runaway. Once alight, again without mitigation, they have the potential to discharge contaminants. It is understood that hydrogen fluoride gas could be released but other contaminants could include metals such as cobalt, nickel, lithium and others. The design, construction and maintenance of the batteries will be the subject of a specific Battery Safety Management Plan. An **Outline Battery Safety Management Plan [REP5-069]** is submitted in support of the DCO Application.

3.4.13 Furthermore, **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment Parts 1-3 [APP-124 to APP-126]** presented a conceptual site model in order to outline possible pollutants, pathways and groundwater receptors. This model would be refined following completion of the pre-construction site investigations for the Proposed Development. In the case of battery safety, model refinement would be completed in consultation with Humberside Fire and Rescue Service and the Environment Agency. However, a similar source-pathway-receptor method assessment to the impacts from battery fires has been completed in this screening and scoping assessment.

3.4.14 Furthermore, this revision (Revision 3) of the report has been updated to reflect the July 2025 release of the Environment Agency guidance Protect Groundwater and Prevent Groundwater Pollution **[WFD-9]**. It also reflects the drainage strategy agreed with the IDB.

3.4.15 This guidance defines the various types of aquifer, which is reflected in paragraph 3.3.2.

3.4.16 The Fire and Rescue Services consider that attempts to extinguish BESS fires directly with water is not effective. It is difficult to direct water on the fire source as it is often buried deep in the unit, and the BESS are Ingress Protection (IP) rated.

3.4.17 Consequently, a typical response from the fire service to a fire would be to either keep adjacent units cool or manage the resulting smoke plume. Where the plume is dense, the response could be to use suppression spraying to encourage the plume to ground. A less dense plume is unlikely to warrant spraying.

3.4.18 BESS units often include internal fire suppression, the choice of which is dependent on the preferred BESS design but typically uses an aerosol or an inert gaseous asphyxiant but can include both.

3.4.19 The fire or plume suppression water would have the effect of diluting contaminants present in the plume (if any are present, which is unlikely as described below) but could also potentially assist their mobilisation. In addition, when in contact with water, hydrogen fluoride becomes hydrofluoric acid. Hydrofluoric acid is known to be a particularly strong acid but would be diluted by the suppression water. For example, Edinburgh University guidance **[Ref. WFD-10]** states that '*If [*the*] spill is of dilute hydrofluoric acid,…neutralise with lime..'.* It is acknowledged this guidance relates to use of hydrofluoric acid in the laboratory; it is also concerned with the management of relatively large quantities of pure or concentrated hydrofluoric acid, as opposed to dilute acid that would be present if fire suppression water were used.

3.4.20 To support the above, a factsheet produced by Honeywell, who handle, and transport, concentrated hydrofluoric acid, have produced a factsheet **[Ref WFD-11]** that provides a number of materials that are known to neutralise the acid. It specifically refers to the Calcium Carbonate present within limestone as a relevant material.

3.4.21 It should be noted that as of January 2025, there are approximately 121 operational BESS sites across the UK.

3.4.22 Since 2006, UK BESS installations have accumulated approximately 800 years of operation, with only three reported failures due to fire at Carnegie Road in Liverpool (2020), Cirencester (2025) and East Tilbury (2025). This relates to a failure per hour (fph) rate of approximately $1x10^{-7}$fph (0.00000014fph).

3.4.23 Within the Health and Safety Executive (HSE) Reducing Risks, Protecting People guidance **[Ref WFD-12]**, a $1x10^{-6}$fph (0.000001fph) rate is proposed as a *'socially acceptable'* safety rate for the public. Consequently, the risk of ignition would not be deemed to be 'unacceptable'.

3.4.24 To date, there have been no recorded fatalities related to a BESS incident in the UK and there has been no recorded damage to third parties or the environment as a result of a BESS fire.

3.4.25 For example, the Merseyside Fire and Rescue Service Significant Incident Response [**Ref WFD-13]** reported that during the Carnegie Road incident runoff was regularly tested and did not record acidic conditions.

3.4.26 In addition, of the few BESS fires worldwide, the clearest evidence relating to monitoring of contaminants in a smoke plume is the Moss Landing Vistra Battery Fire in California, USA [**Ref WFD-14**], which did not record elevated levels of contaminants, as described in more detail in paragraph 3.5.37.

3.4.27 Given the gentle slopes on the Site, the pathway for contaminants released during a fire to enter the surface water bodies is limited but possible.

3.4.28 The soils on Site are understood to be relatively deep and of low permeability across much of the Site. In addition, superficial deposits are present between the WFD groundwater body and the surface. The geology would therefore naturally restrict the pathway for the entry of contaminants from a battery fire to the groundwater body.

3.5 Mitigation

3.5.1 Before understanding if the Proposed Development activities would have an impact on the WFD receptors, it is first important to understand the mitigation that would be utilised by the Proposed Development.

Construction and decommissioning phases

3.5.2 A Construction Environmental Management Plan (CEMP) would be secured pursuant to the DCO as a requirement and will be substantially in accordance with the **Outline CEMP [EN010157/APP/7.2 Revision 3]** to be submitted as part the DCO application. The Outline CEMP includes measures to mitigate the risk of increased runoff during the construction phase of the Proposed Development such as:

- The use of permeable materials for construction or lay-down areas;
- Constructing and using access tracks early in the programme;
- Planting riparian vegetation early in the programme, where reasonably practicable;
- Appropriate storage of hydrocarbons and other pollutants to reduce the chance for accidental spillage or reduce the chance for entry to water bodies;
- Use of inert concrete mix;
- Appropriate pollution prevention such as storage of chemicals on bunded impermeable surfaces, provision of spill kits for rapid clean up;
- Use of low-pressure tyres to limit compaction;
- Use of tillage, or similar, to break up compacted soils; and
- Recording of damaged land drains to allow them to be restored during decommissioning if required.

3.5.3 The construction will also be supported by a Soil Management Plan (an **Outline Soil Management Plan [REP5-073]** has been submitted in support of the DCO Application) and includes measures to manage soil compaction. Further details are provided in **ES Volume 2, Chapter 10: Land, Soil and Groundwater [REP2-078]**.

3.5.4 During construction, there is a risk that land drains may be damaged by piled panel stanchions. This would have the potential to impact land drainage by slowing the rate at which water drains from the land to the watercourses. As described in the operational impacts below, the slowing of runoff is a minor benefit of the transition from arable to solar PV development. Therefore, damage to land drains would augment these benefits.

3.5.5 However, damage of land drains could present a pathway for sediment to enter the receiving watercourse of the damaged drain.

3.5.6 Therefore, damaged land drains would be recorded and reinstated during construction, if required.

3.5.7 Appropriate use of inert concrete mixes would negate impacts on the water environment resulting from the installation of foundations or similar.

3.5.8 Regarding vehicular watercourse crossings, existing crossings are to be utilised wherever possible. Where existing crossings are insufficient to allow proposed traffic loading, the preferred option would be to install a parallel crossing followed by upgrade or extend the existing crossings. It is presumed the improved crossings would have a similar or, preferably, larger cross-sectional area than the existing crossings. They would also contain mammal crossing shelves and include bed substrate that is the equivalent of the existing watercourses to assist with the movement of fish, mammals and other biological receptors.

3.5.9 Where new crossings are required over larger watercourses, they would, wherever possible, be span bridges with the deck level being at least above bankfull. Although the abutments would be constructed during the construction phase and remain in situ during operation (including maintenance). Strata on the river bed would either remain or be returned to the existing state after installation. The use of these bridges would negate impacts on the watercourse morphology as well as the movement of water and wildlife along the river corridor. The use of temporary decks would also negate impacts on daylight. The crossing soffits would be above the bankfull level where possible so that, together with their temporary nature, would negate impacts on receptors such as hydromorphology, water quality, biology and fish.

3.5.10 Where span bridges are not viable, the preference would be for box culverts. These would be fitted with a mammal shelf with the invert of the culvert set 300mm below the bed level. The bed substrate would match that of the watercourse within the vicinity of the crossing. The soffit would be at least bankfull level and the side walls set to a width that doesn’t hinder the flow of water, nor impact receptors such as hydromorphology, water quality, biology and fish.

3.5.11 Watercourse crossings may be required over minor watercourses and in-field drainage ditches, the latter of which tend to be ephemeral ditches that dry up during dry weather. Such new crossings will be limited and only used where other constraints exist. The crossings over minor watercourses, which are likely to be wet for much of the year, would be facilitated by box culverts.

3.5.12 Where required, crossings over in-field ephemeral ditches would be formed from traditional culverts embedded in granular backfill. Given the ditches in question would be minor and ephemeral, the impact on migration of fish or mammals would be negligible. The structures may result in the slowing of the flow of water as well as provide some cleansing, consequently in effect acting like a check dam, which is acknowledged to be good sustainable drainage systems design, for example by the Ciria SuDS Manual **[Ref. WFD-11]**. This could be a positive benefit to flood risk downstream, particularly during heavy or intense rainfall, reducing downstream flood risk.

3.5.13 The number of crossings is relatively few and therefore cover a negligible length of the total reach of the watercourses. Therefore, improved crossings would have a negligible impact on the hydromorphology of the watercourses or movement of fish, invertebrates or other biological receptors.

3.5.14 The preference is to utilise or upgrade existing crossings wherever possible. The specific location, type and formation of proposed crossings is unknown at present as this is subject to a detailed inspection of existing crossings. Regardless, proposed crossings would require relevant consenting from the appropriate authority (such as Flood Risk Activity Permits) before installation. Such consenting would include a case-by-case assessment on the likely local impacts on channel hydromorphology and therefore crossing design and any mitigation required.

3.5.15 Where the cable route needs to cross watercourses, either incorporating the cable with a vehicle crossing or use of horizontal directional drilling (HDD) is proposed to minimise impacts on the watercourses. Furthermore, relevant surveys such as water vole and otter surveys would be completed in advance of drilling and mitigation provided to minimise impacts. An HDD Breakout Plan will be included in the Construction Environmental Management Plan, which will be substantially in accordance with the **Outline CEMP [REP4-027]**. Measures within the **Outline CEMP [REP4-027]** to manage the risk of bentonite breakout include the following:

- Reflect known ground conditions to select a specific route and depth through the most homogeneous geological conditions possible;
- Casing of weaker un-cohesive layers to reduce bentonite breakout;
- Use as low a concentration of bentonite as possible;

- Operatives to monitor the drilling for evidence of breakout and cease drilling and seal fissures or voids if applicable, as required;
- Monitoring of drilling fluid returns and volumes to help identify losses;
- Retain a stock of sandbags and pumps on site to contain breakout and dispose accordingly.

3.5.16 As with watercourse vehicular crossings, the specific location, depth, length and methodology of cable crossings is currently unknown as it is subject to detailed investigation and survey of existing crossings. Similarly, the programme for installing the crossing cannot be known until a contractor is appointed, outside of the DCO process.

3.5.17 It is possible that localised dewatering is required. This would very much depend on the time of year the cabling is installed and the specific geological conditions of buried (non-trellised) crossing location, which will only be confirmed following detailed surveys and on receipt of the contractor's programme.

3.5.18 In order to inform this assessment, it is presumed that groundwater dewatering would be non-consumptive and localised.

3.5.19 A Decommissioning Environmental Management Plan (DEMP) would be secured pursuant to the DCO as a requirement and be substantially in accordance with the **Outline Decommissioning Environmental Management Plan (Outline DEMP) [REP5-065]** that will be submitted in support of the DCO Application. The **Outline DEMP [REP5-065]** includes measures to mitigate the risk of increased runoff during the decommissioning phase of the Proposed Development such as:

- The use of permeable materials for compounds or lay-down areas;
- Access tracks would remain until late in the programme, or possibly remain in situ, and other mitigation (low-pressure tyres, tillage and storage of chemicals) would also be used;
- Retain damaged land drains if possible. Reinstatement may be required depending on the proposed land use and subject to assessment;
- Retain planted watercourse easements and buffers wherever possible to also retain benefits in terms of sedimentation and runoff; and
- Retain cables in situ where possible to remove the need for excavation or disturbance.

Operation

3.5.20 The Proposed Development will have measures that would minimise potential adverse impacts on, as well as deliver benefits to, the water environment.

3.5.21 Most infrastructure would not be located within 9m of the IDB viewed watercourses, 8m from fluvial Main Rivers or Environment Agency defence easements and 5m from Ordinary Watercourses, wherever reasonably practicable. In the event infrastructure would need to be located in this easement, it would be subject to consent from the relevant authority.

3.5.22 The limiting of in-channel and riparian works would negate impacts on the morphology of the water bodies and subsequently have negligible impact on the WFD hydromorphological, fish or biological receptors. IDB maintenance activities, such as sludging, would continue. These would likely have a far greater impact on the WFD receptors than the Proposed Development activities would.

3.5.23 Riparian grass establishment would be located within the easements to act as a buffer to the watercourses. This would maximise the benefits arising from the Proposed Development by reducing the rate of runoff entering the watercourses, therefore also reducing the chance for pollutants or sediment to enter the watercourses. It is not envisaged this would interfere with maintenance activities and therefore is likely to be consented, if such approvals are required.

3.5.24 Mitigation would also manage the risk of increased runoff from hardstanding or containerised infrastructure (which would be limited to the dispersed infrastructure). The Proposed Development, and in particular the transition from arable farmed land to year-round grass cover, would result in improved percolation of rainwater and reduction in runoff and soil erosion (explained below) and consequently have minor benefit in terms of surface water flood risk. In addition, the Flood Risk Assessment (**ES Volume 4, Appendix 5.6: Flood Risk Assessment [EN010157/APP/6.4 Revision 5]**) describes the drainage strategy for the Proposed Development. This document recommends measures to mitigate the risk of increased runoff from hardstanding or containerised infrastructure.

3.5.25 Dispersed hardstanding or containerised infrastructure such as the hybrid BESS and inverter compounds would direct rainfall to the ground locally. This would closely mimic the existing situation whereby rainfall falls to the surface to absorb into the ground. The exception to this would be where there would be more than two hybrid compounds per field. A field is defined by the 'Field Reference' shown in the Indicative Operational Layout Plan [**REP5-023**].

3.5.26 As a result, it was agreed with the Lead Local Flood Authority and IDB that rain falling on the hybrid BESS and inverter compounds/packs, where there are two or fewer units per field, would be directed to the gravel bases they would be sited on. Water would then percolate to the ground when conditions allow, mimicking the existing Site and negating increases in runoff arising from the hardstanding. The gravel bases would be sized to accommodate a design rainfall event, whilst accounting for volume occupied by concrete foundations where relevant.

3.5.27 Where more than two hybrid compounds exist in a field, the compounds would be positively drained via a filter drain. The discharge would be limited to no more than 1l/s by either a narrow orifice, slack pipe gradient or a flow control device, to be determined at detailed design phase. As with the non-positively drained hybrid compounds, the drained compounds would be wrapped by a permeable textile to encourage percolation to the ground, mimicking the existing Site.

3.5.28 Following discussions with the IDB, it was agreed that the substation compound would require a formal drainage strategy and positive drainage approach..

3.5.29 The substation compounds would themselves be gravel surfaced and therefore permeable.

3.5.30 Rain falling on the hardstanding components of the compounds, such as the transformer slab, would be directed to the gravel base surrounding it, which would be wrapped in an impermeable membrane effectively creating a sealed system. The discharge from this sealed system would be controlled by a flow control device (as explained in **ES Volume 4, Appendix 5.6: Flood Risk Assessment [EN010157/APP/6.4 Revision 5])** before flowing into a nearby watercourse.

3.5.31 The runoff pollutant load is expected to be very low and consequently the gravel bases sufficient to cleanse water before discharge to the ground, thus having a negligible impact on groundwater receptor. This is evidenced by comparing the likely pollutant hazard indices from Table 26.2 of the SuDS Manual **[Ref. WFD-11]** with the SuDS mitigation indices for discharges to the ground in Table 26.4 of the SuDS Manual.

3.5.32 The proposed hardstanding on the Site would be equivalent to ‘residential roofs’, which has a very low pollution hazard level. The nearest equivalent SuDS mitigation to the drainage strategy would be an infiltration trench, which would provide more than sufficient cleansing of suspended solids, metals and hydrocarbons likely to be generated.

3.5.33 The Site access tracks would either be formed from permeable materials or be subject to their own bespoke drainage strategy. If permeable materials are used, they would allow rainwater to percolate into the underlying ground at the location where the rain would fall to the ground. This would closely mimic the existing situation by allowing water to drain to ground. If semi-permeable bonded access tracks are required, the tracks would have a filter trench/strip to accommodate runoff and encourage percolation. Tracks would be used infrequently due to the remotely operated nature of the Site. The use of permeable granular material is effective at filtering the low level of contaminants likely to be present in runoff.

3.5.34 The proposed cable route would be a buried service and consequently would have negligible impact on the routing of water overland, post-construction. Where the cable route needs to cross watercourses, HDD or incorporating the cable into a crossing is proposed to minimise impacts on the watercourses. Incorporating the cables to a crossing would negate the impacts on flow, morphology or the movement of wildlife. Furthermore, relevant surveys such as water vole and otter surveys would be completed in advance of drilling and mitigation provided to minimise impacts.

3.5.35 Regarding batteries, as reported above, the chances for ignition are incredibly low and below HSE acceptable standards. Nonetheless, the design, installation and operation of BESS units follows the Health and Safety Executive's hierarchy of controls – elimination; substitution; engineering controls; administrative controls; and personal protective equipment. This would result in mitigation of fire risk being embedded at multiple levels within the battery design and installation.

3.5.36 The design and installation of the batteries will be subject to an **Outline Battery Safety Management Plan [REP5-069]**. Dispersed batteries will be proposed rather than a centralised larger scale BESS area. Therefore, the risk of ignition due to proximity is low. Dispersed battery units limit the potential for increases in temperature due to proximity. Using dispersed units would also reduce the chances for fires to spread.

3.5.37 The most notable mitigation at the Site will be to use watertight containers fabricated in accordance with IP 68 standards. This would mean that in the event of a fire, it is highly likely that contaminants discharged would settle locally within the battery unit and not be released externally.

3.5.38 This limits the release mechanism to be airborne via the smoke plume. The Moss Landing Vistra Battery fire has the clearest evidence relating to monitoring of contaminants in a smoke plume. The US Environmental Protection Agency (EPA) reported **[Ref WFD-14]** that:

- *EPA's monitoring showed concentrations of particulate matter to be consistent with the air quality index throughout the Monterey Bay and San Francisco Bay regions, with no measurements exceeding the moderate air quality level;*
- *Hydrogen fluoride gas was measured at one second intervals and there were no exceedances of California's human health standards.*

3.5.39 Temperature and humidity within the batteries is controlled to avoid excessive heat that could cause breakdowns. This is managed through application of an air or liquid cooling system.

3.5.40 Batteries are fitted with a Battery Management System (BMS). The BMS is a multi-layered system that is able to shut down at cell, module or rack level if temperatures rise in the units.

3.5.41 An internal automated fire suppression system would exist with the units. A clean (i.e., non-toxic, Per- and Polyfluorinated Substances (PFAS)-free substances), non-water based, suppression system is preferred as this eliminates the need for internal storage, and use of, of significant volumes of water. The use of such suppression systems is validated by the decision to propose disperse batteries rather than a centralised system. It should be noted that such an internal suppression system would not necessarily replace the need for external suppression, such as boundary spraying.

3.5.42 As recommended by the Site surface water drainage strategy (summarised above and described in more detail in **ES Volume 4, Appendix 5.6: Flood Risk Assessment [EN010157/APP/6.4 Revision 5]**), the hybrid inverter/battery units would be sited on gravel bases. This would be lined by a permeable geotextile to encourage percolation to the ground where possible.

3.5.43 The gravel base would be specified to be limestone-based, given the calcium carbonate content of limestone is understood to be effective at diluting hydrofluoric acid, as recommended above in **paragraph 3.4.13**.

3.5.44 Geotextiles are normally applied to drainage systems serving highways so are understood to be effective at filtering contaminants, particularly hydrocarbons and heavy metals.

3.5.45 A sand layer will be included with the geotextile, either above or below the geotextile at the base of the gravel, depending on manufacturer recommendations. This would provide additional absorption of contaminants, limiting their mobilisation potential.

3.5.46 If the fire and rescue service is required to attend the Site in the unlikely event of fire, information boxes will be included at Site entrances. This will contain important information relating to the suppression of fire.

3.5.47 The mitigation would restrict the chance of ignition occurring, particularly through the control of thermal runaway. Therefore, the chance of a unit igniting (i.e. the source) is very low, reflected by the extremely low number of fires reported globally compared to operating hours of BESS units.

3.5.48 Evidence from previous BESS fires demonstrates that no contaminants were recorded, or that they were within safe or background limits.

3.5.49 Furthermore, the gravel base, membrane and sand layer would remove the pathway for release of pollutants and therefore provide sufficient mitigation to minimise potential impacts on the groundwater and surface water body receptors.

3.5.50 The IDB require hybrid compounds, where more than two are proposed per field, to be positively drained. This could create a connection, and therefore pathway, for contaminants to enter watercourses. To mitigate this and remove the pathway, it is proposed that the chamber downstream of the compound would be fitted with a penstock. In the event of fire breakout, the penstock would be closed to form a sealed unit that behaves as per the non-drained compounds.

3.5.51 Although subject to procurement and detailed designs, it is envisaged at this stage that the penstock could be closed remotely, automatically and/or manually.

3.5.52 In summary, BESS fires have a negligible chance of occurring and the evidence demonstrates there is no significant source of contaminants. The pathway to the receptors is limited by low permeability or deep soils as well as embedded mitigation. Finally, the receptors are not assessed as being sensitive.

3.6 Impacts of the Proposed Development – scoping summary

3.6.1 This section of the WFD scoping assessment summarises the above impact assessment and identifies if any additional mitigation measures would be required to negate the chance for deterioration of the receptor or if a Stage 3 WFD Assessment is required. **Table 3-2** covers the construction and decommissioning phases while **Table 3-3** covers the operation (including maintenance) phase.

Table 3-2 Scoping Summary Table – Construction/Decommissioning

Potential Impact	Receptor	Pathway	Mitigation	Securing mechanism	Residual impact	Scoped into Assessment?
Compaction resulting in increased sedimentation/ turbidity caused by soil erosion/turbid water	Hydromorphology Water Quality Biology & Fish	Increased overland flows and soil erosion/ sediment – Low due to slope of Site	Construct access roads early (construction) and utilise until late (decommissioning). Construction Environmental Management Plan and Decommissioning Environmental Management Plan. Watercourse easements. Tillage. Seeding.	**Outline CEMP [REP4-027]** **Outline DEMP [REP5-065]** **Outline Soil Management Plan [REP5-073]**	Negligible	No
Damage to watercourse and release of sediment due to cable crossing construction	Hydromorphology Water quality Biology & fish	Release of sediment/ alteration of channel shape	HDD, where required, will be undertaken at sufficient depth below the channel beds. HDD breakout plans. Pre-commencement ecological surveys. Cables to remain in situ after decommissioning	**Design Parameters Document [REP4-059]** **Outline CEMP [REP4-027]** **Outline DEMP [EREP5-065]**	Minor	No
Damage to watercourse and	Hydromorphology	Release of sediment/	Utilise existing crossings		Negligible	No

RWE

Potential Impact	Receptor	Pathway	Mitigation	Securing mechanism	Residual impact	Scoped into Assessment?
release of sediment due to vehicle crossing construction	Water quality Biology & fish	alteration of channel shape	New crossings to use span bridges. Construction Environmental Management Plan and Decommissioning Environmental Management Plan.	**Outline CEMP [REP4-027]** **Outline DEMP [REP5-065]**		
Groundworks resulting in increased sedimentation/ turbidity	Hydromorphology Water quality Biology & fish	Increased overland flows and soil erosion/ sediment – Low due to slope of Site	Construction Environmental Management Plan, Decommissioning Environmental Management Plan and good site management practices. Use of geomembranes and waterproof coverings of stockpiles. Locate arisings away from watercourses	**Outline CEMP [REP4-027]**	Negligible	No
Piling of panel stanchions creating flow path to ground	Groundwater quality	Sub-surface flow of contaminants to groundwater. Low due to	Push piled solution rather than foundations to minimise potential for contaminant release.	**Outline CEMP [REP4-027]**	Negligible	No

Potential Impact	Receptor	Pathway	Mitigation	Securing mechanism	Residual impact	Scoped into Assessment?
		depth to WFD waterbody				

RWE

Table 3-3 Scoping Summary Table – Operation (including maintenance)

Potential Impact	Receptor	Pathway	Mitigation	Securing mechanism	Residual impact	Scoped into Assessment?
Reduced soil erosion and runoff due to transition from arable farmed land to year-round grass cover	Water Quality	Reduced overland flows	Easements and planted buffer would augment the natural benefit.	**Outline CEMP [REP4-027]**	Minor beneficial	No
	Biology & Fish					
Change to cross sectional area due to cable crossing	Hydromorphology	Altered flow regime	Incorporating into existing crossing or HDD drilling at sufficient depth below the channel beds.	**Outline CEMP [REP4-027]**	Negligible	No
Change to cross sectional area due to cable crossing	Hydromorphology	Altered flow regime	Utilise existing crossings. New crossings to be span bridges. Improved crossings to have larger dimensions than existing (e.g. replace pipe culvert with box culvert).	**Outline CEMP [REP4-027]**	Negligible	No
Change to channel morphology due to loading of structures	Hydromorphology	Altered channel shape impacting flow regime	Locate infrastructure outside watercourse easements. Riparian planting.	**Outline CEMP [REP4-027]**	Negligible	No

Potential Impact	Receptor	Pathway	Mitigation	Securing mechanism	Residual impact	Scoped into Assessment?
Release of contaminants from battery fire due to thermal runaway	Hydromorphology Water quality Biology & fish Groundwater quality	Limited release of contaminants– for example due to fire suppression water	Utilise IP68 watertight containers to settle contaminants within the unit. Follow HSE hierarchy of controls. Disperse batteries across the Site to reduce chance for fires to spread or overheating due to proximity. Internal battery management systems. Utilise an automatic clean agent fire suppression system rather than a water-based system. Limestone gravel bases with membrane and sand layer to neutralise acids and absorb pollutants. Where compounds are positively drained, use penstocks to prevent direct connection to watercourses.	**Outline CEMP [REP4-027]** **Outline OEMP [REP5-064]**	Negligible	No

Potential Impact	Receptor	Pathway	Mitigation	Securing mechanism	Residual impact	Scoped into Assessment?
Entry of sediments to the watercourses	Hydromorphology Water quality Biology & fish	Release of sediment/alteration of channel shape. Low pathway due to Site gradient	Watercourse easements with riparian grass planting to absorb sediments. Use of gravel bases to accommodate and cleanse roof runoff from hybrid inverters.	**Outline CEMP [REP4-027]** **Outline DEMP [REP5-065]**	Negligible	No
Increased runoff from hardstanding	Hydromorphology Water quality	Increased overland flows Low due to slope of Site	Direct runoff to gravel bases. Size gravel bases to accommodate a design rainfall event. Use of permeable access tracks or including drainage mitigation (trenches or filter strips).	**Outline CEMP [REP4-027]** **Outline DEMP [REP5-065]**	Negligible	No

4 Conclusion

4.1.1 The assessment demonstrates that there are a number of Proposed Development activities that could impact the local WFD receptors. However, the mitigation proposed would minimise the chance for such impacts.

4.1.2 The construction impact with the highest potential for harm to the WFD receptors is the crossing of cables over the watercourses. Significant mitigation is proposed to minimise the chance for such harm to materialise.

4.1.3 The majority of the operational development would result in minor benefit to the WFD receptors local to the Site.

4.1.4 During operation, significant mitigation is proposed to manage the risk of release of contaminants in the unlikely event of battery fire breakout. This would minimise the risk to the WFD receptors from the impact with highest potential for harm.

4.1.5 Although the Proposed Development benefits are assessed to be unlikely to change the WFD status of the watercourses, they would assist the water bodies in meeting their Objectives.

4.1.6 For the above reasons and in accordance with the relevant guidance, there are no identified impacts of the Proposed Development that would warrant a more detailed WFD assessment. Therefore, this can be scoped out.

5 References

- **Ref. WFD-1** The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available online: https://www.legislation.gov.uk/uksi/2017/407/contents/made
- **Ref. WFD-2** Department for Energy Security and Net Zero (2023) (designated in January 2024). Overarching National Policy Statement for Energy (EN-1). Available online: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1
- **Ref. WFD-3** Department for Energy Security and Net Zero (2023) (designated in January 2024). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online: https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3
- **Ref. WFD-4** Department for Energy Security and Net Zero (2023) (designated in January 2024). National Policy Statement for Electricity Networks Infrastructure (EN-5). Available online: https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5
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