



Meridian Solar Farm

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Volume 6

Environmental Statement

6.3 ES Appendix 11-5:
Hydrology and Flood Risk
Baseline

APFP Regulation 5(2)(a)

Infrastructure Planning (Applications:
Prescribed Forms and Procedure)
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1. Hydrology and Flood Risk Baseline Conditions

1.1. Study Area

- 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 (132kV) 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 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.
- 1.1.6. For the purposes of this assessment, a general Study Area of 1 km around the Order Limits has been considered in order to identify water features that are hydrologically connected to the Order Limits and potential works associated with the Scheme that could cause, or lead to, impacts.

1.1.7. Given that watercourse flow and water quality and flood risk impacts can propagate downstream, the assessment also considers a wider Study Area, where relevant. This is difficult to define as it depends on many dynamic factors. However, it should be as far downstream as a potential significant impact may occur, which is typically up to a few kilometres. In this case, watercourses across the Study Area ultimately drain to the Welland (land parcels A, B and C) and Rivers Nene (land parcels B and D). The Grid Connection Route is also located within these catchments. The River Welland is considered to be the final receiving water feature in the catchment draining to it that could conceivably be significantly affected due to its size and factor of dilution available. However, in the case of the River Nene, this is approximately 13 km to the east, and significant effects would not be expected at this distance, thus the South Holland Main Drain is considered the final receptor in that catchment.

1.2. Desktop Study

1.2.1. The water environment baseline conditions have been determined by a desk study of available Site and Scheme information, online data and requests for information from third parties including:

- Online Ordnance Survey (OS) maps¹;
- Online aerial photography²;
- Anglian River Basin District River Basin Management Plan (RBMPs)³;
- The Met Office website⁴;
- National Rivers Flow Archive website⁵;
- Environment Agency's Catchment Data Explorer Tool⁶;

1 Ordnance Survey maps. Available: <https://os.openstreetmap.org/> [Accessed October 2025]

2 Aerial Photographic maps. Available: <https://www.bing.com/maps> [Accessed October 2025]

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

4 Met Office website. Available at: <https://www.metoffice.gov.uk/public/weather/observation/map/u10q3cdwd#?map=WeatherCode&zoom=8&lon=-0.19&lat=51.73&fcTime=1600041600> [Accessed October 2025]

5 National River Flow Archive website, Available at: <https://nrfa.ceh.ac.uk/data/station/info/37003> [Accessed October 2025]

6 Environment Agency Catchment Data Explorer website. Available: <https://environment.data.gov.uk/catchment-planning/> [Accessed October 2025]

- Environment Agency’s Water Quality Explorer website⁷;
- Environment Agency’s Fish & Ecology Data Viewer⁸;
- Multi-agency geographical information for the countryside (MAGIC) website⁹;
- British Geological Survey (BGS) Borehole and Geology Mapping Geoindex website¹⁰;
- The Cranfield University Soilscape website¹¹;
- Natural England Designated Site website¹²;
- Department for Environment, Food and Rural Affairs (DEFRA) Hydrology Data Explorer website¹³;
- Environment Agency information on pollution incidents and water activity (discharge consent) permits received by request; and
- Environment Agency Flood Maps¹⁴
 - Online flood map for planning (rivers and sea).
 - Online risk of flooding from surface water map.
 - Online risk of flooding from reservoirs map.
 - Online flood warning areas and risk map.

7 Environment Agency Water Quality Archive website. Available at <https://environment.data.gov.uk/water-quality-beta> [Accessed October 2025]

8 Environment Agency. Fish & Ecology Data Viewer. Available at: <https://environment.data.gov.uk/ecology/explorer/>. [Accessed October 2025]

9 Defra. Multi-Agency Geographical Information for the Countryside (MAGIC) map. Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed October 2025]

10 British Geology Survey. 2018. Geoindex viewer. Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> [Accessed October 2025]

11 Cranfield Soils and Agrifood Institute website. Available at: <https://www.landis.org.uk/soilscales/> [Accessed October 2025]

12 Natural England Designated Sites website. Available at <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx> [Accessed October 2025]

13 Defra Hydrology Data Explorer website. Available at: <https://environment.data.gov.uk/hydrology/explore> [Accessed October 2025]

¹⁴ Environment Agency Flood risk mapping. Available at: <https://www.gov.uk/check-long-term-flood-risk>

1.3. Current Baseline: Solar Development Areas and Inter-Array Connections

Topography, Climate and Land Use

- 1.3.1. The topography of the area is very flat, with existing ground levels in the region of 0 m to 4 m Above Ordnance Datum (AOD) according to online Ordnance Survey¹⁵ (OS) and topographical mapping¹⁵. There are numerous small watercourses and drainage ditches across the Solar Development Areas and Inter-Array Connections, especially due to its location within the Fens, where large-scale land drainage projects within the 17th century changed the low-lying landscape into arable lands. Therefore, the current land use of the Solar Development Area and Inter Array Connections is mainly agricultural, with a mosaic of arable fields, and the villages of Spalding, Cowbit on the western boundary, Crowland on the southern boundary, Holbeach, Weston, Moulton and Whaplode on the eastern boundary and Surfleet on the northern boundary.
- 1.3.2. The Solar Development Area and Inter Array Connections lie within two Internal Drainage Boards (IDB), the North Level District IDB (NLDIDB) and the South Holland IDB (SHIDB). The Welland and Deepings IDB (WDIDB) lies adjacent to the western boundary of the Solar Development Area just north of Crowland but would not be affected by the Solar Development Areas and Inter-Array Connections and thus is not considered any further. These operating authorities undertake work to secure clean water drainage and water level management within their drainage districts in the Fens. The topography of the whole area is similar with no significant differences between the different areas of Solar PV development.
- 1.3.3. Based on the Meteorological Office website¹⁶, the nearest weather station is located at Wittering, approximately 30km south-east from the Solar Development Area and Inter Array Connections. Using data from this weather station for the period 1991-2020, it is estimated that the Solar Development Area and Inter Array Connections experiences approximately 613mm of rainfall per year, with it raining more than 1mm on approximately 113 days

¹⁵ Topographical mapping, available at: <https://en-gb.topographic-map.com/map-kb57/England/?center=52.76684%2C-0.01459&zoom=12&popup=52.72654%2C0.02129> [Accessed October 2025]

¹⁶ Met Office website. Available at: <https://www.metoffice.gov.uk/public/weather/observation/map/u10q3cdwd#?map=WeatherCode&zoom=8&lon=-0.19&lat=51.73&fcTime=1600041600> [Accessed October 2025]

per year, which are both low in the UK context (see Plate 11-1). Rainfall is highest from early to mid-winter and late summer and generally peaks in October, with the least rainfall occurring in February on average

1.3.4. The Wittering weather station also reports that the area generally gets around 41 days of air frost per year, distributed between October to April, with the majority (approx. 11 days) occurring in the months of December and January.

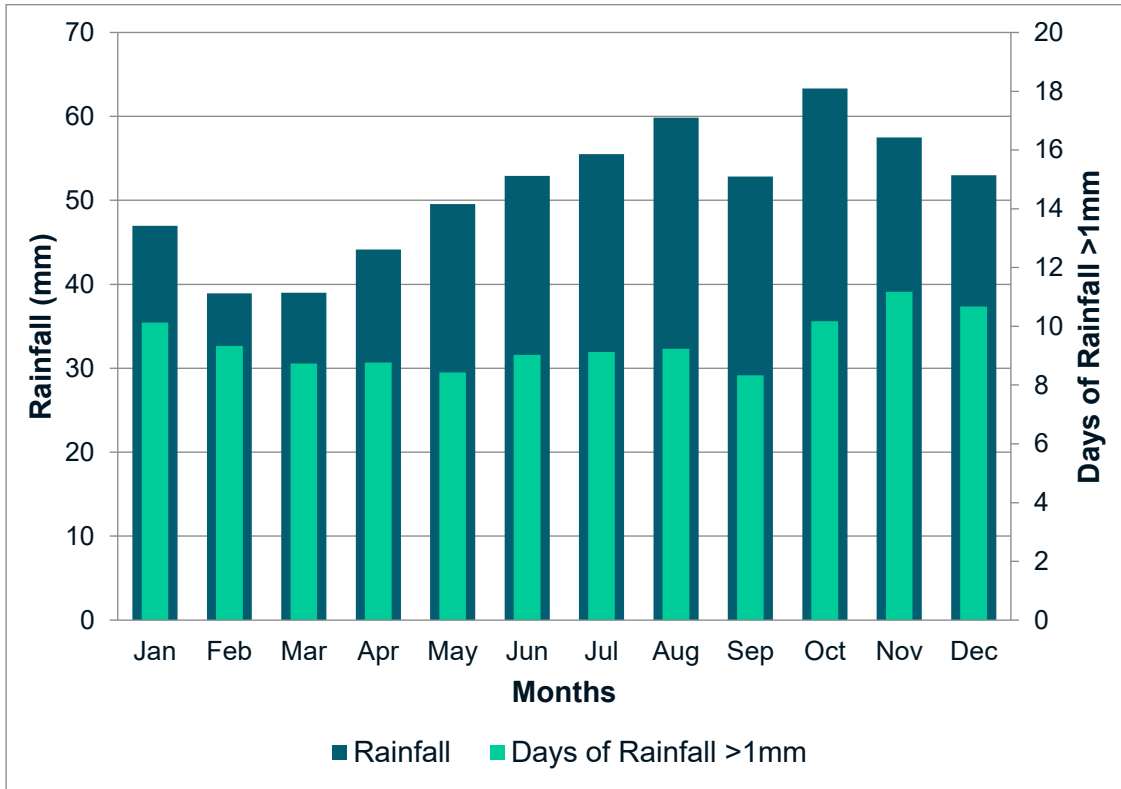


Plate 11-1 Indicative Site Annual Rainfall¹⁶

Geology, Groundwater and Soils

1.3.5. Both the superficial and bedrock strata are designated as unproductive⁹. Bedrock geology underlying the majority of the Solar Development Areas and Inter Array Connections is mudstone of the Oxford Clay Formation. To the west of the Solar Development Area, the bedrock geology is mudstone of the West Walton formation, Amphill Clay Formation to the south, and mudstone and siltstone of the West Walton Formation to the north. The superficial geology is predominantly tidal flat deposits of clay and silt, with the exception of alluvial deposits of clay, silt sand and gravel to the west associated with the floodplain of the River Welland.

- 1.3.6. The bedrock beneath the entire Site is classified as unproductive (i.e. not considered an aquifer)¹⁰. The Tidal Flat superficial deposits are also considered to be unproductive. However, some superficial deposits between Crowbit and Crowland are classed as Secondary A and Secondary (undifferentiated) aquifers. However, these are only likely to yield limited amounts of water and be of limited importance at a local level. As agreed in the Scoping Opinion provided in **ES Appendix 1-2** (Doc Ref 6.3), potential impacts on groundwater have been scoped out. Groundwater may still be present as perched water due to poor infiltration of clay bedrock and thus may be present at a shallow depth and in hydraulic continuity with ditches and drains. Standard construction measures will account for this.
- 1.3.7. The soils of the area are shown on the Soilscape website¹¹ and are described as loamy and clayey soils of coastal flats with naturally high groundwater¹¹.

Surface Water features

- 1.3.8. The following surface water features are present within the Solar Development Area (shown on **ES Figure 11-1** (Doc Ref 6.2):
- The principal watercourses in the area are the River Welland and Vernatt's Drain (to the west of the Site) and the River Nene (to the east), whilst the South Holland Main Drain flows from west to east to the north of the Solar Development Area. The River Welland, Vernatt's Drain and River Nene are all classified as Main Rivers and therefore flood risk management is the responsibility of the Environment Agency. The Site extends across areas administered by the SHIDB and the NLDIDB. The South Holland Main Drain falls within the area administered by the SHIDB. The land is characterised by numerous ditches and drains, with water levels across the area generally managed via pumping.
 - A number of smaller unnamed watercourses (i.e. ditches) are present within the Order Limits. These watercourses are predominantly artificial, likely created or modified to aid agricultural land drainage. The named water features in each Solar Development Area are:
 - **Solar Development Area Land Parcel A:** New River (Drain) and River Welland are both located to the west and north of the Site as shown on **ES Figure 11-1: Surface Water Features And Their Attributes** (Doc Ref 6.2). St James' Drain oriented north south to the west of the Spalding Road where the site is linked to Solar Development Area Parcel B. At the northwest corner of Land Parcel A, there is a pumping station

marked. This is linked to the drainage features within the Land Parcel A. Additionally, many unnamed drainage ditches are present.

- **Solar Development Area Land Parcel B:** Land Parcel B borders South Holland Main Drain on its northern edge, with a drainage ditch on its eastern side draining north to South Holland Main Drain. The rest of land parcel B is located south of the Queens Bank Road. Cox's Drain located adjacent to the track running north from Patchett's Bridge and Wheat Mere Drain to the north of Queen's Bank. Additionally, many unnamed drainage ditches are present.
- **Solar Development Area Land Parcel C:** There are no named water features in this area, although multiple unnamed drainage ditches are present.
- **Solar Development Area Land Parcel D:** The western boundary of Land Parcel D is Lambert Drain, and the eastern boundary is Fleet Drain. Both of which drain north into South Holland Main Drain. A pumping station is shown as present on Fleet Drain / South Holland Main Drain confluence. The northern most field is located north of South Holland Main Drain.
- **Inter-Array Connections:** Within the Inter Array Connections, the name water features of Tinsley's Drain and Division Drain are present, alongside multiple unnamed ditches.

1.3.9. Alongside the principal watercourse noted above there are numerous named and unnamed secondary ditches, drains and watercourse in the Study Area but outside of the Order Limits. These include the named watercourses: New River Drain, Peartree Hill Drain and Highstock Drain.

1.3.10. Water features have been identified in greater detail to relate the source of impact from the Scheme to the specific watercourse or its tributary. Each watercourse has been allocated a specific ID for use within this ES chapter and these are presented in Table and used on the figures where relevant. Many of these water features are otherwise unnamed and so are listed as numbered tributaries only using the named watercourse into which they flow. The NGRs provided are for the proximate source of that water feature.

Table 1-1: Surface water features that may be impacted by the Solar Development Area and Inter-Array Connections

Water Feature	Water Feature ID	Approx NGR.
River Welland	WEL01	TF 23721 13900
New River	NEW01	TF 23791 13896
Postland Main Drain	PMD01	TF 24323 13345
Postland Main Drain tributary 1	PMD02	TF 24032 13303
Postland Main Drain tributary 2	PMD03	TF 24542 13380
Cloot Drain	CLD01	TF 25423 13533
Cloot Drain tributary 1	CLD02	TF 24889 13395
Cloot Drain tributary 2	CLD03	TF 24903 13473
Cloot Drain tributary 3	CLD04	TF 24815 13349
Brotherhouse Bar	BHB01	TF 26256 13571
Brotherhouse Bar tributary 1	BHB02	TF 26270 13569
Drain adjacent to Crowland Bypass	CRW01	TF 26530 13580
CRW01 tributary 1	CRW02	TF 26590 13882
CRW01 tributary 2	CRW03	TF 26897 13719
CRW01 tributary 3	CRW04	TF 27075 13723
Cox's Drain South	CXD01	TF 27188 14195
Queen's Bank Drain	QBD01	TF 26801 14779
Queen's Bank Drain tributary	QBD02	TF 28533 13936
QBD02 tributary	QBD03	TF 28129 13315
Wheat Mere Drain	WMD01	TF 26764 15560
Wheat Mere Drain tributary 1	WMD02	TF 26805 15230
Wheat Mere Drain tributary 2	WMD03	TF 26848 15532
Unnamed Drain 1	UND01	TF 26936 14062
Whitehall Drain	WHD01	TF 28204 13994
Whitehall Drain tributary 1	WHD02	TF 28318 13947
Martin's Road Drain	MRD01	TF 29247 13113
Unnamed Drain 2	UND02	TF 30054 13534

Water Feature	Water Feature ID	Approx NGR.
Eaugate Road Drain	ERD01	TF 31760 13651
Donnington's Drain	DND01	TF 31854 13744
Division Drain	DIV01	TF 32537 14011
Division Drain tributary 1	DIV02	TF 32145 13796
Tinsley's Drain	TIN01	TF 33161 14003
Tinsley's Drain tributary 1	TIN02	TF 33616 14360
Lambert Drain	LAM01	TF 33780 13988
Lambert Drain tributary 1	LAM02	TF 34214 14385
Lambert Drain tributary 2	LAM03	TF 34406 14756
Lambert Drain tributary 3	LAM04	TF 34604 15141
Lambert Drain tributary 4	LAM05	TF 34214 14385
Langary Gate Road	LGR01	TF 34587 14604
Fleet Drain	FLD01	TF 34534 13704
Fleet Drain tributary 1	FLD02	TF 34455 14280
Fleet Drain tributary 2	FLD03	TF 35073 15392
Fleet Drain tributary 3	FLD04	TF 35234 15808
Fleet Drain tributary 4	FLD05	TF 33864 12937
Fleet Drain tributary 5	FLD06	TF 34200 13476
South Holland Main Drain	SHD01	TF 35653 16537
South Holland Main Drain tributary 1	SHD02	TF 35513 16213
South Holland Main Drain tributary 2	SHD03	TF 35355 16731
South Holland Main Drain tributary 3	SHD04	TF 36120 17004

WFD Classifications

- 1.3.11. The present (i.e. Cycle 3, 2022) WFD classifications of the surface water bodies underlying the Scheme are provided in Table 1-2, as identified through **ES Appendix 11-2: WFD Assessment (Doc Ref 6.3)**⁶.

Table 1-2: WFD Classification (Cycle 3 data) for WFD Surface Water Bodies Underlying the Solar Development and Inter-Array Connections Study Area⁶

WFD Parameter	Status/Summary	
Water Body ID	GB205031050685	GB205032050405
Water Body Name	Welland – conf Greatford Cut to tidal Water Body	South Holland Main Drain
Water Body Type	River	River
Water Body Area (km ²)	71.2	169.37
Water Body Length (km)	33.25	36.12
Hydromorphological Designation	Heavily modified	Artificial
Ecological Status or Potential	Moderate	Moderate
Current Overall Status	Moderate	Moderate
Biological Quality Elements	Good	Poor
Physico-chemical Quality Elements	Moderate	Moderate
Hydromorphological Quality Elements	Not high	Not high
Chemical	Does not require assessment	Does not require assessment

- 1.3.12. Reasons for not achieving good (RNAGs) for the Welland – conf Greatford Cut to tidal Water Body include diffuse source pollution as a result of poor livestock management and poor nutrient management; point source pollution from continuous sewage discharge from the water industry; and physical modification for flood protection.
- 1.3.13. RNAGs for the South Holland Main Drain include diffuse source pollution as a result of poor soil management; the presence of invasive non-native species

(INNS) including Chinese mitten crab and other fish; physical modification for land drainage and water level management for flood protection; and saline intrusion from natural sources.

Surface Water Quality and Flow

- 1.3.14. There are Environment Agency four surface water monitoring locations in the Study Area. These are shown on **ES Figure 11-1 Surface Water Features And Attributes** (Doc Ref 6.2): Wheatmere Drain, South Holland Main Drain, Peartree Hill Road North and Peartree Hill Road South. The water quality parameters are limited to a few parameters, and these are summarised in Table 1-3.

Table 1-3: Environment Agency water quality monitoring locations for water features within the Solar Development Area and Inter-Array Connections

Parameter	Monitoring Location			
	Wheatmere Drain	South Holland Main Drain	Peartree Hill Road North	Peartree Hill Road South
Date of monitoring	12 October 2015 to 26 August 2016	13 July 2018 to 15 May 2019	13 July 2018 to 2 May 2019	13 July 2018 to 22 May 2019
Ammoniacal Nitrogen:	n/a	0.052 mg/l	0.034 mg/l	0.045 mg/l
Max				
Min		1.2 mg/l	0.88 mg/l	0.87 mg/l
Mean		0.38 mg/l	0.215 mg/l	0.38 mg/l
Nitrogen:	0.24 mg/l	0.52 mg/l	1 mg/l	0.27 mg/l
Max				
Min	5.84 mg/l	13.8 mg/l	3.9 mg/l	9.12 mg/l
Mean	2.29 mg/l	4.18 mg/l	2.64 mg/l	3.42 mg/l
Chloride:	n/a	93.8 mg/l	313 mg/l	390 mg/l
Max				
Min		1070 mg/l	1860 mg/l	2410 mg/l
Mean		548 mg/l	772 mg/l	1200 mg/l

Parameter	Monitoring Location			
	Wheatmere Drain	South Holland Main Drain	Peartree Hill Road North	Peartree Hill Road South
Orthophosphate, as P	n/a	0.011 mg/l	0.015 mg/l	0.015 mg/l
Max				
Min		1.19 mg/l	1.24 mg/l	1.4 mg/l
Mean		0.24 mg/l	0.32 mg/l	0.34 mg/l

- 1.3.15. At Wheatmere Drain, nitrogen values (2.29 mg/l) are somewhat elevated indicating probable pressure from the surrounding agricultural land uses through use of fertilisers and other products which may run off to the watercourse. No other water quality parameters have been monitored for this watercourse.
- 1.3.16. On South Holland Main Drain, nitrogen values are elevated (4.18 mg/l), as well as orthophosphate concentrations (mean 0.32 mg/l), indicating pressure from surrounding agricultural land uses, and potentially non-mains domestic sewer systems that are common in rural areas.
- 1.3.17. On a tributary of the South Holland Main Drain at Peartree Hill Road North, mean values of nitrogen (2.64 mg/l) and orthophosphates (0.32 mg/l) indicate pressure from surrounding agricultural land uses, and potentially non-mains domestic sewer systems that are common in rural areas.
- 1.3.18. There are no gauging stations on the River Welland or Nene in this area as the watercourses are tidal in this zone. The drainage ditches and flow are controlled by the local IDBs with the use of pumping stations and sluices. As such, it is not possible to gauge a level of flow on these channels. However, it is considered that as a result of the topography and the pumped flows, that the channels would be low flow channels, maybe with a flow that is exceeded 95% of the time (or Q95) of 1 l/s (0.001 m³/s). Although they may offer more dilution by volume, the lack of flow will limit dispersion of fine sediment and chemical substances.

Hydromorphology

- 1.3.19. A description of the hydromorphological characteristics of these watercourses is provided in Table 1-4. The Scheme interacts with multiple large

watercourses and several smaller channels within the Solar Development Area and Inter Array Connections, with the majority being low quality ditches for agricultural drainage.

Table 1-4: Hydromorphology baseline for watercourses within the Solar Development Area and Inter-Array Connections

Watercourse	Baseline Description
River Welland	The River Welland within the Study Area is designated as the Welland – conf Greatford Cut to tidal WFD water body which is classed as heavily modified. The River Welland is approximately 40m wide and flood embankments will limit connectivity with floodplain. Close to the Solar Development Area, the Welland appears overly straight in sections, and have likely been modified, though any such modification will have been undertaken prior to 1900 as historic mapping ¹⁷ shows no changes in the River Welland’s course since this date.
New River	New River within the Study Area is not a designated WFD water but adopts the classification of its receiving water body – the Welland – conf Greatford Cut to tidal. Through the Study Area, New River shows some degree of sinuosity but has some straight sections, indicating some modification. Although any modification will have been undertaken prior to 1900 as historic mapping ¹⁷ shows no changes in New River’s course since this date.
South Holland Main Drain	South Holland Main Drain is a WFD water body designated as artificial. The watercourse follows a straight course through the Study Area, which is likely a result of modification. Although any modification will have been undertaken prior to 1900 as historic mapping ¹⁷ shows no changes in the course of South Holland Main Drain since this date.
Postland Main Drain	Postland Main Drain is not a designated WFD water body, however, adopts the classification of its receiving water body, the Welland – conf Greatford Cut to tidal.

¹⁷National Library of Scotland Available at: <https://maps.nls.uk/geo/explore/side-by-side/> [Accessed October 2025]



Watercourse	Baseline Description
Lambert Drain	Lambert Drain is not a designated WFD water body, however, falls within the South Holland Main Drain WFD catchment. Lambert Drain is a straight, artificial trapezoidal drainage channel which has likely been modified for agricultural drainage purposes.
Tinsley's Drain	Tinsley's Drain is not a designated WFD water body, however, falls within the South Holland Main Drain WFD catchment. Tinsley's Drain is a straight, artificial trapezoidal drainage channel which has likely been modified for agricultural drainage purposes.
Division Drain	Division Drain is not a designated WFD water body, however, falls within the South Holland Main Drain WFD catchment. It is a straight, artificial trapezoidal drainage channel which has likely been modified for agricultural drainage purposes.
Fleet Drain	Fleet Drain is not a designated WFD water body, however, falls within the South Holland Main Drain WFD catchment. It is a straight, artificial trapezoidal drainage channel which has likely been modified for agricultural drainage purposes.
Wheat Mere Drain	Wheat Mere Drain is not a designated WFD water body, however falls within the South Holland Main Drain WFD catchment. Wheat Mere Drain is a straight, artificial trapezoidal drainage channel which has likely been modified for agricultural drainage purposes.

1.3.20. A number of smaller, unnamed watercourses/ditches are present within the Solar Development Area and Inter Array Connections. These watercourses are primarily artificial, likely created or modified to assist in agricultural land drainage. Historic mapping of the Study Area indicates that these modifications took place during the late 1,800s¹⁷. These are generally straight and uniform channels with an over-deep profile. Many of these artificially straight channels are ephemeral due to both natural processes and human activities in agricultural landscapes. This was observed during the site walkover for multiple drainage channels. The modification of these altered watercourses is intended to facilitate drainage and prevent waterlogging in fields.

- 1.3.21. The grading of land and the installation of drainage systems may affect the ephemeral nature of these ditches. Flow within these watercourses is anticipated to be seasonal, with minimal to no flow in the summer. It is unlikely that the modified banks of these watercourses will allow water spillage onto the floodplain, even during particularly wet periods of the year. As a result, there is expected to be limited connection between the channel and the floodplain. However, individually they may contribute to the provision of aquatic habitat within the area, even if it is not the unaltered habitat of the area and therefore may still need to be considered.
- 1.3.22. Photographs of the main watercourses on the Site taken during the site visit in July 2025 are shown in Table 1-5.

Table 1-5 Photographs of watercourses observed during the site walkover survey July 2025

Watercourse	Photograph
New River NGR TF 24481 14218	

Watercourse	Photograph
<p>South Holland Main Drain NGR TF 35697 16551</p>	 A photograph showing a long, straight watercourse (drain) running through a flat landscape. The water is calm and reflects the blue sky and white clouds. The banks are lined with tall green grasses. In the distance, there are some trees and a horizon line under a bright sky.
<p>Postland Main Drain NGR TF 26203 12385</p>	 A photograph of a watercourse (drain) similar to the one above. It is a straight channel of water reflecting the sky and clouds. The banks are covered in tall green grasses. On the left side, there is a large, dense tree. The background shows a flat landscape with a horizon line under a cloudy sky.

Watercourse	Photograph
<p>Lambert Drain NGR TF 32871 12379</p>	 A photograph showing a narrow, shallow watercourse (Lambert Drain) flowing through a rural landscape. The water is contained within a grassy channel. The surrounding fields are mostly dry and brown, suggesting late summer or autumn. A paved road runs parallel to the drain on the right side. The sky is blue with scattered white clouds.
<p>Fleet Drain tributary NGR TF 35048 15405</p>	 A photograph of a watercourse (Fleet Drain tributary) flowing through a field. The water is contained within a channel lined with tall, green grasses. The surrounding fields are dry and brown. The sky is blue with scattered white clouds.

Aquatic Ecology

- 1.3.23. The Environment Agency Freedom of Information request includes searches for protected aquatic species in the area. This states that there are no protected species such as Salmon (*Salmo Salar*) or white clawed crayfish (*Austropotamobius pallipes*) within a 500m search area. However, protected species European Eel (*Anguilla anguilla*), Spined Loach (*Cobitis taenia*) and River Lamprey (*Lampetra fluviatilis*) are shown within 2km of the sites, and care should be taken for any migratory routes. This includes the European Eel on the South Holland Main Drain downstream of the Solar Development Area and on the River Welland upstream of the Solar Development Area.
- 1.3.24. According to the Environment Agency, European Water Vole (*Arvicola amphibus*) are shown as present within 1,239m from the Solar Development Area. This includes records on South Holland Main Drain, adjacent to Land Parcel D, Wheat Mere Drain and watercourses connected to Lambert Drain. Water vole surveys have been undertaken where crossings are required.
- 1.3.25. None of the watercourses in the Study Area are considered to be chalk rivers⁹.
- 1.3.26. A full description of the baseline is outlined within **ES Chapter 9: Ecology and Biodiversity** (Doc Ref. 6.1) and associated appendices.

Nature Conservation Sites

- 1.3.27. Statutory sites that are designated for nature conservation and with the potential for a hydrological link were identified through a review of the Multi Agency Geographic Information for the Countryside (MAGIC)⁹ (refer also to **ES Chapter 9: Ecology and Biodiversity** (Doc Ref 6.1). There are no international or national sites designated for nature conservation within the Solar Development Area.
- 1.3.28. The Nene Washes SSSI is located approximately 10km to the south of the Solar Development Area. This comprises an area of flood wet grassland along river channels. It supports species of breeding and wintering waterbirds as well as nationally scarce plants and vulnerable, rare or relict fenland invertebrates. No further assessment is proposed of this designated ecological site as it is outside of the water environment Solar Development Area and it is unlikely that there would be any significant effects on water quality at this distance when taking into account dilution and dispersion.
- 1.3.29. There are three Local Wildlife Sites (LWS) within the Order Limits of the Solar Development Area. These are non-statutory designated sites. The Slys Connection LWS is within Land Parcels D-2 and D-3 and South Holland Main

Drain (West) is within Land Parcel B-5. The Lambert Drain to Highstock Drain Connection LWS crosses the Order Limits at Langary Gate Road. These are discussed in more detail in **ES Chapter 9: Ecology and Biodiversity** of this ES (Doc Ref 6.1).

Water Resources

- 1.3.30. A Freedom of Information (Fol) request was made, under the Environmental Information Regulations 2004¹⁸, to the Environment Agency and received in May 2025. A further request for updated data was made in January 2026. The request sought access to environmental data relevant within the Solar Development Area and Inter Array Connections. The details of the request and the response received are outlined below.
- 1.3.31. The South Holland District Council was contacted to provide details of Private Water Supplies (PWS) within the Solar Development Area and Inter Array Connections. A response was received in June 2025. The details of the response received are outlined below.

Pollution Incidents

- 1.3.32. Information on pollution incidents which have occurred in the area have been obtained from the Environment Agency. Pollution incidents to water are classified as Category 1 (serious impact) through to Category 4 (No impact). Category 1 to Category 3 (minor impact) incidents have been reviewed within the last 5 years (2020–2025).
- 1.3.33. There have been seven water pollution incidents within the Solar Development Areas and Inter Array Connections Study Area (see **ES Figure 11-1** (Doc Ref. 6.2)):
- P6 was recorded on Parson's Lane, to the south of the Inter Array Connection between Solar Development Area land parcel C and D. The cause was not identified;
 - P34 was reported on Broadgate Road south of the Inter Array Connection between Solar Development Area land parcel C and D, with the pollutant listed as 'crude sewage';

18 HMSO (2004) The Environmental Information Regulations. Available at:
<https://www.legislation.gov.uk/uksi/2004/3391/contents> [Accessed October 2025]

- P30 was recorded on Eaugate Road, north of the Solar Development Area land parcel B, with the pollutant listed as 'diesel'. One incident was recorded on Mill Lane to the south of Solar Development Area land parcel D, with the cause not identified;
- P11 was recorded at Lutton Gate Lodge to the south-east of Solar Development Area land parcel D with the cause not identified;
- P22 was recorded on Leedsgate Bridge to the north-west of Solar Development Area land parcel D, with the cause listed as 'contaminated water'; and
- P24 was recorded on Coy Bridge adjacent to South Holland Main Drain and Solar Development Area land parcel D, with the cause not identified.

Drinking Water Protected Areas and Safeguard Zones

- 1.3.34. There are no surface or groundwater Drinking Water Protected Areas or Safeguard Zones in the Solar Development Area and Inter Array Connections⁹.

Surface Water Abstractions

- 1.3.35. Information received from the Environment Agency on abstraction show there are eight surface water abstractions within 1km of the Solar Development Area and Inter Array Connections. These are shown in **ES Figure 11-1 Surface Water Features and their Attributes** (Doc Ref. 6.2). The abstractions are listed below, together with a summary of why these are scoped in, or out, of further assessment:

- Licence AN/031/0014/058 (SW1) abstracts from an unnamed tributary of the River Welland for trickle irrigation. This abstraction is scoped out of further assessment as the tributary is to the west of the River Welland and is therefore not connected to the Scheme;
- Licence AN/031/0014/047 (SW2) abstracts from BHB02 for 'transfer between sources'. This abstraction is scoped in for further assessment due to being located downstream of the Scheme;
- Licence AN/031/0014/046 (SW3) abstracts from WEL01 for 'transfer between sources'. This abstraction is scoped in for further assessment due to being located downstream of the Scheme;
- Licence 5/32/11/*0019 (SW4, SW5, and SW6) abstracts from BHB01, WEL01 and CXD01 for spray irrigation, respectively. This abstraction is

scoped in for further assessment due to being located downstream of the Scheme; and

- Licence 5/31/14/*5/0185 (SW9 and SW10) abstracts from WEL01 and NEW01 for spray irrigation. This abstraction is scoped out of further assessment due to being located upstream of the Scheme.

Groundwater Abstractions

- 1.3.36. According to the Environment Agency there are no licenced active groundwater abstractions in the Solar Development Area and Inter Array Connections.

Private Water Supplies

- 1.3.37. According to the South Holland District Council there are no surface water or groundwater PWS within the Solar Development Area and Inter Array Connections.

Groundwater Source Protection Zones and aquifers

- 1.3.38. There are no groundwater source protection zones in the Solar Development Area and Inter Array Connections.
- 1.3.39. There are no Groundwater Support Schemes in the Solar Development Area and Inter Array Connections.
- 1.3.40. The Bedrock Aquifer is designated as Unproductive Strata. The Superficial Aquifer is largely designated as Unproductive Strata, with small areas of Secondary A and Secondary (Undifferentiated) aquifer associated with sand and alluvial deposits.

Nitrate Vulnerable Zones (NVZ)

- 1.3.41. A small section in the southwest of the Site is contained within a NVZ. NVZs are areas designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015¹⁹. The Solar Development Area and Inter Array Connections are unlikely to impact nitrate levels in the water environment and so the NVZ will not be considered any further.

¹⁹ HMSO (2015) Nitrate Pollution Prevention Regulations. Available at:
<https://www.legislation.gov.uk/uksi/2015/668/contents/made> [Accessed July 2025]

Flood Risk

- 1.3.42. The existing flood risk to the Solar Development Area and Inter Array Connections is summarised below, details of which have been taken from **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref 6.3).

Fluvial Flood Risk

- 1.3.43. The mapping indicates the flood risk level of fluvial flooding to the Solar Development Area and Inter Array Connections is high. The majority of the Solar Development Area and Inter Array Connections is located in Flood Zones 2 and 3. The mapping below does not take into account the flood defences, although defences are shown in the mapping. Land Parcel A is entirely within Flood Zone 3, and Land Parcels B and D are predominantly within Flood Zones 2 and 3, with small areas that are not Flood Zone. Land Parcel C is located within Flood Zone 2 and 3, however, the eastern half of this parcel lies outside any Flood Zone. Refer to **ES Figure 11-3** (Doc Ref 6.2). Existing land use across the Solar Development Area and Inter Array Connections is agricultural.

Rivers and Sea Flood Risk – Long Term Flood Risk

- 1.3.44. **ES Figure 11-3: Fluvial Flood Risk** (Doc Ref 6.2) shows the risk of flooding from rivers and sea across the Solar Development Area and Inter Array Connections ranges from very low to medium from the long term flood map for planning²⁰. This is due, for the majority of the Scheme being protected by flood defences, providing protection against a flood event with a 0.1% chance of occurring in any year (1 in 1000), including climate change, by the Crowland-Cowbit Washes and embankment, for the River Welland.

Surface Water Flood Risk

- 1.3.45. **ES Figure 11-4: Surface Water Flood Risk** (Doc Ref 6.2) shows the majority of the Site is generally considered to be at low risk of surface water flooding, with very small areas of medium to high risk of surface water flooding. These areas are likely associated with areas of low topography where surface water sits and pools rather than draining away.

²⁰ Long Term Flood Map for Planning: <https://check-long-term-flood-risk.service.gov.uk/postcode> [Accessed October 2025]

Tidal Flood Risk

- 1.3.46. The tidal limit of the River Welland is controlled by the tidal sluices, at Fulney Lock, in Spalding. Therefore, tidal risk is a low residual risk from the River Welland, if the lock was to fail or overtop.
- 1.3.47. The River Nene tidal limit is at Dog in a Doublet Lock, north of Peterborough. Review of the River Nene hydraulic model, notes the Scheme is not at risk of tidal flooding, or from a breach or overtopping of the River Nene Defences in Wisbech.

Artificial Sources Flood Risk

- 1.3.48. The Solar Development Area and Inter Array Connections are seen to be at residual risk of flooding from reservoirs, apart from the eastern parts of the Site, which shows no risk of flooding. This is due to the nearby reservoirs, Eyebrook Reservoir and Rutland Water that are located far west of the Scheme.

Ground Water Flood Risk

- 1.3.49. Online data has been reviewed to establish the existing groundwater risk. The GOV website for flood risk summary was used to obtain information regarding ground water flooding in the Solar Development Area and Inter Array Connections²¹ It is said that flooding from groundwater is unlikely in this area.

1.4. Current Baseline: Grid Connection Route

Topography, Climate and Land Use

- 1.4.1. The topography, climate and land use for the Grid Connection Route is considered as the same as for the Solar Development Areas. Please see paragraph 1.3.1.

Geology, Groundwater and Soils

- 1.4.2. The geology, groundwater and soils for the Grid Connection Route is considered to be similar to the Solar Development Areas and Inter Array Connections. Please see paragraph 1.3.6.

²¹ Long Term Flood Map for Planning: <https://check-long-term-flood-risk.service.gov.uk/postcode> [Accessed October 2025]

Surface Water features

- 1.4.3. All surface water features are shown on **ES Figure 11-1 Surface Water Features And Their Attributes** (Doc Ref 6.2) and listed in Table 1-6.
- 1.4.4. The River Welland is located approximately 680m west from the northern end of the Grid Connection Route, this is a Main River and is flowing north. Vernatts Drain is located 200m west of the River Welland and is scoped out of this assessment, as there is no pathway from the construction or operational area to Vernatts Drain. Also in the area are Lord’s Drain and Wheat Mere Drain which are oriented on a north-south direction. Close to the Lord’s Drain / Wheat Mere Drain crossing of A151 west of Weston Hills Village there is a pumping station.
- 1.4.5. As the route passes south, it crosses Wheat Mere Drain, and then Moulton Mere Drain towards Austendyke Road, where the route crosses alongside the parallel Austen Dike. The route travels in a south-southwest direction east of Delgate Bank towards the B1357 Moulton Chapel Road.
- 1.4.6. North of Moulton Chapel Road the Scheme crosses Delgate Drain, with the Order Limits extending westwards to Wheat Mere Drain and the A16. The Grid Connection Route extends southwards to Queen Bank Road, and to connect with the Solar Development Area Land Parcel B.

Table 1-6 Surface water features that may be potentially affected by the Grid Connection Route

Water Feature	Water Feature ID	Approx NGR
Wheat Mere Drain tributary 3	WMD04	TF 27155 16476
Unnamed Drain 3	UND03	TF 27026 17206
Delgate Drain	DGD01	TF 28221 18311
Delgate Drain tributary 1	DGD02	TF 27597 17561
Delgate Drain tributary 2	DGD03	TF 27801 17872
Delgate Drain tributary 3	DGD04	TF 27878 18123
Delgate Drain tributary 4	DGD05	TF 27948 18236
Delgate Drain tributary 5	DGD06	TF 28722 20186
Delgate Drain tributary 6	DGD07	TF 28661 19165
Delgate Drain tributary 7	DGD08	TF 28851 19595
Delgate Drain tributary 8	DGD09	TF 28843 19627

Water Feature	Water Feature ID	Approx NGR
Delgate Drain tributary 9	DGD10	TF 28253 18400
Moulton Mere Drain	MMD01	TF 28967 19726
Moulton Mere Drain tributary 1	MMD02	TF 28903 19788
Moulton Mere Drain tributary 2	MMD03	TF 29069 20133
Moulton Mere Drain tributary 3	MMD04	TF 29129 20251
Moulton Mere Drain tributary 4	MMD05	TF 29180 20574
Moulton Mere Drain tributary 5	MMD06	TF 29221 20708
Moulton Mere Drain tributary 6	MMD07	TF 29216 20863
Moulton Mere Drain tributary 7	MMD08	TF 29210 20871
Moulton Mere Drain tributary 8	MMD09	TF 29213 21309
Austendyke Drain	ADD01	TF 29291 21786
Austendyke Drain tributary 1	ADD02	TF 29525 21811
Austendyke Drain tributary 2	ADD03	TF 29280 21899
Austendyke Drain tributary 3	ADD04	TF 29411 21351
Moulton Mere Drain North	MDN01	TF 29186 22214
Delgate Drain North tributary 1	DDN02	TF 28819 22439
Delgate Drain North	DDN01	TF 28805 22429
Delgate Drain North tributary 2	DDN03	TF 28699 22499
Delgate Drain North tributary 3	DDN04	TF 28604 22705
Delgate Drain North tributary 4	DDN05	TF 28546 22804
Delgate Drain North tributary 5	DDN06	TF 28454 22862
Delgate Drain North tributary 6	DDN07	TF 28385 22924
Delgate Drain North tributary 7	DDN08	TF 28658 22603
Wheat Mere Drain tributary 4	WMD05	TF 28232 22941
Old Exeter Drain tributary 1	OED02	TF 27697 23585
Old Exeter Drain tributary 2	OED03	TF 27710 23739
Old Exeter Drain tributary 3	OED04	TF 27682 23888
Old Exeter Drain tributary 4	OED05	TF 27683 23999
Old Exeter Drain tributary 5	OED06	TF 27704 24369

Water Feature	Water Feature ID	Approx NGR
Wheat Mere Drain tributary 5	WMD06	TF 27659 24379
Lord's Drain tributary 1	LOD02	TF 28404 24938
Lord's Drain tributary 3	LOD04	TF 27985 25565
Lord's Drain	LOD01	TF 28016 25071
Lord's Drain tributary 2	LOD03	TF 28408 24967
Lord's Drain tributary 4	LOD05	TF 27997 25584
Lord's Drain tributary 5	LOD06	TF 27366 24507
Lord's Drain tributary 6	LOD07	TF 27740 25336
Lord's Drain tributary 7	LOD08	TF 28197 26113
Lord's Drain tributary 8	LOD09	TF 28060 27044
Lord's Drain tributary 9	LOD10	TF 28217 25314
Lord's Drain tributary 10	LOD11	TF 27491 25204
Lord's Drain tributary 11	LOD12	TF 27493 25240

WFD Classifications

- 1.4.7. The present (i.e. Cycle 3, 2022) WFD classifications of the surface water bodies underlying the Grid Connection Route are given in Table 1-7, as identified through **ES Appendix 11-2 WFD Assessment** (Doc Ref 6.3).

Table 1-7: WFD Classification (Cycle 3 date) for WFD surface water bodies underlying the Grid Connection Route Study Area⁶

WFD Parameter	Status/Summary	
Water Body ID	GB205031050755	GB205032050405
Water Body Name	Moulton River	South Holland Main Drain
Water Body Type	River	River
Water Body Area (km ²)	24.28	169.37

Water Body Length (km)	5.56	36.12
Hydromorphological Designation	Artificial	Artificial
Ecological Status or Potential	Moderate	Moderate
Current Overall Status	Moderate	Moderate
Biological Quality Elements	N/A	Poor
Physico-chemical Quality Elements	Bad	Moderate
Hydromorphological Quality Elements	Not high	Not high
Chemical status	Does not require assessment	Does not require assessment

1.4.8. RNAGs for the Moulton River water body include diffuse source pollution as a result of poor nutrient management; point source pollution from private sewage treatment; physical modification for land drainage; and natural conditions affecting temperature.

1.4.9. RNAGs for the South Holland Main Drain include diffuse source pollution as a result of poor soil management; the presence of invasive non-native species (INNS) including Chinese mitten crab and other fish; physical modification for land drainage and water level management for flood protection; and saline intrusion from natural sources.

Surface Water Quality and Flow

1.4.10. There are three Environment Agency surface water monitoring locations in the Grid Connection Route Study Area. These are the Lower Welland A151, Lower Welland Runway and Lords Drain Near Spalding. The monitoring is summarised in Table 1-8 and the locations shown on **ES Figure 11-1 Surface Water Features and Their Attributes** (Doc Ref 6.2).

Table 1-8: Environment Agency water quality monitoring for water features along the Grid Connection Route

Parameter	Monitoring Location		
	Lower Welland - A151	Lower Welland - Runway	Lords Drain Near Spalding
Date of monitoring	12 October 2015 to 26 August 2016	13 July 2018 to 15 May 2019	26 March 2015 to 27 March 2017
pH	8.25	8.65	8.85
Max			
Min	7.59	7.08	7.33
Mean	7.853	7.929	8.004
Temperature	23.2 °C	27.9 °C	19.4 °C
Max			
Min	5 °C	5.6 °C	3.8 °C
Mean	12.74 °C	15.11 °C	11.323 °C
Conductivity	3549 µS/cm	3124 µS/cm	3112 µS/cm
Max			
Min	1989 µS/cm	1868 µS/cm	778 µS/cm
Mean	2588.2 µS/cm	2465 µS/cm	2077.2 µS/cm
Ammoniacal Nitrogen as N	23 mg/L N	15 mg/L N	2.66 mg/L N
Max			
Min	0.2 mg/L N	1.3 mg/L N	0.03 mg/L N
Mean	10.6 mg/L N	7 mg/L N	0.64 mg/L N
Nitrogen, Total Oxidised as N	1.4 mg/L	1.6 mg/L	20.1 mg/L
Max			
Min	0.26 mg/L	0.45 mg/L	0.2 mg/L
Mean	0.7 mg/L	0.98 mg/L	1.8 mg/L

Parameter	Monitoring Location		
	Lower Welland - A151	Lower Welland - Runway	Lords Drain Near Spalding
Nitrate as N Max	1.36 mg/L	1.54 mg/L	19.4 mg/L
Min	0.1 mg/L	0.12 mg/L	0.15 mg/L
Mean	0.49 mg/L	0.69 mg/L	1.75 mg/L
Nitrite as N Max	0.21 mg/L	0.11 mg/L	0.68 mg/L
Min	0.04 mg/L	0.04 mg/L	0.00 mg/L
Mean	0.09 mg/L	0.07 mg/L	0.05 mg/L
Orthophosphate, reactive as P Max	0.85 mg/L	1.9 mg/L	0.57 mg/L
Min	0.06 mg/L	0.1 mg/L	0.01 mg/L
Mean	0.42 mg/L	0.51 mg/L	0.1 mg/L
Oxygen, Dissolved, % Saturation Max	164.3	214.4	239.4
Min	26.2	0.7	24.4
Mean	73.97	84.33	108.09
Oxygen, Dissolved as O ₂ Max	17.1 mg/L	17.1 mg/L	23.9 mg/L
Min	2.39 mg/L	0.06 mg/L	2.24 mg/L
Mean	8.41 mg/L	8.85 mg/L	12.07 mg/L

1.4.11. On the Lower Welland across both monitoring locations, water quality is circum-neutral with a mean pH of 7.59 and 7.08. Similarly, the site on Lords Drain is circum-neutral with a pH of 7.33. Ammoniacal nitrogen at the A151 site is 10.6 mg/l, while at the Runway site is 7 mg/l. Mean ammoniacal nitrogen is much lower on the Lords Drain site at 0.64 mg/l. Nitrate levels are low at 0.49 and 0.69 for the A151 site and Runway site indicating that there may not be significant pressure from agricultural runoff / non-mains domestic sewerage systems affecting water quality at this location. Nitrate levels are higher on the Lords Drain site, at 1.75 mg/l, potentially as result of agricultural runoff from the nearby Shepherd’s Farm. Orthosphosphate values are low for all three sites. Mean dissolved oxygen saturation for the A151 site falls within Good WFD classification, and for the Runway site and Lords Drain site, falls within High WFD classification. This suggests that the water body is well oxygenated at these locations.

Hydromorphology

1.4.12. The Grid Connection Route interacts with multiple large watercourses and several smaller channels within the Grid Connection Route Study Area and the hydromorphology of these is described in Table 1-9. The majority of the channels within the Order Limits are low quality ditches used for agricultural purposes.

Table 1-9: Description of hydromorphology of watercourses along the Grid Connection Route

Watercourse	Baseline Description
River Welland	The River Welland within the Study Area is designated as the Welland – conf Greatford Cut to tidal WFD water body which is classed as heavily modified. The River Welland is approximately 40m wide. Flood embankments will limit connectivity with floodplain.
Moulton Mere Drain	Moulton Mere Drain through the Grid Connection Route is not a designated WFD water body but takes the classification of its receiving water body. It is a straight, trapezoidal drainage channel which has likely been modified for agricultural purposes.
Delgate Drain	Delgate Drain through the Grid Connection Route is not a designated WFD water body but takes the classification of its receiving water body. It is a straight, trapezoidal drainage

Watercourse	Baseline Description
	channel which has likely been modified for agricultural purposes.
Lord's Drain	Lord's Drain through the Grid Connection Route is not a designated WFD water body however transitions into Moulton River downstream of the Study Area which is classified as heavily modified by the WFD.
Wheat Mere Drain	Wheat Mere Drain is not a designated WFD water body but takes the classification of its receiving water body. It is a straight, trapezoidal drainage channel which has likely been modified for agricultural purposes.

1.4.13. A number of smaller, unnamed watercourses/ditches are present within the Grid Connection Route. These watercourses are primarily artificial, likely created or modified to assist in agricultural land drainage. Historic mapping of the Study Area indicates that these modifications took place during the late 1800s. These are generally straight and uniform channels with an over-deep profile. Many of these artificially straight channels are ephemeral in nature due to both natural processes and human activities in agricultural landscapes. This was observed during the site walkover for multiple drainage channels.

1.4.14. The modification of these altered watercourses is intended to facilitate drainage and prevent waterlogging in fields. The grading of land and the installation of drainage systems may affect the ephemeral nature of these ditches. Flow within these watercourses is anticipated to be seasonal, with minimal to no flow in the summer. It is unlikely that the modified banks of these watercourses will allow water spillage onto the floodplain, even during particularly wet periods of the year. As a result, there is expected to be limited connection between the channel and the floodplain. However, individually they may contribute to the provision of aquatic habitat within the area, even if it is not the unaltered habitat of the area and therefore may still need to be considered.

Aquatic Ecology

1.4.15. The Environment Agency Freedom of Information request includes searches for protected aquatic species in the area. This states that there are no protected species such as Salmon (*Salmo Salar*) or white clawed crayfish (*Austropotamobius pallipes*) within 500m of the Grid Connection Route Study

Area. However, protected species European Eel (*Anguilla anguilla*), Spined Loach (*Cobitis taenia*) and River Lamprey (*Lampetra fluviatilis*) are shown within 2km of the sites, and care should be taken for any migratory routes.

- 1.4.16. According to the Environment Agency, European Water Vole (*Arvicola amphibus*) are shown as present within 1,239m from the Grid Connection Route. Water vole surveys have been undertaken where crossings are required.
- 1.4.17. None of the watercourses in the Study Area are considered to be chalk rivers⁹.
- 1.4.18. A full description of the baseline is outlined within **ES Chapter 9: Ecology and Biodiversity** (Doc Ref. 6.1) and associated appendices.

Nature Conservation Sites

- 1.4.19. Statutory sites that are designated for nature conservation and with the potential for a hydrological link were identified through a review of the MAGIC website⁹ (refer also to **ES Chapter 9: Ecology and Biodiversity** (Doc Ref. 6.1). There are no international or national sites designated for nature conservation within the Grid Connection Route.
- 1.4.20. The Wash & North Norfolk Coast SAC and Wash SSSI is approximately 10km downstream of the Order Limits of the Grid Connection Route. However, due to the likely high dilution of the River Welland, it is unlikely that water quality impacts would propagate this far downstream and no further consideration of this site within this assessment has been undertaken. The Wheatmere Drain LWS is located within the Order Limits of the Grid Connection Route and is described in more detail in **ES Chapter 9: Ecology and Biodiversity** (Doc Ref 6.1).

Water Resources

- 1.4.21. A FoI request was made, under the Environmental Information Regulations 2004²², to the Environmental Agency and received in May 2025. A further request to provide updated data was made in January 2026. The request sought access to environmental data relevant to the area within Grid Connection Route. The details of the request and results are outlined below.

22 HMSO (2004) The Environmental Information Regulations. Available at:
<https://www.legislation.gov.uk/uksi/2004/3391/contents> [Accessed 05 July 2025]

- 1.4.22. The South Holland District Council was contacted to provide details of PWS within the Grid Connection Route. A response was received in June 2025. The details of the response received are outlined below.

Pollution Incidents

- 1.4.23. Information on pollution incidents which have occurred in the Grid Connection Route have been obtained from the Environment Agency. Pollution incidents to water are classified as Category 1 (serious impact) through to Category 4 (No impact). Category 1 to Category 3 (minor impact) incidents have been reviewed within the last 5 years (2020–2025).

- 1.4.24. There have been seven water pollution incidents within the Grid Connection Route Study Area (see **ES Figure 11-1 Surface Water Features And Their Attributes** (Doc Ref 6.2)):

- P38 was reported in the east of Weston to the east of the Grid Connection Route, with the pollutant recorded as crude sewage;
- P20 was reported in the west of Weston to the east of the Grid Connection Route, with the pollutant recorded as crude sewage;
- P5 was reported to the northeast of the Grid Connection Route adjacent to the River Welland, with the cause recorded as household waste;
- P39 was reported on Camelgate Road to the west of the Grid Connection Route, recorded as crude sewage;
- P8 was reported on the A16/A151 roundabout, with the pollutant recorded as firefighting run-off; and
- P29 and P37 were reported at Swanpens Farm to the east of the Grid Connection Route, with the pollutants recorded as firefighting run-off and crude sewage.

Drinking Water Protected Areas and Safeguard Zones

- 1.4.25. There are no surface or groundwater Drinking Water Protected Areas or Safeguard Zones in the Grid Connection Route⁹.

Surface Water Abstractions

- 1.4.26. Information received from the Environment Agency on abstraction show there are two surface water abstractions within 1 km of the Grid Connection Route. These are shown in **ES Figure 11-1 Surface Water Features and their Attributes** (Doc Ref. 6.2). The abstractions are listed below, together with a summary of why these are scoped in, or out, of further assessment:

- Licence 5/31/14/*5/0247 (SW7 and SW8) abstracts from Vernatt's Drain for spray irrigation and general farming and domestic. This abstraction can be scoped out of further assessment as Vernatt's Drain is not hydrologically connected to the Scheme.

Groundwater Abstractions

- 1.4.27. According to the Environment Agency there are no licenced active groundwater abstractions in the Grid Connection Route.

Private Water Supplies

- 1.4.28. According to South Holland District Council there are no known surface water or groundwater PWS within the Grid Connection Route.

Nitrate Vulnerable Zones

- 1.4.29. A small section in the southwest of the Grid Connection Route is contained within a NVZ. However, as discussed earlier, no further consideration of NVZs is required.

Flood Risk

- 1.4.30. A summary of flood risk of the Scheme for all sources of the Grid Connection Route has been provided in below, details of which have been taken from **ES Appendix 11-3: Flood Risk Assessment** (Doc Ref 6.3).

Fluvial Flooding

- 1.4.31. Pre-Scheme fluvial flood risk is high, as online mapping indicates the majority of the Site is located in Flood Zones 2 and 3¹⁴. the Grid Connection Route generally lies within a combination of Flood Zones 2 and 3 with limited and localised areas in the south falling within Flood Zone 1. Existing land use across the Site is agricultural.

Tidal Flooding

- 1.4.32. This Site is not considered to be at risk of tidal flooding¹⁴. The west of the Scheme is protected against a flood event with a 0.1% chance of occurring in any year (1 in 1,000) by the Crowland-Cowbit Washes and embankment.

Pluvial (surface water) Flooding

- 1.4.33. The Environment Agency 'Flood Risk from Surface Water' Map¹⁴ shows areas that may be susceptible to surface water flooding following an extreme rainfall event. The mapping shows that the majority of the Grid Connection Route is at a 'Very Low' risk of surface water flooding. Only isolated and localised areas are shown to be at high, medium and low risk of surface water flooding.

Surface water flooding is also likely to be very localised. Risks range from low chance to high chance. The areas of risk are likely areas of low topography where surface water sits and pools rather than draining away.

Groundwater Flooding

- 1.4.34. The Strategic Flood Risk Assessment (SFRA) and online data has been reviewed to establish the existing groundwater risk. The GOV website²³ for long term flood risk¹⁴ was used to obtain information regarding ground water flooding in the Site. The website said that flooding from groundwater is unlikely in this area.

Sewer Flood Risk

- 1.4.35. It is considered unlikely that flooding from sewers will impact the Site as it is located within arable fields. The South Holland SFRA does not identify any public sewers or historic flood incidents.

Artificial Sources Flood Risk

- 1.4.36. The Environment Agency Reservoirs Map¹⁴¹⁴ shows the Site is seen to be at risk of flooding from reservoirs, apart from the east of the Order Limits, which shows no risk of flooding. This is due to the nearby reservoirs, Eyebrook Reservoir and Rutland Water that are located far west of the Scheme.

²³ GOV.UK (2024). Check your long term flood risk. [online] check-long-term-flood-risk.service.gov.uk. Available at: <https://check-long-term-flood-risk.service.gov.uk/risk#>. [Accessed October 2025]

