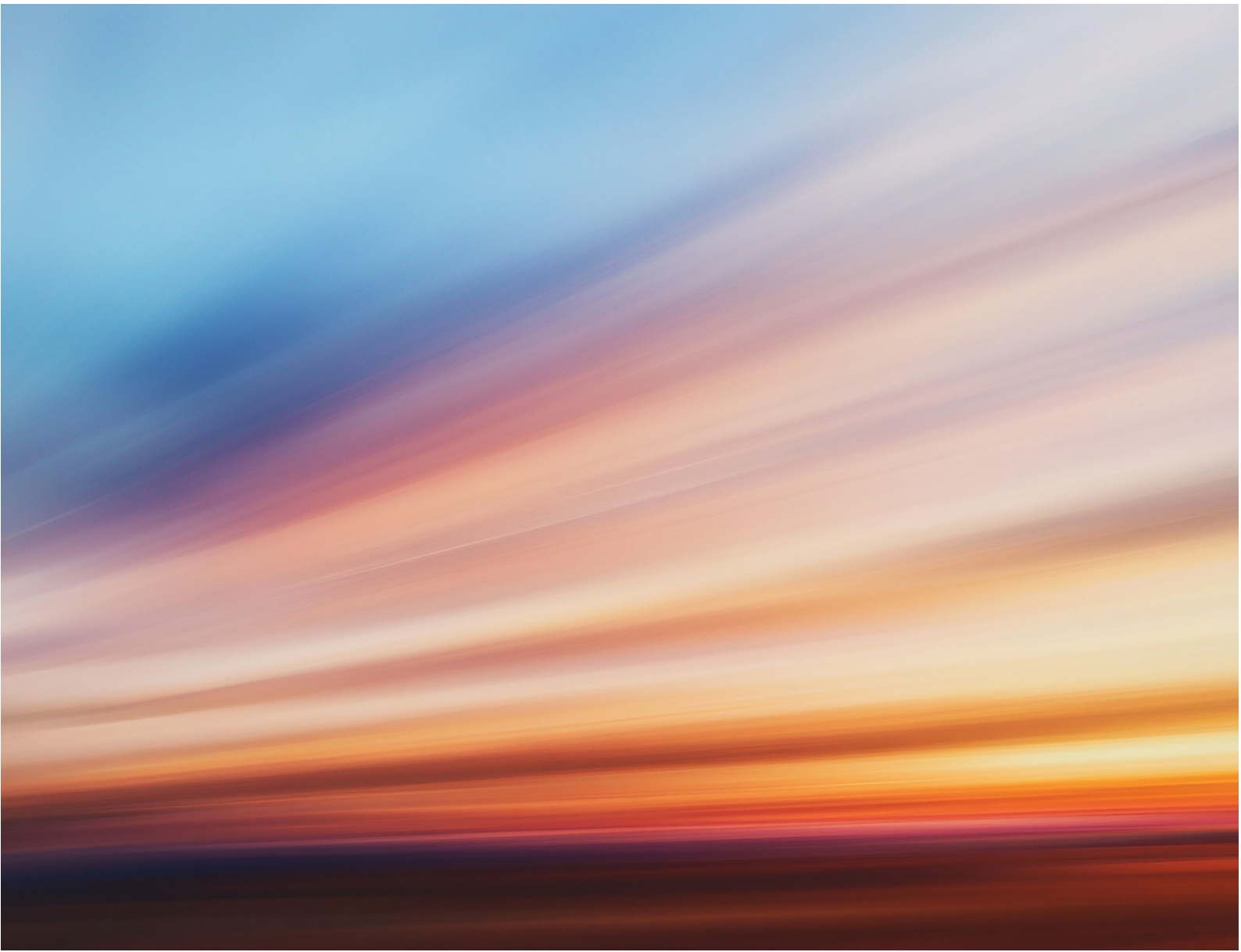
Mylen Leah Solar Farm

Preliminary Environmental Information Report (PEIR)

Volume 1

Chapter 15: Water

April 2026



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15. Water

15.1 Introduction

15.1.1 This chapter presents a preliminary assessment of the likely significant effects arising upon the water environment (water protected areas (and hydrologically connected watercourses), Water Framework Directive waterbodies (and hydrologically connected watercourses) and flood risk) during the construction, operation and decommissioning phases of Mylen Leah Solar Farm.

15.1.2 This chapter should be read in conjunction with the following chapters in **Volume 1** and with the following figures in **Volume 2**:

- **Chapter 7: Biodiversity**;
- **Chapter 10: Land and Groundwater**;
- **Chapter 11: Landscape and Visual**;
- **Figure 15.1: Watercourse and Waterbody Map**;
- **Figure 15.2: Water Framework Directive Waterbodies and Protected Areas Designations**;
- **Figure 15.3: Flood Map for Planning (Flood Zone Designations)**; and
- **Figure 15.4: Risk of Flooding from Surface Water Map**.

15.1.3 Following the EIA scoping process, the following receptors/matters have not been considered within this preliminary assessment:

- Water use demand (abstraction) during construction, operation and decommissioning.

15.1.4 It should also be noted that groundwater has been assessed as part of **Chapter 10: Land and Groundwater** in **Volume 1** and is therefore not considered within this chapter.

15.2 How have we engaged with others about water so far?

15.2.1 **Table 15.1** provides a summary of the engagement undertaken to date to inform this preliminary assessment, outside of the EIA Scoping process.

Table 15.1: Summary of engagement undertaken to date in relation to water

Consultee	Date of engagement	Summary of engagement
Environment Agency	1 April 2025	A meeting was held to discuss the flood risk constraints and initial design. A summary of the key points is included below: - The Environment Agency requested a Sequential Test for the overall Site selection due to the presence of Flood Zones 2 and 3 within the Site.

Consultee	Date of engagement	Summary of engagement
		• Modelling data should be obtained for the flood risk areas to inform the mitigation. The lowest point of the solar PV modules should be raised 300mm above the design flood event if located within a flood risk area, whilst for more critical equipment, such as the On-Site Substation, this should be 600mm. - Buffers from the top of banks of watercourses should be determined within the Flood Risk Assessment to inform mitigation principles. • To assess the flood risk associated with smaller watercourses and Internal Drainage Board Drains (less than 3km^2 catchments), the surface water flood mapping can be used as a proxy in determining the risk to areas where less critical equipment is i.e. solar PV modules. Where more critical infrastructure such as the On-Site Substations are sited, more investigation should be undertaken to determine the risk, such as 1D fluvial flood modelling. • As Mylen Leah Solar Farm is classed as essential infrastructure, the higher central allowance for climate change should be assessed, with the upper end allowance to be used as a sensitivity test.
Yorkshire and Humber Drainage Board	1 April 2025	A meeting was held to discuss the flood risk constraints and initial design. A summary of the key points is included below: - Any crossings, outfalls, structures or significant planting within 9m either side of an Internal Drainage Board Watercourse requires consent. - Single span bridge crossings are preferred, but for smaller watercourses culverts are not opposed to as long as it can be shown that it does not restrict the flow of the watercourse. For example, there will be many existing crossings, so the proposed crossings may use those as an initial assessment of what is required. - The Internal Drainage Board will provide a shapefile of the network to indicate where the watercourses are located; however, survey/modelling information of each watercourse is not available.

Consultee	Date of engagement	Summary of engagement
Environment Agency	16 April 2025	A data request response for flood modelling data was received in which the Environment Agency confirmed the Flood Zones for the Site were produced by using National Generalised Modelling that was produced in 2004. As the JFLOW modelling method was developed, tested and reviewed for production of the Flood Zone extents only, the Environment Agency currently has no information on the accuracy of the water depth data and the data is not suitable for use within a flood risk assessment.
Environment Agency	16 March 2026	A meeting was held to discuss the flood risk constraints and proposed watercourse crossings. A summary of the key points is included below: - The design should be based on the 1 in 100 year flood extent and the risk of flooding from rivers and sea dataset in absence of model data. - The Environment Agency's flood risk from rivers and sea dataset should be used as proxy for the Flood Zone 3b designation (functional floodplain) by using the 1 in 30 year extent. - Solar infrastructure should be sited outside of Flood Zone 3b. - There are two 'ponded' areas of Flood Zone 2 designation on-site. The Environment Agency suggests that LiDAR and aerial imagery may show there to be an ephemeral watercourse. If it is an ephemeral watercourse, this needs to be treated as river flooding. - The Environment Agency suggests using surface water flood maps as a proxy for smaller watercourses that aren't modelled with the Flood Zones. - Launch and reception pits should be outside of the functional floodplain where possible, with a 10m easement from the Main River top of bank for any works. - The Environment Agency advises to take lots of photographs when on-site to inform the Watercourse Crossing Baseline Assessment.

15.2.2 Consultation and engagement with consultees and relevant stakeholders is still ongoing and will continue to inform the design of Mylen Leah Solar Farm and the EIA process. These include, but are not limited to:

- The Environment Agency;
- The Lead Local Flood Authority (East Riding of Yorkshire Council);
- The Internal Drainage Boards (Foss, and Ouse and Humber);

- The Canal and River Trust; and
- Yorkshire Water.

15.3 What legislation, planning policy and guidance is relevant to water?

15.3.1 The general legislation and planning policy context for Mylen Leah Solar Farm is provided in **Section 1.4** of **Chapter 1: Introducing Mylen Leah Solar Farm** in **Volume 1**. Legislation, planning policy and guidance relevant to this preliminary water assessment is detailed below:

Legislation

- Land Drainage Act 1991[1];
- The Nitrates Directive 91/676/EEC[2];
- Water Industry Act 1991[3];
- Water Resources Act 1991[4];
- Control of Pollution (Oil Storage) (England) Regulations 2001[5];
- Water Act 2003[6];
- Flood and Water Management Act 2010[7];
- The Priority Substances Directive 2013/39/EU[8];
- Water Act 2014[9];
- The Nitrate Pollution Prevention Regulations 2015[10];
- Environmental Damage (Prevention & Remediation) (England) Regulations 2015 (as amended)[11];
- The Environmental Permitting (England and Wales) Regulations 2016[12];The Water Framework Directive 2000/60/EC[13], which is transposed into legislation for England via The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[14];
- The Habitats Directive 92/43/EEC[15], which is transposed into legislation for England via The Conservation of Habitats and Species Regulations 2017[16];
- The Environment Act 2021[17]; and
- The Flood Directive 2007/60/EC[18], which is transposed into legislation for England via the Retained EU Law (Revocation and Reform) Act 2023[19].

National planning policy

- Overarching National Policy Statement for Energy (EN-1) (December 2025, published January 2026) [20] specifically Paragraphs 4.9.6-19, 5.5.60 and Section 5.8;
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (December 2025, published January 2026) specifically Paragraphs 2.10.52, 2.10.76 and 2.10.146 and Section 2.4;

- National Policy Statement for Electricity Networks Infrastructure (EN-5) (December 2025, published January 2026)[21], specifically Section 2.3; and
- National Planning Policy Framework (NPPF) (2024)[22]. Section 14 'Meeting the challenge of climate change, flooding and coastal change' sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

Local planning policy

- East Riding Local Plan Update 2020-2039 (adopted April 2025)[23], specifically Policy S2: 'Addressing climate change', Policy S9 'Strengthening blue/green infrastructure', Policy ENV4 'International, National and Local Sites of Importance for Biodiversity', Policy ENV5 'Enhancing biodiversity and geodiversity' and Policy ENV6 'Managing environmental hazards'.

Guidance

- Flood Risk and Coastal Change Planning Practice Guidance (Department for Levelling Up, Housing and Communities, 2022)[24];
- Flood Risk Assessments: climate change allowances (Environment Agency, 2022)[25];
- National Standards for Sustainable Drainage Systems (Department for Environment, Food and Rural Affairs, 2025)[26];
- Design Manual for Roads and Bridges LA 113: Road Drainage and the Water Environment, Revision 1 (DMRB, 2020)[27];
- Design Manual for Roads and Bridges LA 104: Environmental Assessment and Monitoring, Revision 1 (DMRB, 2020)[28];
- Flood Risk and Coastal Change National Planning Practice Guidance (Department for Levelling Up, Housing and Communities, 2025)[29];
- Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Planning Inspectorate, 2025)[30];
- Flood Risk Assessments: climate change allowances (Environment Agency, 2022)[31];
- Flood risk assessment: flood zones 1, 2, 3 and 3b (Environment Agency, 2024)[32];
- Oil Storage Regulations for Businesses (Environment Agency and Defra, 2015)[33];
- Pollution prevention for businesses (Department for Environment, Food and Rural Affairs and Environment Agency, 2016)[34];
- Land contamination risk management (LCRM) (Environment Agency, 2020)[35];

- BS EN 858-1 and 858-2 (Design and maintenance of oil separators) (EU 2002, fully UK adopted 2003)[36];
- Planning Practice Guidance (Communities and Local Government, 2024)[37], specifically Flood Risk and Coastal Change, ID 7; and
- The SuDS Manual – C753 (CIRIA, 2015)[38].

15.4 What study area has been used for water?

15.4.1 For the purposes of this preliminary assessment, the Site and a 1km buffer from the draft Order Limits have been considered as the study area with regard to identifying hydrological receptors that could be impacted by the construction, operation and decommissioning of Mylen Leah Solar Farm.

15.4.2 In the absence of any specific guidance relating to solar developments, professional judgement has been used to determine the study area. Professional judgement has been informed by DMRB LA 113 (2020), where a 1km buffer is considered appropriate for water environment assessments including the receptors of flood risk, Water Framework Directive waterbodies (and hydrologically connected watercourses) and water protected areas (and hydrologically connected watercourses) considered within this preliminary assessment.

15.4.3 A 1km buffer is considered a sufficient distance to enable the deposition of silts in overland flows and dilution of any concentrated pollutants so that waterbodies at a greater distance than the buffer would not be at significant risk of being affected.

15.4.4 The study area is presented on **Figure 15.1: Watercourse and Waterbody Map** in **Volume 2**.

15.5 How have existing water conditions been understood?

Data sources to inform the EIA baseline characterisation

15.5.1 A desk-based study has been undertaken to identify the existing hydrological features and assess any potential effects caused by Mylen Leah Solar Farm during the construction, operation and decommissioning phases. The hydrology has been assessed in terms of the natural drainage patterns and water quality.

15.5.2 In order to inform this preliminary assessment, additional information has been obtained from Environment Agency sources, such as fluvial flood mapping and information on nationalised modelling of surface water flow paths available from online government meta data.

15.5.3 The following data sources have been used to understand the existing water baseline conditions:

- Flood Map for Planning[39];
- Risk of Flooding from Surface Water maps[40];
- Statutory Main River Map[41];
- Water environment and Water Framework Directive classifications[42];
- Yorkshire and Humber Drainage Boards asset map[43];

- Canal and River Trust asset map[44];
- Magic Map[45]; and
- Online aerial imagery[46].

Site visits/surveys

15.5.4 No on-site surveys or site visits have been undertaken to inform this preliminary assessment. Targeted site visits will be undertaken to inform the Flood Risk Assessment, Water Framework Directive Screening Assessment and Watercourse Crossing Baseline Assessment as part of the DCO application. These targeted areas will be of the mapped watercourses within the draft Order Limits and the areas proposed for watercourse crossings.

15.6 What are the water conditions within the study area?

Existing baseline

Yorkshire and Humber Drainage Board watercourses

15.6.1 The Internal Drainage Board District boundary of the 'Ouse and Humber' covers most of the Site, study area and the south-eastern edge of the underground grid connection corridor. The remainder of the underground grid connection corridor and the northern extent of the study area are predominantly covered by the 'Foss' Internal Drainage Board. The Yorkshire and Humber Drainage Board represents the two Internal Drainage Board districts which cover the Site and study area. The Internal Drainage Board Districts within the study area are shown in **Figure 15.1: Watercourse and Waterbody Map** in **Volume 2**. Internal Drainage Board designated watercourses are maintained by the Internal Drainage Board and are subject to Internal Drainage Board byelaws.

15.6.2 The Yorkshire and Humber Drainage Board asset map identifies several Internal Drainage Board watercourses and culverts/structures within the study area; these are shown on **Figure 15.1: Watercourse and Waterbody Map** in **Volume 2**. The main Internal Drainage Board watercourse tributaries through the Site are Lords Drain and Foss Dyke, located in the south/south-eastern Site area and draining southwards, Charity Drain which is located more centrally within the Site and drains south-west/westwards, and Common Drain, Two Spits Goit and Fox Covert Drain which are located in the south-west of the Site, all of which drain south/south-west to Bottoms Drain.

Environment Agency Main Rivers

15.6.3 The Environment Agency Main River map identifies one Environment Agency designated Main River within the study area, shown in **Figure 15.1: Watercourse and Waterbody Map** in **Volume 2**. The Main River is identified as The Beck/Bielby Beck, which is located within the underground grid connection corridor, flowing from east to west and is culverted below Pocklington Canal to cross from south to north of the canal.

Canal and River Trust assets

15.6.4 The Canal and River Trust asset map identifies Pocklington Canal within the study area, and is located across the underground grid connection corridor,

as shown in **Figure 15.1: Watercourse and Waterbody Map** in **Volume 2**. The Canal and River Trust notes that the majority of Pocklington Canal is designated as a Site of Special Scientific Interest (SSSI).

Ordinary watercourses

15.6.5 Within the extents of the study area there are several unnamed (and potentially unmapped) watercourses, which will be neither classified as Internal Drainage Board maintained watercourses or Main Rivers. These are classified as Ordinary Watercourses and will come under the jurisdiction of the Lead Local Flood Authority. Ordinary Watercourses can include field drainage ditches, highway ditches and rivers or streams. Works in or adjacent to Ordinary Watercourses may be subject to Ordinary Watercourse Consents. Given the Internal Drainage Board boundaries extend across the study area, it is likely the Internal Drainage Board will act on behalf of the Lead Local Flood Authority as consultee for any works required in or around these watercourses. This will be confirmed as part of future consultation (refer to **Section 15.2** above).

Water Framework Directive waterbodies

15.6.6 There are three surface water Water Framework Directive waterbodies identified within the study area; these are shown on **Figure 15.2: Water Framework Directive Waterbodies and Protected Areas Designations** in **Volume 2**.

15.6.7 The Water Framework Directive waterbody of 'Foulness from Black Beck to Market Weighton Canal Water Body' is located centrally within the Site, aligned north to south. The waterbody has been classified as 'poor' ecological status under Cycle 3 of the Water Framework Directive. The reasons for not achieving a good classification are poor nutrient management and septic tanks. There is low confidence under Cycle 3 of the Water Framework Directive that the waterbody will achieve a good status in 2027.

15.6.8 The second Water Framework Directive waterbody within the Site is 'Pocklington Beck from Bielby Beck to River Derwent Water Body' aligned east to west through the underground grid connection corridor and study area towards the north. It is the same Main River watercourse identified as The Beck/Bielby Beck. The waterbody has been classified as 'moderate' ecological status under Cycle 3 of the Water Framework Directive. The reason for not achieving a good classification is flood protection. There is low confidence under Cycle 3 of the Water Framework Directive that the waterbody will achieve a good status in 2027.

15.6.9 Lastly, the Water Framework Directive Canal Waterbody mapping identifies 'Pocklington Canal Water Body' aligned east to west through the underground grid connection corridor and study area towards the north. The waterbody has been classified as 'good' ecological status under Cycle 2 of the Water Framework Directive.

Fluvial and tidal flood risk

15.6.10 The Environment Agency Flood Map for Planning identifies several fields within the Site which are subject to flooding. The fluvial flood risk categories as classified into either Flood Zone 2 (representing a 1 in 100 to 1 in 1000

annual probability of fluvial flooding or a 1 in 200 to 1 in 1000 annual probability of tidal flooding) or Flood Zone 3 (a greater than 1 in 100 annual probability of fluvial flooding or a greater than 1 in 200 annual probability of tidal flooding). The Flood Map for Planning is provided on **Figure 15.3: Flood Map for Planning (Flood Zone Designations)** in **Volume 2**.

15.6.11 The mapping shows flooding of Flood Zone 2 and 3 designations within the Site, which is predominantly limited to land adjacent to the Internal Drainage Board watercourses of Lords Drain/Foss Dyke towards the east of the Site. These areas of flooding partially cover the western extents of Fields 13.ze, 13.zd, 13.zf, 13.zi and 13.zj. Given the connectivity to flood extents associated with the River Humber, this flooding may be classified as tidal, or fluvial and tidal.

15.6.12 There are limited extents of flooding of Flood Zone 2 and 3 designations associated with the Internal Drainage Board watercourses of Charity Drain and Bottoms Drain towards the west/south-west of the Site. These areas of flooding partially cover Fields 20.a, 4.b, 18.f, 18.g, 18.j, 1.c, 10.e, 9.c and 9.d. These areas of flooding are more tightly aligned with the watercourses and are largely limited to field boundaries.

15.6.13 The underground grid connection corridor towards the north of the Site contains a flooding area of Flood Zone 2 and Flood Zone 3 designation. It is assumed these flood extents are associated with The Beck/Bielby Beck. These designations continue within the study area along the route of The Beck/Bielby Beck.

15.6.14 Within the Site to the south, the entirety of Field 2.a is designated as Flood Zone 2, assumed to be associated with flooding from the Internal Drainage Board watercourses of Moor Dyke and Oaktree Lane Drain.

15.6.15 In the centre of the Site, in Fields 14.h and 14.j, ponded areas of Flood Zone 2 are mapped.

15.6.16 Within the study area to the south, there are areas of flooding designated as Flood Zones 2 and 3 associated with flooding from the Internal Drainage Board watercourses of Foss Dyke, Hazelbush Drain and Moor Dyke.

15.6.17 Within the study area to the west, there is flooding of Flood Zone 2 and Flood Zone 3 designation associated with the Internal Drainage Board watercourse of Walloway Drain.

15.6.18 There is no further information provided for flood extents identified by the Flood Map for Planning. The Environment Agency has been consulted, and it has been confirmed they hold no available model data for the design flood events to reference. The Land Parcels comprising the solar PV modules currently apply the sequential approach and the risk is therefore considered to be very low. The entirety of the fields proposed for the On-Site Substation options are all wholly located within areas of Flood Zone 1 designation and at a very low risk of fluvial/tidal flooding. At detailed design, the precise location of the On-Site Substations within the chosen fields will be confirmed.

Flood defences

15.6.19 Within the Site (crossing the underground grid connection corridor) and study area, there are fluvial flood defences in the form of embankments and naturally high ground along either bank of The Beck/Bielby Beck.

Surface water flooding

15.6.20 The Risk of Flooding from Surface Water maps produced by the Environment Agency have been used to identify the areas of surface water flood risk from pluvial sources within the Site and study area; the mapping is provided in **Figure 15.4: Risk of Flooding from Surface Water Map** in **Volume 2**.

15.6.21 The mapping generally shows that surface water risk extents are greatest where areas have already been identified as being within Flood Zone 2 or Flood Zone 3, as the surface water flood maps can indicatively show the route of watercourses. The surface water flooding mapping shows that in addition, there are also many isolated areas within the Site which are subject to surface water flooding; it is considered that these areas are likely due to localised topographic depressions or low points with poor onwards overland drainage. The Environment Agency mapping categorises the flooding from low risk to high risk based on the expected return period of the flooding. It has been recommended through consultation with the Environment Agency that these flood extents can be used as a proxy to map the fluvial flood extents associated with smaller watercourses that are not modelled to produce part of the Flood Zone mapping.

Sewer flood risk

15.6.22 Given the greenfield nature of the largely rural, agricultural land within the Site and study area, the presence of existing sewer networks or other Yorkshire Water assets is considered unlikely. The risk of sewer flooding is therefore considered to be very low. A data request will be submitted to Yorkshire Water to confirm whether they have assets within the study area (refer to **Section 15.14** below).

Reservoir flood risk

15.6.23 The majority of the Site is not at risk of reservoir flooding when river levels are normal, or when there is also a risk of fluvial flooding.

15.6.24 Within the underground grid connection corridor, there is reservoir flooding associated with The Beck/Bielby Beck and Pocklington Canal, predominantly when there is also flooding from rivers. However, a localised area in this location is at risk of reservoir flooding when rivers levels are normal. These designations continue within the study area along the route of these watercourses.

15.6.25 There is considered to be a residual risk surrounding The Beck/Bielby Beck and Pocklington Canal should the peak fluvial event and reservoir failure occur at the same time. However, the reality is a reservoir failure is more likely to occur sometime after the peak of the event. The risk of reservoir flooding is therefore considered to be very low.

Water protected areas

15.6.26 Water receptors relevant for water protected resources have been assessed using the Department for Environment, Food and Rural Affairs' MAGIC maps; the information is included in **Figure 15.2: Water Framework Directive Waterbodies and Protected Areas Designations** in **Volume 2**.

15.6.27 The western, northern and south-western extents of the solar PV development area (specifically across Fields 10.a-.e, Fields 8.a-.b, Fields 9.a-.b, Fields 1.a-.c, Fields 14.a-.l, Field 33.a, Fields 18.c-.o, Field 20.a, Field 26.a, Fields 4.a-.h, Fields 7.a-.d, Field 7.h, Fields 15.a-.c, Field 13.a, Fields 13.o-.s, Field 13.zq, Field 31.n, Field 31.f, Field 31.h, Field 31.k and Field 31.i) and the majority of the underground grid connection corridor are located within Drinking Water Safeguard Zones (Surface Water). They are identified where the protected area has been assigned as being "at risk" of failing the drinking water protection objectives of the Water Environment (Water Framework Directive) (England & Wales) Regulations 2017. These Safeguard Zones are a non-statutory, joint initiative between the Environment Agency and water companies that define areas where actions and measures will be targeted to address water contamination and avoid or minimise extra treatment needed by water companies.

15.6.28 The western extent of the study area is located within Drinking Water Protected Areas (Surface Water) zone. This is defined by the Water Environment (Water Framework Directive) (England & Wales) Regulations 2017 (or Water Framework Directive Regulations) as locations where raw water is abstracted for human consumption providing, on average, more than 10 cubic metres per day, or serving more than 50 persons, or is intended for such future use. Water sources used for drinking supplies need to be protected under the Water Framework Directive Regulations to ensure they are not polluted and avoid/minimise the need for additional purification treatment which can be costly and resource intensive.

15.6.29 The northern extent of the study area surrounding Pocklington Canal and The Beck/Bielby Beck is classified as the Melbourne and Thornton Ings SSSI, with Pocklington Canal also designated as a SSSI. Pocklington Canal SSSI crosses the underground grid connection corridor; however, it is to be noted that Melbourne and Thornton Ings SSSI is outside the draft Order Limits. Melbourne and Thornton Ings SSSI is also designated as the 'Lower Derwent Valley' Ramsar, National Nature Reserve, Special Area of Conservation (SAC) and Special Protection Area (SPA).

Future baseline

15.6.30 In the absence of Mylen Leah Solar Farm, it is possible that the existing baseline conditions as described above may be subject to change in the future due to natural and human factors. Primarily, future baseline conditions may be influenced by climate change. The future climate impacts on the hydrology of the Site could include changes in precipitation patterns and seasonality, temperature and extreme weather events. These changes could have various impacts on the hydrology of the area:

- Temperature changes can lead to changes in the rate of weathering and erosion of rocks and soils, as well as changes in the distribution of

plants and animals that can impact erosion and sedimentation patterns. Changes in precipitation patterns can lead to changes in the availability of water resources, as well as changes in surface water flow and groundwater recharge. Fluvial and pluvial flooding events may increase in frequency and severity, although effects could be highly localised. Groundwater recharge could be affected by an increase in flash flooding. High-intensity storms could lead to increased frequency in landslides and slope failures. Changes in vegetation can impact erosion and sedimentation patterns. This may particularly affect wetland habitats if the availability of water decreases and ambient temperatures increase, raising evaporation rates.

15.6.31 In the absence of Mylen Leah Solar Farm, the future baseline with respect to surface water and water bodies is not expected to change significantly. Assuming no changes in agricultural practices, then there should be no significant changes to watercourse routing and discharges expected to occur.

15.6.32 The future baseline of water quality is unlikely to change from the existing baseline. Assuming no changes in agricultural practices, then there are no reasons to suggest that water quality will change for the water protected areas, Internal Drainage Board Watercourses, Ordinary Watercourses and Main Rivers within the study area.

15.6.33 For the Water Framework Directive water bodies classed under Cycle 3 (2021), as discussed in **paragraphs 15.6.7** and **15.6.8** above, the objectives state that there is low confidence that they will achieve a good status by 2027. Assuming no changes in agricultural practices, then there are no reasons to suggest that these watercourses will achieve a status that differs from the current rating.

15.6.34 It is important to note that the future baseline is a projection, with a range of possible future conditions, and it is subject to uncertainty associated with the available projections. However, it is considered highly likely that the future baseline would be broadly comparable to the existing baseline described above.

15.7 How have the likely effects been assessed for water?

Approach to design flexibility

15.7.1 For this preliminary assessment, it has been assumed that the location of the On-Site Substations may be placed within areas designated by the Environment Agency as low to high risk of surface water flooding, associated with overland flow paths or topographic low spots causing ponded areas of risk. However, the proposed locations of the On-Site Substations will be determined at a later stage in the design process and prior to the submission of the DCO application.

15.7.2 The minimum cable depth in the underground grid connection corridor which coincides with areas designated as Flood Zones 2 and 3 will be a minimum of 2.0m below ground, whilst in areas designated as Flood Zone 1, it will be a minimum of 1.0m below ground. Across the remainder of the Site, the cable trenches will be between 0.5m to 3.0m in width and between 0.5m to 1.5m in depth.

Assessment assumptions

15.7.3 Although the current solar PV module design includes two possible orientations for fixed tilt and one option with a sun tracking system, it has been assumed for the purposes of this preliminary assessment that the solar PV modules are fixed (as a worst case scenario) and some will be placed within the surface water overland flow paths and the ponded medium to high risk surface water flooding areas, with some solar PV modules placed within Flood Zones 2 and 3. It has also been assumed that the inverters are string inverters which will require to be placed in proximity to the solar PV modules and, as such, will be placed within areas of surface water risk and Flood Zones 2 and 3. It has been assumed that areas of Flood Zone 3 which coincide with the locations of the solar PV modules and string inverters are not defined as Flood Zone 3b (functional floodplain) by the Environment Agency. The more sensitive electrical components of Mylen Leah Solar Farm (On-Site Substations and switchgear) will remain wholly within Flood Zone 1 designations.

15.7.4 Watercourse crossings are assumed to be culverts of Internal Drainage Board watercourses and Ordinary Watercourses. The crossing types are to be agreed with the relevant authorities.

Assessment methodology and criteria

15.7.5 This preliminary assessment has taken into account the sensitivity of the receptor and the magnitude of impact on the receptor. The significance of effect has been determined based on the resultant sensitivity and magnitude of impact.

Sensitivity of the receptor

15.7.6 Criteria for determining the sensitivity of the receptor, based on professional judgement, are presented in **Table 15.2** below.

Table 15.2: Receptor sensitivity criteria

Sensitivity	Criteria guide
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance. In terms of hydrological receptors, this relates to; – A watercourse of National importance; – Areas of Flood Zone 3 or at high risk of surface water [or other forms of] flood risk; – Water Framework Directive recorded watercourse achieving 'Good' or targeted as 'Good' status (including immediately downstream watercourses); – Regional sewer or water supply networks; – A flood plain or defence protecting between 1 and 100 residential properties or industrial premises from flooding; – Protected or designated areas, e.g., SSSIs, Ramsar sites, SPAs, SACs, which are highly sensitive to

Sensitivity	Criteria guide
	disruption; Supports industrial or agricultural abstraction of >500 m^3/day or supports a public potable water supply to a large community;and, – Water stressed area.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance. In terms of hydrological receptors, this relates to; – A watercourse of Countywide importance; – Areas of Flood Zone 2 or medium surface water flood risk; – Water Framework Directive recorded watercourse achieving 'Moderate' or targeted as 'Moderate' status (including immediately downstream watercourses); – Local sewer or water supply networks; and; – Supports industrial or agricultural abstraction of 50m^3/day or supports a Private Water Supply of potable water to a small community
Low	The receptor is tolerant of change without detriment to its character, is of low environmental value, or local importance. In terms of hydrological receptors, this relates to: – A watercourse of Local to District importance; – Areas of Flood Zone 1 or low surface water flood risk; – Water Framework Directive recorded watercourse achieving 'Poor' or targeted as 'Poor' status (including immediately downstream watercourses); – On-site sewer or water supply networks; and – Supports an abstraction for agricultural or industrial use of <50m^3/day.

Magnitude of impact

15.7.7 Criteria for determining the magnitude of impact, based on professional judgement, are presented in **Table 15.3**.

Table 15.3: Magnitude of impact criteria

Magnitude of Impact	Criteria guide
High	Total loss or major alteration to key elements or features of the baseline conditions to the extent that post-development character or composition of baseline conditions will be fundamentally changed (e.g. large increase or decrease in peak flood level, significant deterioration or improvement of water quality).
Medium	Loss or alteration to one or more key elements or features of the baseline conditions to the extent that post-development

Magnitude of Impact	Criteria guide
	character or composition of the baseline conditions will be materially changed (e.g. moderate increase or decrease in peak flood level, moderate deterioration or improvement of water quality).
Low	Minor shift away from baseline conditions. Changes arising will be detectable but not material; the underlying character or composition of the baseline conditions will be similar to the pre-development situation (e.g. slight increase or decrease in peak flood level, slight deterioration or improvement of water quality).
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a 'no change' situation (e.g. no discernible effects on hydrological elements (neither beneficial nor adverse)).

Significance of effect

15.7.8 The determination of the significance of effect, based on professional judgement, is achieved using the matrix presented in **Table 15.4**.

15.7.9 Effects can be either adverse or beneficial. The significance of an effect is reported as either 'significant' or 'not significant'. Any effects determined as 'moderate' or above are considered to be significant. Any effects determined as 'slight' or below are considered not significant.

15.7.10 Where the significance matrix indicates a range for the effect significance (e.g. 'moderate or minor'), professional judgement can be applied to select one option (which would be justified by evidence, as appropriate) or an effect significance range can be applied. If a significance of effect is assigned as 'moderate or minor', this would be considered significant unless further information could be provided to support and justify the significance effect as 'minor'.

Table 15.4: Significance of effect

Magnitude of impact	Sensitivity		
	High	Medium	Low
High	Major	Major or Moderate	Moderate or Minor
Medium	Major or Moderate	Moderate	Minor
Low	Moderate or Minor	Minor	Minor or Negligible
Negligible	Negligible	Negligible	Negligible

15.8 How has water informed the design so far?

15.8.1 This preliminary assessment has been based on the principle that certain mitigation measures have been 'embedded' into the design of Mylen Leah Solar Farm to minimise likely significant effects as far as reasonably practicable at this stage of the design process, for example by the considered placement of infrastructure. Embedded (primary) environmental mitigation measures relevant to this preliminary water assessment are presented in **Table 15.5**:

Table 15.5: Embedded mitigation measures relevant to water

Embedded mitigation measures relevant to water	Function
10m development offset from the banks of Internal Drainage Board Watercourses, 5m development offset from banks of Ordinary Watercourses	This will reduce the likelihood that spillage of potential contaminants would enter surface watercourses. To allow space for access for maintenance and management activities of the existing watercourses.
Watercourse crossings have been kept to a minimum and it will be proven that the crossings will not obstruct flows of the watercourse. The soffit level of any bridges will sit above the design flood level with an allowance for freeboard. For temporary crossings as part of the construction phase, the present day (without climate change) design flood levels can be used.	To ensure the flow rates within the watercourse are not being altered to ensure there is no increase in flood risk upstream or downstream of the crossing.
The sequential approach in regard to fluvial/tidal flood risk has been applied to Mylen Leah Solar Farm, where possible. Sensitive electrical infrastructure (On-Site Substations and switchgear) is to be sited in locations at low risk of flooding.	To ensure more sensitive electrical components of Mylen Leah Solar Farm (i.e. on-site Substations and switchgear) are not located within areas of elevated flood risk i.e. areas within Flood Zones 2 and 3. This ensures the safety of Mylen Leah Solar Farm for the development lifetime in regard to flood risk and that flood compensation will not be required. It also ensures equipment is protected from flood water.
Any solar PV modules and inverters which are located within areas of Flood Zone 2 and 3 and any other components of Mylen Leah Solar Farm located within surface water flood extents will be raised 300mm above the design flood level.	To ensure Mylen Leah Solar Farm is safe for its lifetime. It also ensures equipment is protected from flood water.
For dispersed hardstanding such as containerised infrastructure, runoff is to be directed to ground locally via gravel beds.	To ensure flood risk is not increased as a result of Mylen Leah Solar Farm and rainfall is suitably managed on-site.
Where hardstanding is concentrated, e.g., on-site Substation's concrete bases, larger buildings or concentration of containers, a formal drainage	To ensure flood risk is not increased as a result of Mylen Leah Solar Farm and rainfall is suitably managed on-site.

Embedded mitigation measures relevant to water	Function
strategy will be included as part of the Flood Risk Assessment, most likely discharging at greenfield rates to the nearby watercourse network.	
In the locations where Horizontal Direction Drilling is proposed beneath Pocklington Canal, appropriate setbacks will be incorporated into the design and identified in the Outline Construction Environmental Management Plan (CEMP) and/or Water Framework Directive Screening Assessment.	This will reduce the likelihood that spillage of potential contaminants would enter surface watercourses.

15.9 What are the likely effects of Mylen Leah Solar Farm on water?

Construction

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.9.1 Construction activities including topsoil stripping and stockpiling of material, establishment of construction compounds and access tracks, reprofiling and vegetation clearance will have the potential to result in silt laden runoff arising from on-site construction activities, resulting in the sedimentation and pollution of watercourses, which could significantly degrade the water quality of surface water runoff leaving the Site. This may affect the ecological status score of the Water Framework Directive Waterbodies and/or reduce the water quality within water protected areas.

15.9.2 Construction activities have the potential to lead to spillages and leaks of fuels, oils and chemicals. This could have effects on the water quality of local watercourses which are hydrologically connected to the Pocklington Canal SSSI and Melbourne and Thornton Ings SSSI/SAC/SPA/Ramsar, and the Water Framework Directive waterbodies and local watercourses which are hydrologically connected if spilled directly into the water or allowed to runoff towards these watercourses during rainfall events. This may affect the ecological status score of the Water Framework Directive Waterbodies and/or reduce the water quality within water protected areas.

Flood risk

15.9.3 An increase in flood risk could result from uncontrolled runoff from construction compounds, temporary access tracks, compacted soils or other impermeably surfaced areas. Flood risk impacts could also result from storage of materials or groundworks within Flood Zones or within overland flow routes.

Operation

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.9.4 Due to the nature of Mylen Leah Solar Farm, there is a low likelihood that the water quality of surface water features within the study area would be degraded. The cessation of agricultural practices would result in fewer pollutants i.e. pesticides, herbicides and/or fertilisers within the Site. Vegetation will be established below solar PV modules, which will enable the stabilisation of soils which would be less prone to the erosional forces of rainfall runoff. There should be no increase in silt laden runoff to the nearby watercourses from Mylen Leah Solar Farm once in operation and therefore by linkage to the Water Framework Directive Waterbodies, Drinking Water Protection Area, SSSIs, or Lower Derwent Valley SAC/SPA/Ramsar site.

15.9.5 It is likely that the maintenance of Mylen Leah Solar Farm will require some of the components to be replaced over the operational lifetime. As such, activities for the replacement may have the potential to lead to spillages and leaks of fuels, oils and chemicals. This could have effects on the water quality of local watercourses if spilled directly into the water or allowed to runoff towards watercourses during rainfall events. However, the frequency and scale of these activities will be less than that required for the construction phase, as it will be for specific components only.

Flood risk

15.9.6 At present, it is assumed as a conservative approach that some of the solar PV modules will be located within the 'design' 1 in 100 year plus climate change fluvial flood extent or the 1 in 200 year tidal flood extent. Any disruption to overland flow routes or displacement of floodwater could result in an increase in flood risk. Any land raising, for example for the creation of roads or landscaping works within ecological mitigation and enhancement areas, could also impact existing overland flow routes or flood storage. An increase in flood risk could also result from creation of additional hardstanding areas where runoff is not appropriately managed; however, where hardstanding is concentrated e.g. On-Site Substations concrete bases, larger buildings or concentration of containers, a formal drainage strategy would be included within the Flood Risk Assessment, most likely discharging at greenfield rates to the nearby watercourse network.

Decommissioning

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.9.7 Decommissioning activities would include dismantling of on-site infrastructure and removal from the Site, excluding the watercourse crossings which will be retained. This would include topsoil stripping and stockpiling of material, establishment of decommissioning compounds and reinstatement. These activities will have the potential to result in silt laden runoff arising from on-site earthwork activities, resulting in the sedimentation and pollution of watercourses, which could significantly degrade the water quality of surface

water runoff leaving the Site. This may affect the ecological status score of the Water Framework Directive Waterbodies and/or reduce the water quality within water protected areas.

15.9.8 Decommissioning activities have the potential to lead to spillages and leaks of fuels, oils and chemicals. This could have effects on the water quality of nearby watercourses and designations and the Water Framework Directive waterbodies and local watercourses which are hydrologically connected if spilled directly into the water or allowed to runoff towards these watercourses during rainfall events. This may affect the ecological status score of the Water Framework Directive Waterbodies and/or reduce the water quality within water protected areas.

Flood risk

15.9.9 During the decommissioning phase, an increase in flood risk could result from uncontrolled runoff from temporary access tracks, compacted soils or other impermeably surfaced areas. Flood risk impacts could also result from storage of materials or groundworks within Flood Zones or within overland flow routes. It is anticipated that the watercourse crossings would be retained following the decommissioning of Mylen Leah Solar Farm.

15.10 What additional mitigation is proposed to avoid, prevent, reduce or offset likely effects on water?

15.10.1 Where necessary, additional mitigation has been identified following best practice guidelines including the (now revoked) Environment Agency Pollution Prevention Guidelines.

15.10.2 In regard to flood risk as a receptor, there are no additional mitigation measures proposed as the embedded mitigation measures (being the Outline Surface Water Drainage Strategy, freeboard allowances in flood risk areas and watercourse development easements/offsets (as detailed in **Table 15.5** above)), will ensure the likely significant effects from Mylen Leah Solar Farm on flood risk are mitigated and minimised.

Construction

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.10.3 Pollution prevention measures will be implemented to reduce the potential for adverse effects to occur, as set out within the Outline CEMP and the Outline Soil Management Plan (Outline SMP). The measures included in the Outline CEMP will ultimately prevent silt laden runoff and pollutants that may arise from the construction phase from reaching the receptor waterbody via overland flow pathways.

Operation

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.10.4 The Outline Landscape and Ecological Management Plan (Outline LEMP) and an Outline Soil Management Plan (Outline SMP) will be established to

control silt/soil laden runoff produced during operation to avoid, minimise or mitigate effects on the water environment.

15.10.5 Measures to control silt/soil laden runoff produced during operation activities will be documented within and secured by the Outline Operational Environmental Management Plan (Outline OEMP), which would avoid, minimise or mitigate effects on the water environment. This would include best practice procedures to mitigate against erosion and manage the timing and conditions of the operational activities.

Decommissioning

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.10.6 Measures to control silt/soil laden runoff produced during decommissioning activities will be documented within and secured by the outline Decommissioning Environmental Management Plan (Outline DEMP), which would avoid, minimise or mitigate effects on the water environment. This would include best practice procedures to mitigate against erosion and manage the timing and conditions of the decommissioning activities.

15.11 What likely effects would remain for water following additional mitigation?

Construction

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.11.1 The Water Framework Directive waterbody of 'Foulness from Black Beck to Market Weighton Canal Water Body' has been classified as 'poor' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **low** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline CEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the waterbody or nearby hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.2 The Water Framework Directive waterbody of 'Pocklington Beck from Bielby Beck to River Derwent Water Body' has been classified as 'moderate' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **medium** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed Horizontal Direction Drilling of the cable route and the pits incorporating a suitable easement from the waterbody. The Outline CEMP will also ensure that silt laden sediment and runoff is contained on-site and does not enter the waterbody or hydrologically connected watercourses on-site. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its

hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.3 The Water Framework Directive waterbody of 'Pocklington Canal Water Body' has been classified as 'good' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline CEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the waterbody or nearby hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.4 The western extent of the study area is located within a Drinking Water Protected Areas (Surface Water) zone. This designation and its hydrologically connected watercourses on-site are of **high** sensitivity due to the protected area's role in water abstraction for human consumption providing, on average, more than 10 cubic metres per day, or serving more than 50 persons, or intended for such future use. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline CEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the designation or hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this water protected area and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.5 Pocklington Canal (located within the underground grid connection corridor) is classified as a SSSI, whilst the northern extent of the study area surrounding Pocklington Canal and The Beck/Bielby Beck is classified as the Melbourne and Thornton Ings SSSI/'Lower Derwent Valley' Ramsar site, SAC and SPA. These designations and the hydrologically connected watercourses on-site are of **high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline CEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the designations or hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on these water protected areas and the hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

Flood risk

15.11.6 The majority of the Site is within an area of Flood Zone 1, which is designated as **low** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the more sensitive electrical components of Mylen Leah Solar Farm (On-Site Substations and switchgear) being sequentially located within the areas of Flood Zone 1 and set away from the watercourses in accordance with the relevant easements. The solar PV modules will be raised above the modelled flood level if placed in Flood Zones 2 and 3 and/or located outside the surface water flood extents used as

a proxy for the design event and therefore will remain operational during the design flood event. Therefore, there is likely to be a temporary **negligible adverse** residual effect on fluvial/tidal flood risk following the implementation of additional mitigation measures due to the potential displacement of small areas of floodwater from solar PV modules, which is considered to be **not significant**.

15.11.7 There are localised areas of ponded low to high surface water flood risk and overland flow paths of low to high risk which are of **low to high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** as the sequential approach will be applied to Mylen Leah Solar Farm, where possible, whilst equipment will be raised above the expected flood level with the addition of freeboard if the sequential approach cannot be applied. Therefore, there is likely to be a temporary **negligible adverse** residual effect on surface water flood risk following the implementation of additional mitigation measures due to the potential displacement of small areas of floodwater from solar PV modules, which is considered to be **not significant**.

Operation

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.11.8 The Water Framework Directive waterbody of 'Foulness from Black Beck to Market Weighton Canal Water Body' has been classified as 'poor' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **low** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed surface water drainage strategy ensuring the watercourses hydrological regimes are not altered by restricting runoff from hardstanding areas to the greenfield runoff rates and an Outline LEMP ensuring the stabilisation of soils using vegetation management. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.9 The Water Framework Directive waterbody of 'Pocklington Beck from Bielby Beck to River Derwent Water Body' has been classified as 'moderate' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **medium** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed surface water drainage strategy ensuring the watercourses hydrological regimes are not altered by restricting runoff from hardstanding areas to the greenfield runoff rates and an Outline LEMP ensuring the stabilisation of soils using vegetation management. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.10 The Water Framework Directive waterbody of 'Pocklington Canal Water Body' has been classified as 'good' ecological status under Cycle 3 of the

Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed surface water drainage strategy ensuring the watercourses hydrological regimes are not altered by restricting runoff from hardstanding areas to the greenfield runoff rates and an Outline LEMP ensuring the stabilisation of soils using vegetation management. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.11 The western extent of the study area is located within Drinking Water Protected Areas (Surface Water) zone. This protected area and its hydrologically connected watercourses on-site are of **high** sensitivity due to the protected area's role in water abstraction for human consumption providing, on average, more than 10 cubic metres per day, or serving more than 50 persons, or intended for such future use. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed surface water drainage strategy ensuring the watercourses hydrological regimes are not altered by restricting runoff from hardstanding areas to the greenfield runoff rates and an Outline LEMP ensuring the stabilisation of soils using vegetation management. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this water protected area and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.12 Pocklington Canal (located within the underground grid connection corridor) is classified as a SSSI, whilst the northern extent of the study area surrounding Pocklington Canal and The Beck/Bielby Beck is classified as the Melbourne and Thornton Ings SSSI/'Lower Derwent Valley' Ramsar site, SAC and SPA. These designations and the hydrologically connected watercourses on-site are of **high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed surface water drainage strategy ensuring the watercourses hydrological regimes are not altered by restricting runoff from hardstanding areas to the greenfield runoff rates and an Outline LEMP ensuring the stabilisation of soils using vegetation management. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on these protected areas and the hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

Flood risk

15.11.13 The majority of the Site is within an area of Flood Zone 1, which is designated as **low** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the proposed drainage infrastructure restricting flows from hardstanding areas to the existing greenfield rates and the Outline LEMP ensuring the greenfield scenario is maintained beneath the solar PV modules. In addition, more sensitive electrical components of Mylen Leah Solar Farm (On-Site Substations and, switchgear) are sequentially located within the areas of Flood Zone 1 and set away from the watercourses

in accordance with the relevant easements. The solar PV modules will be raised above the modelled flood level if located in Flood Zones 2 and 3 and/or located outside the surface water flood extents used as a proxy for the design event and therefore will remain operational during the design flood event. Therefore, there is likely to be a temporary **negligible adverse** residual effect on fluvial/tidal flood risk following the implementation of additional mitigation measures due to the potential displacement of small areas of floodwater from solar PV modules in Flood Zones 2 and 3, which is considered to be **not significant**.

15.11.14 There are localised areas of ponded low to high surface water flood risk and overland flow paths of low to high risk and are of **low to high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** as the sequential approach will be applied to Mylen Leah Solar Farm, where possible, whilst equipment will be raised above the expected flood level with the addition of freeboard if the sequential approach cannot be applied. Therefore, there is likely to be a temporary **negligible adverse** residual effect on surface water flood risk following the implementation of additional mitigation measures due to the potential displacement of small areas of floodwater from solar PV modules, which is considered to be **not significant**.

Decommissioning

Water Protected Areas (and hydrologically connected watercourses) and Water Framework Directive waterbodies (and hydrologically connected watercourses)

15.11.15 The Water Framework Directive waterbody of 'Foulness from Black Beck to Market Weighton Canal Water Body' has been classified as 'poor' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **low** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline DEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the waterbody or hydrologically connected watercourses on-site. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.16 The Water Framework Directive waterbody of 'Pocklington Beck from Bielby Beck to River Derwent Water Body' has been classified as 'moderate' ecological status under Cycle 3 of the Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **medium** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline DEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the waterbody or on-site hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.17 The Water Framework Directive waterbody of 'Pocklington Canal Water Body' has been classified as 'good' ecological status under Cycle 3 of the

Water Framework Directive. This watercourse and its hydrologically connected watercourses on-site are therefore of **high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline DEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the waterbody or nearby hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this waterbody and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.18 The western extent of the study area is located within Drinking Water Protected Areas (Surface Water) zone. The protected area and its hydrologically connected watercourses on-site are of **high** sensitivity due to the protected area's role in water abstraction for human consumption providing, on average, more than 10 cubic metres per day, or serving more than 50 persons, or intended for such future use. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline DEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the designation or hydrologically connected watercourses Therefore, there is likely to be a temporary **negligible beneficial** residual effect on this water protected area and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.19 Pocklington Canal (located within the underground grid connection corridor) is classified as a SSSI, whilst the northern extent of the study area surrounding Pocklington Canal and The Beck/Bielby Beck is classified as the Melbourne and Thornton Ings SSSI/'Lower Derwent Valley' Ramsar site, SAC and SPA. These protected areas and the hydrologically connected watercourses on-site are of **high** sensitivity. The magnitude of impact, following additional mitigation, is **negligible** due to the Outline DEMP ensuring silt laden sediment and runoff is contained on-site and does not enter the designations or hydrologically connected watercourses. Therefore, there is likely to be a temporary **negligible beneficial** residual effect on these protected areas and its hydrologically connected watercourses on-site following the implementation of additional mitigation measures, which is considered to be **not significant**.

15.11.20 Flood riskThere are considered to be no residual effects to flood risk during decommissioning due to the removal of infrastructure within all mapped areas of flood risk and therefore no placement of infrastructure within areas of flood risk.

15.12 What opportunities are there for environmental enhancement?

15.12.1 The proposed provision of vegetation cover (for the duration of the operation phase) below the solar PV modules would help slow the rate of surface water runoff from the Site during high intensity rainfall events and promote the interception of surface water runoff. This would result in a reduction in the rate of surface water runoff compared to the baseline scenario, as agricultural practices would periodically result in bare vegetation ground cover and exposed soils which can potentially increase the rate of surface water runoff. Furthermore, linear depressions caused by the repeated

movement of agricultural vehicles over the soil can also increase the velocity in which surface water leaves the Site and potentially increased peak runoff rates. The change in land use would result in a decrease in flood risk both on-site and downstream of Mylen Leah Solar Farm.

15.12.2 The cessation of arable agricultural activities may result in a reduction of the application of pesticides, herbicides and/or fertilisers within the Site. In turn, the vegetation cover will stabilise soils and reduce the mobilisation of these materials.

15.13 What difficulties and uncertainties have been encountered in this preliminary water assessment?

15.13.1 The information provided in this PEIR is preliminary and is based on the information available at the time of writing. A full assessment of likely significant effects of Mylen Leah Solar Farm will be reported in the ES.

15.13.2 The nationalised dataset of the Flood Zones has formed the basis of the fluvial and/or tidal sources of risk assessed within this preliminary assessment. Following a data request for the flood modelling data, the Environment Agency confirmed there is no information on the accuracy of the water depth data for the Site. The JFLOW modelling method was developed, tested and reviewed for production of the Flood Zone extents only and is not suitable for use within flood risk assessments. In areas where solar PV modules are being sited within Flood Zones 2 and 3, 1D hydraulic modelling will be undertaken to accurately delineate the design flood event extents and expected flood depths in order to inform mitigation measures. The areas defined as Flood Zone 3b (functional floodplain) are not mapped on the Flood Map for Planning and will be defined following further consultation with the Environment Agency prior to submission of the DCO application. The surface water flood maps can also be used as a proxy when determining flood extents from smaller watercourses with catchments of less than 3km^2 which have not been included in the Flood Zone mapping. However, these mapped areas used as a proxy are to be defined in the dataset as fluvially mapped areas of surface water risk (see **Section 15.14** below).

15.13.3 The surface water drainage strategy has not been designed at the time of writing this preliminary assessment. Therefore, the principles of the drainage strategy outlined in this preliminary assessment are based on the assumption that best practice will be followed.

15.13.4 No environmental surveys have been undertaken for the assessment of the Water Framework Directive classified waterbodies. Baseline conditions are based on the Cycle 3 classifications and are assumed to be correct. However, a targeted site visit of the Water Framework Directive classified waterbodies will be undertaken to support the DCO application.

15.14 What further work is required to inform the full water assessment in the DCO application?

15.14.1 Consultation with the statutory bodies and key stakeholders is ongoing. Namely with the Internal Drainage Board to confirm if they act on behalf of the Lead Local Flood Authority as consultee for any works required in or around the on-site watercourses due to their location within the Internal

Drainage Board's district boundaries. Consultation with the Environment Agency will be undertaken to determine the extents of any Flood Zone 3b (functional floodplain) across the Site.

15.14.2 The following assessments are required to be undertaken and will be provided in support of the DCO application:

- A Flood Risk Assessment will be based on desktop studies of flood risk, using the data available for the fluvial and the surface water flood risk and establishing which areas of Mylen Leah Solar Farm are at risk from these flood risk sources. The surface water flood extents will be assessed as to whether they are suitable to use as a proxy for the fluvial flooding design extents, in absence of Environment Agency model data. In areas where Flood Zones 2 and 3 coincide with Mylen Leah Solar Farm and the surface water flood extents are not suitable to be used as a proxy, the watercourse will be modelled. The mapped areas used as a proxy are to be defined in the dataset as fluvially mapped areas of surface water risk. The assessment will consider the vulnerability of the Site users, including arrangements for safe access and escape. Following consultation with the Environment Agency, the risk of flooding from rivers or the sea 1 in 30 year extent will be used to determine Flood Zone 3b (functional floodplain). The extents being used as a proxy for Flood Zone 3b in absence of model data will be confirmed with the Environment Agency following further consultation. A data request will be submitted to Yorkshire Water to confirm whether they have assets within the study area.
- Through the implementation of an Outline Surface Water Drainage Strategy, the Flood Risk Assessment will, if practicable, identify and secure opportunities to reduce the causes and impacts of flooding overall, making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management. The assessment will be made by calculating greenfield runoff rates from the Site and ensuring surface water runoff rates from proposed areas of impermeability as a result of construction do not exceed existing greenfield runoff rates. The quantitative assessment into runoff rates will also consider the requirements for sustainable drainage systems to mitigate against any potential increases in runoff rates from impermeable constructed areas.
- As there are waterbodies within the study area classified under Cycle 3 (2021) of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, a Water Framework Directive Screening Report will be prepared in support of the DCO application. The report will consider proposed activities that could cause or contribute to deterioration of status and/or jeopardise the water body achieving good status, supported by a field study of the Water Framework Directive classified waterbodies.
- A Watercourse Crossing Baseline Assessment will be undertaken, with a field study in targeted areas of proposed locations for crossings to inform the future design of the crossings.

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