

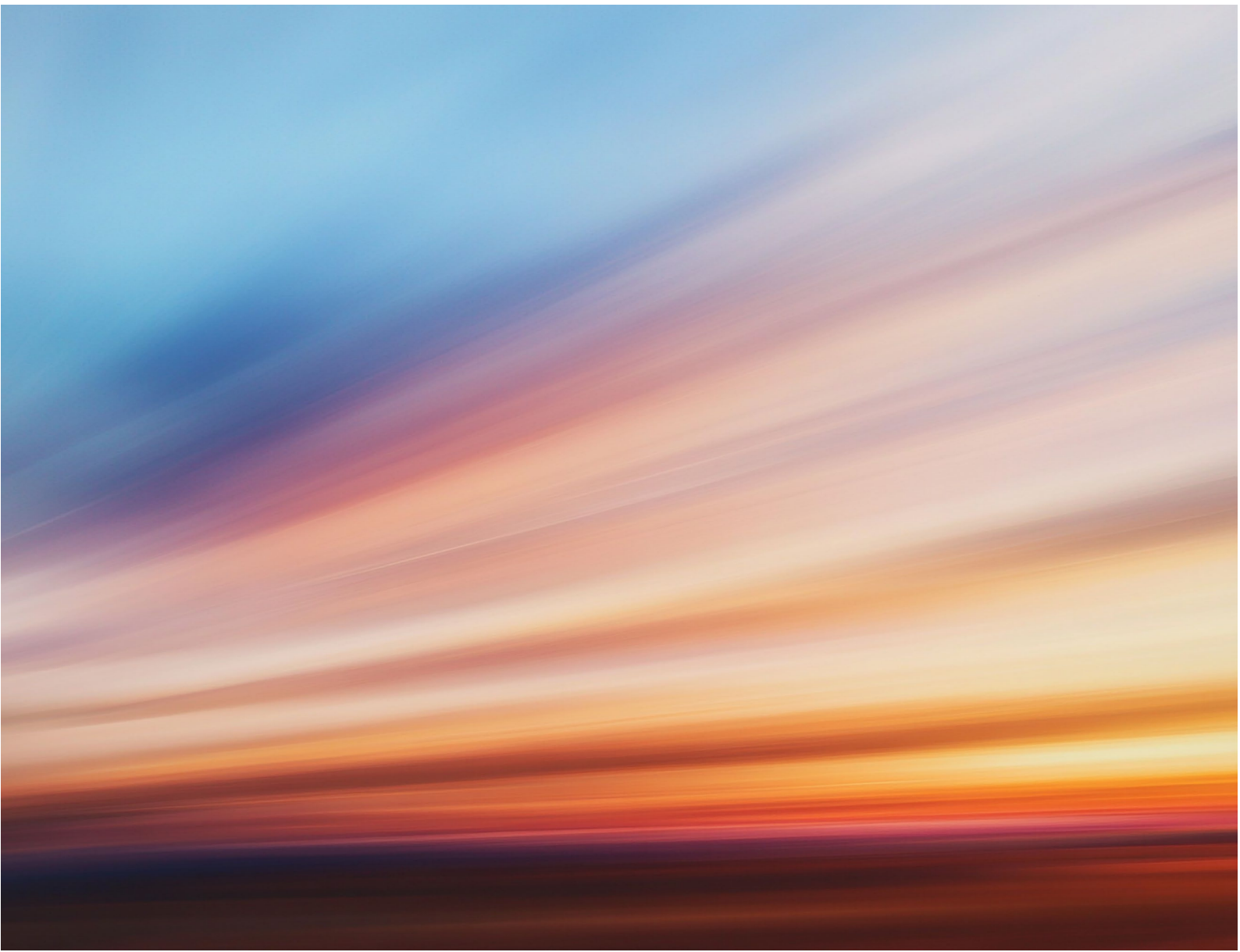
Mysten Leah Solar Farm

Preliminary Environmental Information Report (PEIR)

Volume 1

Chapter 10: Land and Groundwater

April 2026



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10. Land and Groundwater

10.1 Introduction

10.1.1 This chapter presents a preliminary assessment of the likely significant effects arising on land and groundwater during the construction, operation and decommissioning phases of Mylen Leah Solar Farm.

10.1.2 This chapter should be read in conjunction with the following chapters in **Volume 1**, with the following figures in **Volume 2** and with the following appendices in **Volume 3**:

- **Chapter 7: Biodiversity;**
- **Chapter 15: Water;**
- **Chapter 17: Soil;**
- **Figure 10.1: Land and Groundwater Study Areas;** and
- **Appendix 10.1: Preliminary Risk Assessment.**

10.1.3 Following the Environmental Impact Assessment (EIA) scoping process, the following receptors/matters have not been considered within this preliminary assessment:

- Geological units underlying the site during construction, operation and decommissioning;
- Designated geological sites during construction, operation and decommissioning;
- Land (potential contamination) during operation and decommissioning; and
- Groundwater during operation (although potential effects on Groundwater Dependent Terrestrial Ecosystems and heat generated by underground cables are considered in light of the Environment Agency's scoping opinion response).

10.1.4 Appropriate mitigation measures relating to groundwater during operation and land (potential contamination) during operation and decommissioning will be detailed within the Outline Operational Environmental Management Plan (Outline OEMP) and Outline Decommissioning Environmental Management Plan (Outline DEMP), both of which will be submitted in support of the Development Consent Order (DCO) application and secured by the DCO.

10.2 How have we engaged with others about land and groundwater so far?

10.2.1 **Table 10.1** provides a summary of the engagement undertaken to date to inform this preliminary assessment, outside of the EIA Scoping process.

Table 10.1: Summary of engagement undertaken to date in relation to land and groundwater

Consultee	Date of engagement	Summary of engagement
The Hull Geological Society and the East Yorkshire Regionally Important Geological Sites Group	17 September 2024	Confirmed that there are no Regionally Important Geological Sites within or adjacent to the draft Order Limits.
East Riding of Yorkshire Council (ERYC)	26 November 2025	Freedom of information request for details of unlicensed groundwater abstractions on Site and within 1km of the Site boundary. Information has been provided and is included within Appendix 10.1: Preliminary Risk Assessment in Volume 3 .
Yorkshire Water	26 and 27 November 2025	Telephone enquiries with general enquiries, operations, clean water and developer services teams to request details of any assets held by Yorkshire Water within the Site. Such information has not been provided to date.

10.2.2 It should be noted that the Applicant also intends to engage with the Environment Agency prior to submission of the Development Consent Order (DCO) application with regard to the groundwater elements of the assessment.

10.3 What legislation, planning policy and guidance is relevant to land and groundwater?

10.3.1 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 land and groundwater assessment is detailed below:

Legislation

- Environmental Protection Act 1990;¹
- Water Resources Act 1991 (as amended);²
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017;³
- Groundwater Directive 2006/118/EC;⁴
- Groundwater (Water Framework Directive) (England) Direction 2016;⁵
- Priority Substances Directive 2008/105/EC;⁶ and
- Environmental Permitting (England and Wales) Regulations 2016.⁷

National planning policy

- Overarching National Policy Statement for Energy (NPS EN-1) (December 2025, published January 2026) Part 5 - Generic Impacts (land use, land quality & land contamination), and Section 4.3 - Environmental Effects/Considerations relate to land use and includes details of planning policy relating to land contamination;⁸
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (December 2025, published January 2026) - Section 2.10 contains details on solar energy generation;⁹
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (December 2025, published January 2026) - primarily addresses overhead line infrastructure but also expects applicants to assess environmental effects associated with underground cables - however, detailed policy on land quality and contamination is now provided in NPS EN-1 (December 2025, published January 2026) rather than NPS EN-5 (December 2025, published January 2026).¹⁰
- National Planning Policy Framework (NPPF) (2024) – Section 15 ‘Conserving and enhancing the natural environment’ provides guidance that policies and decisions applied by local authorities should ‘prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability’ and should result in ‘remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate’;¹¹ and
- Environmental Improvement Plan 2023: First Revision of the 25 Year Environment Plan. This plan identifies the need to explore improvements across a wide range of disciplines, including the approach to land use. The Plan includes a series of long term targets, with associated interim targets, including a number that relate to agricultural chemical use and reduction in production of waste. ¹²

Local planning policy

- East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan 2016-2033¹³, specifically policy EC6: Protecting Mineral Resources and
- East Riding of Yorkshire and Kingston upon Hull Joint Waste Local Plan.¹⁴

Guidance

- Land Contamination Risk Management (Environment Agency, 2025);¹⁵
- Institute of Environmental Management and Assessment Guide: A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022);¹⁶

- Design Manual for Roads and Bridges (DMRB) LA 109: Geology and Soils, Revision 0 (2019);¹⁷
- DMRB LA 113: Road Drainage and the Water Environment, Revision 1 (2020);¹⁸
- DMRB LA 104: Environmental Assessment and Monitoring, Revision 1 (2020);¹⁹
- British Standard 10175:2011+A2:2017 Investigation of potentially contaminated sites Code of practice (2017);²⁰
- British Standard 5930: Code of practice for ground investigations²¹
- The Environment Agency's approach to groundwater protection, Version 1.2 (2018);²² and
- The Environment Agency, Protect groundwater and prevent groundwater pollution (July 2025 update);²³.

10.4 What study area has been used for land and groundwater?

- 10.4.1 The study area for land is the area within and up to 250m from the draft Order Limits.
- 10.4.2 The study area for groundwater is the area within and up to 1km from the draft Order Limits.
- 10.4.3 The draft Order Limits and the land and groundwater study areas are shown on **Figure 10.1: Land and Groundwater Study Areas** in **Volume 2**.
- 10.4.4 The sizes of the study areas applied for land and groundwater are based on professional judgement, in conjunction with the requests made by the Environment Agency within the Scoping Opinion adopted by the Planning Inspectorate (on behalf of the Secretary of State) on 18 February 2025²⁴, and will ensure that all features that may be impacted by the construction, operation and decommissioning phases of Mylen Leah Solar Farm will be considered within the preliminary assessment.
- 10.4.5 The larger study area for groundwater issues allows for consideration of features that could require assessment if mobile groundwater conditions are evident.

10.5 How have existing land and groundwater conditions been understood?

Data sources to inform the EIA baseline characterisation

- 10.5.1 The baseline conditions of the study areas have been determined using a number of different sources, comprising:
- Geological maps (bedrock and superficial geology);
 - Hydrogeological and groundwater vulnerability maps;
 - Site-specific data and historical mapping from Envirocheck;
 - The British Geological Society Onshore GeoIndex;
 - The Magic Map application available online from the Department for Environment, Food & Rural Affairs website;

- Mineral resources information from local mineral plans; and
- Datasets relating to public or private licensed and unlicensed groundwater abstractions from Yorkshire Water and ERYC.

Site visits/surveys

10.5.2 A Preliminary Risk Assessment report has been prepared and is provided as **Appendix 10.1: Preliminary Risk Assessment** in **Volume 3**. This report provides a desk-based analysis of the Site from a land and groundwater perspective and includes a Site reconnaissance survey which was completed over multiple days during April 2024 and February 2025.

10.6 What are the land and groundwater conditions within the study area?

10.6.1 This section presents details of the baseline conditions in relation to land and groundwater. Further details can be found in **Appendix 10.1: Preliminary Risk Assessment** in **Volume 3**.

Existing baseline

Land (potential contamination)

- 10.6.2 The following potential sources of contamination have been identified within the study area with respect to historical land use:
- Historical and current agricultural site usage (potential contamination including herbicides or pesticides) and any storage of fuels or chemicals;
 - There are no recorded animal burial pits within the Site, but due to the long-term agricultural usage, it is a possibility that unrecorded animal burial pits could be present.
 - There are areas of possible infilled ground within the study area, which include locations of recorded mineral extraction sites, as well as unrecorded pits or former ponds;
 - Scamland Bridge historical landfill site is located within the underground grid connection corridor. It received inert, industrial, commercial and household waste from 1948 until 1979, including soil, sub-soil, demolition, construction, highway construction and repair waste, glass cullet, drums of waste oil, packaging materials, fluorescent tubes;
 - Ellerton Site A and B historical landfill is situated adjacent to Land Parcel B (but outside of the draft Order Limits) and is reported to have received inert, industrial, commercial and household waste from 1975 until 1976, including construction industry waste, old vehicles and trailers, and excavation soil and subsoil from road improvements in the Holme and Spalding Moor area;
 - A hydrocarbon exploration well was identified on a British Geological Survey borehole record (reference SE73NE4), located approximately 700m to the east of Land Parcel E. This was drilled to a depth of 1036.3m, and was recorded as Seaton Ross well number 1, part of licence number PL163. The well was drilled in April 1973 and was

found to be dry and therefore was abandoned (a completion report is available on the British Geological Survey GeolIndex website);²⁵

- The former Breckstreet Airfield (now Melbourne Raceway) is located within Land Parcel D. It was used for aviation from 1940 until 1946, with possible contamination being associated with historical aviation activities (fuel storage and aircraft maintenance), as well as the more recent motorsport usage. Based on the former land use, it is a possibility that other contamination could be present associated with any authorised or ad-hoc disposal of aircraft that may have occurred (which could include luminised equipment [this term is generally used to refer to instruments that used phosphorescent or self-luminous materials, such as radium paint in older aircraft]), as well as ordnance storage, use and disposal;
- There are no recorded contaminated land register entries within the study area;
- There have been seven pollution incidents to controlled waters within the draft Order Limits and a further 20 that are located within 1km of the draft Order Limits. Of these, most were minor incidents (Category 3). Eight related to major incidents (Category 2), three of which were situated within the draft Order Limits, but all occurred over three decades ago. All 27 pollution incidents involved surface waters and none related specifically to groundwater;
- Substantiated pollution incidents were recorded at three locations within the draft Order Limits and one incident was recorded within 1km of the draft Order Limits. All incidents were categorised as having significant impact (Category 2) with respect to the water environment, but no impact to air or land was reported and impacts to groundwater were not specifically mentioned.

10.6.3 With respect to the potential for contamination to impact surface water, this is covered in **Chapter 15: Water** in **Volume 1**. In terms of the potential for contamination to impact groundwater, this is covered in **paragraphs 10.6.5 to 10.6.12** below.

Land (mineral safeguarding)

10.6.4 Mylen Leah Solar Farm lies entirely within the ERYC area, and mineral safeguarding areas are present on the extreme western edge of Land Parcel B and the north-eastern part of Land Parcel D. The majority of the underground grid connection corridor is situated within a mineral safeguarding area, relating to deposits of sand and gravel.

Groundwater

10.6.5 Published geological records for the area and available historical borehole logs indicate that the bedrock geology underlying the Site and study area is composed of the Mercia Mudstone Group (consisting of red mudstones, with some siltstone, halite-bearing and sandstone layers) and the Sherwood Sandstone Group which includes red, yellow and brown sandstone, conglomerate, red mudstone and siltstone layers.

- 10.6.6 The superficial geological units are primarily the Thorganby Clay Member (soft laminated silts and clays) in the west and central areas (Land Parcels A, B, C and E), with the Bielby Sand Member (slightly clayey to slightly silty sands) underlying the eastern fields of Land Parcel D and beneath the underground grid connection corridor. Peat and Alluvium are also present beneath the underground grid connection corridor, following the route of Pocklington Canal.
- 10.6.7 The groundwater within the Sherwood Sandstone bedrock underlying the Site and study area is classified as a principal aquifer. The groundwater vulnerability of this unit is classified as medium to high, depending on whether it is protected by a layer of Mercia Mudstone Group deposits or not.
- 10.6.8 The groundwater within the Mercia Mudstone Group is classified as a secondary B aquifer. The groundwater vulnerability of this unit is generally classified as low.
- 10.6.9 The groundwater within the Bielby Sand Member in the north of the Site is designated as a secondary undifferentiated aquifer. The groundwater vulnerability of this unit is classified as medium.
- 10.6.10 The main superficial unit beneath the Site is the Thorganby Clay Member, which is categorised as unproductive strata. The groundwater vulnerability of this unit is classified as low.
- 10.6.11 There is one Groundwater Dependent Terrestrial Ecosystem that extends into the Site within the underground grid connection corridor. This is the Pocklington Canal Site of Special Scientific Interest (SSSI). White Carr Meadow SSSI and Groundwater Dependent Terrestrial Ecosystem is situated within the study area, but outside the draft Order Limits, approximately 316m to the north-east of the underground grid connection corridor, to the north-east of Thornton substation.
- 10.6.12 Groundwater Source Protection Zones are present within the Site. All of these are Zone 1 Source Protection Zones.

Future baseline

- 10.6.13 In the absence of Mylen Leah Solar Farm, there would be no changes to the existing baseline with respect to land and groundwater. The geological and hydrogeological units would not be expected to change significantly, and no significant changes to mineral resources are expected to occur.

10.7 How have the likely effects been assessed for land and groundwater?

- 10.7.1 For the purposes of this preliminary assessment, the details above have been used. In order to assess the likely significant effects within the Environmental Statement (ES), a more detailed assessment will be carried out, which will include consideration of the Water Framework Directive status of the groundwater bodies (details of which are presented in **Appendix 10.1: Preliminary Risk Assessment in Volume 3**), as well as a detailed consideration of how the Site topography will affect issues relating to groundwater, and an in depth review of data provided within British Geological Survey borehole records relating to groundwater depth and elevation.

Approach to design flexibility

- The mounting structure for the solar photovoltaic (PV) modules would include foundations to a maximum depth of 4m below ground level, except in areas where ground penetration needs to be avoided. This use of foundations to the maximum depth is taken as the worst-case scenario with respect to this preliminary assessment;
- This preliminary assessment assumes that there would be two project substations (based on the four substation options), with a maximum area occupied by each substation of 1.7 ha, to ensure a worst case has been assessed;
- Buried cables within the solar PV site would be installed in a trench of width 0.5m to 3m and depth 0.5m to 1.5m; and
- The area of search for the underground grid connection corridor has an approximate working width of 30m, with the installed cable to be in a trench of up to 5m width and depth ranging from 1m to 5m. Where cable trenching is not suitable (e.g. below watercourses) horizontal directional drilling (HDD) may be required, the depth of which may be greater than 5m. Minimum cable depth in flood zones will be 2m.

Assessment assumptions

- 10.7.2 The assessment of the land and groundwater impact has been based on the information set out in **Chapter 3: What will Mylen Leah Solar Farm Comprise?** in **Volume 1**. Where the design parameters include a variable design detail (for example, the depth of a trench is given as from 1m to 5m, or the width of a road is given as 3m to 7m), the worst case situation with respect to land and groundwater would be the deeper trench or the wider road, and therefore this preliminary assessment assumes the larger dimensions will be required. It should be noted that these parameters may be amended at the detailed design stage of Mylen Leah Solar Farm.

Assessment methodology and criteria

- 10.7.3 For this preliminary assessment, the likely effects on identified receptors are reported based on the information available at the time of writing. The final assessment of likely significant effects will be reported in the ES.
- 10.7.4 A Minerals Safeguarding Assessment, to assess impacts to Mineral Safeguarding Areas, does not form part of this preliminary assessment, but will be reported within the ES once further baseline information has been obtained and further consultation with ERYC has been undertaken.
- 10.7.5 A Preliminary Risk Assessment has been completed (see **Appendix 10.1: Preliminary Risk Assessment** in **Volume 3**). This provides baseline data on the Site, alongside an assessment of risks relating to human receptors, controlled waters and other sensitive receptors. This work is undertaken in line with the technical approach presented in the Environment Agency Land Contamination Risk Management guidance and in general accordance with British Standard 10175: 2011 + A2 2017.
- 10.7.6 The assessment criteria for land and groundwater adopted for this preliminary assessment are detailed below. It should be noted that these

criteria differ from the criteria proposed within Appendix D of the EIA Scoping Report, with an updated approach that provides additional robustness in terms of assessing the likely significant effects relating to land and groundwater receptors. The main change has been the adoption of DMRB LA 109: Geology and Soils, DMRB LA 113: Road Drainage and the Water Environment and DMRB LA 104: Environmental Assessment and Monitoring for assigning receptor sensitivity or importance relating to land and groundwater, magnitude of impact (change) and significance of effect.

- 10.7.7 It is acknowledged that the main use of DMRB is for projects that relate to projects promoted by National Highways. However, in the absence of specific guidance relating to the assessment of impacts upon geology, mineral resources, contamination and groundwater with respect to solar projects, the use of DMRB is considered to result in a robust and appropriate assessment. The DMRB assessment criteria are presented in **Table 10.2** and **Table 10.3** and some further examples have been added in relation to groundwater importance in **Table 10.3** to provide a clear discussion on the risks to groundwater from contamination, not just routine runoff.
- 10.7.8 Within the Scoping Opinion adopted by the Planning Inspectorate (on behalf of the Secretary of State) on 18 February 2025, the Environment Agency requested that the importance of licensed and unlicensed groundwater abstractions be included within **Table 10.3**, and that secondary aquifer types should be included. These changes have been incorporated along with the other stated amendments.

Sensitivity of the receptor for geology, mineral resources and contamination

- 10.7.9 Sensitivity criteria for geology, mineral resources and contamination, derived from DMRB LA 109: Geology and Soils, are defined in **Table 10.2**. Sensitivity criteria for mineral resources are also provided in **Table 10.2** and have been derived from the IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment.
- 10.7.10 It should be noted that when considering the potential for contamination to affect other receptors (human health or groundwater), the receptor sensitivity criteria for human health are taken from **Table 10.2** and criteria for groundwater are provided in **Table 10.3**.
- 10.7.11 With respect to potential contamination issues, the receptor sensitivity is assigned based on the intended land-use, as this affects how the receptors will come into contact with the potential pollutant sources.

Table 10.2: Environmental value (sensitivity) and descriptions for geology, mineral resources and contamination

Receptor value (sensitivity)	Description
Very high	Geology: very rare and of international importance with no potential for replacement (e.g. United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites, UNESCO Global Geoparks, SSSIs and Geological Conservation Review sites where citations indicate features of international

Receptor value (sensitivity)	Description
	<p>importance). Geology meeting international designation citation criteria which is not designated as such.</p> <p>Mineral resources: important surface mineral reserves that would be sterilised (i.e., without future access).</p> <p>Contamination:</p> <ol style="list-style-type: none"> 1) Human health: very high sensitivity land use such as residential or allotments; 2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and 3) Groundwater: use sensitivity criteria from Table 10.3 (as taken from Table 3.70 in DMRB LA 113: Road Drainage and the Water Environment).
High	<p>Geology: rare and of national importance, with little potential for replacement (e.g. geological SSSI, National Nature Reserves (NNR)). Geology meeting national designation citation criteria which is not designated as such.</p> <p>Mineral resources: surface mineral reserves that would be sterilised (i.e. without future access).</p> <p>Contamination:</p> <ol style="list-style-type: none"> 1) Human health: high sensitivity land use such as public open space; 2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and 3) Groundwater: use sensitivity criteria from Table 10.3 (as taken from Table 3.70 in DMRB LA 113: Road Drainage and the Water Environment).
Medium	<p>Geology: of regional importance with limited potential for replacement (e.g. regionally important geological or geomorphological sites (RIGS)). Geology meeting regional designation citation criteria which is not designated as such.</p> <p>Mineral resources: surface mineral reserves that would remain accessible for extraction.</p> <p>Contamination:</p> <ol style="list-style-type: none"> 1) Human health: medium sensitivity land use such as commercial or industrial; 2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and

Receptor value (sensitivity)	Description
	3) Groundwater: use sensitivity criteria from Table 10.3 (as taken from Table 3.70 in DMRB LA 113: Road Drainage and the Water Environment).
Low	<p>Geology: geological units of local importance or interest, with potential for replacement (e.g. non-designated geological exposures, former quarries, mining sites).</p> <p>Mineral resources: Surface mineral reserves that would remain accessible for extraction.</p> <p>Contamination:</p> <p>1) Human health: low sensitivity land use such as highways and rail;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.3 (as taken from Table 3.70 in DMRB LA 113: Road Drainage and the Water Environment).</p>
Negligible	<p>Geology: no geological exposures or little or no local interest.</p> <p>Mineral resources: As for low sensitivity.</p> <p>Contamination:</p> <p>1) Human health: undeveloped surplus land or no sensitive land use proposed;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.3 (as taken from Table 3.70 in DMRB LA 113: Road Drainage and the Water Environment).</p>

Importance of the receptor for groundwater

10.7.12 The importance criteria presented in **Table 10.3** are derived from DMRB LA 113: Road Drainage and the Water Environment.

10.7.13 It should be noted that when considering the potential for contamination to affect other receptors (human health or groundwater), the receptor importance criteria for groundwater are taken from **Table 10.3** and criteria for human health are provided in **Table 10.2**.

Table 10.3: Receptor importance for groundwater

Importance	Typical criteria	Typical examples
Very high	Nationally significant attribute of high importance	Principal aquifer providing a regionally important resource, and/or supporting a site protected under European

Importance	Typical criteria	Typical examples
		Commission and United Kingdom (UK) legislation; Groundwater that locally supports a Groundwater Dependent Terrestrial Ecosystems; Source Protection Zone 1; Public licensed groundwater abstraction for potable use.
High	Locally significant attribute of high importance	Principal aquifer providing locally important resource or supporting a river ecosystem; Groundwater that supports a Groundwater Dependent Terrestrial Ecosystems; Source Protection Zone 2; Licensed or unlicensed private groundwater abstractions with domestic/potable use.
Medium	Of moderate quality and rarity	Secondary aquifer providing water for agriculture or industrial use with limited connection to surface water; Source Protection Zone 3; Public licensed groundwater abstraction for agricultural/industrial use; Licensed or unlicensed private groundwater abstraction with agricultural/industrial use.
Low	Lower quality	Unproductive strata

Magnitude of change (impact)

Magnitude of impact (change) for geology, mineral resources and contamination

10.7.14 The magnitude of impact (change) is classified using the criteria presented in **Table 10.4**, which are derived from DMRB LA 109: Geology and Soils. Sensitivity criteria for mineral resources are included, which have been derived from the IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment.

10.7.15 It should be noted that when considering the potential for contamination to affect receptors (human health or groundwater), the magnitude of impact (change) criteria for human health are taken from **Table 10.4** and criteria for groundwater are provided in **Table 10.5**.

Table 10.4: Magnitude of impact (change) criteria for geology, mineral resources and contamination

Magnitude of impact (change)	Description
Major	<p>Geology: loss of geological feature/designation and/or quality and integrity, severe damage to key characteristics, features or elements.</p> <p>Mineral resources: physical removal or permanent sterilisation of mineral resource.</p> <p>Contamination:</p> <p>1) Human health: significant contamination identified. Contamination levels significantly exceed background levels and relevant screening criteria (e.g. category 4 screening levels, as detailed within SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, 2014)²⁶ with potential for significant harm to human health. Contamination heavily restricts future use of land;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.5.</p>
Moderate	<p>Geology: partial loss of geological feature/designation, potentially adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.</p> <p>Mineral resources: permanent loss or reduction of access to mineral resources and restrictions to current or future use.</p> <p>Contamination:</p> <p>1) Human health: contaminant concentrations exceed background levels and are in line with limits of relevant screening criteria (e.g. category 4 screening levels). Significant contamination can be present. Control/remediation measures are required to reduce risks to human health/make land suitable for intended use;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.5.</p>
Minor	<p>Geology: minor measurable change in geological feature/designation attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.</p>

Magnitude of impact (change)	Description
	<p>Mineral resources: temporary loss or reduction of access to mineral resources and restriction to current or future use.</p> <p>Contamination:</p> <p>1) Human health: contaminant concentrations are below relevant screening criteria (e.g. category 4 screening levels). Significant contamination is unlikely with a low risk to human health. Best practice measures can be required to minimise risks to human health;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.5.</p>
Negligible	<p>Geology: very minor loss or detrimental alteration to one or more characteristics, features or elements of geological feature/designation. Overall integrity of resource not affected.</p> <p>Mineral resources: no discernible loss/reduction in access that would restrict current or future use.</p> <p>Contamination:</p> <p>1) Human health: contaminant concentrations substantially below levels outlined in relevant screening criteria (e.g. category 4 screening levels). No requirement for control measures to reduce risks to human health/make land suitable for intended use;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.5.</p>
No change	<p>Geology: no temporary or permanent loss/disturbance of characteristics features or elements.</p> <p>Mineral resources: no change in access to or availability of mineral resources.</p> <p>Contamination:</p> <p>1) Human health: reported contaminant concentrations below background levels;</p> <p>2) Surface water: this receptor is included in DMRB LA 113: Road Drainage and the Water Environment and is assessed within Chapter 15: Water in Volume 1; and</p> <p>3) Groundwater: use sensitivity criteria from Table 10.5.</p>

Magnitude of impact for groundwater

10.7.16 The magnitude of impact has been classified using the criteria presented in **Table 10.5** below, which are adapted from DMRB LA 113: Road Drainage and the Water Environment.

10.7.17 It should be noted that when considering the potential for contamination to affect receptors (human health or groundwater), the magnitude of impact criteria for groundwater are taken from **Table 10.5** and criteria for human health are provided in **Table 10.4** above.

Table 10.5: Magnitude of impact (change) criteria for groundwater

Magnitude of impact (change)	Criteria	Typical examples
Major adverse	Results in loss of attribute and/or quality and integrity of the attribute	Loss of, or extensive change to, an aquifer. Loss of regionally important water supply. Potential high risk of pollution to groundwater from contamination introduced as a result of the proposed development, as a result of mobilisation of existing contamination, or as a result of routine runoff Loss of, or extensive change to Groundwater Dependent Terrestrial Ecosystem or baseflow contribution to protected surface water bodies. Reduction in water body Water Framework Directive classification. Loss, or significant damage, to major structures through subsidence or similar effects.
Moderate adverse	Results in effect on integrity of attribute, or loss of part of attribute	Partial loss or change to an aquifer. Degradation of regionally important public water supply or loss of significant commercial/industrial/agricultural supplies. Potential medium risk of pollution to groundwater from contamination introduced as a result of the proposed development, as a result of mobilisation of existing contamination, or as a result of routine runoff. Partial loss of the integrity of a Groundwater Dependent Terrestrial Ecosystem. Contribution to reduction in water body Water Framework Directive classification.

Magnitude of impact (change)	Criteria	Typical examples
		Damage to major structures through subsidence or similar effects, or loss of minor structures.
Minor adverse	Results in some measurable change in attributes, quality or vulnerability	Potential low risk of pollution to groundwater from contamination introduced as a result of the proposed development, as a result of mobilisation of existing contamination, or as a result of routine runoff. Minor effects on an aquifer, Groundwater Dependent Terrestrial Ecosystems, abstractions and structures.
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity	No measurable impact upon an aquifer and/or groundwater receptors.
Minor beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring	Reduction of groundwater hazards to existing structures Reductions in waterlogging and groundwater flooding.
Moderate beneficial	Results in moderate improvement of attribute quality	Contribution to improvement in water body Water Framework Directive classification. Improvement in water body catchment abstraction management strategy (or equivalent) classification. Support to significant improvements in damaged Groundwater Dependent Terrestrial Ecosystem.
Major beneficial	Results in major improvement of attribute quality	Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring. Recharge of an aquifer. Improvement in water body catchment abstraction management strategy (or equivalent) classification.
No change	No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance of effect for geology, mineral resources, contamination and groundwater

- 10.7.18 The significance of effect for geology, mineral resources, contamination and groundwater is based on the sensitivity of the receptor and the magnitude of impact (change), as outlined in **Table 10.6** and derived from DMRB LA 104: Environmental Assessment and Monitoring. The significance of effect can be adverse or beneficial.
- 10.7.19 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.
- 10.7.20 Where the significance matrix indicates a range for the effect significance (e.g. ‘slight or moderate’), 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 ‘slight or moderate’, this would be considered significant unless further information could be provided to downgrade the significance effect to ‘slight’. Where both effect categories within the range fall within either ‘significant’ or ‘not significant’, it may not be necessary to adjust the range to a single descriptor (for example if the range is ‘neutral or slight’, as both effects are considered to be not significant; or if the range is ‘large or very large’, as both effects are considered to be significant).
- 10.7.21 Descriptive terms are applied to the significance criteria within **Section 10.11** to provide further clarification of the extent of the effect, and as summarised in **Table 10.6**. The effect can be characterised as positive (beneficial) or negative (adverse); direct or indirect; short-term, medium term or long-term; and permanent or temporary.

Table 10.6: Significance of effect criteria for geology, mineral resources, contamination and groundwater

Value/sensitivity/importance	Magnitude of impact (change)				
	No change	Negligible	Minor	Moderate	Major
Very high	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Note: the value/sensitivity/importance criteria for groundwater do not include a category of ‘negligible’

10.8 How has land and groundwater informed the design so far?

10.8.1 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 land and groundwater assessment are presented in **Table 10.7**.

Table 10.7: Embedded mitigation measures relevant to land and groundwater

Embedded mitigation measures relevant to land and groundwater	Function
All internal access tracks and cable routes would use existing tracks, crossings and/or gaps in the hedgerows where reasonably practicable	To minimise compression of soil with subsequent impacts on groundwater regime
Construction storage areas and machinery will be designed and appropriately managed to prevent spillages or waste products coming into contact with land and groundwater, in accordance with statutory environmental protection requirements	To minimise any impacts due to accidental spillage or leaks affecting land or groundwater receptors
The solar PV module frame legs for the solar PV modules will be designed and installed to avoid corrosion to increase the design life of the solar PV modules, to minimise impacts on the groundwater regime	To minimise potential for impacts to groundwater
Areas of impermeable surfaces will be assessed in the Flood Risk Assessment (FRA) and designed to ensure adequate groundwater infiltration is maintained during works	To ensure that no significant changes occur to the existing groundwater regime
The preparation of an Outline Surface Water Drainage Strategy	Whilst the focus of this document will be the protection of the existing surface water regime, as it will relate to drainage, it will also afford protection to the existing groundwater regime

10.9 What are the likely effects of Mylen Leah Solar Farm on land and groundwater?

Construction

Land (potential contamination)

- 10.9.1 Construction activities could lead to localised contamination of soils from potential spills from the operation of construction plant or refuelling activities. If any existing contamination associated with previous activity at the Site is encountered, disturbed or mobilised during construction activity, this could result in a spread of contamination and potential adverse effects to sensitive receptors if not managed correctly. There is the potential for contamination to affect human health and groundwater quality. Issues relating to contamination and groundwater are also considered in **paragraphs 10.9.3 to 10.9.10** below.

Land (mineral safeguarding)

- 10.9.2 The construction of Mylen Leah Solar Farm has the potential to affect mineral resources by interacting with the existing mineral deposits, and by preventing access to the mineral safeguarding areas for extraction purposes during the construction works.

Groundwater

- 10.9.3 Construction activities (including HDD works, piling activities, earthworks, foundation construction, trenchless utility installation, formation of access tracks and excavations) could lead to minor damage to field drains, which may affect the localised drainage of the land and the groundwater quality of the underlying aquifer.
- 10.9.4 Spillages or leaks of fuels, oils and chemicals during construction works may lead to effects on groundwater, which could result in potential pollution to any underlying aquifers.
- 10.9.5 The construction techniques detailed above could form preferential pollutant pathways, resulting in movement of contamination (either existing or introduced by Mylen Leah Solar Farm) and effects on the wider groundwater environment, including the underlying bedrock aquifer.
- 10.9.6 Effects on groundwater may also arise from runoff associated with construction activities (e.g., silt run-off during earthworks and accidental spills and leaks from construction plant).
- 10.9.7 Where piling is required, there may be the potential for preferential pathways to be created to the underlying aquifer, particularly where spills or leaks have occurred as noted above.
- 10.9.8 Groundwater Dependent Terrestrial Ecosystems could also be adversely affected by the issues detailed above, particularly release of new contamination, or mobilisation of existing contamination within the groundwater.
- 10.9.9 With respect to the abstraction and use of groundwater for Mylen Leah Solar Farm, if this is undertaken as part of the works, and not managed appropriately, over-abstraction could affect existing groundwater flow patterns, with potential for subsequent negative effects on the Groundwater

Dependent Terrestrial Ecosystems and licensed/unlicensed groundwater abstractions. The use of water is covered in greater depth within **Chapter 15: Water in Volume 1**, but is mentioned here due to the overlap in terms of effects on groundwater.

- 10.9.10 Where HDD crossings are required, the work could involve the use of drilling fluids, the uncontrolled release of which could pose a risk to groundwater in terms of pollution. For any HDD crossings of watercourses, the risks relating to surface waters are addressed within **Chapter 15: Water in Volume 1**.

Operation

Land (mineral safeguarding)

- 10.9.11 During the operation of Mylen Leah Solar Farm, which is intended to be 50 years, there will be no or limited access to the mineral safeguarding areas due to the presence of solar PV modules, and other associated infrastructure.

Groundwater

- 10.9.12 Activities during operation are likely to be less intrusive than during construction. However, Groundwater Dependent Terrestrial Ecosystems could be adversely affected by leaks or spillages that occur during operation.
- 10.9.13 It is intended that the potential for thermal effects on the groundwater due to buried high voltage cables will be considered further within the ES chapter. Potential effects of temperature changes could include effects of a 'thermal plume' on groundwater flow, bulk thermal conductivity, and potential related changes to water chemistry.

Decommissioning

Land (mineral safeguarding)

- 10.9.14 Access to safeguarded mineral resources will not be possible during the decommissioning phase. On completion of all decommissioning works, the mineral resources will be available for extraction.

Groundwater

- 10.9.15 With some decommissioning activities being similar in nature to the construction activities, there is the potential for adverse effects to groundwater quality and groundwater quantity.
- 10.9.16 Decommissioning activities (including removal of foundations, earthworks and excavations) could lead to minor damage to field drains. Spillages or leaks of fuels, oils and chemicals during decommissioning works may lead to effects on groundwater, which could result in potential pollution to any underlying aquifers.
- 10.9.17 Effects on groundwater may also arise from runoff associated with decommissioning activities (e.g., accidental spills and leaks from construction plant).
- 10.9.18 Groundwater Dependent Terrestrial Ecosystems could also be adversely affected by the decommissioning works, particularly via the release of new contamination.

10.10 What additional mitigation is proposed to avoid, prevent, reduce or offset likely effects on land and groundwater?

Construction

- 10.10.1 A site investigation and accompanying interpretative report is required for Mylen Leah Solar Farm. This would be completed prior to construction works commencing and the report will be issued to the ERYC. This will provide further information specifically targeting potential pollutant linkages that have been identified by **Appendix 10.1: Preliminary Risk Assessment in Volume 3**.
- 10.10.2 The results of the site investigation would also feed into the piling risk assessment element of a Foundation Works Risk Assessment and would therefore incorporate a geotechnical element alongside contamination assessment works. Intrusive investigation works will be completed in accordance with relevant legislation and guidance documents (as indicated in **Section 10.3**).
- 10.10.3 The Outline Construction Environmental Management Plan (Outline CEMP) would set out measures to avoid damage to human health due to contamination, and to avoid, minimise or mitigate effects on the environment during construction works. This includes managing risks from former agricultural activities and ensuring that land and groundwater receptors are protected from effects of contamination associated with historical usage of the land. Examples of measures that would be presented in the Outline CEMP include:
- good housekeeping and site maintenance, including management of materials and waste; fuel storage and refuelling operations;
 - maintain records relating to routine inspections, investigations, corrective actions and action schedules;
 - procedures to mitigate against erosion;
 - procedures to prevent disturbance of contamination; and
 - emergency procedures to manage accidental spillages and leaks in order to minimise any risk to the land and groundwater.
- 10.10.4 Along with preventing damage to the quality of groundwater, any potential impacts on the existing groundwater levels and flow directions during construction would be minimised. The Outline CEMP will include measures to address these issues, which will include the example measures listed in **paragraph 10.10.3**. The Outline Soil Management Plan will also provide some protection, as measures that are protective of the soil structure would also prevent damage to below ground drainage.
- 10.10.5 Measures for the use of HDD (and drilling muds) will be included within the Outline CEMP. This would include a hydrogeological risk assessment to support specific HDD works where these may interact with Secondary A or Principal aquifers and a HDD fluid breakout plan.
- 10.10.6 A Foundation Works Risk Assessment would be produced by the Principal Contractor following completion of the site investigation to ensure the use of

a piling methodology that minimises the likelihood of creating a pollution pathway to groundwater.

Operation

10.10.7 The Outline OEMP will set out measures to avoid damage to human health due to contamination, and to avoid, minimise or mitigate effects on the land and groundwater receptors during operation. This includes managing any remaining risks (if present) from former agricultural activities and ensuring that land and groundwater receptors are protected from effects of contamination associated with historical usage of the land. Examples of the measures that will be presented in the Outline OEMP include:

- good housekeeping and site maintenance, including management of materials and waste;
- maintaining records relating to routine inspections, investigations, corrective actions and action schedules; and
- emergency procedures to manage accidental spillages and leaks in order to minimise any risk to the land and groundwater.

10.10.8 Along with preventing damage to the quality of groundwater, any potential impacts on the existing groundwater levels and flow directions during the operational phase would also be minimised. The Outline OEMP will contain a detailed list of measures, which will include the example measures listed in **paragraph 10.10.7**.

Decommissioning

10.10.9 The Outline DEMP will set out measures to avoid, minimise or mitigate effects on human health (from contamination) or on the environment during decommissioning works. Such measures will include:

- good housekeeping and site maintenance, including management of materials and waste;
- maintaining records relating to routine inspections, investigations, corrective actions and action schedules;
- procedures to prevent disturbance of contamination; and
- emergency procedures to manage accidental spillages and leaks in order to minimise any risk to the land and groundwater.

10.10.10 Along with preventing damage to the quality of groundwater, any potential impacts on the existing groundwater levels and flow directions during the decommissioning phase would also be minimised. These measures will be provided in the Outline DEMP, which will include the example measures listed in **paragraph 10.10.9**.

10.11 What likely effects would remain for land and groundwater following additional mitigation?

Construction

Land (potential contamination)

10.11.1 Contamination could be introduced as a result of construction activities (including spills or refuelling activities), and existing contamination associated with past developments could be encountered. With respect to contamination issues affecting human health, the receptor sensitivity is categorised as **medium**, in line with the intended land use (see **Table 10.2**). The magnitude of impact (change), following additional mitigation, is categorised as **negligible** (with contaminant concentrations expected to be substantially below any screening levels, due to a lack of the presence of pollutants, and no requirement for further control measures to reduce the risks to human health or make the land suitable for its intended use). Therefore, there is assessed to be either a **neutral** residual effect, or an indirect, temporary, short-term **slight adverse** residual effect on human health following the implementation of additional mitigation measures, which is considered to be **not significant**.

10.11.2 With respect to contamination issues affecting groundwater, this is assessed in **paragraphs 10.11.5 to 10.11.9** below.

Land (mineral safeguarding)

10.11.3 The construction of Mylen Leah Solar Farm has the potential to affect mineral resources by interacting with the existing mineral deposits, and by preventing access to the mineral safeguarding areas for extraction purposes during the construction works.

10.11.4 The mineral resources within the mineral safeguarding areas are assigned as having a receptor sensitivity of **medium** (see **Table 10.1**); this classification is considered appropriate for surface mineral reserves that would remain accessible for extraction. The magnitude of impact, following additional mitigation, is **minor** (defined as a temporary loss or reduction of access to mineral resources and restriction to current or future use). Therefore, there is likely to be a direct, temporary, short-term **slight adverse** residual effect on mineral safeguarding areas during the construction phase, following the implementation of additional mitigation measures, which is considered to be **not significant**.

Groundwater

10.11.5 The quality of groundwater and the current groundwater regime with respect to groundwater levels and groundwater flow, have the potential to be affected by the construction phase of Mylen Leah Solar Farm. Construction activities could introduce contamination (for example due to spills or refuelling activities), or the groundwater could be affected by existing contamination. The groundwater regime could be affected by changes to existing drainage or new preferential contaminant migration routes introduced as a result of construction activity. Groundwater Dependent Terrestrial Ecosystems could also be affected by changes to the groundwater regime. Activities such as HDD works, piling activities, earthworks, foundation construction, trenchless

utility installation, formation of access tracks and excavations could potentially result in adverse effects on the groundwater receptor.

- 10.11.6 The importance of groundwater varies depending on the underlying geological units and the locations of groundwater abstraction points, but ranges from **very high** to **low** (see **Table 10.3**). Where the importance is **very high**, this relates to the presence of Zone 1 Source Protection Zones and groundwater abstraction points for potable use. Areas of principal aquifer or where the groundwater supports Groundwater Dependent Terrestrial Ecosystems can be either **very high** or **high** importance depending on the details of the situation.
- 10.11.7 Where there are licensed or unlicensed groundwater abstractions used for agriculture or industrial use, these would be classified as groundwater receptors of **medium** importance (see **Table 10.3**).
- 10.11.8 Where there are licensed or unlicensed groundwater abstractions used for domestic purposes, these would be classified as groundwater receptors of **high** importance (see **Table 10.3**).
- 10.11.9 The magnitude of impact, following additional mitigation, is categorised as **minor** (with the potential low risk of pollution to groundwater, and potential minor effects on an aquifer, Groundwater Dependent Terrestrial Ecosystems or abstractions). Therefore, considering the most sensitive groundwater receptors, there is the potential for direct, temporary, short to medium-term **moderate or large adverse** residual effects on the quality or quantity of groundwater following the implementation of additional mitigation measures. This is considered to be **significant** and will be further assessed at greater depth within the ES, with all of the receptors that have been identified with regard to groundwater being assessed individually.

Operation

Land (mineral safeguarding)

- 10.11.10 During the operation of Mylen Leah Solar Farm, which is intended to be 50 years, there will be no or limited access to the mineral safeguarding areas due to the presence of solar PV modules and other associated infrastructure. These resources will become accessible again once Mylen Leah Solar Farm has been decommissioned.
- 10.11.11 The sensitivity of the mineral resource within mineral safeguarding areas is **medium**, and the magnitude of impact, following additional mitigation, is **minor** (defined as a temporary loss or reduction of access to mineral resources and restriction to current or future use). The residual effect on mineral resources during operation will be direct, temporary, long-term and **slight adverse**, which is considered to be **not significant**.

Groundwater

- 10.11.12 The quality of groundwater, and the current groundwater regime (with respect to groundwater levels and groundwater flow), have the potential to be affected by the operational phase of Mylen Leah Solar Farm, which could result in an adverse impact on Groundwater Dependent Terrestrial Ecosystems.

- 10.11.13 The importance of the groundwater receptor in respect of the two Groundwater Dependent Terrestrial Ecosystems identified in the vicinity of the Site is assigned based on the definitions provided in **Table 10.3**. For the Groundwater Dependent Terrestrial Ecosystem located partly within the underground grid connection corridor (Pocklington Canal SSSI), this site is considered to be locally supported by the groundwater beneath the Site and therefore is of **very high** importance. For the Groundwater Dependent Terrestrial Ecosystem that is located 316m from the draft Order Limits but within the study area (White Carr Meadow SSSI) is considered to be supported by groundwater beneath the Site, so is of **high** importance.
- 10.11.14 The magnitude of impact, following additional mitigation, is categorised as **negligible** (whereby there may be an effect on the attribute, but these are of insufficient magnitude to affect its use or integrity). Therefore, there is the potential for direct, temporary, short-term **slight adverse** residual effects on the Groundwater Dependent Terrestrial Ecosystems following the implementation of additional mitigation measures. This is considered to be **not significant**.
- 10.11.15 With respect to the potential for effects on groundwater from thermal changes during operation of Mylen Leah Solar Farm, the receptor importance is the same as defined for the construction phase, ranging from **very high** to **low**, depending on the location. The magnitude of impact in relation to potential thermal effects, following additional mitigation, is categorised as **negligible** (with a possible effect on the attribute, but of insufficient magnitude to affect its use or integrity). Therefore, considering the most sensitive groundwater receptors, there is the potential for direct, temporary, short-term **slight adverse** residual effects on groundwater following the implementation of additional mitigation measures. This is considered to be **not significant**.

Decommissioning

Land (mineral safeguarding)

- 10.11.16 During decommissioning, there will be no access to the mineral safeguarding areas due to the works associated with the removal of solar PV modules and associated infrastructure. After decommissioning, access to any mineral resources will be restored.
- 10.11.17 The sensitivity of the mineral resource within mineral safeguarding areas is **medium**, and the magnitude of impact, following additional mitigation, is **minor** (defined as a temporary loss or reduction of access to mineral resources and restriction to current or future use). The residual effect on mineral resources during decommissioning will be direct, temporary, short-term and **slight adverse**, which is considered to be **not significant** and will cease on completion of all decommissioning works.

Groundwater

- 10.11.18 The quality of groundwater, and the current groundwater regime with respect to groundwater levels and groundwater flow, have the potential to be affected by the decommissioning phase of Mylen Leah Solar Farm by the introduction of contamination (for example due to spills or refuelling activities), or by affecting the groundwater regime by changing existing

drainage. Groundwater Dependent Terrestrial Ecosystems could also be affected by changes to the groundwater regime.

10.11.19 As noted above, the importance of groundwater varies depending on the underlying geological units and the locations of groundwater abstraction points, but ranges from **very high** to **low** (see **Table 10.3**). The magnitude of impact, following additional mitigation, is categorised as **minor** (with the potential low risk of pollution to groundwater, and potential minor effects on an aquifer, Groundwater Dependent Terrestrial Ecosystems or abstractions). Therefore, considering the most sensitive groundwater receptors, there is the potential for direct, temporary, short to medium-term **moderate or large adverse** residual effects on the quality or quantity of groundwater following the implementation of additional mitigation measures. This is considered to be *potentially significant* and will be further assessed at greater depth within the ES, with all of the receptors that have been identified with regard to groundwater being assessed individually.

10.12 What opportunities are there for environmental enhancement?

10.12.1 The existing predominantly agricultural land use carries a contamination risk, for example from the application of herbicides, pesticides or fertilisers, or due to leaks or spillages from agricultural machinery. The change in land use from agricultural producer to solar farm would result in a reduction in risks from these potential pollutants.

10.13 What difficulties and uncertainties have been encountered in this preliminary land and groundwater assessment?

10.13.1 The following difficulties and uncertainties have been encountered in undertaking this preliminary land and groundwater assessment:

- Data on site history have been obtained from historical maps. On some occasions, there may be developments that occurred between map editions that are not evident. However, for the Site, there are few changes to field boundaries or building locations between the map editions, and it is considered unlikely that significant features have been missed;
- There are no previous investigations available for the Site; therefore, there is no specific information on concentrations of potential contaminants in soil and groundwater. It would be standard for this information to be collected during later stages of Mylen Leah Solar Farm, when site investigations can be appropriately designed for Mylen Leah Solar Farm based on both the available desk-based information and the detailed design; and
- Details of groundwater depth and flow direction are unknown at this stage. However, it has been possible to complete this preliminary assessment in a robust manner by applying reasonably conservative assumptions.

10.13.2 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.

10.14 What further work is required to inform the full land and groundwater assessment in the DCO application?

10.14.1 The ES will include a more detailed assessment of the likely significant effects to groundwater, which will include consideration of the Water Framework Directive status of the groundwater bodies (details of which are presented in **Appendix 10.1: Preliminary Risk Assessment in Volume 3**), as well as a detailed consideration of how the Site topography will affect issues relating to groundwater, and an in depth review of data provided within British Geological Survey borehole records relating to groundwater depth and elevation. Information relating to private and public, licensed and unlicensed groundwater abstractions has been obtained and will be used to inform the assessment relating to groundwater receptors.

10.14.2 Further consultation with ERYC is required to inform a Minerals Safeguarding Assessment, which will be undertaken and reported within the ES to assess impacts to Mineral Safeguarding Areas.

10.14.3 Further work will be undertaken to assess the potential for thermal effects on the groundwater due to buried high voltage cables. The details of this assessment will be included within the ES.

¹ Environmental Protection Act 1990. Available online: [Environmental Protection Act 1990](#)

² Water Resources Act 1991. Available online: [The Water Resources Act 1991 \(Amendment\) \(England and Wales\) Regulations 2009](#)

³ Water Framework Directive 2000/60/EC. Available online: [Directive - 2000/60 - EN - Water Framework Directive - EUR-Lex](#)

⁴ Groundwater Directive 2006/118/EC. Available online: [Directive - 2006/118 - EN - EUR-Lex](#)

⁵ Groundwater (Water Framework Directive) (England) Direction 2016 (2016). Available online: [The Groundwater \(Water Framework Directive\) \(England\) Direction 2016 - GOV.UK](#)

⁶ Priority Substances Directive 2008/105/EC. Available online: [Directive - 2008/105 - EN - EUR-Lex](#)

⁷ Environmental Permitting (England and Wales) Regulations 2016. Available online: [The Environmental Permitting \(England and Wales\) Regulations 2016](#)

⁸ Department for Energy Security and Net Zero (December 2025, published January 2026). Overarching National Policy Statement for Energy (EN-1). Available online: [Overarching National Policy Statement for energy \(EN-1\), 2025 - GOV.UK](#)

⁹ Department for Energy Security and Net Zero (December 2025, published January 2026). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online: [National Policy Statement for renewable energy infrastructure \(EN-3\), 2025 - GOV.UK](#)

¹⁰ Department for Energy Security and Net Zero (December 2025, published January 2026). National Policy Statement for Electricity Networks Infrastructure (EN-5). Available online: [National Policy Statement for electricity networks infrastructure \(EN-5\), 2025 - GOV.UK](#)

¹¹ Ministry of Housing, Communities & Local Government (2024) National Planning Policy Framework. Available online: [National Planning Policy Framework - GOV.UK](#)

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- ¹² UK Government (2023). A Green Future: Our 25 Year Plan to Improve the Environment. Available online: [CD1.H HM Government A Green Future Our 25 Year Plan to Improve the Environment.pdf](#)
- ¹³ East Riding of Yorkshire Council and Hull City Council (2023). East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan 2016-2033. Available online: [Joint Minerals Plan](#)
- ¹⁴ East Riding of Yorkshire Council and Hull City Council (2004). East Riding of Yorkshire and Kingston upon Hull Joint Waste Plan. Available online: [Joint Waste Plan](#)
- ¹⁵ Environment Agency (2025). Land Contamination Risk Management. Available online: [Land contamination risk management \(LCRM\) - GOV.UK](#)
- ¹⁶ Institute of Environmental Management and Assessment (2022) Guide: A New perspective on Land and Soil in Environmental Impact Assessment. Available online: [2022-iema land and soils guidance.pdf](#)
- ¹⁷ Highways England (2019). Design Manual for Roads and Bridges LA 109: Geology and Soils, revision 0, October 2019. Available online: [adca4c7d-4037-4907-b633-76eaed30b9c0](#)
- ¹⁸ Highways England (2020). Design Manual for Roads and Bridges LA 113: Road Drainage and the Water Environment, revision 1, March 2020. Available online: [LA 113 - Road drainage and the water environment](#)
- ¹⁹ Highways England (2020). Design Manual for Roads and Bridges LA 104: Environmental Assessment and Monitoring, revision 1, August 2020. Available online: [LA 104 - Environmental assessment and monitoring](#)
- ²⁰ BSI (2017) BS 10175:2011+A2:2017 Investigation of potentially contaminated sites – Code of practice. London: British Standards Institution.
- ²¹ BSI (2015) BS 5930:2015 Code of practice for ground investigations. London: British Standards Institution.
- ²² Environment Agency (2018). The Environment Agency’s approach to groundwater protection. Version 1.2. Available online: [The Environment Agency’s approach to groundwater protection \(publishing.service.gov.uk\)](#)
- ²³ Environment Agency (2025). Protect groundwater and prevent groundwater pollution. Available online: [Protect groundwater and prevent groundwater pollution - GOV.UK](#)
- ²⁴ Scoping Opinion Adopted by the Planning Inspectorate (on behalf of the Secretary of State) on 18 February 2025. Available online: [EN0110002-000035-Secretary of State Scoping Opinion - Proposed Mylen Leah Solar Farm 18 February 2025.pdf](#)
- ²⁵ British Geological Survey. Onshore UK Hydrocarbon Well Dataset within GeoIndex. Available online: [GeoIndex - British Geological Survey](#)
- ²⁶ Contaminated Land: Applications in Real Environments (CL:AIRE) (2014). SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. Available online: [Category 4 Screening Levels \(C4SLs\)](#)