

Intermodal Logistics Park North Ltd

INTERMODAL LOGISTICS PARK NORTH (ILPN)

Intermodal Logistics Park North (ILPN) Strategic Rail Freight Interchange (SRFI)

Project reference TR510001

Preliminary Environmental Information Report (PEIR)

Chapter 14: Surface water and flood risk

October 2025

Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

This document forms a part of a Preliminary Environmental Information Report (PEIR) for the Intermodal Logistics Park North (ILPN) project.

A PEIR presents environmental information to assist consultees to form an informed view of the likely significant environmental effects of a proposed development and provide feedback.

This PEIR has been prepared by the project promoter, Intermodal Logistics Park North Ltd. The Proposed Development is described in Chapter 3 of the PEIR and is the subject of a public consultation.

Details of how to respond to the public consultation are provided at the end of Chapter 1 of the PEIR and on the project website:

<https://www.tritaxbigbox.co.uk/our-spaces/intermodal-logistics-park-north/>

This feedback will be taken into account by Intermodal Logistics Park North Ltd in the preparation of its application for a Development Consent Order for the project.

Chapter 14 ◆ Surface water and flood risk

INTRODUCTION

- 14.1 This PEIR chapter sets out the assessment of the potential effects of the Proposed Development, as described in Chapter 3, on surface water and flood risk.
- 14.2 This PEIR chapter considers the impact of the Proposed Development upon the DCO Site and surrounding area in relation to existing baseline conditions, and relevant legislation and national, regional and local planning policy with regard to surface water hydrology, drainage and flood risk. In particular, consideration is given to effects that might arise during construction and operation in terms of flood risk, surface water quantity and quality, foul water sewerage and potable water supply.
- 14.3 The Chapter provides a description of the methods used in the assessment. This is followed by a description of the relevant baseline conditions of the Proposed Development and an assessment of the likely environmental effects of the Proposed Development during the construction works and once the Proposed Development is completed and operational. Mitigation measures are identified where appropriate to avoid, reduce or offset any significant adverse effects identified, together with the nature and significance of likely residual effects.
- 14.4 The PEIR Chapter is accompanied by the following figures:
- Figure 14.1: Surface Water and Flood Risk Study Area.
 - Figure 14.2: Waterbodies within the Main Site and the Study Area.
 - Figure 14.3: Environment Agency (EA) Flood Map for Planning.
 - Figure 14.4: EA Risk of Flooding from Surface Water Mapping.
- 14.5 The PEIR Chapter is also accompanied by the following technical appendices:
- Appendix 14.1: Flood Risk Assessment (FRA) (including hydraulic modelling report).
 - Appendix 14.2: Sustainable Drainage Statement (SDS) (including surface water and foul water drainage strategies).
- 14.6 In line with the EIA Regulations 2017, this PEIR Chapter has been compiled by appropriately qualified, experienced, and competent experts. This PEIR Chapter has been produced by members of the Water Environment team at BWB Consulting Ltd who are members of the Chartered Institution of Water and Environmental Management.

RELEVANT LAW, POLICY AND GUIDANCE

- 14.7 The assessment has been undertaken with reference to, and in accordance with, the relevant national and local legislation and planning policy, including the following.

Water Resources Act

- 14.8 The Water Resources Act¹ (1991) relates to the control of the water environment. The main aspects of that Act which are relevant to the Intermodal Logistics Park North Strategic Rail Freight Interchange (ILPN SRFI) include provisions concerning land drainage, flood mitigation and controlling discharges to watercourses to prevent water pollution. It also outlines the functions and responsibilities of the EA in regulating the water environment.

Flood and Water Management Act

- 14.9 The Flood and Water Management Act² (2010) takes forward some proposals previously published by the UK Government: Future Water, Making Space for Water and the UK Government's response to Sir Michael Pitt's Review of the summer 2007 floods.
- 14.10 This Act gives the EA the strategic overview of management of flood risk in England. It gives upper tier local authorities in England responsibility for preparing and putting in place strategies for managing flood risk from groundwater, surface water and ordinary watercourses in their areas.
- 14.11 Local flood authorities, district councils, internal drainage boards and highways authorities have a duty to aim to make a contribution towards sustainable development.
- 14.12 As set out in Paragraph 7(3) of Schedule 3, the need for a drainage system for construction work which has drainage implications to be approved by the approving body does not apply to nationally significant infrastructure projects. As such, Schedule 3 will not apply to the Proposed Development.

Water Framework Directive

- 14.13 The Water Framework Directive (WFD)³ applied to all waterbodies within European Union (EU) member states at the time it was introduced. The Water Environment (Water Framework Directive) (England and Wales) Regulations⁴ (2017) transposed the requirements of the WFD into UK law and was retained post-Brexit. These Regulations aim to ensure the protection of waterbodies from further deterioration, and that improvements in water quality are made. The assessment and protection of waterbodies is undertaken by implementing River Basin Management Plans (RBMP). In general terms, there is an onus on developers to protect and, if possible, enhance waterbodies close to proposed developments.

¹ The Water Resources Act 1991.

² The Flood and Water Management Act 2010.

³ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

⁴ UK Statutory Instruments: 2017 No. 4.7: The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

14.14 In total, 11 River Basin Districts have been identified in England and Wales. The Study Area falls within the North West River Basin District. The Regulations include a requirement for surface waterbodies to achieve 'good' status with respect to ecology and water chemistry by 2021. Progress is monitored by the EA in its role as the 'competent authority'. The current plan relevant to the Study Area is the North West River Basin District River Basin Management Plan 2022 – 2027.

National Policy Statement for National Networks

14.15 The National Policy Statement for National Networks (NPSNN)⁵ provides planning guidance for nationally significant infrastructure road, rail and strategic rail freight infrastructure projects.

14.16 Paragraphs 5.126 to 5.151 (related to flood risk) and 5.252 to 5.268 (related to water quality and resources) include the requirements to:

- *'take the impacts of climate change into account'.*
- undertake an appropriate assessment of flood risk, in accordance with the requirements of the National Planning Policy Framework in order to *'avoid, limit and reduce the risk of flooding to the proposed infrastructure and others'.*
- assess potential impacts on potential impacts on water quality, water resources, physical characteristics and waterbodies or protected areas under the WFD Regulations.

National Planning Policy Framework

14.17 The National Planning Policy Framework (NPPF)⁶ (December 2024, as amended February 2025) sets out the Government's national policies on different aspects of land use planning, including flood risk.

14.18 The accompanying National Planning Practice Guidance (NPPG)⁷ sets out the vulnerability and suitability of different land uses to flood risk. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk to the wider catchment.

14.19 The NPPF and the NPPG are material considerations as the NPSNN provides the overarching policy guidance for nationally significant strategic rail freight infrastructure projects.

Design Manual for Roads and Bridges LA 113 Road Drainage and the Water Environment

14.20 This Standard⁸ gives guidance on the assessment and management of the impacts that road projects may have on the water environment. These include possible impacts on the quality of waterbodies and on the existing hydrology of the catchment(s) through which roads pass.

⁵ Department for Transport (2024) National Networks National Policy Statement

⁶ Ministry of Housing, Communities and Local Government (2025) National Planning Policy Framework.

⁷ Ministry of Housing, Communities and Local Government (2024) National Planning Practice Guidance.

⁸ Highways England (2020) Design Manual for Roads and Bridges LA 113 Road Drainage and the Water Environment.

The Standard may also be applied to existing roads, where appropriate.

National Standards for Sustainable Drainage Systems

- 14.21 The National Standards for Sustainable Drainage Systems (SuDS)⁹ was published in June 2025 and is the current guidance for the design, maintenance and operation of SuDS.
- 14.22 The standards set out that the peak runoff rate should be as close as is reasonably practicable to the greenfield rate but should never exceed the pre-development runoff rate.
- 14.23 The standards also set out that the drainage system should be designed so that flooding does not occur on any part of the Proposed Development for a 1 in 30-year rainfall event, and that no flooding of a building (including basement) would occur during a 1 in 100 year rainfall event.
- 14.24 It is also noted within the standards that pumping should only be used when it is not reasonably practicable to discharge by gravity.

CIRIA Document C753: The SuDS Manual

- 14.25 The Construction Industry Research and Information Association (CIRIA) SuDS Manual¹⁰ provides guidance regarding planning, design, construction and maintenance of SuDS to assist with the effective implementation within both new and existing developments.
- 14.26 Other CIRIA guidance of relevance include C532 Control of Water Pollution from Construction Sites and C624 Development and Flood Risk.

Preliminary Flood Risk Assessment

- 14.27 A Preliminary Flood Risk Assessment (PFRA) is an assessment of floods that have taken place in the past and floods that could take place in the future. It generally considers flooding from surface water runoff, groundwater and ordinary watercourses, and is prepared by Lead Local Flood Authorities (LLFAs).
- 14.28 The St Helens Council PFRA¹¹ was completed in June 2017. The PFRA seeks to assess past and future flood risk and identify areas at significant flood risk.
- 14.29 The Wigan Council PFRA¹² was completed in May 2011 and an addendum¹³ was published in December 2017.
- 14.30 The Warrington Borough Council PFRA¹⁴ was published in May 2017.

⁹ Department for Environment, Food & Rural Affairs (2025) National Standards for Sustainable Drainage Systems.

¹⁰ B. Woods Ballard, S. Wilson, H. Udale-Clarke, S. Illman, T. Scott, R. Ashley, R. Kellagher (2015) CIRIA C753 The SuDS Manual.

¹¹ St Helens Borough Council (2017) Preliminary Flood Risk Assessment 2017-2023.

¹² JBA Consulting (2011) Wigan Council Preliminary Flood Risk Assessment.

¹³ Wigan Metropolitan Borough Council (2017) Addendum to Preliminary Flood Risk Assessment.

¹⁴ Warrington Borough Council (2017) Warrington Preliminary Flood Risk Assessment 2017-2023.

Local Flood Risk Management Strategy

- 14.31 A Local Flood Risk Management Strategy (LFRMS) is prepared by a LLFA to help understand and manage flood risk at a local level. The LFRMS aims to ensure that the knowledge of local flood risk issues is communicated effectively so floods can be better managed. The LFRMS also aims to promote sustainable development and environmental protection.
- 14.32 The St Helens Council LFRMS¹⁵, the Wigan LFRMS¹⁶ and the Warrington LFRMS¹⁷ were written to assist in the understanding and management of flood risk in the respective boroughs.

Strategic Flood Risk Assessment

- 14.33 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future.
- 14.34 The St Helens Council SFRA¹⁸ was completed in September 2014. The SFRA aims to provide an assessment of flood risk from all sources within the council's administrative area.
- 14.35 A Liverpool City Region Combined Authority SFRA Part A¹⁹ was completed in November 2023. This is a joint SFRA for the combined authority and covers the administrative area of St Helens Borough Council.
- 14.36 An updated Level 1 SFRA for Greater Manchester²⁰ was completed in March 2019. This document updates a previously completed Level 1 SFRA and covers the Wigan Council administrative area. Following this, a Greater Manchester Level 2 Hybrid SFRA²¹ was completed in October 2020.
- 14.37 The Warrington Borough Council Level 1 SFRA²² was completed in July 2018 and the Level 2 SFRA²³ was completed in March 2019. An addendum to the SFRA²⁴ was published in August 2021.

St Helens Borough Local Plan

- 14.38 The St Helens Borough Local Plan²⁵ was adopted in July 2022 and sets out the vision, objectives and strategic and local policies for development in the Borough up to 2037. The key policy from the Local Plan relevant to water resources and flood risk is Policy LPC12 (Flood Risk and Water Management). This policy sets out requirements for new developments with respect to flood risk, water quality and sustainable drainage systems.

¹⁵ St Helens Council (2020) Local Flood Risk Management Strategy 2019-2025.

¹⁶ Wigan Council (2018) Wigan Local Flood Risk Management Strategy.

¹⁷ Warrington Borough Council (2017) Local Flood Risk Management Strategy 2017-2023.

¹⁸ JBA Consulting (2014) St Helens Council Strategic Flood Risk Assessment.

¹⁹ JBA Consulting (2023) Liverpool City Region Combined Authority Strategic Flood Risk Assessment Part A.

²⁰ JBA Consulting (2019) Level 1 Strategic Flood Risk Assessment for Greater Manchester – Update.

²¹ JBA Consulting (2020) Greater Manchester Level 2 Hybrid Strategic Flood Risk Assessment.

²² JBA Consulting (2018) Warrington Borough Council Level 1 Strategic Flood Risk Assessment.

²³ JBA Consulting (2019) Warrington Borough Council Local Plan Site Screening Level 2 Strategic Flood Risk Assessment.

²⁴ Warrington Borough Council (2021) Warrington Borough Council Strategic Flood Risk Assessment Addendum.

²⁵ St Helens Borough Council (2022) St Helens Borough Local Plan up to 2037.

Places for Everyone Joint Development Plan Document

- 14.39 The Places for Everyone Joint Development Plan²⁶ encompasses nine of the ten Greater Manchester districts, including Wigan. Policy JP-S4: Flood Risk and the Water Environment sets out the need for development to be located and designed *‘to minimise the impacts of current and future flood risk’* as well as expectations for the use of sustainable drainage systems.
- 14.40 Policy JP-G4: Lowland Wetlands and Mosslands is also of relevance, due to the Highfield Moss Site of Special Scientific Interest (SSSI) located immediately adjacent to the Main Site. In particular, it is stated that land adjacent to sensitive wetland habitats should be positively managed in such a way that their hydrology is not adversely affected.

Wigan Local Plan Core Strategy

- 14.41 Whilst a number of policies from the Wigan Local Plan Core Strategy²⁷ have been superseded by Places for Everyone, this strategy was updated in March 2024 to include the remaining policies. The Wigan Local Plan Core Strategy was first adopted in September 2013 and sets out the spatial vision for the Borough until 2026.
- 14.42 Policy CP 16 (Flooding) has been retained within the Local Plan Core Strategy. This sets out the requirements for development with regards to flood risk and surface water run-off.
- 14.43 Wigan Council is preparing a new Local Plan for the period to 2040. The Wigan Borough Local Plan: Initial draft for consultation²⁸ was published in April 2025. A key draft policy of relevance is Draft Policy EN10: Development and flood risk, which includes the requirement for development to be designed such that *‘it does not increase the risk of flooding elsewhere’* as well as the requirements for sustainable surface water run-off management.

Warrington Local Plan

- 14.44 The Warrington Local Plan 2021/22 to 2038/39²⁹ was adopted in December 2023 and provides the statutory planning framework for the Borough until 2039. The key policy from the Local Plan relevant to water resources and flood risk is Policy ENV2 - Flood Risk and Water Management. This policy sets out general principles for development with relation to flood risk as well as specific requirements for development proposals.

North West River Basin Management Plan

- 14.45 The latest version of the North West RBMP³⁰ was published in 2022. RBMPs include an assessment of river basin characteristics, a review of the impact of human activities, statuses of waterbodies and an economic analysis of water use and progress since the first plan was

²⁶ Greater Manchester Combined Authority (2024) Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan 2022 to 2039.

²⁷ Wigan Council (2024) Wigan Local Plan Core Strategy Remaining Policies.

²⁸ Wigan Council (2025) Wigan Borough Local Plan: Initial draft for consultation.

²⁹ Warrington Borough Council (2023) Warrington Local Plan 2021/22 to 2038/39.

³⁰ Environment Agency (2022) North West River Basin Management Plan.

published in 2009.

United Utilities Water Resources Management Plan

14.46 The Water Resources Management Plan³¹ is a long-term assessment of the likely demand and supply of potable water within the United Utilities supply region. The document also includes an outline of plans in order to balance supply and demand, whilst meeting environmental obligations and climate change uncertainty.

CONSULTATION TO DATE

14.47 Table 14.1 summarises comments received within the EIA Scoping Opinion in relation to surface water and flood risk as well as comments from informal consultation discussions which have taken place with key consultees since the EIA Scoping consultation. Details of how these comments have been, and will be, considered as the DCO application progresses are included.

³¹ United Utilities (2019) Final Water Resources Management Plan 2019.

Table 14.1 Scoping and informal consultation summary

Consultee	Consultee comment	Response
EIA Scoping Consultation		
Planning Inspectorate (PINS)	The Scoping Report seeks to scope out effects from flood risk arising from coastal sources. The Inspectorate considers given the nature and location of the Proposed Development that significant effects are unlikely to occur from coastal flooding. On that basis, this matter can be scoped out of the assessment.	The Applicant notes that the Inspectorate agrees to scope out effects from flood risk arising from coastal sources.
PINS	The Scoping Report seeks to scope out effects from flooding from canals on the basis that the nearest canal is 3.8km north of the Proposed Development and due to intervening topography. The Inspectorate agrees that on that basis, this matter can be scoped out of the assessment on that basis.	The Applicant notes that the Inspectorate agrees to scope out effects from flood risk from canals.
PINS	The Scoping Report seeks to scope out effects from reservoir flooding on the basis that the Proposed Development is outside the area of inundation in the event of reservoir failure. The Inspectorate agrees that provided appropriate evidence, such as Environment Agency mapping, is provided in the ES to confirm this, that this matter can be scoped out of the assessment.	The Applicant notes that the Inspectorate agrees to scope out effects from reservoir flooding. This PEIR Chapter, and the ES Chapter, will include appropriate evidence to confirm that the Proposed Development is outside of the area of inundation in the event of reservoir failure.

Consultee	Consultee comment	Response
PINS	The Inspectorate considers that the study area for the hydrology assessment (limited to the site of the Proposed Development only) is not sufficient to capture the potential impact-pathways from the Proposed Development to potential receptors and to fully establish flood risk (particularly downstream flood risk), given the nature and extent of the Proposed Development. Different study areas could also be appropriate for the different matters scoped within the assessment. The extent of and rationale for selecting the study area(s) should be clearly and consistently set out in the ES and associated figures, in order to represent the potential maximum extent of likely significant effects. The Applicant is encouraged to agree the study area(s) with relevant consultation bodies, including the Environment Agency and Lead Local Flood Bodies. Please also see the Inspectorate's comment which defines study areas within the Geology, Soils and Contaminated Land in ID 3.9.5 of this Scoping Opinion.	The Applicant notes the comments regarding the study area for the ES Chapter 15: Surface water and flood risk. The study area(s) of this PEIR Chapter has taken these comments, including those on Geology, Soils and Contaminated Land, as well as the study areas for other technical chapters, into consideration. The Applicant will seek to agree the Study Area with the EA and the LLFAs as the DCO application progresses and the agreed study area(s) will be clearly set out in the ES.
PINS	Regarding Table 13.2 of the Scoping Report on Magnitude of effect, this table should also describe how magnitude of effect on potable water supply and licenced abstractions will be defined.	The ES will include descriptors for the magnitude of effect on potable water supply and licenced abstractions.

Consultee	Consultee comment	Response
PINS	Regarding effects from fire-fighting foams on surface water quality, where this element is included in the Proposed Development, effects from potential discharges of firewater foam associated with battery storage should be included in the assessment of site discharges to surface water within the ES.	The Applicant acknowledges the comment and the potential for discharges of firewater foam associated with battery storage to introduce persistent chemicals to the environment. The effects from these potential discharges to surface water will be included within the ES and the technical appendices, as well as within this PEIR Chapter.
PINS	Regarding assessment of effects on groundwater receptors, the Inspectorate notes inconsistencies and omissions in the receptors that have been identified in Scoping Report Chapters 13 and 14. The ES should clarify where the assessment of effects on these receptors is presented and ensure, where relevant, that there is appropriate cross reference between related assessments. The Applicant's attention is drawn to the response from the Environment Agency which identifies further receptors that should be considered.	The Applicant notes the inconsistencies identified in the Scoping report. The ES Chapter 15: Geology, soils and contaminated land will set out all relevant groundwater receptors. The ES Chapter 14: Surface water and flood risk will include consideration of the receptors relevant to its technical scope, including where relevant those identified by statutory consultees, and will make reference to other technical chapters where appropriate.
PINS	The assessment of effects on water quality should include consideration of the effects on groundwater quality, where significant effects are likely to occur.	The Applicant acknowledges the need to consider effects on groundwater quality, where significant effects are likely to occur.

Consultee	Consultee comment	Response
		Within the ES Chapter 14: Surface water and flood risk, groundwater will be considered in the context of potential effects resulting from the proposed drainage scheme. Groundwater quality, considering contamination from ground or during the construction phase, will be considered within the ES Chapter 15: Geology, soils and contaminated land. Any effects on the Highfield Moss SSSI will be considered under the ES Chapter 11: Ecology and biodiversity as well as the ES Chapter 15: Geology, soils and contaminated land. To establish the effects on groundwater quality, further works will be undertaken to inform the ES Chapters 11 and 15, such as the monitoring of groundwater levels within an intrusive ground investigation. Appropriate reference to the other technical chapters will be made where applicable.
Informal Consultation		
St Helens Borough Council LLFA	The DCO application process was discussed, including the role of the LLFA and the EA as consultees, as well as the proposed hydraulic modelling and likely surface water drainage strategy.	The Applicant will continue engaging with St Helens Borough Council LLFA as the DCO application progresses, following initial discussions on principles to be included

Consultee	Consultee comment	Response
		within the surface water drainage strategy
Wigan Borough Council LLFA	The DCO application process was discussed, including the role of the LLFA and the EA as consultees, as well as the preliminary hydraulic modelling and likely surface water drainage strategy.	The Applicant will continue engaging with Wigan Borough Council LLFA as the DCO application progresses, following initial discussions on principles to be included within the surface water drainage strategy
United Utilities	Pre-development advice was provided via a pre-development enquiry. It was confirmed that there are no public sewers within the Main Site of the DCO Site (Main Site) and that foul flows from the Proposed Development will be allowed to drain into the public foul water / combined sewer system.	Further consultation will continue to be undertaken as the DCO application progresses to confirm details of the connection(s) to the public foul water network.
Warrington Borough Council	Concerns over existing downstream flooding issues from the site associated with the Cockshot Brook catchment were raised. It was requested that the existing culverts should not be upsized or flows through these structures increased from the existing conditions at the Main Site.	The Applicant has confirmed that flows from the Main Site will not increase as a result of the Proposed Development. Further technical work is being undertaken to confirm the baseline conditions at the DCO Site, to inform the flood risk and drainage proposals and the associated drainage strategy.
	Regarding water quality control and future maintenance of the site, it was noted that it is considered critical that future maintenance is in place for the lifetime of the Proposed Development to ensure that downstream water quality is not	Water quality mitigation will be embedded into the drainage design, where appropriate. It is proposed that full retention separators and bypass separators

Consultee	Consultee comment	Response
	adversely impacted.	/ permeable paving will be used as appropriate to manage 'at risk' areas of the Main Site. The ownership and responsibility of the proposed SuDS features during the lifetime of the Proposed Development was outlined.
	It was queried how incoming flows from the north of the Chat Moss Line will be managed.	It was clarified that the proposed drainage strategy will include allowance for these incoming flows to pass through the Main Site. The importance of not significantly changing the hydrological arrangement around the Highfield Moss SSSI was noted.

14.48 No additional consultation has been undertaken at this time.

METHODOLOGY AND DATA SOURCES

Definition of the study area

14.49 The Study Area for this Chapter, shown in Figure 14.1, comprises the Main Site, the Western Rail Chord and the Highfield Moss SSSI.

14.50 There are potential significant receptors that exist beyond the Study Area, as well as cumulative impacts, which will also be included in the assessment. These include flood risk and drainage pathways between the Main Site and potential receptors such as the tributary of the Cockshot Brook, the Newton Brook, sewerage system and groundwater. As such, the assessment also covers a 1km buffer that has been applied from the Main Site, the Western Rail Chord and the Highfield Moss SSSI, as this is considered to be the area which will have the greatest potential to affect surface water and flood risk outside of the Main Site.

14.51 The EA assesses surface water and groundwater quality at a river catchment level. Therefore, when considering a potential for impact on downstream water quality, the potential for impacts at a river catchment level, rather than limited to a 1km radius, have been considered in this PEIR chapter.

Temporal scope

14.52 The temporal scope of the assessment is anticipated to cover the period of construction and operation, as set out in Chapter 3: Project Description.

Establishing baseline conditions

14.53 Information on surface water and flood risk has been collected through a detailed desktop review of existing studies and datasets. In addition to publicly available data, the PEIR Chapter has been informed by the following sources of information:

- preliminary hydraulic modelling of the Main Site and the Western Rail Chord undertaken by BWB Consulting Ltd (2025);
- surface and foul water drainage strategies produced by BWB Consulting Ltd (2025);
- CCTV drainage and condition surveys of culverted watercourse; and
- United Utilities sewer records and pre-development enquiries.

14.54 An FRA and an SDS will be produced to be submitted alongside the ES as part of the DCO application; draft reports are appended to this PEIR Chapter (Appendix 14.1 and Appendix 14.2).

14.55 No further site-specific surveys are considered to be required at this time to inform the EIA.

- 14.56 The EA guidance entitled Flood Risk Assessments: Climate Change Allowances³² (2021) has been used to determine the potential future baseline in terms of fluvial and pluvial flood risk. This guidance has also been used to inform the surface water drainage designs.

Approach and methodology

- 14.57 The significance of potential effects arising from the Proposed Development has been established through a combination of identifying receptor sensitivity and determining the magnitude of potential effects.
- 14.58 The assessment considers the construction and operation stages of the Proposed Development over its lifetime, i.e., taking account of the potential influence of climate change on the surface water and flood risk receptors under consideration.
- 14.59 The sensitivity of the resource has been assessed according to the definitions of receptor sensitivity in Table 14.2 using best practice methodologies and will consider the quality, rarity and sensitivity of the resource changing.

Table 14.2 Definition of receptor sensitivity

Value / Sensitivity	Criteria	Examples
High	Water environment features with a very high yield, quality or rarity with little potential for substitution. Water resources supporting human health and economic activity at a regional scale. Features with a very high vulnerability to flooding.	Conditions supporting sites with international conservation designations (Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar) where the designation is based specifically on the water features. Land use types defined as 'Essential Infrastructure' and 'Highly Vulnerable' in the NPPF flood risk vulnerability classification. Human Receptors (construction workers, future workers, local residents). Surface water WFD class 'High'. Groundwater resource in Zone 1 of a groundwater source protection zone (GSPZ). Principal aquifer providing regionally important resource or supporting a site protected under EC or

³² Environment Agency (2021) Flood Risk Assessments: Climate Change Allowances.

Value / Sensitivity	Criteria	Examples
		UK habitat legislation/species protected by EC or UK legislation. Drainage infrastructure within or draining towards a critical drainage area. Public water supply infrastructure in an area of 'serious' water stress.
Medium	Water environment features with a high yield, quality or rarity with a limited potential for substitution. Water resources supporting human health and economic activity at a local scale. Features with a high vulnerability to flooding.	Conditions supporting sites with national conservation designations (SSSI, National Nature Reserve (NNR)) where the designation is based specifically on the water features. Species protected under EC or UK habitat legislation. Surface water WFD class 'Good'. Land use types defined as 'More Vulnerable' in the NPPF flood risk vulnerability classification. Groundwater resource in Zone 2 of an GSPZ. Principal aquifer providing a locally important resource. Private water drainage infrastructure in urbanised or industrial areas and public water drainage infrastructure in urbanised and rural areas. Private water supply infrastructure in urbanised or industrial areas and public water supply infrastructure in an area of 'not serious' water stress.
Low	Features with a moderate or low yield, quality or rarity with some or good potential for substitution. Water resources supporting human health and economic activity at	Sites with local conservation designations (Local Nature Reserves (LNR), County Wildlife Sites) where the designation is based specifically on the water features.

Value / Sensitivity	Criteria	Examples
	household/individual business scale. Water resources that do not support human health and are of only limited economic benefit.	Land use types defined as 'Less Vulnerable' or 'Water-compatible' in the NPPF flood risk vulnerability classification. Surface water WFD class 'Moderate' or 'Poor'. Non-reportable or heavily modified WFD river waterbodies. Groundwater outside GSPZ. Private water drainage infrastructure in rural areas or within a commercial facility. Private water supply infrastructure in rural areas or within a commercial facility.

14.60 Impacts will be described as beneficial or adverse, and the potential magnitude of this impact rated from major to negligible / no change (Table 14.3).

Table 14.3 Definition of beneficial and adverse magnitude of change

Magnitude of Effect	Criteria	Examples
Major (Adverse)	Loss of attribute and / or quality and integrity of the attribute.	Increase in peak flood level (>100mm). Deterioration in surface water ecological or chemical WFD element.
Moderate (Adverse)	Results in an effect on the integrity of an attribute, or loss of part of an attribute.	Increase in peak flood level (>50mm). Measurable decrease in surface water ecological or chemical WFD quality or flow with potential for deterioration in WFD element status.

Magnitude of Effect	Criteria	Examples
Minor (Adverse)	Minor change to feature, with insufficient magnitude to affect its use, quality or integrity in most circumstances.	Increase in peak flood level (>10mm). Measurable decrease in surface water ecological or chemical WFD quality or flow.
Negligible / No Change	Little or no change to feature with insufficient magnitude to affect its use, quality or integrity.	Negligible change in peak flood level (< +/-10mm). Discharges to watercourse which lead to no change in the feature's integrity.
Minor (Beneficial)	Some beneficial impact on the feature or a reduced risk of a negative impact occurring.	Creation of additional flood storage and decrease in peak flood level (>10mm). Measurable increase in surface water ecological or chemical quality.
Moderate (Beneficial)	Moderate improvement of the feature's quality.	Creation of additional flood storage and decrease in peak flood level (>50mm). Measurable increase in surface water ecological or chemical quality or flow with potential for WFD element status to be improved.
Major (Beneficial)	Results in a large improvement of the attributes quality or creation of new feature.	Creation of additional flood storage and decrease in peak flood level (>100mm). Improvement in surface water ecological or chemical WFD element.

14.61 The significance of the effect will be defined using a matrix of the sensitivity and the magnitude of the impact according to Table 14.4. Effects determined to be moderate or greater will be considered significant in EIA terms.

Table 14.4 Definition of significant effects for surface water and flood risk

	Receptor Value / Sensitivity		
Magnitude	High	Medium	Low
Major	Major	Major	Moderate
Moderate	Major	Moderate	Minor
Minor	Moderate	Minor	Negligible
Negligible	Minor	Negligible	Negligible

Assumptions and limitations

- 14.62 This Chapter is based on available data from the EA, British Geological Survey (BGS) and United Utilities. The data from the EA, BGS and United Utilities are mostly considered suitably accurate for the purpose of this assessment. However, it is considered that the EA Risk of Flooding from Surface Water dataset should not be wholly relied on to assess pluvial flood risk to the Main Site. As such, preliminary hydraulic modelling has been undertaken to supplement this data and understand the flood risk from surface water to the Main Site and the Western Rail Chord.
- 14.63 This assessment utilises the Design Manual for Roads and Bridges (DMRB) guidance for matters related to highway design. Where highways are not appraised, other best practice has been utilised.
- 14.64 Due to the preliminary stage of the Proposed Development and assessments, the following assumptions have been made in the production of this PEIR Chapter whilst consultation and assessments are ongoing.
- The connectivity, alignment and levels of the existing cross-field culvert will be confirmed through CCTV drainage and condition surveys.
 - Areas of the Main Site are understood to currently drain partially via infiltration. Preliminary infiltration testing has been undertaken to confirm the infiltration characteristics of the underlying geology; however, it may not be representative of final locations. The surface water drainage strategy has been progressed using a conservative approach which assumes that infiltration does not contribute to the disposal of surface water. This will be refined as the DCO application is progressed.
- 14.65 The level of understanding in this PEIR chapter will be consolidated through further work to inform the ES, including an FRA and its appendices (Appendix 14.1) and an SDS (Appendix 14.2). Any data gaps will be resolved prior to the DCO application.

BASELINE CONDITIONS

Hydrology

- 14.66 The majority of the Main Site is located within the Spittle Brook surface waterbody catchment. The western extents of the Main Site and the Western Rail Chord fall within the Millingford (Newton) Brook catchment, whilst the northeastern-most extents of the Main Site fall within the Glaze surface waterbody catchment.
- 14.67 The Cockshot Brook, located to the south-east of the Main Site, and the Newton Brook, to the west of the Western Rail Chord, are designated by the EA as Main Rivers. The Newton Brook is known as the Millingford Brook to the north of the Main Site. The Oswalds Brook, a tributary of the Newton Brook to the south of the Western Rail Chord, is also an EA Main River.
- 14.68 There are no Ordinary Watercourses located within the Main Site. Unnamed tributaries of the Cockshot Brook flow in a south-easterly direction to the south of the Main Site, beyond the A579.
- 14.69 There are surface water drainage features within the Main Site, such as attenuation features and swales associated with the Parkside Link Road. There are small ponds in the north-east of the Main Site, which are also anticipated to ultimately outfall into the Cockshot Brook.
- 14.70 There are also ditches present along the northern boundary of the Main Site, adjacent to the Highfield Moss SSSI. There are noted to be ditches within the Highfield Moss SSSI, which receive incoming flows from the north of the railway line. A cross-field drain is assumed to drain the SSSI as well as any incoming drainage upstream of this; this drain is understood to comprise a 600mm culvert which is assumed to outfall to a tributary of the Cockshot Brook to the south-east of the Main Site, beyond the A579.

Flood risk

- 14.71 A standalone FRA (Appendix 14.1) will accompany the DCO application, in line with Paragraph 5.131 of the NPSNN, which will assess flood risk from all sources in more detail.

Fluvial

- 14.72 The EA's Flood Map for Planning (Figure 14.3) shows the entirety of the Main Site to be in Flood Zone 1 (defined as land having a less than 1 in 1,000 annual probability of fluvial or tidal flooding). The nearest EA Flood Zone 2 and 3 extents are located approximately 110m west of the Western Rail Chord, associated with the Newton Brook. There are also noted to be EA Flood Zone 2 and 3 extents within the Study Area approximately 375m north of the Main Site, associated with the Millingford Brook, and approximately 400m south-east of the Main Site, associated with the Cockshot Brook.
- 14.73 There are no EA Flood Zone extents associated with the Oswalds Brook, to the south of the Western Rail Chord, or the minor watercourses within the Study Area. This is considered to be due to the relatively small catchment areas (less than 3km²) of these watercourses.
- 14.74 The latest EA Flood Map for Planning includes defended and undefended climate change

extents. These include the following scenarios: 0.1% AEP (1 in 1000) Rivers/Sea and 1% AEP (1 in 100) Rivers/0.5% AEP (1 in 200) Sea. The climate change scenarios used are the 'Central' allowance for the '2080s' epoch for flooding from rivers and the 'Upper End' allowance for flooding from the sea, accounting for cumulative sea level rise to 2125. The mapping does not account for any potential future changes to defence design or operation. This is considered to be the most precautionary data on rivers and sea currently published by the EA. As in the Flood Map for Planning, the Main Site is located outside of the mapped extents of these datasets.

Surface water

- 14.75 The EA's Risk of Flooding from Surface Water map (Figure 14.4) shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground. The Main Site is shown to be predominantly at very low probability of flooding from pluvial sources. Three pluvial flow routes are shown to generally flow in a south-easterly direction within the Main Site, which appear to originate within the Main Site. Areas indicated to be at potential risk of surface water flooding generally correlate with the location of existing surface waterbodies and existing topographical low points.
- 14.76 A preliminary site-specific hydraulic modelling exercise was undertaken by the Applicant to identify the potential flood risk that surface water could pose to the Main Site. Whilst the direct rainfall-runoff modelling was undertaken prior to the release of updated data by the EA in January 2025, the site-specific modelling is considered to supersede national mapping. Three overland flow routes were predicted to flow in a south-easterly direction (from the Parkside Link Road roundabout, from the centre of the Main Site and from an existing pond in the east of the Main Site) towards Winwick Lane. An overland flow route was also predicted in the north-east of the Main Site, which flows in a south-westerly direction to the Highfield Moss SSSI. Surface water ponding was also predicted within the Main Site, associated within existing topographical depressions or existing ponds.

Canals and reservoirs

- 14.77 The Sankey Canal, located approximately 1.5km south-west of the Western Rail Chord, is the nearest canal to the Main Site. The Main Site is elevated approximately 12m above the canal, at the nearest point, based on a review of EA Light Detection and Ranging (LiDAR) data. Due to the distance and topographical elevation of the Main Site, the Sankey Canal is not considered to pose a flood risk to the Main Site or the Proposed Development.
- 14.78 The Main Site is located outside of areas shown to be at risk of inundation in the event of reservoir failure. The nearest reservoir failure flood extents are located approximately 80m of the Western Rail Chord, attributed to Willow Park Lake during a 'wet-day' scenario (this scenario predicts flooding if a dam or reservoir failed when a river is already experiencing an extreme flood). Also known as Newton Lake, this surface waterbody is located approximately 260m north of the Western Rail Chord. There are no other large surface waterbodies within the Study Area. The Main Site is elevated above both the Newton Lake and the nearest reservoir inundation extents. It should also be noted that reservoirs are subject to safety legislation and therefore, should be maintained and repaired by owners. As such, reservoirs and large waterbodies are not considered to pose a flood risk to the Main Site or the Proposed

Development.

- 14.79 Given the lack of proximity to these sources, flood risk from reservoirs and canals is not considered to affect the Main Site and will also not be affected by the Proposed Development. Therefore, these have been scoped out of the assessment, as agreed with the Planning Inspectorate through EIA Scoping (detailed in Table 14.1).

Surface water drainage

- 14.80 The Main Site is understood to currently drain via a combination of infiltration and positive drainage outfalls, including culverts which outfall to the Cockshot Brook. The Parkside Link Road has associated surface water drainage features.
- 14.81 Rainfall is believed to infiltrate into the ground where geological and hydrogeological conditions allow, and then to runoff at surface level once the infiltration capacity of the ground has been exceeded. Any run-off currently generated will likely be directed to local surface waterbodies, and ultimately into the Cockshot Brook, the Newton Brook or associated tributaries.

Water quality

- 14.82 The Spittle Brook catchment has a WFD overall waterbody quality classification of 'moderate', with an ecological status of 'moderate' and a 'fail' chemical status. The main issues preventing the surface waterbody from achieving 'good' status are agricultural and rural land management, as well as pollution related to urban development. The catchment has an objective of achieving 'good' overall and ecological statuses by 2027. The waterbody is classified as a heavily modified waterbody.
- 14.83 The Millingford (Newton) Brook catchment also has a WFD overall waterbody quality classification of 'moderate', with an ecological status of 'moderate' and a 'fail' chemical status. Reasons for not achieving 'good' status include pollution from trade/ industry discharge, transport drainage, abandoned mines and urban development. The catchment has an objective of achieving 'good' overall and ecological statuses by 2027. The waterbody is classified as a heavily modified waterbody.
- 14.84 The Glaze catchment has a 'poor' ecological status, with a 'fail' chemical status. Reasons for not achieving 'good' status include pollution from wastewater (intermittent and continuous sewage discharges), urban development and transport drainage. The catchment has an objective of achieving 'moderate' ecological status by 2027 and 'good' chemical status by 2063. The waterbody is not designated as artificial or heavily modified.
- 14.85 With regards to groundwater, the Main Site is within the Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers groundwater body catchment. This groundwater catchment has a WFD overall waterbody quality classification of 'poor'. Reasons for not achieving 'good' status include agriculture and land management. The catchment has an objective of achieving 'good' overall status by 2027.

Foul water drainage

- 14.86 The Main Site is located within United Utilities' sewerage area, although it is not believed to be served by a public foul water drainage system at present.
- 14.87 Pre-development enquiries with United Utilities indicated that foul water from the Main Site would be able to drain to the public foul water and combined sewerage system. Pre-application discussions to determine the final foul drainage solution are ongoing.

Potable water supply

- 14.88 Potable water is supplied to the area by United Utilities. There is understood to be a water main within Parkside Link Road, which is understood to be abandoned south of Parkside Farm.
- 14.89 The EA classifies the United Utilities region as being 'not seriously water stressed', although it is noted that a degree of pressure on water resources may still be present.

Designations

- 14.90 Highfield Moss SSSI is located between the northern boundary of the Main Site and the Chat Moss Line to the north. The Risley, Holcroft and Chat Moss National Nature Reserve (NNR), declared in 2025, is located within this SSSI. The SSSI is a lowland raised valley mire and part of the Greater Manchester Wetlands area. The SSSI currently has an '*Unfavourable – Recovering*' assessment description according to Natural England³³. Details on Highfield Moss SSSI are provided within Chapter 11: Ecology and biodiversity.
- 14.91 There are no other SSSIs within 1km of the Main Site.
- 14.92 The Main Site is located within Zone III (Total Catchment) of a groundwater source protection zone (GSPZ), with a small portion of the Western Rail Chord located within Zone II (Outer Catchment) of a GSPZ.
- 14.93 The Main Site is partially located within a Nitrate Vulnerable Zone (NVZ) and is also partially located within a Drinking Water Safeguard Zone for groundwater.

Future baseline

- 14.94 Climate change may lead to increased rainfall intensity and peak flows within watercourses, as well as increased pressure on water resources. The bespoke hydraulic model includes consideration of appropriate climate change allowances. The FRA and the SDS, including the drainage strategy, will consider future climate change.
- 14.95 The United Utilities region is not designated to be in an area of 'serious water stress'; this classification reportedly considers future climate change scenarios.

EMBEDDED MITIGATION MEASURES

- 14.96 The Proposed Development will include a range of 'embedded' measures designed to reduce

³³ Designated Sites View: Highfield Moss SSSI, Natural England,
<https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1002768> (accessed 24/06/2025).

or prevent significant adverse environmental effects arising. In some cases, these measures may result in enhancement of current environmental conditions or help alleviate existing issues.

14.97 An outline Construction Environmental Management Plan (oCEMP) will be developed in accordance with Guidance for Pollution Prevention 5: works or maintenance in or near water³⁴ (GPP 5) and will include measures to avoid pollution from concrete use, silt and oil, and chemicals. The oCEMP will manage and mitigate impacts from the Proposed Development on surface water and flood risk during the construction phase. Measures may include:

- locating the site compound, welfare facilities and storage of materials outside of the floodplain;
- working safely in proximity to watercourses;
- recommending employers sign up for EA Flood Warnings and Flood Alerts;
- monitoring local weather warnings for heavy rainfall;
- designated pathways for large vehicles to limit areas of sediment compaction;
- the implementation of temporary surface water conveyance routes and temporary attenuated storage measures which will ensure surface water runoff is intercepted, safely stored and discharged from the Main Site at a rate no greater than existing;
- the provision of appropriate measures to provide treatment to runoff prior to discharge from the Main Site through the surface water management plan;
- monitoring the water quality of surface water flows leaving the Main Site;
- provision of welfare facilities including the proper disposal of foul water;
- covering the surfaces of stockpiles or large areas of bare ground, or treating such as through hydroseeding, to reduce sediment mobilisation;
- undertaking wheel washing facilities and regular sweeping, to reduce sediment build-up;
- dust management;
- appropriate management of waste water from wheel and lorry washing facilities and concrete production, if mixed on-site;
- regular inspection and maintenance of vehicles used on-site;

³⁴ Natural Resources Wales, Northern Ireland Environment Agency and Scottish Environment Protection Agency (2018) Guidance for Pollution Prevention: Works and Maintenance In or Near Water.

- a designated bunded impermeable area for on-site refuelling; and
- locating oil and fuel storage in appropriate above ground storage tanks, with facilities to include drip trays for use under vehicles to prevent contaminated runoff.

14.98 An FRA has been undertaken and specifies appropriate mitigation measures for flood risk during the operational phase, to be incorporated into the design of the Proposed Development. Measures include setting finished floor levels relative to surrounding ground in line with the parameters plan and consideration of overland flow routing (such as profiling ground levels to direct runoff away from built development). These embedded design measures will ensure that the Proposed Development does not detrimentally affect flood risk downstream (i.e. will not result in increased flood risk elsewhere), in line with the NPPF and the NPPG. NPPG.

14.99 A surface water drainage strategy (included within Appendix 14.2) has been prepared to provide details on measures to manage surface water during the operational phase of the Proposed Development, such that surface water is appropriately attenuated, stored, and treated prior to being discharged in a controlled manner from the Main Site. Existing surface water runoff routes are likely to be altered once the Proposed Development is operational; the implementation of a surface water drainage strategy, including SuDS, will prevent an adverse impact on the wider catchment.

14.100 As part of the surface water drainage strategy (included in Appendix 14.2), a level of treatment will be provided to surface water prior to discharge from the Main Site. A maintenance schedule for the proposed SuDS measures will be prepared such that the effectiveness of the proposed stages of water quality treatment remains for the lifetime of the Proposed Development. This embedded mitigation is applicable to potential effects on both surface water quality and groundwater quality as a result of the drainage of the Proposed Development.

14.101 Where practicable, the Proposed Development will include appropriate water-saving devices such as rainwater harvesting tanks and be designed to maximise water efficiency, for example through low water use sanitary appliances and optimising hot water use in appropriate locations. This will manage and mitigate some of the potential impact on the local potable water supply.

POTENTIAL EFFECTS PRIOR TO ADDITIONAL MITIGATION

Main Site and Western Rail Chord

Construction phase – flood risk

14.102 The construction phase of the Proposed Development has potential for impedance of overland flow routes within the Main Site, through the temporary obstruction of surface water flow routes. Such potential effects could influence the flood risk posed on-site, including to construction workers, and to downstream third-party land.

14.103 The embedded mitigation, in the form of the oCEMP, will direct welfare facilities and any

stockpiled materials to be located outside of the floodplain. This will prevent site users from being put at risk and will also prevent adverse displacement of floodplain and impedance of flood flows, which would otherwise detrimentally affect downstream flood risk.

- 14.104 Any change in flood risk on or off the Main Site during the construction phase is considered to be direct, of short to medium term duration and temporary in nature. Overall, it is predicted that the negligible impact on high sensitivity receptors (construction workers and downstream flood risk receptors, i.e. local residents and existing properties downstream) would result in a minor adverse effect on flood risk during the construction phase, which is not significant.

Construction phase – surface water quantity

- 14.105 The operation of construction plant and vehicles on the Main Site could result in the compaction of soils, subsequently reducing the rate of infiltration. A reduction in the infiltration rates of the soils could consequently result in an increase in surface water runoff rates. However, the embedded mitigation in the form of the oCEMP will ensure that appropriate surface water management measures are in place at the construction stage.
- 14.106 Any change in surface water quantity discharging from the Main Site during the construction phase is considered to be direct, of short to medium term and temporary in nature. Overall, it is predicted that the negligible impact on high sensitivity receptors (construction workers and downstream flood risk receptors) would result in a minor adverse effect on surface water quantity during the construction phase, which is not significant.

Construction phase – surface water quality

- 14.107 The construction works will introduce excavations, exposed ground, stockpiled soil, and generate dust and mud across the Main Site which could lead to an increase in suspended sediments, contributing to water pollution. In the event of heavy rainfall during the construction phase, suspended sediments may be mobilised and impact the quality of surface water runoff leaving the Main Site. This could lead to the disruption of habitats, blockage of restrictive structures and alteration to flow regimes in addition to a decline in water quality of receiving surface waterbodies.
- 14.108 Additionally, the operation of construction plant and vehicles on the Main Site poses the risk of hazardous substances (such as fuels and oils) leaching into receiving watercourses as a result of spillages or leakages. If concrete production is undertaken on the Main Site during the construction phase, there is also the potential for particulate pollution of the receiving waterbodies. The construction phase will introduce hazardous substances to the Main Site such as solvents, cleaning agents, paints and other chemical substances. Improper storage or use of such materials on the Main Site may lead to pollution of the local waterbodies and damage to existing ecological habitats.
- 14.109 However, as part of embedded mitigation measures, construction phase surface water management measures will be included within the oCEMP. These will manage the quality of surface water runoff and prevent significant adverse effects on downstream surface water quality.

- 14.110 In addition, discharges of surface water from the Main Site could result in detrimental effects on the water quality of receiving groundwater bodies during the construction phase. As above, construction phase surface water management measures within the oCEMP will ensure an appropriate level of treatment to runoff prior to it being discharged from the Main Site, such that the proposed drainage scheme during construction will not adversely affect groundwater quality.
- 14.111 The wider surface water catchments and groundwater catchment are considered to be of low sensitivity, due to being classed under the WFD as 'moderate' or 'poor' status. The receiving waterbodies of the Cockshot Brook, the Millingford (Newton) Brook and their tributaries are also considered to be of low sensitivity as these are classed as heavily modified waterbodies. Any change in surface water runoff quality during the construction phase is considered to be direct, of short to medium term and temporary in nature. On the basis of the above discussion, it is predicted that negligible impacts on the surface water quality of low sensitivity receptors would result in a negligible effect, which is not significant.

Construction phase – foul water quantity and quality

- 14.112 There will be increased pressure on the local foul water network due to the temporary presence of construction workers and associated welfare facilities. Should increased foul flow loads result in capacity issues in the local sewerage and sewage treatment infrastructure, foul water discharges could adversely affect water quality in receiving waterbodies if not appropriately treated.
- 14.113 However, the embedded mitigation in the form of the oCEMP will include appropriate measures to dispose of the foul water generated. These may include use of the existing treatment facilities where there is sufficient capacity, and/or the use of self-contained facilities with built-in drainage tanks that can be transported off-site for disposal. Consultation with United Utilities regarding foul water discharges from the Main Site will be undertaken prior to the start of construction works to agree suitable connection points for foul water during the temporary construction phase as required.
- 14.114 Any changes in foul flows from the Main Site during the construction phase are expected to be direct, of short to medium term and temporary in nature.
- 14.115 At this stage, it is predicted that the minor adverse impact on medium sensitivity receptor (public foul water sewer network) would result in a minor adverse effect during the construction phase, which is not significant.

Construction phase – potable water supply

- 14.116 There will be an increased demand on the local water supply because of construction activities and the presence of construction workers. Consultation with United Utilities regarding potable water supply will be undertaken prior to the commencement of construction works to understand the impacts of the increased demand for water supply as a result of the construction phase.
- 14.117 Any changes in potable water supply within the Main Site during the construction phase are expected to be direct, of short to medium term and temporary in nature.

14.118 At this stage, it is anticipated that the magnitude of impact of increased demand on the potable water supply during construction will be minor adverse. The United Utilities potable water supply is considered to be a medium sensitivity receptor, as this is public water supply infrastructure in an area of 'not serious' water stress. On the basis of a minor adverse magnitude impact on a medium sensitivity receptor, the significance of the effect is considered to be minor adverse which is not significant.

Operational phase – flood risk

14.119 The Proposed Development includes reprofiling of the Main Site, which will result in altered overland flow routes through the Main Site. In addition, the operational phase of the Proposed Development has potential for impedance of overland flow routes through the permanent obstruction of surface water flow routes. Such potential effects could influence the flood risk posed on-site and to downstream third party land.

14.120 Embedded design measures will ensure that the Proposed Development does not detrimentally affect flood risk downstream (i.e. will not result in increased flood risk elsewhere), in line with the NPPF and the NPPG. An FRA will determine any appropriate mitigation measures for flood risk during the operational phase, to be incorporated into the design of the Proposed Development. Measures may include raising of finished floor levels and consideration of overland flow routing within proposed ground levels.

14.121 In addition, as part of the embedded mitigation measures, a surface water drainage strategy will be implemented to prevent an adverse impact on flood risk within the wider catchment.

14.122 Any change in flood risk during the operational phase is considered to be direct, of long term and permanent in nature.

14.123 Overall, it is predicted that the negligible impact on high sensitivity receptors (site users and downstream flood risk receptors) would result in negligible or minor beneficial effects on flood risk during the operational phase, which are not significant.

Operational phase – surface water quantity

14.124 The Proposed Development will increase the impermeable surface area within the Main Site. This will result in an increase in rates and volumes of surface runoff, increasing the likelihood of adverse effects downstream, for example increased flood risk as a result of surcharging waterbodies and / or sewerage systems.

14.125 However, as part of the embedded mitigation, the proposed surface water drainage strategy will be designed to intercept and attenuate the additional surface water generated by the Proposed Development. The proposed surface water drainage strategy seeks to attenuate surface water within the Main Site and to discharge at an appropriate rate via outfalls to the Cockshot Brook, under appropriate consents. A reduction in the rate of surface water discharge from the Main Site as a result of the Proposed Development (from an unrestricted and unmanaged rate) would be achieved through use of a range of SuDS techniques. Therefore, the proposed drainage network would act to reduce downstream flood risk through on-site attenuation. As such, the increase in runoff will be managed appropriately within the Proposed Development such that there are no adverse downstream impacts.

- 14.126 Any change in surface water quantity during the operational phase is considered to be direct, of long term and permanent in nature. It is predicted that the negligible impact on high sensitivity receptors (site users and downstream flood risk receptors) would result in a minor beneficial effect on surface water quantity during the operational phase, which is not significant.
- 14.127 In addition, the Proposed Development has the potential to adversely affect Highfield Moss SSSI through alteration of above and / or below ground hydrological connectivity between the Main Site and the SSSI. Effects on the Highfield Moss SSSI are considered within Chapter 11: Ecology and biodiversity and Chapter 15: Geology, soils and contaminated land.

Operational phase – surface water quality

- 14.128 The discharge of additional surface water from the Main Site has the potential to adversely affect water quality in receiving waterbodies, if unmitigated. Surface water discharges have the potential to contain or mobilise pollutant generated as part of construction and operational activities.
- 14.129 Pollutants associated with run-off from the Proposed Development have the potential to detrimentally affect water quality. There is potential for increased pollutant emissions and fuel contamination, associated with the Proposed Development itself and a potential increase in vehicles present on the Main Site. However, the embedded mitigation in the form of the surface water drainage strategy includes measures that will as treat runoff prior to it being discharged to the receiving surface waterbodies.
- 14.130 It is noted that agricultural and rural land management is a reason for the Spittle Brook and Glaze surface water catchments, which encompass the Main Site, not achieving ‘good’ status under the WFD. As such, it is considered that the Proposed Development and associated surface water drainage strategy, may result in a minor beneficial impact.
- 14.131 There is also noted to be potential for discharges of firewater foam associated with the proposed battery storage. Such discharges could introduce persistent chemicals to the environment. As part of the embedded mitigation within the design of the Proposed Development, the proposed battery storage site will have a sealed drainage system; this allows the containment and management of any contaminated surface water from this particular element of the Proposed Development should a fire occur.
- 14.132 In addition, discharges of surface water from the Proposed Development could result in detrimental effects on the water quality of receiving groundwater bodies. As above, the surface water drainage strategy will include measures to provide an appropriate level of treatment to runoff prior to it being discharged from the Main Site, such that the proposed drainage scheme will not adversely affect groundwater quality.
- 14.133 Any changes in surface water quality during the operational phase are considered to be direct, of long term and permanent in nature.
- 14.134 On the basis of the above, it is predicted that negligible to minor beneficial impacts related to surface water quality on low sensitivity receptors would result in a negligible to minor beneficial effect, which are not significant.

Operational phase – foul water quantity and quality

- 14.135 Foul flow loads on the local area will be increased because of the Proposed Development, which may potentially cause capacity issues in the local sewerage and sewage treatment infrastructure. Additionally, foul water discharges could adversely affect water quality in receiving waterbodies if not appropriately treated.
- 14.136 Consultation with United Utilities regarding the capacity of the local foul water network, and the standard of available foul water treatment infrastructure is ongoing. Further consultation with United Utilities will be undertaken as the DCO pre-application stage progresses to confirm the magnitude of the potential impact on the local foul water network from an increase in foul flows from the Proposed Development; this will be concluded prior to the DCO application.
- 14.137 Should the existing network capacity not be sufficient, network upgrades may be required to be undertaken by the sewerage undertaker. Consultation with United Utilities will continue to ensure the sewerage undertaker is aware of the development programme and can make any network upgrades that are considered necessary.
- 14.138 At this stage, it is predicted that the negligible impact on medium sensitivity receptor (public foul water sewer network) would result in a negligible effect during the operational phase, which is not significant.

Operational phase – potable water supply

- 14.139 The Proposed Development will involve the use and consumption of potable water during operation, which has the potential to adversely affect water resource availability within the region. It is anticipated that any increase in water demand will be reduced as far as possible by the incorporation of appropriate water-saving devices, wherever practicable, and through design measures to maximise water efficiency.
- 14.140 Consultation with United Utilities regarding potable water supply is ongoing. This will continue to be undertaken to ensure the supplier is aware of the development programme and that any necessary reinforcements works to be implemented ahead of operation of the Proposed Development.
- 14.141 At this stage, it is anticipated that the negligible impact on medium sensitivity receptor (public potable water supply) would result in a negligible effect during the operational phase, which is not significant.

PROPOSED ADDITIONAL MITIGATION MEASURES**Main Site and Western Rail Chord**

- 14.142 No additional mitigation measures have been identified at this stage.
- 14.143 Consultation with United Utilities is ongoing to understand the effects of the increased foul flows and increased demand for water supply during both the construction and operational

phases. Any mitigation measures and residual effects will be identified as part of these ongoing discussions with United Utilities and will be reviewed and later defined as the DCO application progresses.

RESIDUAL ENVIRONMENTAL EFFECTS

Main Site and Western Rail Chord

Construction phase

- 14.144 An appropriate oCEMP will be prepared which will set out detailed methodologies and monitoring requirements to prevent adverse effects on flood risk and drainage. This will include measures related to surface water management during the construction phase and measures to appropriately dispose of foul water. As a result, there would be negligible residual effects from the Proposed Development during the construction phase, which are not significant.
- 14.145 Consultation with United Utilities regarding foul water discharges from the Main Site and potable water supply during construction will be undertaken prior to the start of construction works, to agree suitable connection points for foul water during the temporary construction phase and to understand the impacts of the increased demand for water supply as a result of the construction phase. Subject to any required network improvement works that may be required and an agreed approach with United Utilities, the effect on the foul water network and potable water supply during the construction phase is considered negligible, which is not significant.

Operational phase

- 14.146 The potential effects of the operation of the Proposed Development are considered to be negligible (not significant) as a result of embedded mitigation. The design of the Proposed Development, including consideration of ground levels and management of surface water runoff, provides embedded mitigation to ensure that the Proposed Development will not detrimentally affect flood risk within the Main Site or downstream. The surface water drainage strategy may result in a minor beneficial effect on surface water quality in the wider catchment, due to the change of use from agricultural land and introduction of treatment to surface water runoff from the Main Site.
- 14.147 Consultation with United Utilities regarding foul water discharges from the Main Site and potable water supply during operation will continue to be undertaken to ensure the United Utilities is aware of the development programme and that any necessary reinforcements works to be implemented ahead of operation of the Proposed Development. Subject to any required network improvement works that may be required and an agreed approach with United Utilities, the effect on the foul water network and potable water supply during the operational phase is considered negligible, which is not significant.

CUMULATIVE AND IN-COMBINATION EFFECTS

- 14.148 With consideration to Chapter 20: Cumulative, In-Combination and Transboundary Effects, there are ten developments within the Study Area which are considered to have potential to result in cumulative impacts based on active planning applications and local plan allocations. These include the Parkside West allocation.
- 14.149 All committed developments nearby will be subject to similar requirements of national planning policy and best practice as the Proposed Development, to limit surface water runoff and to manage water efficiently and in a sustainable way, including with regards to climate change. As such, there are predicted to be no cumulative effects with other committed development with regards to surface water and flood risk.
- 14.150 Outside of the committed developments, any emerging proposals will also adhere to the same principles with regards to reducing flood risk and limiting surface water runoff. Therefore, it can be considered likely that there would be no cumulative adverse impact from other developments which are not yet constructed or operational.
- 14.151 Overall, given the strength of the planning policy related to surface water and flood risk, should the existing, permitted or emerging schemes be approved and delivered, the cumulative impact will be negligible.

IMPLICATIONS OF CLIMATE CHANGE

- 14.152 The effects of climate change will be considered throughout the Proposed Development's lifetime, for example the risk of increased rainfall and implications for surface water flood risk. The FRA and hydraulic modelling will include an assessment of climate change. The design of the surface water drainage strategy, to be included in the Sustainable Drainage Statement, will also take climate change into consideration.

SUMMARY AND CONCLUSIONS

- 14.153 This PEIR Chapter has provided an interim assessment of the effects of the construction and operation of the Proposed Development on surface water and flood risk.
- 14.154 An assessment of the significance of potential effects was undertaken and considered the sensitivity of receptors and the magnitude of each effect. Effects of moderate significance or above were considered to be significant. The assessment of likely significant effects accounted for embedded mitigation, prior to consideration of any additional mitigation measures. Embedded mitigation includes an outline Construction Environment Management Plan (oCEMP) to ensure there are no adverse effects during the construction phase, and a surface water drainage strategy to ensure surface water will be managed appropriately to ensure that the flood risk downstream of the Proposed Development is not detrimentally affected and water quality of receiving waterbodies is not compromised. The surface water drainage strategy will include Sustainable Drainage Systems (SuDS) features.

- 14.155 Based on the available information, and following appropriate mitigation, the effects of the Proposed Development on flood risk, surface water quantity and quality, foul water and potable water are expected to be negligible. These effects are not significant.
- 14.156 The level of understanding in the PEIR Chapter will be consolidated through further work, including a Flood Risk Assessment (FRA) and a Sustainable Drainage Statement (SDS), which will be undertaken to accompany the ES as part of the DCO application. Consultation with United Utilities will continue to determine the potential effect of the Proposed Development on the foul water network and the potable water supply, during both the construction and operational phases, as well as to identify any necessary mitigation that may be required.
- 14.157 The Proposed Development will have no adverse effect on the achievement of the environmental objectives established under the Water Framework Directive (NPSNN para 5.266).
- 14.158 With appropriate mitigation in place, no significant adverse effects will remain as a result of the Proposed Development.

Table 14.5 Summary of effects

Receptor	Receptor sensitivity	Magnitude of impact	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Main Site and Western Rail Chord						
Construction Phase						
Construction workers	High	Negligible	Change in flood risk on-site	oCEMP (embedded mitigation)	Minor adverse	Not significant
Downstream flood risk receptors	High	Negligible	Change in flood risk off-site	oCEMP (embedded mitigation)	Minor adverse	Not significant
Cockshot Brook	High	Negligible	Change in flood risk off-site Changes in surface water runoff (quantity)	oCEMP (embedded mitigation)	Minor adverse	Not significant
	Low	Negligible	Changes in surface water runoff (quality)	Construction phase surface water strategy as part of oCEMP (embedded mitigation)	Negligible	Not significant

Receptor	Receptor sensitivity	Magnitude of impact	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Wider surface waterbody catchments	Low	Negligible	Changes in surface water runoff (quality)	Construction phase surface water strategy as part of oCEMP (embedded mitigation)	Negligible	Not significant
Groundwater catchment	Low	Negligible	Changes in surface water runoff (quality) due to proposed drainage strategy	Construction phase surface water strategy as part of oCEMP (embedded mitigation)	Negligible	Not significant
Public Foul Sewer Network	Medium	Minor adverse	Increased demand on public foul water sewer network	TBC, subject to consultation with United Utilities	Minor adverse	Not significant
Potable Water Supply Network	Medium	Minor adverse	Increased demand on public potable water supply network	TBC, subject to consultation with United Utilities	Minor adverse	Not significant
Operation Phase						
Site users	High	Negligible	Change in flood risk on-site	Embedded mitigation measures	Minor beneficial	Not

Receptor	Receptor sensitivity	Magnitude of impact	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
				designed into the Proposed Development		significant
Downstream flood risk receptors	Low to High	Negligible	Change in flood risk off-site	Embedded mitigation measures already designed into or proposed as part of the Proposed Development, including a drainage strategy	Minor beneficial	Not significant
Cockshot Brook	High	Negligible	Change in flood risk off-site Changes in surface water runoff (quantity)	Embedded mitigation measures already designed into or proposed as part of the Proposed Development, including a drainage strategy	Minor beneficial	Not significant
	Low	Negligible	Changes in surface water runoff (quality)	Embedded mitigation measures already designed into or proposed as part of the Proposed	Negligible	Not significant

Receptor	Receptor sensitivity	Magnitude of impact	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
				Development, including a drainage strategy		
Wider surface waterbody catchments	Low	Negligible to minor beneficial	Changes in surface water runoff (quality)	Embedded mitigation measures already designed into or proposed as part of the Proposed Development, including a drainage strategy	Negligible	Not significant
Groundwater catchment	Low	Negligible	Changes in surface water runoff (quality) due to proposed drainage strategy	Embedded mitigation measures already designed into or proposed as part of the Proposed Development, including a drainage strategy	Negligible	Not significant
Public Foul Sewer Network	Medium	Negligible	Increased demand on public foul water sewer network	TBC, subject to consultation with United Utilities	Negligible	Not significant

Receptor	Receptor sensitivity	Magnitude of impact	Description of potential impact	Proposed mitigation	Residual effect	Significant / not significant
Potable Water Supply Network	Medium	Negligible	Increased demand on public potable water supply network	TBC, subject to consultation with United Utilities	Negligible	Not significant