

Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Environmental Statement

Chapter 21: Major Accidents and Disasters

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1 Introduction

1.1 Purpose of this chapter

1.1.1 This chapter of the Environmental Statement (ES) is to assess the vulnerability of the Proposed Development to major accidents and to demonstrate how that vulnerability is to be managed to prevent or reduce potential significant adverse effects to environmental receptors.

1.1.2 The requirement to consider major accidents and disasters as part of the Environmental Impact Assessment (EIA) process was established by the amended EIA Directive 2014/52/EU. This is transposed into UK law by the Infrastructure Planning (Environmental Assessment) Regulations 2017, which require that the EIA process must identify, describe, and assess....

"the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development"

1.1.3 The Scoping Report (App Doc Ref 5.4.4.2) proposed to consider scoped in matters in respective Chapters of the ES and to include a risk assessment as part of the 'Description of the development' chapter to identify risks associated with the Proposed Development and set out the embedded design features and management controls to demonstrate that risks are mitigated and the resulting outcome aligns with the principle of being As Low As Reasonably Possible (ALARP) (see section 2.2 Assessment methodology).

1.1.4 The Planning Inspectorate (PINS), in its Scoping Opinion confirmed acceptance of the approach set out in the Scoping Report. However, further detail was requested with respect to the inclusion of battery storage and securing appropriate mitigating measures to ensure suitable controls are embedded within the Proposed Development.

1.1.5 Subsequent to the scoping stage a decision was taken to report the consideration of major accidents and disasters in a separate Chapter.

1.1.6 The structure of this chapter differs from the typical chapter structure used elsewhere in this ES due to its nature of focusing on risks relevant to the Proposed Development and where relevant signposts other documentation where these risks have been addressed.

1.1.7 This chapter refers to information from supporting studies, technical Environment Statement (ES) reports and publicly available data which are included within:

- Chapter 7: Air quality (Application Document Ref 5.2.7)
- Chapter 8: Biodiversity (Application Document Ref 5.2.8)
- Chapter 9: Climate resilience (Application Document Ref 5.2.9)

- Chapter 11: Community (Application Document Ref 5.2.11)
- Chapter 12: Health (Application Document Ref 5.2.12)
- Chapter 13: Historic environment (Application Document Ref 5.2.13)
- Chapter 14: Land quality (Application Document Ref 5.2.14)
- Chapter 15: Landscape and visual amenity (Application Document Ref 5.2.15)
- Chapter 16: Materials and resources (Application Document Ref 5.2.16)
- Chapter 19: Traffic and transport (Application Document Ref 5.2.19)
- Chapter 20: Water resources (Application Document Ref 5.2.20)
- The Lighting Assessment (Application Document Ref 5.4.15.3)
- Lighting Design Strategy (Application Document Reference 5.4.2.5)
- The Glint and Glare Study (Application Document Ref 5.4.15.4)
- The Flood Risk Assessment (Application Document Ref 5.4.20.1)
- The Drainage Design Strategy (Application Document Ref 5.4.20.12)

1.2 Competency statement

1.2.1 Summaries of the qualifications and experience of the Chapter authors are set out in Table 1-1.

Table 1-1: Competent experts

Author	Qualification / Professional Membership	Years of experience	Project experience summary
AB	Graduate Member of the Institute of Environmental Management and Assessment	4	Authored the MA&D Scoping report. 2 years of Environmental Clerk of Works (EnvCoW) on construction sites.
RM	Chartered Environmentalist and Full Member of the Institution of Environmental Science	12	Experience in EIA (screening scoping and environmental statements) across a range of sectors including road, rail, energy and buildings. 2 years of Environmental Clerk of Works (EnvCoW) on construction sites.
CS	PIEMA Full Member of the Institution of Environmental Science	22	Experience in EIA (TCPA, Hybrid bills, TWAO) for rail, ports, pipelines, energy covering assessment authoring checking, stakeholder engagement and devising mitigation approaches

Author	Qualification / Professional Membership	Years of experience	Project experience summary
			and environmental management plans. Experience in defining and delivering environmental compliance monitoring programmes (freshwater water, coasts, estuaries, sediments soils, air). Regulatory experience (environmental protection and flood risk management).
T	Chartered Environmentalist and Full Member of the Institute of Environmental Management and Assessment	29	Experience in EIA, regulatory compliance and environmental planning consents, construction and operational environmental management. Experience covers major infrastructure projects across a variety of sectors including water, road, rail and aviation.
SBr	Chartered Environmentalist and Full Member of the Institute of Environmental Management and Assessment	22	Experience includes screening, scoping, mitigation design, stakeholder engagement, participation in value engineering, the preparation of construction environmental management plans and reviewing / editing and advising on the presentation of technical information in environmental statements. Contributor to professional guidance documents through IEMA's Impact Assessment network.

1.3 Planning policy context

National Planning Statement requirements

- 1.3.1 Planning policy on Waste Water Nationally Significant Infrastructure Projects (NSIPs), specifically in relation to major accidents and disasters, is contained in the National Policy Statement (NPS) for Waste Water (Department of Environment, Food and Rural Affairs, 2012).
- 1.3.2 Table 1-2 sets out how the scope proposed in this chapter complies with the NPS for Waste Water.

Table 1-2: Scope and NPS compliance

NPS requirement	Compliance of ES scope with NPS requirements
<p>Paragraph 3.8.1 Applicants should consult with HSE on safety issues.</p>	<p>The Applicant has consulted with the Health and Safety Executive (HSE) on the construction, operation and decommissioning of the waste water infrastructure.</p> <p>The HSE scoping response:</p> <ul style="list-style-type: none"> • confirmed that their records indicate that the proposed development is not within the consultation zones of any major accident hazard sites or major accident hazard pipelines. • Identified the requirement to consider significant effects arising from the proposed development’s vulnerability to major accidents. <p>No further responses were received in relation to subsequent consultation activities.</p>
<p>Paragraph 3.8.2 Infrastructure may be subject to the Control of Major Accident Hazards (COMAH) Regulations 1999. These are enforced by HSE and the Environment Agency in England and Wales.</p>	<p>Proposed Development does not meet criteria for a COMAH site.</p> <p>It is noted that the Proposed Development does not fall within the scope of EU legislation 2012/18/EU (control of major-accident hazards involving dangerous substances).</p>
<p>Paragraph 3.9.1 All establishments wishing to hold stocks of certain hazardous substances, above a threshold quantity need hazardous substances consent. Applicants should consult the HSE at pre-application stage if the project is likely to need hazardous substances consent.</p>	<p>Post DCO consent the Applicant will engage with The Health and safety Executive and confirm if consent required. If required, the anticipated submission date would be on grant of consent. The anticipated receipt date would be 28 days thereafter.</p> <p>Currently predicted hazardous substances volumes are below threshold levels.</p>
<p>3.12.3 Defra should be notified by the developer at pre-application stage about likely future applications for nationally significant infrastructure projects, so that any national security implications can be identified. Where national security implications have been identified, the applicant should consult with relevant security</p>	<p>The Applicant has engaged with Defra in relation to the Proposed Development. No specific concerns have been raised in relation to security requirements to be incorporated into the Proposed Development.</p> <p>Security measures of the within the proposed WWPT comply with:</p> <ul style="list-style-type: none"> • Security & Emergency Measures Direction (SEMD) guidance for the type of development.

NPS requirement	Compliance of ES scope with NPS requirements
<p>experts from CPNI and Defra to ensure that physical, procedural and personnel security measures have been adequately considered in the design process and that adequate consideration has been given to the management of security risks. If CPNI and Defra are satisfied security issues have been adequately addressed in the project when the application is submitted, they will provide confirmation of this to the examining authority and they should then not need to give any further consideration to the details of the security measures in its examination</p>	<ul style="list-style-type: none"> • Physical security design will align with industry standards guidance from National Protective Security Authority (NPSA) (NPSA, 2023). • Cyber security will align with industry standards advice and guidance from National Cyber Security Centre (NCSC) (NCSC, 2023).

National planning policy

1.3.3 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2021) with particular reference to:

- paragraph 45 in siting of, or changes to, major hazard sites, installations or pipelines, or for development around them;
- paragraph 97 in relation to public safety; and
- paragraphs 152 to 174 in relation to meeting the challenge of climate change, flooding, coastal change and water pollution.

Local planning policy

1.3.4 Local planning policies of relevance to the Proposed Development includes:

- South Cambridgeshire Council Local Plan 2018 (South Cambridgeshire District Council, 2018), with particular reference to policy SC/13 (Hazardous Installations) and policy CC/9 (Managing Flood Risk);
- Cambridge City Council Local Plan 2018 (Cambridge City Council, 2018) with particular reference to policy 32 (Flood risk) and policy 38 (Hazardous installations) and policy 19 (Cambridge Airport Public Safety Zone and Air Safeguarding Zones);
- Applications for development within Cambridge Airport’s Air Safeguarding Zones will be the subject of consultation with the operator of the airport and the Ministry of Defence.

1.4 Legislative context

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

- 1.4.1 The amended EIA Directive was transposed into UK legislation in 2017, including for the purposes of this application through the Infrastructure Planning (EIA) Regulations 2017 (referred to as the EIA Regulations from here).
- 1.4.2 Regulation 5(4) of the EIA Regulations states that ‘The significant effects to be identified, described and assessed include, where relevant, the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development.’
- 1.4.3 Schedule 4, paragraph 8 requires an ES to provide ‘A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters...Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies’.

Health and Safety at Work etc. Act 1974

- 1.4.4 The Health and Safety at Work etc. Act 1974 and relevant statutory provisions provides the overarching framework in relation to the regulation of industrial health and safety. It applies to construction, operation, and maintenance of the Proposed WWTP and decommissioning of the existing Cambridge WWTP and:
- places general duties on e.g. employers, people concerned with premises, manufacturers and employees. Health and safety Regulations made under this Act contain more detailed provisions; and
 - provides the framework for the regulation of industrial health and safety in the UK. The overriding principle is that foreseeable risks to persons in workplaces shall be reduced so far as is reasonably practicable and that adequate evidence shall be produced to demonstrate that this has been done.

Other relevant legislation and guidance

- 1.4.5 Further pertinent legislation in relation to the Proposed Development is detailed below, however this list is not exhaustive (the requirements of legislation and associated guidance place requirements on the Applicant to embed measures to prevent accidents and disasters associated with their activities and or minimise the likelihood of accidents or make provision for measures to manage incidents such as through contingency plans to control the impacts of events so that that effects are reduced):
- The Construction (Design and Management) (CDM) Regulations 2015 ‘the CDM Regulations’ and accompanying guidance:

- Place particular duties on clients, designers and contractors, to ensure that health and safety is considered throughout the lifecycle of project, from inception, design, construction, operation and into subsequent demolition and removal.
- Under the CDM Regulations, designers must avoid foreseeable risks as far as reasonably practicable. The regulations place an obligation on ‘duty holders’ who should comply with the law to ensure projects are carried out in a way that secures health and safety. Duty holders including designers, principal designers, principal contractors and contractors. During construction the Principal Contractor has a duty to prepare a construction phase plan. To fulfil both the CDM regulations and the Management of Health and Safety at Work Regulations 1999 arrangements for dealing with foreseeable emergency must be made and, where necessary, implemented, and those arrangements must include procedures for any necessary evacuation of the site or any part of it (during construction and operation phases).
- Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR):
 - DSEAR requires employers to assess the risks of fires and explosions that may be caused by dangerous substances in the workplace. From June 2015 DSEAR also covers the risk caused by gases under pressure and substances that are corrosive to metals. These risks must then be eliminated or reduced as far as is reasonably practicable. The aim is to protect employees and other people who may be put at risk, such as visitors to the workplace and members of the public. The Regulations complement the requirement to manage risks under the Management of Health and Safety at Work Regulations 1999 (SI 1999 No 3242).
 - DSEAR places duties on employers (in this case the Applicant) to assess and eliminate or reduce risks from dangerous substances. Under DSEAR there are requirements to assess risks, implement measures to prevent and control risks (including design measures), and preparing emergency plans and procedures as well as informing and training employees.
- Environmental Permitting Regulations 2016
 - Environmental Permits will be required for the operation of the proposed WWTP accordance with the Environmental Permitting Regulations (EPR) 2016. The proposed WWTP will seek a bespoke integrated environmental permit which requires the inclusion of a written management system which forms a set of procedures describing actions the Applicant will undertake to minimise the risk of pollution from the activities covered by the permit. Procedures will cover numerous matters, those relevant to the accidents and disasters include fire prevention plans (in the case of activities storing combustible waste), equipment maintenance plans, contingency plans

and accident prevents and management plans as well as digital security (Environment Agency and DEFRA, 2023). Environmental permits that may be required in relation to the Proposed Development are indicated in the Consents and other permits register (Application Document Ref 7.1)

- Regulatory framework and guidance for management risks to and from aviation including the change in land use within safeguarding zones around aerodromes (the Proposed Development is in the safeguarding zone for the existing Cambridge Airport). Changes to land use may present new or different hazards presenting risk to aviation as well as a risk to the features within the safeguarded zone:
 - European Commission Regulation (EU) No 139/2014 of 12 February 2014. Article 9 (e) Monitoring of aerodrome surroundings and Article 10 Wildlife hazard management;
 - The European Commission Implementing Rules ADR.OPS.B.020 (europa.eu, 2022); and
 - detailed Regulatory guidance regarding wildlife hazards to aviation in the UK is provided by the UK Civil Aviation Authority as an Acceptable Means of Compliance (AMC) with the EC regulations in their publication CAP 772 - Wildlife Management at Aerodromes (Civil Aviation Authority, 2017) and Chapter 5 of CAP 168 Licensing of Aerodromes (Civil Aviation Authority, 2022).
- The Security & Emergency Measures Direction (SEMD) (DWI, 2022):
 - a statutory document produced under the provisions of Section 208 of the Water Industry Act 1991. It places upon Water Companies the requirement to ‘keep under review and revise such plans as it considers necessary to ensure the provisions of essential water supply ...and waste water services at all times’. Undertakers and licensees are required to maintain a water supply and/or sewerage system in the interests of national security or to mitigate the effects of any civil emergency which may occur. The obligation to meet the requirements of the direction under the Water Act 1991 requires the operator to have in place measures to mitigate the effects of a civil emergency which may subsequently limit environmental effects such as to water quality.
 - The SEMD has four main areas companies must comply with:
 - Planning - companies have to make, keep under review, test and revise plans to ensure the provision of essential water supply and/or sewerage services at all times, including during a civil emergency or any event threatening national security.

- Resourcing – companies have to ensure they have the necessary capability, capacity and facilities to implement their plans.
- Securing – companies have to identify and mitigate against any security risks to the provision of water supply and/or sewerage services. There are additional requirements for companies who have been notified by government they have any Critical National Infrastructure designated sites.
- Responding – companies have to react promptly to incidents, including providing an alternative supply of water (where required) (Inspectorate, 2022).

1.5 Consultation

EIA Scoping

1.5.1 Table 1-3 provides a summary of key points raised during EIA scoping.

Table 1-3: Key points raised during scoping

ID	Consultee	Points raised	Response
3.11.1	PINS	<p>Although no matters have been proposed to be scoped out of the assessment in section 16.8, Appendix I of the Scoping Report lists a number of “long listed” major accidents and disaster types from which the “short list” as presented in paragraph 16.8.1 are derived.</p> <p>The Inspectorate agrees that relevant accidents and disasters have been included in paragraph 16.8.1 and has no further comments to make in this regard. The ES should report on the process of derivation of the relevant matters from the ‘long list’ as presented in Appendix I.</p>	<p>Appendix I.1 of the EIA Scoping Report (Application Document Ref 5.4.4.2 included a justification column on why a matter was screening in or out. As there is no specific method specified in relation to the screening of issues each matter was reviewed by a multi-disciplinary team comprising engineers and environmental specialists applying professional judgement to determine the relevance of the matter to the Proposed Development.</p> <p>This considered whether the development proposals had a vulnerability to major accidents and/or disaster and whether the Proposed Development could lead to a significant effect.</p>
3.11.2	PINS	<p>The Scoping Report indicates that the volumes of predicted hazardous substances required for the Proposed Development are below threshold levels. However, it does not explain what thresholds it is referencing, the hazardous substances that will be used or where, how and in what quantities substances will be stored.</p> <p>This information should be included within the ES description of development and an assessment of risk from hazardous substances scoped into the assessment where significant effects are likely to occur.</p>	<p>Chapter 2 of the ES (Application Document Ref 5.2.2) includes information including estimated resource use for operation and maintenance of the proposed WWTP.</p> <p>The Control of Major Accident Hazards (COMAH) regulations aim to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/harm to people and/or the environment. A site which has any dangerous substance present at or above the threshold limit will be subject to COMAH regulations. A Preliminary COMAH assessment (Appendix 21.1, App Doc Ref 5.4.21.1) has been completed for the Proposed Development. The current design basis for the Proposed Development does not exceed either the lower or upper tier threshold on either a single substance or aggregate basis for any of the potentially dangerous substances to be stored on site. Based on the design at this stage it is not considered that the Proposed Development will be</p>

ID	Consultee	Points raised	Response
			<p>registered as a COMAH site under the Control of Major Accident Hazards regulations 2015.</p> <p>As the Proposed Development is not within scope of the COMAH Regulations, the safety concerns related to any work activity would be addressed under the Health and Safety at Work, etc Act 1974 and its relevant statutory provisions.</p>
3.11.3	PINS	The Inspectorate notes that the Proposed Development will include a containerised LNG fuel facility, although no specific reference appears to be made to this within Chapter 16 of the Scoping Report. An assessment of risk from this facility should be scoped into the assessment where significant effects are likely to occur.	<p>Chapter 2 of the ES (Application Document Ref 5.2.2) includes information on the LNG fuel facility.</p> <p>The potential for significant effects to arise as a result of any risk arising from the proposed LNG facility is considered within this Chapter.</p>
	GCSF	We agree with the proposal that this aspect can be scoped out, with the exception of the relevant matters that are proposed to be scoped in.	Matters scoped in are assessed within this Chapter or a cross reference to the relevant topic Chapter in this ES is provided.
	GCSF	In relation to flood risk and extreme rainfall (proposed to be scoped in), the potential risk of landslide due to an extreme climate event (potentially compounded both by more extreme dry spells followed by rainfall peaks, and by the fragility of the maturing landscape in the first decade of operation) should be included in this assessment.	<p>Chapter 9: Climate resilience (Application Document Ref 5.2.9) assesses the potential risks and effects associated with extreme weather events including increased winter and heavy rainfall events and drought events. The potential for climate change to impact upon the frequency and severity of meteorological hazards in future years is inherent within the assessment and discussed in Chapter 9: Climate Resilience (Application Document Ref 5.2.9).</p> <p>The earth bank will be designed and constructed according to industry best practice earthworks standards. The earth bank would be designed to have effective drainage and would be subject to ongoing monitoring as part of the Landscape Ecology and Recreation Management Plan (LERMP) which would be applied for 30 years as a minimum as part of the biodiversity net gain (BNG) obligation (Application Doc Ref 5.4.8.14). The Flood Risk Assessment (FRA) (Application Document Ref 5.4.20.1) assesses the potential risk associated with flood risk, effect on the proposed WWTP and measures to minimise effects of flooding. Taking into account mitigation no likely significant effects from flooding are identified within the FRA.</p>

ID	Consultee	Points raised	Response
GCSP		We also note the increased (albeit low) risk of an aircraft collision risk with cranes or tall equipment used during construction of Proposed Development. Is there a risk of aviation strike during operation (if the airfield is not moved)?	The Code of Construction Practice (CoCP) (App Doc Ref 5.4.2.1) requires that relevant permits and approvals in relation to cranes and tall plant are obtained from the operators of Cambridge Airport prior to the commencement of construction. Cambridge Airport operators have and will continue to be consulted in relation to structures within the safeguarding zone of Cambridge Airport in particular in relation to building heights and navigation lights on structures as well as ongoing communication between the operator of the Proposed WWTP and Cambridge Airport.
East of England Ambulance		EEAST would request further consideration is made to assess the impact of emergency and non-emergency ambulance services during construction of the connecting road link, during construction and post construction phases at the new site, as well as the decommissioning of the current site	The Applicant remains engaged with the East of England Ambulance Service who are seeking a Statement of Common Ground (SoCG). Points of agreement to be finalised once the final ES is available post submission.
		Any nationally significant infrastructure development requires EEAST to assess the suitability of existing ambulance station(s) within the locality of the development, with potential to redevelop or extend existing sites and in certain instances relocate to a more suitable location.	The Traffic and Transport Chapter of the ES assesses impacts to traffic movements supported by the Transport Assessment (App Doc Ref 5.4). Measures related to the mitigation of traffic and transport related impacts are contained within the Construction Traffic Management Plan (CTMP) (App Doc Ref 5.4.19.7), the Code of Construction Practice Part A and B (App Doc Ref 5.4.2.1, 5.4.2.2), the Construction Worker Travel Plan (CWTP) (App Doc Ref 5.4.19.9), and the Operation Worker Travel Plan (OWTP) (App Doc Ref 5.4.19.8). In addition, an Operational Traffic Management Plan would be prepared post consent in relation to the management of operational traffic movements.
		EEAST are required to meet nationally set response times for accident and emergency services around the geographical area associated with the proposed new treatment works during construction phases and mitigation measures may be required	Implementation of the CTMP (App Doc Ref 5.4.19.7) in particular Section 4.2 (Local routeing and site plant vehicle routeing) which requires abnormal loads to have specific measures including appropriate vehicle escort and marshalling where required and timing of movement to be outside peak hours (i.e., school start and finishing times). All deliveries will be made outside of peak hours (8:00-9:00, 15:00-16:00, and 17:00-18:00) unless it is determined to be essential that the delivery is to be completed during peak hours.
		EEAST needs to meet nationally mandated response times will be impacts as a result of increased traffic, abnormal loads and hazardous loads during the construction of the access road, the new	

ID	Consultee	Points raised	Response
		treatment works and decommissioning the current site.	
		EEAST would request the design of the internal road network should also take account of the potential requirement for emergency services to access and move around the site during and post construction	The internal road network has been designed to meet the requirements of building regulations Part B.
		EEAST together with other blue light emergency services would wish to be involved in the risk analysis of hazardous loads during construction and decommissioning in the event of an accident and the likely effect of such an event	No hazardous loads are currently expected in relation to the construction and decommissioning of the Proposed Development. The Applicant will continue to engage with the EEAST in relation to hazardous loads should they be required and will work with EEAST (and the Local Highways Authority (LHA)) in relation to planning for vehicle movements associated with the Proposed Development.
	Health and Safety Executive	According to HSE's records the proposed DCO application boundary for this Nationally Significant Infrastructure Project is not within the consultation zones of any major accident hazard sites or major accident hazard pipelines. This is based on the current configuration as illustrated in, for example, figure 0.0 'EIA Scoping boundary and Zones' of the document Cambridge Waste Water Treatment Plant Relocation Project EIA Scoping report October 2021 HSE's Land Use Planning advice would be dependent on the location of areas where people may be present. When we are consulted by the Applicant with further information under Section 42 of the Planning Act 2008, we can provide full advice.	The baseline has been reviewed and no major accident hazard sites have been identified after scoping.
		The presence of hazardous substances on, over or under land at or above set threshold quantities (Controlled Quantities) will probably require Hazardous Substances Consent (HSC) under the Planning (Hazardous Substances) Act 1990 as amended. The substances, alone or when aggregated with others for which HSC is required, and the	A preliminary COMAH assessment is included in Appendix 21.1 (App Doc Ref 5.4.21.1). It concluded that the thresholds for tier 1 and tier 2 are not reached.

ID	Consultee	Points raised	Response
		<p>associated Controlled Quantities, are set out in The Planning (Hazardous Substances) Regulations 2015 as amended.</p> <p>HSC would be required to store or use any of the Named Hazardous Substances or Categories of Substances at or above the controlled quantities set out in Schedule 1 of these Regulations.</p>	
		<p>Consideration of risk assessments Regulation 5(4) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires the assessment of significant effects to include, where relevant, the expected significant effects arising from the proposed development's vulnerability to major accidents. HSE's role on NSIPs is summarised in the following Advice Note 11 Annex on the Planning Inspectorate's website - Annex G – The Health and Safety Executive . This document includes consideration of risk assessments on page 3.</p> <p>Explosives sites HSE has no comment to make as there are no licensed explosives sites in the vicinity.</p> <p>Electrical Safety No comment from a planning perspective.</p>	<p>A preliminary COMAH assessment is included in Appendix 21.1, App Doc Ref 5.4.21.1. It concluded that the thresholds for tier 1 and tier 2 are not reached.</p>
	<p>Fen Ditton Parish Council</p>	<p>We refer in relation to Chapter 21 and elsewhere, the possibility of system failure at the works and the need for overflows to be avoided at the Works or escaping to the nearby drainage network. System failure encompasses climate events such as rainfall exceeding the design capacity in addition to physical failures of pipelines and power supplies. FDPC considers AW should design out the consequences.</p>	<p>The Drainage Strategy (App Doc Ref 5.4.20.12) sets out how future climate predictions will be accounted for within the final drainage design to minimise the risk of flooding to the proposed WWTP. The strategy considers rainwater volumes for a 1 in 100 year event with an allowance for climate change (20% and 40%). The strategy considers attenuation and storage requirements under each scenario to be provided for in the detailed design. The drainage strategy also requires that the surface water drainage design adopt a segregated system for areas of the proposed WWTP that present a pollution risk such as through spills so that run off is captured and routed through the proposed WWTP for treatment. The estimated greenfield runoff rates are subject to further discussion and agreement with the Lead Local Flood Authority (LLFA) as part of the</p>

ID	Consultee	Points raised	Response
			<p>detailed design development. The final drainage design will be prepared post consent and approved by the LLFA.</p> <p>The Drainage Strategy (App Doc Ref 5.4.20.12) requires that the requirements of the Environment Agency Approach to Groundwater Protection (Environment Agency, The Environment Agency’s Approach to Groundwater Protection, Feb 2018 (Version 1.2), 2018) are to be followed in relation to the detailed drainage design. Section 4.8 of the Drainage Strategy (App Doc Ref 5.4.20.12) sets out how the drainage design will align with the Approach to Groundwater Protection.</p> <p>The proposed WWTP will operate under a bespoke integrated environmental permit which requires the inclusion of a written management system which forms a set of procedures describing actions the Applicant will undertake to minimise the risk of pollution from the activities covered by the permit. Procedures will include fire prevention plans (in the case of activities storing combustible waste), equipment maintenance plans, contingency plans and accident prevents and management plans as well as digital security (Environment Agency and DEFRA, 2023).</p> <p>Chapter 2 of the ES (App Doc Ref 5.2.2) includes details in relation to system redundancy in relation to storm water pumps whereby design includes one standby pump. The storm storage capacity of the proposed WWTP has been derived through pre-application consultation with the Environment Agency. The storm storage requirements will be specified within the operational environmental permit obtained for the proposed WWTP. Furthermore, the design of the proposed WWTP includes space for future requirements in relation to storm storage.</p>
	Ministry of Defence	The proposed development site occupies the statutory height and technical safeguarding zones that ensure air traffic approaches, and the line of sight of navigational aids and Transmitters/receivers are not impeded.	<p>Aerodrome safeguarding space has been identified and the impact is assessed in this Chapter 22 Major Accidents and Disasters and the Wildlife hazard management plan (App Doc Ref 5.4.8.18).</p> <p>The Code of Construction Practice (CoCP)(App Doc Ref 5.4.2.1) requires that relevant permits and approvals in relation to cranes and tall plant are</p>

ID	Consultee	Points raised	Response
		<p>The airspace above and around aerodromes is safeguarded to maintain an assured, obstacle free environment for aircraft manoeuvre.</p>	<p>obtained from the operators of Cambridge Airport prior to the commencement of construction.</p> <p>Measures relating to the continued assessment and management of potential wildlife hazards (birds) are set out within the outline Wildlife Hazard Management Plan (App Doc Ref 5.4.8.18).</p> <p>Cambridge Airport operators have and will continue to be consulted in relation to structures within the safeguarding zone of Cambridge Airport in particular in relation to navigation lights on structures and ongoing communication between the operator of the proposed WWTP and Cambridge Airport.</p>
	<p>Ministry of Defence</p>	<p>Considering the development falls within the above Statutory Safeguarding Zones, precise detail will be required at Pre-Planning, Full Planning/Reserve Matters stages relating to the exact location coordinates in easting and northing format, the elevations of any infrastructure and specific detail regarding any landscaping scheme in order to carry out the required assessment.</p> <p>The MOD recognises that cranes may be used during the construction of tall buildings at this site. These may affect the line of sight of navigational aids and transmitters/receivers. If the redevelopment of this site does progress, it will be necessary for the developer to liaise with the MOD prior to the erection of cranes or temporary tall structures.</p> <p>The MOD would request that a condition such as the one below be included in any planning permission granted to ensure that the MOD is notified of when and where cranes will be erected.</p>	<p>The Code of Construction Practice (CoCP) (App Doc Ref 5.4.2.1) requires that relevant permits and approvals in relation to cranes and tall plant are obtained from the operators of Cambridge Airport prior to the commencement of construction.</p> <p>Measures relating to the continued assessment and management of potential wildlife hazards (birds) are set out within the outline Wildlife Hazard Management Plan (App Doc Ref 5.4.8.18).</p> <p>Cambridge Airport operators have and will continue to be consulted in relation to structures within the safeguarding zone of Cambridge Airport in particular in relation to navigation lights on structures and ongoing communication between the operator of the proposed WWTP and Cambridge Airport.</p>
	<p>Public Health England</p>	<p>Within the ES, PHE would expect to see information about how the applicant would respond to accidents with potential off-site emissions (e.g., flooding or fires, spills, leaks or releases off-site). Assessment of accidents should: identify all potential hazards in relation to construction, operation and</p>	<p>Construction and decommissioning activities would be undertaken in accordance with the Code of Construction Practice Parts A and B (App Doc Ref 5.4.2.1 and 5.4.2.2) to manage risks to the environment. As required by the CoCP Part A, Section 5.6, Emergency Procedures and Preparedness Plan, spills and contamination events would be planned for within a CEMP and the associated sub-plan. This will require best practice guidance to be</p>

ID	Consultee	Points raised	Response
		decommissioning; include an assessment of the risks posed; and identify risk management measures and contingency actions that will be employed in the event of an accident in order to mitigate off-site effects	<p>followed to prevent spills and leakages before they are able to occur, and should they occur, a plan for their immediate remediation and reporting. This has been assessed with Chapter 20 Water Resources and concludes that the impact is predicted to be negligible and there are no likely significant effects in relation to accidental leaks and spills.</p> <p>Once operational the proposed WWTP will operate under a bespoke integrated environmental permit which requires the inclusion of a written management system which forms a set of procedures describing actions the Applicant will undertake to minimise the risk of pollution from the activities covered by the permit. Procedures will include fire prevention plans (in the case of activities storing combustible waste), equipment maintenance plans, contingency plans and accident prevents and management plans as well as digital security (Environment Agency and DEFRA, 2023). The Environment Agency consults the public and relevant organisations on new bespoke permit applications including for all waste operations and all water discharge activities.</p> <p>The Flood Risk Assessment (FRA) (App Doc Ref 5.4.20.1) assesses the potential risk associated with flood risk, effect on the proposed WWTP and measures to minimise effects of flooding. Taking into account mitigation no likely significant effects from flooding are identified within the FRA.</p>
	Public Health England	PHE would expect the applicant to consider the COMAH Regulations (Control of Major Accident Hazards) and the Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations: both in terms of their applicability to the development itself, and the development’s potential to impact on, or be impacted by, any nearby installations themselves subject to these Regulations.	<p>Proposed Development does not meet criteria for a COMAH site. There are no upper tier sites identified in Cambridge.</p> <p>COMAH 2015 Public Information Search reveals no sites within 4.8 km(3 miles) of the existing Cambridge WWTP.</p> <p>The following sites in Cambridge are understood to accommodate hazardous installations/pipelines:</p> <ul style="list-style-type: none"> ● Cavendish Laboratory, Department of Physics (Explosives) (approx. 7km from proposed WWTP); ● Cambridge Holder Station, Newmarket Road (Hazardous Substances); ● Q8 Cambridge Terminal, Ditton Walk (Hazardous Substances) (approx. 2km from proposed WWTP);

ID	Consultee	Points raised	Response
			<ul style="list-style-type: none"><li data-bbox="1164 239 1960 303">• National Grid pipelines running from Madingley to Teversham, and through to Addenbrooke <p data-bbox="1120 335 1960 477">The Proposed Development will follow the Major Accident Off-Site Emergency Plan regulations if applicable as required by the CoCP which requires the Contractor to follow all relevant regulations in relation to matters relating to the safe and legal execution of their activities. .</p>

Statutory s42 consultation

- 1.5.2 The Consultation Report (App Doc Ref 6.1) and its associated Appendices detail the responses to all comments made during the public consultation for the Proposed Development
- 1.5.3 The following key points were raised in relation to major accidents and disasters:
- Marshalls Group, who operate Cambridge City Airport raised points in relation to
 - building heights and controls on the maximum heights of permanent structures specifically noting that the proposed WWTP is located beneath an ‘Inner Horizontal Surface’, which is a horizontal plane above an aerodrome and its environs whereby the height of buildings, plant and roof structures is restricted to ensure they do not interfere with Airport activities. The height of this surface at the land required for the proposed WWTP is 55.82m AOD. Further consultation with Cambridge Airport should be sought in the event this threshold is reached to enable further Obstacle Limitation Surface (OLS) aeronautical studies to be completed.
 - the proposed WWTP sits beneath the ‘Instrument Flight Procedures’ associated to Cambridge Airport; therefore structures including construction equipment above 15m above ground level will require further consultation with Cambridge Airport to enable any further aeronautical studies to be undertaken.
 - request to review of the CEMP at construction stage
 - requirement for continued close liaison between the Applicant and Cambridge Airport to ensure matters in relation to wildlife hazard management are addressed including a requirement for a Bird Hazard Management Plan to cover both the construction and operational phases.
 - request to understand renewables proposals in particular the use for solar and the potential further aeronautical studies to be completed.
 - East Cambridgeshire District Council (ECDC) in relation to details relating to emergency procedures and operational failure
- 1.5.4 No points were raised by the Health and Safety Executive.
- 1.5.5 Further consultation will continue with both the Marshalls Group and ECDC in relation to detailed design and operational management activities in respect of planning for emergency responses.

Statutory s47 local community consultation

- 1.5.6 The Consultation Report (App Doc Ref 6.1) and its associated appendices detail the responses to all comments made during the public consultation for the Proposed Development.
- 1.5.7 The following key points were raised by the following parties in relation to major accidents and disasters:
- Save Honey Hill in relation to:
 - odour during emergency out of design conditions and in relation to future weather patterns; and
 - the risk of sewage pollution of land and watercourses in Horningsea, the Black Ditch and Quy Fen should an extreme event or other system failure occur. Noting that incorporating some form of emergency overflow/escape at the Waterbeach pumping station could avoid this.
 - Waterbeach Parish Council in relation to:
 - The use of real time traffic counts on road links between Waterbeach and Horningsea to understand traffic flows and manage instances of when the A10 becomes blocked and traffic is routed through Waterbeach and Horningsea; and
 - whether or not there will be an emergency plan to avoid construction traffic including the haul routes from causing further congestion around the access to the site and the A14 junction.
 - Fen Ditton Parish Council in relation to:
 - in-built resilience to out of design conditions and the request for information in relation to data for the design inlet and outlet storm water flow at the works under the current and 1:100 +20% condition in 2040 and 2050 together with predicted changes to the frequency of CSO events;
 - clarifying the upper design air temperature range of 40° C as to whether this is a daily average or peak value;
 - providing an emergency overflow outlet from the Waterbeach system; and
 - assumptions about future stormwater flows, capacity requirements and water use by residents including a variant based on Business-As-Usual water use by customers and be clear about population projections after 2040.

2 Assessment Approach

2.1 Guidance

2.1.1 At present, there is no formal recommended guidance for a methodology for the assessment of major accidents and disasters within EIA. However, approaches discussed in IEMA Major Accidents and Disasters in EIA: A Primer (IEMA, 2020) have been applied in scoping the assessment of Major Accidents and Disasters and assessing matters not covered by other assessments within the ES.

2.2 Assessment methodology

2.2.1 The following definitions from the IEMA Major Accidents and Disasters in EIA: A Primer (IEMA, 2020) are referred to:

- **ALARP:** ALARP stands for "as low as reasonably practicable". Reasonably practicable involves weighing a risk against the trouble, time and money needed to control it. Thus, ALARP describes the level to which the Health & Safety Executive (HSE) expect to see workplace risks controlled. For a risk to be defined as ALARP a risk must be appropriately managed through the use of mitigation.
- **Disaster:** may be a natural hazard (for example a flood, landslip/slide, or earthquake) or a man-made / external hazard (for example an act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident.
- **Major accidents:** events (such as train derailment or major road traffic accident) that threaten immediate or delayed serious environmental effects to human health, welfare and / or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Major accidents can be caused by disasters resulting from both man-made and natural hazards. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.
- **Risk:** For a risk to arise there must be hazard that consists of a 'source' (e.g. high rainfall); a 'receptor' (e.g. people, property, environment); and a pathway between the source and the receptor (e.g. flood routes).
- **Risk event:** An identified, unplanned event, which is considered relevant to the development and has the potential to result in a major accident and/or disaster, subject to assessment of its potential to result in a significant adverse effect on an environmental receptor.
- **Significant environmental effect (in relation to a major accidents and/or disasters assessment):** Could include the loss of life, permanent injury and

temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.

- Vulnerability: Describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to the 'exposure and resilience' of the development to the risk of a major accident and / or disaster. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact.

Approach to the assessment of risks of major accidents and disasters

2.2.2 The assessment method follows the steps set out in the IEMA Primer (2020) Major Accidents and Disasters.

Screening

2.2.3 This stage was completed at the screening and scoping stage and is reported in the Scoping Report (Application Doc Reference 5.4.4.2). It covers the identification of whether a development falls within the definition of EIA development under the EIA Regulations, by virtue of the likelihood of significant environmental effects from major accidents and/or disasters.

2.2.4 At this stage a long list of potential threats / hazards (termed in this document as event risks) was screened along with the likelihood of significant environmental effects was considered. This stage consisted of a multi-disciplinary review to consider high-level criteria to consider which of potential threats / hazards would be considered in more detail:

- Does the Proposed Development present a source of hazard itself that could result in a major accident and/or disaster occurring?
- Does the Proposed Development interact with any sources of external hazards that may make it vulnerable to a major accident and/or disaster? (existing external hazards may include flood zones, existing COMAH facilities these are document in section 3.1)
- In the event an external major accident and/or disaster occurred, would the existence of the Proposed Development increase the risk of a significant effect to an environmental receptor occurring?

Scoping

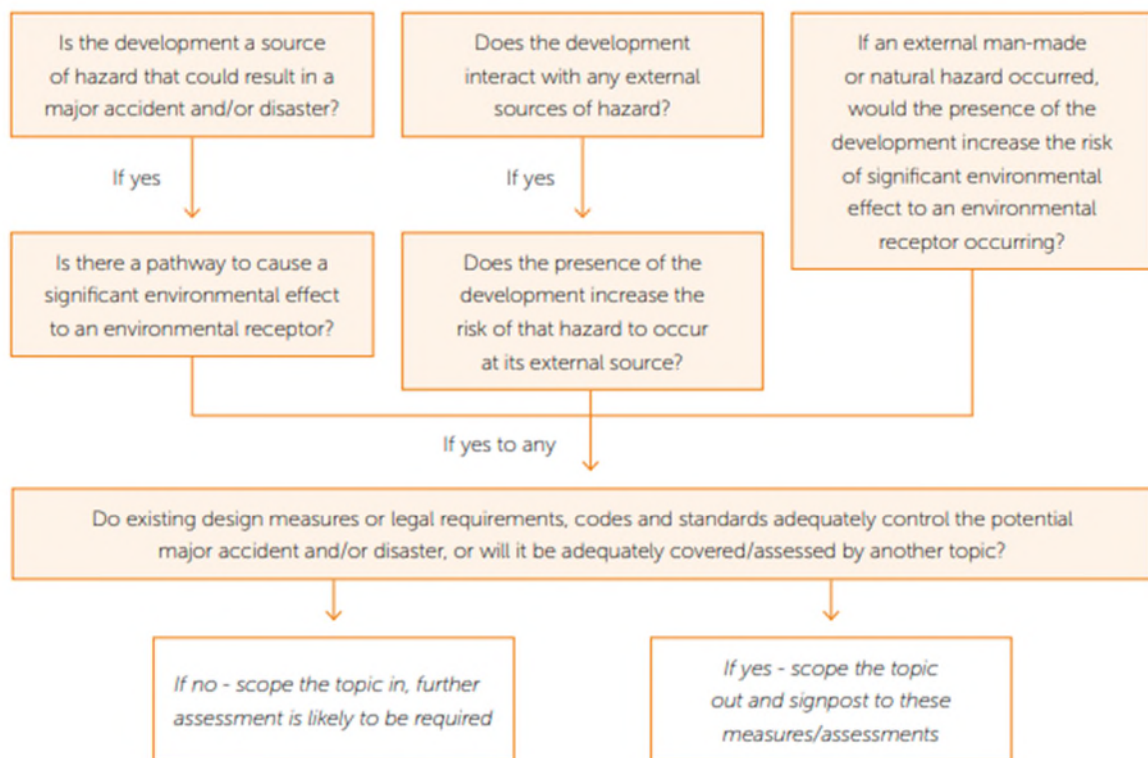
2.2.5 This stage was completed at the screening and scoping stage of the Proposed Development and is reported in the Scoping Report (Application Doc Reference 5.4.4.2). It comprises the following steps:

- Deciding if a major accidents and/or disasters assessment should be scoped in or out of the EIA (see Figure 2.1).
- For those items scoped in setting a proposed methodology as part of a Scoping Report (as assessments were scoped out within the Scoping Report

there is reference to topic specific assessment methods for example the FRA assesses the impacts of flood risk)

2.2.6 Major accidents and/or disasters can be scoped out if it can be demonstrated that:

- there is no source-pathway-receptor linkage of a hazard that could trigger a major accident and/or disaster or potential for the scheme to lead to a significant environmental effect; or
- all possible major accidents and/or disasters are adequately covered elsewhere in the environmental impact assessment (EIA) or controlled by existing design measures or compliance with legislation and best practice.



Source: (IEMA, 2020)

Figure 2.1. Scoping steps for defining scope of major accidents and disasters assessment

Effect significance

2.2.7 The effect significance will consider identified receptors in conjunction with the relevant environmental topics within the ES. Taking into account the IEMA Primer (2020) Major Accidents and Disasters, the factors considered in determining whether potential adverse effects are significant include:

- the geographic extent of the effects. Effects beyond the Order Limit boundaries are more likely to be considered significant;
- the duration of the effects. Effects which are permanent (i.e. irreversible) or long lasting are considered significant;

- the severity of the effects in terms of number, degree of harm to those affected and the response effort required. Effects which trigger the mobilisation of substantial civil emergency response effort are likely to be considered significant;
- the sensitivity of the identified receptors; and
- the effort required to restore the affected environment. Effects requiring substantial clean-up or restoration efforts are likely to be considered significant.

2.2.8 A significant adverse effect is considered to mean:

- the loss of life or permanent injury to people, and/ or
- permanent or long-lasting/ irreversible damage to an environmental receptor.

2.2.9 Effects that do not meet this definition are considered not significant.

Assessment

2.2.10 The assessment stage is completed by the following steps:

1. Establish the reasonable worst-case environmental impact for each grouped risk event with a valid receptor. Unless otherwise stated this has established using professional judgement.
2. Selecting the risk events requiring further assessment.
3. Assessing remaining risks to determine potential significant effects on receptors and whether these are already managed and/or mitigated to an acceptable level by considering embedded and tertiary measures or whether there are gaps in mitigation that need to be addressed through secondary mitigation. This step covers:
 - identify the likelihood of the event occurring taking account embedded measures and best practice measures
 - establishing the likelihood that a receptor is affected taking into account embedded measures and best practice
4. For event risk where it is deemed that the mitigation is not sufficient a final step is the identification of further mitigation (secondary measures). This stage focusses on demonstrating how secondary mitigation reduces the likelihood and/or significance of the reasonable worst-case impact occurring to an acceptable level.

2.3 Aspects scoped in/out of the assessment

2.3.1 Within the EIA Scoping Report (Application Document Ref 5.4.4.2), a long list of potential threats / hazards was screened along with the likelihood of significant environmental effects. That list was drawn from a number of sources, including the

UK Government's Risk Register of Civil Emergencies (HM Government, 2020). Refer to Appendix I.1 of the EIA Scoping Report (Application Document Ref 5.4.4.2).

2.3.2 The list produced at EIA scoping stage was screened further to produce a short list of hazards that may be likely to occur, assuming that standard processes and procedures would be in place. The assessment will focus on low likelihood but potentially high consequence events.

2.3.3 Possible risks that were scoped out in the Scoping Report and the justification for doing so are listed in Appendix I.1 of the EIA Scoping Report (Application Document Ref 5.4.4.2).

2.3.4 The remaining risk events for consideration identified within the Scoping Report (Figure 16-3) were:

- Hydrological disasters -Flood risk and extreme rainfall
- Engineering accident/failures – Flood defence failure
- Transport
 - Aviation
 - Wildlife hazard – preliminary assessment birds within the ES Biodiversity assessment
 - Lighting (glint/glare) – considered in glint glare study and the Landscape and visual assessment within the ES
 - Rail accidents
- Engineering accident/failures -Tunnel failure
- Industrial accidents – Anaerobic digestion/gas storage fire and explosion
- Malicious attack
 - Terrorism and cyber threat
 - Vandalism

2.3.5 The EIA Scoping Report (Application Document Ref 5.4.4.2), indicated that the assessment of:

- the impact of flooding in relation to the Proposed Development would be addressed in the ES Chapter: Water resources and within the Flood Risk Assessment (FRA) that will be appended to the ES.
- the impact of the Proposed Development to landscape (including lighting and glint and glare in relation to the airport) would be addressed in the ES Chapter: Landscape and visual. A glint and glare study will be a technical appendix to the ES.

- the assessment of the impact of the Proposed Development in relation to traffic accidents would be addressed in the ES Chapter: Traffic and transport.

2.3.6 The relevant documents in the assessment are Chapter 20: Water resources (Application Document Ref 5.2.20), The FRA (Application Document Ref 5.4.20.1), Chapter 15: Landscape and visual amenity (Application Document Ref 5.2.15) The Glint and Glare Study (Application Document Ref 5.4.15.4), and Chapter 19: Traffic and transport (Application Document Ref 5.2.19).

Scoping opinion

- 2.3.7 The scope of the major accidents and disasters assessment was then confirmed through the formal EIA scoping process with PINS. A request for an EIA scoping opinion was made in 2021 refer to 'Scoping Report' of the ES (Application Document Ref 5.4.4.2). The points raised at Scoping and how they are addressed in this ES are provided in Section 1.5.
- 2.3.8 In the EIA Scoping Report (Application Document Ref 5.4.4.3) submitted to the Planning Inspectorate (PINS) in October 2021, it was proposed that the Major Accidents and Disasters chapter could be scoped out of the ES and that a risk assessment will be appended to the Environmental Statement as part of the 'Description of the development' chapter. This was intended to identify risks associated with the Proposed Development and set out the embedded design features and management controls to demonstrate that risks are mitigated and the resulting outcome aligns with the principle of ALARP.
- 2.3.9 PINS, in its Scoping Opinion confirmed its acceptance of the approach in the Scoping Report to scope out a standalone Chapter and that relevant risks would be assessed within the relevant Chapter of the ES. However, further detail was requested with respect to the inclusion of a containerized Liquefied Natural Gas (LNG) fuel facility and the inclusion of an assessment of risk from this facility should be scoped into the assessment where significant effects are likely to occur.

Changes following scoping

- 2.3.10 Feedback from PINS following the Environmental Statement (ES) submission in January 2023 requested more information relating to the LNG and battery storage hazards associated with the Proposed Development.
- 2.3.11 A separate Chapter reporting on the consideration of Major Accidents and Disasters has been included in the ES.
- 2.3.12 The original risks identified at Scoping for further consideration were re-considered based on information available within designer's risk assessments and through ongoing consultation.
- 2.3.13 The risk events that have been assessed in relation to the Proposed Development are:
- Tunnel / excavation or ground collapse (including land slip of the earth bank)

- Storm events – result in river flooding / surface water inundation of the Proposed Development during construction, decommissioning and operations.
- Changes to avian population alters bird strike potential – operation and construction
- Presence of tall structures and lighting in construction and operation results in aviation risk
- Fire and explosion – decommissioning
- Fire and explosion – battery storage
- Fire and explosion – anaerobic digestion
- Fire and explosion – LNG storage
- Major air emission during decommissioning of the existing Cambridge WWTP
- Cyber security – attack compromises normal operations of the Proposed WWTP
- Malicious damage or vandalism – deliberate damage or trespass compromise the Proposed Development during construction, decommissioning and operations.

2.3.14 The impact of flooding in relation to the Proposed Development would be addressed in the Chapter 20: Water resources and within the Flood Risk Assessment (FRA) and these are referred to in the consideration of major flood events considered in this Chapter.

2.3.15 The impact of the Proposed Development to landscape (including lighting and glint and glare) is addressed in Chapter 14: Landscape and visual. A glint and glare study is provided in the application (Application Doc Reference 5.4.15.4) in addition a Lighting Assessment (Application Document Reference 5.4.14.3) is included in the application. These are referred to in the consideration of aviation accidents considered in this Chapter.

2.3.16 the assessment of the impact of the Proposed Development in relation to road traffic accidents is addressed in the Chapter 19: Traffic and transport.

2.3.17 A preliminary Control of Major Accident Hazards (COMAH) assessment is provided in Appendix 21.1, App Doc Ref 5.4.21.1). This considers the design intent for the use and storage of dangerous substances (as described by COMAH regulations) within the proposed WWTP. It concludes that the thresholds for dangerous substances do not exceed either the lower or upper tier threshold on either a single substance or aggregate basis for any of the potentially dangerous substances to be stored on site. Therefore, at this stage it is not anticipated that the new treatment works will be registered as a COMAH site under the Control of Major Accident Hazards regulations 2015.

2.3.18 As the proposed WWTP is not within scope of the COMAH Regulations, the safety concerns related to any work activity are addressed under the Health and Safety at Work, etc Act 1974 and its relevant statutory provisions.

2.4 Study area

- 2.4.1 There is no specific regulatory guidance or standardised methodology for defining a study area in relation to major accidents and/or disaster vulnerability.
- 2.4.2 Figure 1-1 shows the study area for the risk events considered in this major accidents and disasters assessment
- 2.4.3 Risks within the study area that have been considered include tunnel collapse, flood zones and the location of other infrastructure (road, rail, utilities) within 1km of the Order Limits. Based on professional judgment this is considered appropriate for harm to receptors arising from incidents which include a structural collapse at road/rail crossings, flood events including of pollution as a result of a flood event.
- 2.4.4 In relation to release of airborne pollution including explosion an extent of 5km from the Order Limits is considered in relation to the local airshed and designated sites (habitats sites).
- 2.4.5 In relation to aviation, aerodrome safeguarding and Cambridge City Airport, the relevant guidance states that the study area for consideration is 13km zone around the airport (Civil Aviation Authority, 2022). This is not indicated on Figure 1-1 as the entire Proposed Development is located within this safeguarding zone. Figure 1-1 indicates the public safety zone which extends north-east from the runway¹.
- 2.4.6 A review of information was conducted on sites that are subject to Control of Major Accident Hazard regulations (termed COMAH sites) held by the Health and Safety Executive (HSE) which provides a 4.8km (3 mile) search radius from a location (HSE, 2023). The search indicated no existing COMAH sites within 4.8km of the Proposed Development (HSE, 2023).
- 2.4.7 The study areas for specific receptors that could be affected by major accidents or disasters are described in individual ES chapters.

¹ Areas of land at the ends of airport runways within which development is restricted to control the number of people on the ground at risk of death or injury in the event of an aircraft accident on take-off or landing. It corresponds to the 1 in 100,000 individual risk calculated for the airport.

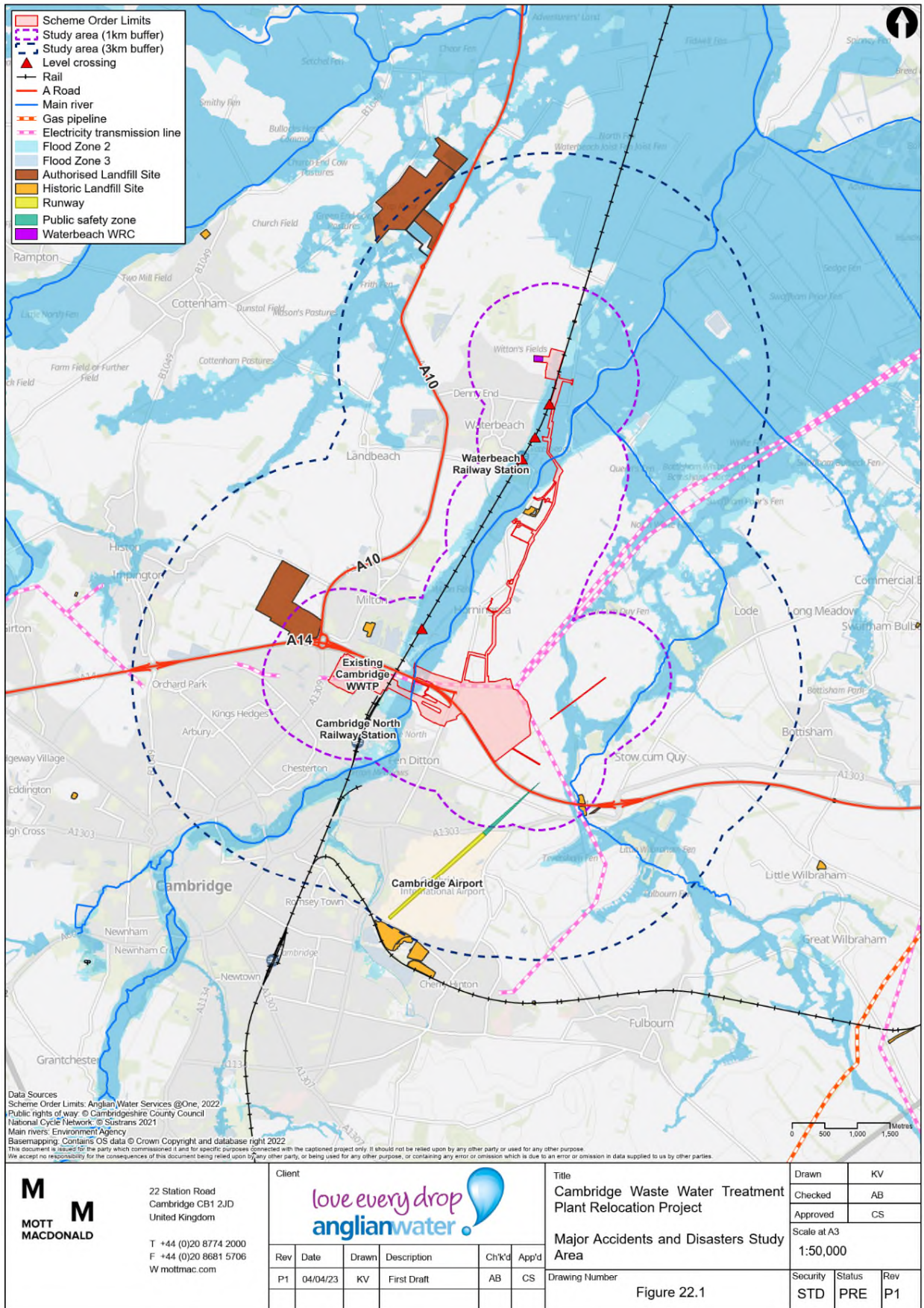


Figure 2.2.: Major accidents and/or disasters baseline study area and baseline features

2.5 Baseline study

Desktop data

2.5.1 Information relating to possible major risk events have been derived from the following sources:

- National Risk Register of Civil Emergencies (HM Government, 2020);
- Cambridgeshire and Peterborough Local Resilience Forum Community Risk Register v1.2 (SCDC, 2013);
- British Geological Survey 'Onshore GeoIndex' (British Geological Survey, 2022a);
- Tsunamis Hazard Map (PreventionWeb, 2023);
- The International Disaster Database (EM-DAT, 2023);
- Health and Safety Executive's COMAH 2015 Public Information Search (HSE, 2023);
- Ordnance Survey map (OS, 2023);
- Cambridge Airport Public Safety Zones and Safeguarding Areas (Civil Aviation Authority, 2022); and
- Grid Network Route Maps (National Grid, 2023).

Surveys

2.5.2 To avoid duplication of data gathering, information referred to within this Chapter has been sourced from existing information within topic specific ES assessments or other relevant studies, rather than collecting survey data which is not considered appropriate in this matter.

2.6 Assumptions and limitations

2.6.1 Environmental effects associated with unplanned events that do not meet the definition of a major accident and / or disaster, such as minor leaks and spills are addressed in the relevant ES topic chapters.

2.6.2 No modelling or detailed calculations were undertaken for the assessment. The qualitative assessment took the form of 'sign-posting' using existing assessments as listed in paragraph 1.1.2 and the assessment of potential gaps or residual risks that are not considered to be able to be managed using the ALARP principles (HSE, 2023).

2.6.3 Where information was not available, professional judgement was used to reach a conclusion in relation to risk for the purposes of this assessment.

2.6.4 Any hazards for which there is no credible source-pathway-receptor linkage are not considered within the scope of assessment.

- 2.6.5 Potential effects on employees working at the Proposed Development are scoped out as significant effects are considered to be avoided via protection secured through existing health and safety legislation (IEMA, 2020).
- 2.6.6 It is assumed that good safety management principles would be applied during construction and operation and that all risks that have the potential to be major accidents or disasters, and that could impact a local environmental receptor, would be managed using the ALARP principle.
- 2.6.7 Detailed design of the Proposed Development and operation of the facility will adhere with industry standards and codes, many of which are mandatory. For those that are not and are judged as a mitigation measure in relation to a major accident and disaster risk a DCO requirement will be adopted to secure the required measures. The detailed design requires infrastructure and systems to be designed in order that risks to people and the environment are either eliminated or reduced to levels that are ALARP.

2.7 Mitigation measures adopted as part of the Proposed Development

- 2.7.1 The measures outlined below are considered standard mitigation which will be applied during the construction, operation and maintenance of the Proposed WWTP and decommissioning the existing Cambridge WWTP.
- 2.7.2 Specific mitigation measures to address hazards identified for the assessment are detailed in Table 2-1

Embedded measures

- 2.7.3 Table 2-1 sets out the embedded mitigation measures that will be adopted during the during the construction, operation and maintenance of the Proposed WWTP and decommissioning the existing Cambridge WWTP.

Table 2-1: Design measures relating to major accidents and disasters adopted as part of the Proposed Development

Mitigation measures		Applied to
Construction		
Compounds vandalism / sabotage	Perimeter fencing CCTV/Surveillance equipment Security controlled access	Main compound, Waterbeach main compound, outfall compound Shaft 4 and 5
Vehicle movements	ANPR camera	Horningsea Road
Operation		
Explosion risk -LNG storage	Industry standard surveillance and controls Impact protection around LNG storage tank facility	All process equipment LNG storage
Explosion risk -gas release from digestors	Pressure and vacuum relief valve Expandable gas bag	Digestors Gas holder
Explosion risk – lightning strike	Lightning protection incorporated to built development in accordance with regulations, industry standards and best practice applicable at the detailed design stage	Digestors, sludge tanks, all buildings
Flood risk	Segregated drainage system in areas of potential contamination with the proposed WWTP. Detailed drainage design will determine area of permeable surfaces through which infiltration could occur.	Proposed WWTP
Pollution risk – spills of waste water	Storm storage tanks and tunnel to provide excess storage capacity as discussed with the EA and required by the Environmental Permit for the proposed WWTP Design of the proposed WWTP provides improved stormwater management, which includes stormwater storage of up to 20,400m ³ and a ‘flow to full treatment’ capacity of 2,000l/s.	Transfer tunnel Storm tanks
	Space to respond to future changes including the effects of climate change	Proposed WWTP

Mitigation measures	Choice of technology that will allow for future adaptation	Applied to
Major spills and leaks	<p>Measures to minimise contamination through detailed surface water drainage design complying with the Drainage Strategy (Application Document Reference 5.4.20.12). This includes the requirement for drainage to accord with requirements set out within The Environment Agency's Approach to Groundwater Protection, Feb 2018 (Version 1.2 or whatever guidance is current at the time of design) as well as the specific requirements for the detailed drainage design to:</p> <ul style="list-style-type: none"> • Provide a segregated drainage system for the proposed WWTP in areas of potential contamination within the proposed WWTP. • Detailed drainage design will determine the area of permeable surfaces within the land required for the landscape masterplan, access road and proposed WWTP through which infiltration could occur. 	Surface water drainage within extent of the proposed WWTP and along access road
Fire risk – battery storage	Fire detection and prevention equipment including monitors and fire prevention/cooling system compliant with industry standards requirements	Battery storage structure
Malicious attack – cyber security	Industry standard controls and use of security software	Entire operational WWTP
Malicious attack – vandalism / sabotage	Earth bank and perimeter fencing CCTV/surveillance equipment Security controlled access	Entire operational WWTP

Plans and procedures

2.7.4 The plans outlined in this section have been developed to effectively manage and minimise risk by ensuring that every reasonable effort will be made to ensure that environmental impacts will be avoided or reduced, where possible. These plans incorporate best practice/tertiary measures as well as secondary measures.

Construction

2.7.5 The Applicant has committed to constructing the Proposed Development in accordance with various standards and systems.

2.7.6 The CoCP Part A and B (Application Document Ref 5.4.2.1, 5.4.2.2) encompasses the main requirements in relation to the management of the Proposed Development in construction. The CoCP:

- sets out industry best practice measures to be applied to avoid and minimise impacts including those that may arise from a natural disasters such as a flood or from an accident such as spill or leak affecting the area of land required for the construction of the proposed development.
- Requires the contractor to obtain and carry out their activities in accordance with all relevant environmental consents permits and licences

Flood risk

2.7.7 The management of water resources and flood risk as set out within Section 7.5 of the CoCP Part A, Water resources and flood risk, sets out a framework for the control of flood risk during construction, identifying a number of 'standard' mitigation measures which will be implemented whilst construction work takes place. These will be reflected in an appended plan to/as part of the CEMP. This will include the following:

- requirement to minimise construction period for sections identified within the flood zone
- the timing of river crossing works in summer months if possible
- requirement for a flood management plan for construction works within areas at risk of flooding
- Inclusion of dry access/egress routes for pedestrians from compounds
- requirement for any soil temporarily stored within the flood zone, to include gaps to allow flood water to run through
- requirement to secure or relocation loose items within compounds, laydown or storage areas within flood zone 2 and 3 to prevent them becoming a debris hazard in a flood event or where practical removed from the flood zone if high rainfall within the catchment is predicted

- location specific requirements within CoCP Part B (Application Document Ref 5.4.2.2) in relation to the careful siting of compounds in so far as is possible outside of the floodplain

2.7.8 Post grant of the DCO and prior to commencement of construction a detailed CEMP will be prepared and agreed as secured through the DCO requirements. This will incorporate any measures required by the Environment Agency through environmental permits (flood risk activities) for those aspects of the works that require a separate permit.

Emergency response and incident response

2.7.9 Management of construction activities as described within the CoCP Part A and B (Application Document Ref 5.4.2.1) in particular

- Part A section 4.4 which requires the Principal Contractor(s) to produce a Water Quality Management Plan(s), Pollution Incident Control Plan, and risk assessments before works commence on site.
- Part A section 5.6 which requires that emergency procedures are developed in line ISO 14001 criteria and HSE standards by the appointed Principal Contractor(s) and incorporated into an Emergency Preparedness Plan(s).
- Part A section 5.7 which specifies the requirements of the Pollution Incident Control Plan

2.7.10 The plans will be appended to or incorporated into the CEMP(s).

2.7.11 Temporary tall structures and cranes Management of construction activities as described within the CoCP Part A and B (Application Document Ref 5.4.2.1 & 2) in particular

- Part A section 5.15, Cambridge Airport, which requires
 - the Principal Contractor(s) to notify the operator of Cambridge Airport (and the CAA as required) prior to the erection or use on site of cranes and other tall structures (over 15m).
 - Provide details of temporary lighting.
 - Make any appropriate adjustments or additional safety measures into the CEMP(s) following this engagement.
- Part A section 5.12, Cranes and other temporary tall structures, which requires
 - cranes will to be operated in accordance with the requirements of CAP1096 (Guidance to crane users on the crane notification process and obstacle lighting marking).

Control of wildlife hazards

2.7.12 Section 4.16 of the COCP Part A (Application Document Reference: 5.4.2.1) specifies the requirement for continued engagement with airport operators and the requirement of a Wildlife Hazard Management Plan (Application Document Reference 5.4.8.18) in relation to Cambridge Airport.

2.7.13 The CoCP Part A (Application Document Reference 5.4.2.1) section 4.4 requires the Principal Contractor(s) to produce Birdstrike Hazard Management Plan before works commence on site. The plan will be appended to or incorporated into the CEMP(s). It will incorporate measures that

- set out the required monitoring for changes to bird assemblages
- measures to prevent increase risk of attracting species of birdstrike concern

2.7.14 The Outline Wildlife Hazard Management Plan (Application Document Reference 5.4.8.18) requires further engagement with Cambridge Airport in relation to the need for:

- the management of temporary features in construction (for example temporary ponds, areas of stripped soil, structures that may serve as roosts)
- monitoring approaches and reporting frequency in construction once detailed construction methods and programme are established
- refinements to the design of buildings and treatment infrastructure to reduce risk of attracting undesirable bird assemblages

2.7.15 The detailed WHMP for construction will be prepared to the satisfaction of Cambridge Airport and in place prior to the commencement of works. The requirements to prepare and implement the Wildlife Hazard Management Plan in the construction phase are secured through:

- a requirement in the draft DCO (Application Document Reference 2.1) to comply with the CoCP Part A and B (Application Document Ref 5.4.2.1 & 2)
- a requirement of the draft DCO (Application Document Reference 2.1) for approval and implementation of a CEMP.

Construction site safety and security

2.7.16 As required under the CDM Regulations information about or affecting the site is collected prior to the commencement of construction. This will involve approaching the relevant authorities and stakeholders. The Principal Contractor(s) will be responsible for the production and implementation of the Project Health and Safety Plan in accordance with CDM Regulations. This will set out how health and safety matters on the site are to be managed and how risks are to be identified and managed in accordance with current best practice and legal requirements. The Health and Safety Plan will focus on the health and safety of construction workers; however, the Principal Contractor(s) will also be responsible for ensuring the health

and safety of any visitors to the site and of the general public in the vicinity of construction activities.

2.7.17 The Principal Contractor(s) appointed by the Applicant will be required to be accredited to British Standard (BS) EN ISO 14001: Environmental Management and ISO 45001: Health and Safety Management Standards.

2.7.18 These are secured through a requirement of the draft DCO (Application Document Reference 2.1) for approval and implementation of a Safety Plan, CTMP, and CEMP.

2.7.19 Section 5.3, Site compound set up, security and fencing, of the CoCP Part A includes specific requirements in relation to site security and access controls.

Fire prevention and control

2.7.20 Section 5.5, Fire prevention and control, of the COCP Part A (Application Document Reference: 5.4.2.1) requires the Principal Contractor(s) to have in place appropriate plans and management controls to prevent fires (in line with HSE standards). The measures to be put in place will include the following:

- fire inspection and risk assessments will be prepared and carried out for all relevant areas and buildings;
- a Fire and Emergency Plan(s) will be prepared. This will be reviewed regularly. The Site Managers will ensure that they are understood and complied with by everyone on site;
- office fire alarms will be inspected and tested in line with the Fire and Emergency Plan(s);
- nominated trained fire marshals will be appointed for each area as appropriate. The marshals will be clearly instructed in respect of their duties;
- fire marshals will be on site at all times;
- all personnel (including visitors) will receive instruction in fire precautions, action and evacuation in the event of fire;
- adequate and suitable fire-fighting equipment will be provided on each floor of any site buildings, in readily accessible locations and maintained in a serviceable condition;
- fire exit routes, fire/smoke doors will be clearly signed, and written fire instructions displayed at suitable points within the site compounds;
- an emergency muster point will be positioned away from the offices that it is easily accessible and large enough for all of the workforce at that location to assemble and be accounted for;
- weekly inspections of escape routes, fire brigade access, fire-fighting facilities and work areas will be carried out. This will include a check that the requirements of the site Fire and Emergency Plan are being followed;

- fire drills will be carried out at least twice a year and weekly tests on all alarm and detection devices installed;
- a written record will be kept of all checks, inspections, tests, fire patrols and fire drill procedures;
- a quarterly check will be made of the detailed arrangements and actual procedures for calling the fire brigade and, where appropriate, (i.e., on the more complex sites); liaise with them to arrange site inspections and familiarisation tours;
- any security personnel will be liaised with;
- a Disaster Recovery Plan(s) will be developed and maintained by the designated Emergency Coordinator;
- all fire extinguishers will be regularly calibrated; and
- colour coded extinguishers for different fires will be provided in site compounds.

Operation

2.7.21 Operation and maintenance activities required for the proposed WWTP would be subject to operational management plans and procedures. The management plans and procedures will sit within the Environmental Management System (EMS) required under the environmental permitting regime. These would be 'live' documents that identify the environmental risks and legal obligations associated with the operations of the Proposed Development once construction has been completed. These specify the management measures the operator will implement in order to prevent or minimise the environmental effects associated with the Proposed Development. The exact plans and procedures will be finalised through the permitting processes and in relation to accidents and disasters the following are relevant (Environment Agency, 2023):

- Accident prevention and management plan to cover incidents or events that could result in pollution and or not being able to comply with the permit. This plan must identify potential accidents, for example (Environment Agency, 2023):
 - equipment breakdowns
 - enforced shutdowns
 - fires
 - vandalism
 - flooding
 - any other incident which causes an unexpected change to normal operations, such as extreme weather

- Contingency plans to minimise the impact on the environment of any:
 - breakdowns
 - enforced shutdowns
 - any other changes in normal operations, for example due to extreme weather
- Site and equipment maintenance plan that sets out how the operator will maintain the infrastructure within the site and any machinery. This must be in accordance with the manufacturers or suppliers recommendations.

2.7.22 Post grant of the DCO and prior to commencement of operations a detailed EMS will be prepared and agreed with the Environment Agency under the environmental permitting regime.

Flood risk

2.7.23 Within the land required for the landscape masterplan as described within the Landscape Ecology and Recreation Management Plan (LERMP) (Application Document Reference 5.4.8.14) there will be retention of permeable surfaces in land outside of the earth bank with new planting. This new planting will create a more varied vegetation and habitats around the proposed WWTP which may have a secondary benefit of slowing surface water run-off during more extreme rainfall events. Further measures related to the management of surface water delivered during operation will be implemented through the long term application of the LERMP (Application Document Reference 5.4.8.14) which requires that the operator prepare a detailed management and maintenance plan (secured through requirements in the DCO), based on the LERMP which will be agreed with key stakeholders, such as the local authority, Natural England and National Trust.

2.7.24 Since the LERMP integrates aspects of the Drainage Strategy (Application Document Reference 5.4.20.1) the detailed surface water drainage design shall be prepared to account for the detailed management of the LERMP.

Site safety and security

2.7.25 The Applicant is obligated to operate and maintain the Proposed Development in line with the Security & Emergency Measures Direction (SEMD) guidance for the type of development.

Vehicle movements including abnormal loads

2.7.26 An Operational Traffic Management Plan would be prepared post consent in relation to the management of operational traffic movements.

2.7.27 The requirements to prepare and implement the OTMP is secured through a requirement of the draft DCO (Application Document Reference 2.1) for approval and implementation of the OTMP.

Control of wildlife hazards

- 2.7.28 An Operational Wildlife Hazard Management Plan will be prepared post consent in relation to the operation and maintenance of the proposed WWTP.
- 2.7.29 The Applicant will implement an EMS that will set out the responsibilities of the site management to control risks arising from the proposed WWTP during operations.
- 2.7.30 The EMS will also include appropriate definitions of roles and responsibilities to ensure compliance with any conditions related to the requirement to manage birdstrike risk from the Proposed Development.
- 2.7.31 This will include appointing an Environmental Manager who will be responsible for managing environmental issues through operational monitoring, including ongoing and adaptive risk management, subject to regular review. The Environment Manager will be responsible for the preparation and implementation of the operation WHMP including appointing suitably qualified and experience staff or contractors to undertake operational monitoring of birdstrike risk.
- 2.7.32 The Outline Wildlife Hazard Management Plan (Application Document Reference 5.4.8.18) requires further engagement with Cambridge Airport in relation to the production of a detailed WHMP for the operation and maintenance of the Proposed Development. The operational WHMP will align with changing landscape management activities and take account of the results of ecological monitoring of bird populations in the areas of land required for the landscape masterplan.

Decommissioning

- 2.7.33 Decommissioning of the existing Cambridge WWTP would be subject to a Decommissioning Management Plan which is to be agreed with the Local Planning Authority. An outline Decommissioning Management Plan (Application document Reference 7.18) describes measure applied to this activity. Post grant of the DCO and prior to commencement of decommissioning a detailed plan will be prepared and agreed with the Local Planning Authority.

3 Baseline Environment

3.1 Current baseline

Natural hazards

Weather events

3.1.1 Hazards resulting from severe weather events which could impact the Proposed Development are included in the baseline information reported in Chapter 9: Climate Resilience and with the FRA (Application Document Reference 5.4.20.1) and are include:

- heavy rainfall events resulting in flooding including fluvial, surface water, and ground water
- storms and gales;
- drought / heatwave;
- cold and snow;
- lightning and electrical storms (thunderstorms);
- extreme temperatures (heatwaves and sub-zero temperatures); and
- extreme humidity (high and low).

Flood risk

3.1.2 Part of the land required for the Proposed Development falls the floodplain of the River Cam catchment, as indicated by flood zone 2 and 3 (see Figure 2.2.). In this location, flood defence structures are understood to comprise high ground and some sections of earth embankments along both banks of the River Cam that provide a 1 in 30 year event standard of protection. The outfall for the Proposed Development would directly interface with the eastern bank of the River Cam. To the east and north of the proposed WWTP, there is another flood zone associated with the Black Ditch.

Seismicity

3.1.3 Based on information published by the British Geological Survey (BGS, 2020), the Proposed Development Site is located in one of the lowest areas of seismic hazard risk in the UK.

Existing major accident hazards

3.1.4 The Proposed Development crosses the Public Safety Zone and is within the Safeguarding Area of Cambridge Airport. At the closest point, the Order Limits are approximately 1km north east of the Cambridge Airport runway.

3.1.5 There are no existing COMAH sites within 4.8km of the Order Limits.

Other potential accident hazards

- 3.1.6 The A14 passes to the south of the land required for the proposed WWTP and is crossed below by the transfer tunnel and the Waterbeach pipelines. The West Anglian Main Line (WAML) passes approximately 900m west of the land required for the proposed WWTP and landscaping, the Transfer tunnel passes under the WAML in one location and the Waterbeach pipelines pass under the WAML in 2 locations. There are four rail level crossings connecting public highway between Cambridge North station and the northern extent of the Proposed Development boundary. Some of these level crossings would be required to facilitate construction access routes. The WAML has overhead catenary infrastructure.
- 3.1.7 There are no high-pressure gas pipelines within the Order Limits. There is a medium pressure main running parallel to the disused railway. Under the gas to grid option there would be a connection required to this existing gas pipeline. This connection is not part of the DCO and would be developed and delivered by the gas network operator using its permitted development powers. There is an existing major overhead powerline running across land required for the proposed WWTP and across the land occupied by the existing Cambridge WWTP.
- 3.1.8 There are no active landfills within the Order Limits. There are three historic landfills (refer to Figure 2.2) within 1km of the Order Limits to the west of the land required for the Waterbeach pipelines, north of the Existing Cambridge WWTP and south east of the Proposed Development.
- 3.1.9 Until decommissioning for permit surrender has been completed the existing Cambridge WWTP may pose a potential accident hazard to during works to construction the proposed WWTP including Waterbeach and transfer tunnel tie in activities. The existing Cambridge WWTP has active digestion processes and associated gas storage which may present a fire and explosion risk while operational.
- 3.1.10 The following sites in Cambridge are understood to accommodate hazardous installations/pipelines:
- Cavendish Laboratory, Department of Physics (Explosives) (approx. 7km from proposed WWTP);
 - Q8 Cambridge Terminal, Ditton Walk (Hazardous Substances) (approx. 2km from proposed WWTP);
 - National Grid pipelines running from Madingley to Teversham, and through to Addenbrooke

Receptors

- 3.1.11 Each relevant topic specific Chapter is referred to in defining potential receptors in relation to the Proposed Development. The receptors considered within this Chapter are summarised in Table 3-1. Professional judgement has been applied in defined receptors and associated buffers. These are selected to be conservative in relation

to harm to receptors arising from the risk events (fire/explosion, structural collapse, flooding, major spills).

Table 3-1: Receptors considered for the consideration of Major Accidents and Disasters

ES Topic	Receptors
Agriculture and soils	All soils and farm businesses within the Order Limits Buffer of 500m for farm businesses and soils within 500m of the Order limits
Air	Local airshed within 1km of the Order Limits Designated habitat sites within 5km of the Order Limits
Biodiversity	Habitats Protected species with within the order limits Designated sites within the Order Limits and within 5km of the order limits Aquatic habitats downstream of the Order Limits
Community	Communities of Fen Ditton, Horningsea, Waterbeach, Clayhithe, Milton and Chesterton Users of the River Cam Users of PROW within the Order Limits and extending 500m from the Order Limits
Health	Population within the Order Limits and within 1km of the Order Limits Users of the River Cam Future users of the landscape masterplan area Future visitors to the proposed WWTP Visitor Centre
Historic Environment	All assets within the Order Limits and 500m from the Order Limits
Land quality	Extent of Order Limits and 500m from the Order Limits
Landscape	Extent of Order Limits area defined for LVIA
Material resources and waste	Waste management facilities within local authority area
Odour	Population within the Order Limits and within 1km of the Order Limits
Traffic and transport	Users of all construction access routes Users of PROW with the Order Limits and extending 500m from the Order Limits Users of Horningsea Road between Horningsea and Fen Ditton (operation) Users of River Cam Users of A14 Users of WAML
Water	River Cam downstream of the existing outfall Groundwater bodies within and extending 1km from the Order Limits Black Ditch

ES Topic	Receptors
	Drainage ditches within and extending 1km from the Order Limits

3.2 Baseline information contained within the ES chapters

3.2.1 The baseline information within Section 3 of each ES relevant chapter has been referred to in order to identify baseline environmental conditions and potential receptors that could be impacted by the effects of major accidents and disasters to which the Proposed Development is vulnerable.

3.3 Future baseline

3.3.1 The presence of COMAH sites and the standard of flood protection within the study area is assumed to be stable and unlikely to change prior to the commencement of construction and operation of the Proposed Development. It is considered that this baseline shall in the consideration of potential impacts that may be affected by the presence of existing COMAH sites and or from flood risk during construction and operation of the Proposed Development.

3.3.2 Chapter 22 Cumulative Effects Assessment identifies future developments within study area that may alter the receptors potentially affected by the environmental effects arising from the vulnerability of the Proposed Development to accident or disaster.

3.3.3 The following developments have been shortlisted for inclusion in the assessment of cumulative effects and therefore represent potential future baseline receptors for consideration in relation to the effects of major accidents and disasters:

- Waterbeach New Town East S/2075/18/OL ;
- Waterbeach Station Relocation S/0791/18/FL
- Waterbeach New Town S/0559/17/OL; and
- Cambridge North Residential Quarter 22/02771/OUT

3.3.4 The following local planning authority development plans have been shortlisted for inclusion in the assessment of cumulative effects:

- Cambridge East Area Action Plan (AAP); and
- Emerging North East Cambridge AAP (Policy 1).

3.3.5 Of these the demolition of both the existing Waterbeach Water Recycling Centre (WRC) and the existing Cambridge WWTP are considered as part of the Waterbeach New Town East and NECAPP respectively.

3.3.6 None of the above developments or plans and proposals are identified as introducing further major accident sources.

Impacts of climate change on future baseline

- 3.3.7 The potential for climate change to impact upon the frequency and severity of meteorological hazards in future years is inherent within the assessment and discussed in Chapter 9: Climate Resilience (Application Document Ref 5.2.9).
- 3.3.8 Changes in climatic and environmental factors (e.g., temperature, wind speed, precipitation, frequency of extreme weather events) during the operation of the Proposed Development have been considered in relevant environmental models used for assessments within the EIA. Table 3-2 summarises future baseline assessment scenarios considered in assessments completed as part of the EIA.

Table 3-2: Future baseline assessment scenarios considered within the Application documents

ES Chapter	Assessment	Consideration of future baseline	Application documents
Air quality	Data from the Cambridge City Airport meteorological station used in the air dispersion model (with missing data supplemented from RAF Mildenhall) were used as this is the most representative data available for the study area	For meteorological data to be suitable for dispersion modelling purposes, multiple parameters need to be measured on an hourly basis, such as wind speed, wind direction, temperature, cloud cover and relative humidity. The year of measured meteorological data can cause variations in model predictions due to variations in annual weather patterns. Therefore, emissions from the proposed WWTP have been assessed using five years of historical meteorological data in line with best practice. It is considered that assessing across five historical years is appropriate to cover the likely future weather conditions for the Proposed Development. This approach is best practice and used on for all permit applications approved by the Environment Agency. Whilst climate change could affect future meteorological conditions, it is not proportional to forecast hourly meteorological conditions suitable for dispersion modelling given the parameters required and considering the likely effects they would have on air quality as the assessment already considers a range of measured meteorological conditions across five historical years.	Air Quality Assessment Method (Application Document Reference 5.4.7.1)
Climate resilience	Future climate – weather extremes	The future climate baseline refers to the projected climate that may be experienced at the study site in both the 2050s (the average climate for the period 2040-2059) and the 2090s (the average climate for the period 2080-2099). The impact assessment considers risks to the 2090s but takes account of embedded design mitigations including	Chapter 9: Climate Resilience (Application Document Ref 5.2.9)

ES Chapter	Assessment	Consideration of future baseline	Application documents
		<p>routine replacements for receptors whose operational lifetime is not to the 2090s (such as mechanical and electrical equipment). As such, the interim period of the 2050s is taken into consideration to determine if climate impacts are likely to be significant even before the end of life of some receptors. This is an updated approach from the Scoping Report in response to the Scoping Opinion</p>	
Odour	<p>Odour impact assessment used the same meteorological data set as for air dispersion modelling. Use of AERMOD Version 10.2.1 (December 2021) modelling software has been employed for the odour modelling exercise.</p>	<p>The impact of climate change on odour concentrations has been considered in the odour modelling assessment by using odour emission rates from the existing Cambridge WWTP obtained from monitoring during the Summer of 2019. These emission rates obtained during the summer months have been applied to the proposed WWTP across the whole year.</p>	<p>Odour Impact Assessment (Application Document Reference 5.4.18.2)</p>
Water resources – river flows	<p>River modelling to assess the impact of outfall discharges on fluvial flood levels in the River Cam to cover the 1 in 2, 10, 20, 30, 50, 75, 100, 200 and 1000 year floods.</p>	<p>The model allowance of 20% for climate change uplift is similar to the values identified by the EA for 2050s Upper (22%) and 2080s Higher (19%). The model therefore retained the 20% uplift for climate change in the model simulations.</p>	<p>River Modelling Report (Application Document Reference 5.4.20.5)</p>
Water resources – surface water run-off	<p>Assessment of surface water flood risk and requirements for rainfall attenuation and short term storage to account for future rainfall intensity</p>	<p>Rainfall event 1 in 100 year consideration plus 20% and 40% uplift to understand surface water attenuation requirements taking into account climate change predictions.</p>	<p>Drainage Strategy (Application Document Reference 5.4.20.12)</p>

4 Assessment of Adverse Effects Arising from Major Accident and Disaster Risks

- 4.1.1 This section identifies the significant adverse effects of the Proposed Development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disaster risk events identified in section 2.3. The assessment considers the construction, operation and maintenance of the Proposed Development and decommissioning of the existing Cambridge WWTP for the purpose of permit surrender.
- 4.1.2 The major accident or disaster risk events considered are set out within a hazard identification record provided in Appendix 21.1, App Doc Ref 5.4.21.1.
- 4.1.3 Where the assessment of consequential significant effects is provided within other ES Chapters the document reference is provided.

4.2 Construction

- 4.2.1 This section considers the effects relating to the occurrence of risk events during the construction of the Proposed Development.

Vulnerability of the Proposed Development to major accidents

Event risk – tunnel collapse/ excavation or ground collapse

- 4.2.2 The Transfer Tunnel and Waterbeach Pipeline will need to be constructed under the WAML and the A14 . Any collapse would potentially result in harm to people along with road and rail users. There may also be secondary impacts to surface features (habitats, soils, landscape) at the surface depending on the extent of the occurrence as well as impacts associated with remediation such as waste and vehicle movements. The Transfer tunnel would likely be constructed using micro tunnel boring machines (MTBM) and the Waterbeach pipelines through horizontal direction drilling (HDD). Both are well established construction techniques. Information on construction methods is provided in Chapter 2.
- 4.2.3 Ground Investigations (GI) of the Proposed Development have been completed and are assessed within Chapter 14 Land Quality (Application Document Ref 5.2.14). These data are used to inform works planning. In addition to pre works studies to understand ground conditions, modern MTBM are capable of providing monitoring data by the sensors in the machine, in turn allowing adaptive management of the process.
- 4.2.4 The potential environmental effects as a result of this risk event occurring are:
- Temporary changes to landscape appearance as a result of surface subsidence and depressions in the landscape. With remediation these effects are reversible.

- Human health effects through fatal and non-fatal injuries as a result of structure collapse. Fatal events are by definition significant.
- Secondary effects to surface and groundwater features through physical changes at the surface and subsurface. Depending on the location and extent of change these effects could be longer term (months to years) until remediation is completed.
- Secondary effects to waste infrastructure associated with clean up and remediation activities. Based on capacity it is not expected that volumes of waste from clean up would be significant in the context of available capacity (as described in Chapter 15:Material resources and waste).
- Secondary effects to surface habitats (damage/reduction in condition) depending on the spatial extent of the incident. Depending on the location and extent of change these effects could be longer term (months to years) until restoration is completed.

Mitigation

- 4.2.5 The potential for construction related incidents are covered by safe working practices, CoCP (Application Document Ref 5.4.2.1) and CDM regulations (legislation.gov.uk, 2015). In accordance with usual practice, all works under and in close proximity to the railway line will be addressed by proposed protective provisions and a Basic Asset Protection Agreement (BAPA) to be entered into between the Applicant and Network Rail which secure the method of working and necessary protection measures. Similarly, the method of working and necessary protection measures in relation to works affecting the A14 will be agreed with National Highways and secured within the proposed protective provisions in the DCO.
- 4.2.6 Management of construction activities as described within the CoCP Part A and B (Application Document Ref 5.4.2.1) in particular:
- Part A section 4.4 which requires the Principal Contractor(s) to produce Pollution Incident Control Plan, and risk assessments before works commence on site.
 - Part A section 5.6 which requires that emergency procedures are developed in line ISO 14001 criteria and HSE standards by the appointed Principal Contractor(s) and incorporated into an Emergency Preparedness Plan(s). Such plans would incorporate any specifications as agreed with Network Rail and the highways authority in relation to crossings of railways and highways respectively.
- 4.2.7 Should this event occur subsequent environmental impacts would be managed through measures within the Pollution Incident Control Plan Management which is required by the CoCP Part A section 4.4. The plans will be appended to or incorporated into the CEMP(s) prepared prior to the start of construction.

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result of tunnel collapse

- 4.2.8 The application of mitigation will reduce the likelihood of risk occurrence or manage the consequences should the event occur.
- 4.2.9 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk – aviation hazard from changes to bird assemblages

- 4.2.10 The area of land required for the construction of the Proposed Development is within the safeguarding area for Cambridge Airport. Land use changes in the safeguarding area can lead to changes in bird assemblages which present new or greater risks of birdstrike. A bird strike occurs when a moving airplane collides with a bird.
- 4.2.11 During construction land clearance and earthworks as well as temporary water holding structures and the commencement of landscape planting represent land use changes that could alter bird populations within the safeguarding zone.
- 4.2.12 Section 4 of the outline Wildlife Hazard Management Plan (WHMP) (Application Document Reference 5.4.8.18) provides a detailed assessment of bird assemblages and risks in construction.
- 4.2.13 Environmental effects arise from direct collision with birds resulting in the likely death of the bird(s) and damage to the aircraft. Responding to the risk of birdstrike risk may result in delays to aviation users. In the worst cases birdstrike can lead to serious aircraft accidents.

Mitigation

- 4.2.14 Section 4.16 of the COCP Part A (Application Document Reference: 5.4.2.1) specifies the requirement for continued engagement with airport operators and the requirement of a Wildlife Hazard Management Plan (Application Document Reference 5.4.8.18) in relation to Cambridge Airport.
- 4.2.15 The CoCP Part A (Application Document Reference 5.4.2.1) section 4.4 requires the Principal Contractor(s) to produce Wildlife Hazard Management Plan before works commence on site. The plan will be appended to or incorporated into the CEMP(s). It will incorporate measures that:
- set out the required monitoring for changes to bird assemblages
 - measures to prevent an increased risk of attracting species of birdstrike concern
- 4.2.16 The Outline WHMP (Application Document Reference 5.4.8.18) requires further engagement with Cambridge Airport in relation to the need for:
- the management of temporary features in construction (for example temporary ponds, areas of stripped soil, structures that may serve as roosts)

- monitoring approaches and reporting frequency in construction once detailed construction methods and programme are established
- refinements to the design of buildings and treatment infrastructure to reduce risk of attracting undesirable bird assemblages

4.2.17 The detailed WHMP for construction will be prepared to the satisfaction of Cambridge Airport and in place prior to the commencement of works.

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result of changes to bird assemblages.

4.2.18 Measures are in place to minimise the changes to bird assemblages and to allow for adaptive management to continually monitor and manage wildlife hazards in consultation with the airport operators.

4.2.19 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk – aviation hazard from presence of cranes, and tall construction equipment

4.2.20 The area of land required for the construction of the Proposed Development is within the safeguarding area for Cambridge. The presence of new tall structures may present a collision risk to aircraft. The presence of new lighting in this location may also present a risk to aviation. Responding to the changes in the presence of birds may result in delays to aviation users as a result of delayed landing and take-off whilst birds are dispersed

4.2.21 Effects of aviation incidents are delay to journeys, damage to aircraft and the event of a serious aircraft accident fatal injuries and secondary effects from firefighting and direct impacts at the ground.

Mitigation

4.2.22 There are well defined controls in relation to aviation safety supported by legislation and guidance. Management of construction activities as described within the CoCP Part A and B (Application Document Ref 5.4.2.1) in particular:

- Part A section 5.15, Cambridge Airport, which requires:
 - the Principal Contractor(s) to notify the operator of Cambridge Airport (and the Civil Aviation Authority as required) prior to the erection or use on site of cranes and other tall structures (over 15m).
 - Provide details of temporary lighting.
 - Make any appropriate adjustments or additional safety measures into the CEMP(s) following this engagement.
- Part A section 5.12, Cranes and other temporary tall structures, which requires

- cranes will to be operated in accordance with the requirements of CAP1096 (Guidance to crane users on the crane notification process and obstacle lighting marking).

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result of presence of cranes, and tall construction equipment

4.2.23 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk – malicious damage or vandalism

4.2.24 Malicious damage and or vandalism to construction sites can result in various impacts including:

- Economic losses and construction delay (prolonging overall impact duration)
- Leaks and spills of materials into the local environment with secondary effects to people, soils, water course, habitats, and wildlife.
- Fires with secondary effects to people, soils, watercourses (from fire water and foams), habitats and wildlife, heritage assets in the vicinity

Mitigation

4.2.25 Section 5.3, Site compound set up, security and fencing, of the CoCP Part A includes specific requirements in relation to site security and access controls. The Principal Contractor(s) will be required to ensure that the main construction compounds are suitably signed and secured to protect against unauthorised entry in accordance with HSE standards.

4.2.26 In the event of an incident occurring as a result of malicious damage or vandalism the Principal Contractor(s) would enact Emergency Response Plans. These plans are also required by section 5.6 of Part A of the CoCP which requires that emergency procedures are developed in line ISO 14001 criteria and HSE standards by the appointed Principal Contractor(s) and incorporated into an Emergency Preparedness Plan(s).

4.2.27 The CoCP Part A (Application Document Reference: 5.4.2.1), Section 5.5, Fire prevention and control, requires the Principal Contractor(s) to have in place appropriate plans and management controls to prevent fires (in line with HSE standards).

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result malicious damage and or vandalism during construction

4.2.28 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Vulnerability of the Proposed Development to natural disasters

4.2.29 Potential natural disasters that could occur during construction of the Proposed Development includes storm events.

Storm events – result in river flooding / surface water inundation of the Proposed Development during construction

- 4.2.30 Storm events can damage construction equipment used which can lead to spills, leaks, fires and / or explosions affecting nearby properties, environment, and people through contamination of airborne substances, land or water.
- 4.2.31 Chapter 20:Water Resources and the FRA (Application Document Refence 5.4.20.1) assess the effects of flood risk in construction.
- 4.2.32 The FRA (Application Document Ref 5.4.20.1) demonstrates that the existing surface water flood risk to the Proposed Development is **very low**.
- 4.2.33 Chapter 20:Water resources reports that taking into account mitigation the residual effects on flood risk ion construction are assessed as slight adverse to neutral and are **not significant**.
- 4.2.34 Chapter 9: Climate Resilience (Application Document Ref 5.2.9) assesses the vulnerability of the Proposed Development in relation to climate change related natural events. It considers predicted future changes to the climate and how the Proposed Development is designed to withstand the effects of future extreme events in particular drought, storm and rainfall. Where necessary it sets out further mitigation to minimise the effects of climate related events on the Proposed Development.
- 4.2.35 Chapter 9 reports that overall, following the application of mitigation measures including secondary mitigation measures, the significance of effects of climate change would be negligible / minor adverse for the operation of the proposed Development and are **not significant**

Mitigation

- 4.2.36 Measures within the CoCP Part A and B (Application Document Ref 5.4.2.1 & 2) will be implemented through a Construction Environmental Management Plan (CEMP). The CoCP outlines that all construction activities will be undertaken to prevent spills, fires and emergency procedures.
- 4.2.37 Section 7.5 of the CoCP Part A, Water resources and flood risk, sets out a framework for the control of flood risk during construction, identifying a number of 'standard' mitigation measures which will be implemented whilst construction work takes place. These will be reflected in an appended plan to/as part of the CEMP.
- 4.2.38 The CoCP Part A (Application Document Reference: 5.4.2.1), Section 5.5, Fire prevention and control, requires the Principal Contractor(s) to have in place appropriate plans and management controls to prevent fires (in line with HSE standards).
- 4.2.39 Post grant of the DCO and prior to commencement of construction a detailed CEMP will be prepared and agreed as secured through the DCO requirements. This will incorporate any measures required by the Environment Agency through

environmental permits (flood risk activities) for those aspects of the works that require a separate permit.

Potential environmental effects as a result of the vulnerability of the Proposed Development to storm events during construction

4.2.40 Based on the conclusions of ES Chapter 9, ES Chapter 20 and the FRA and accounting for the application of mitigation measures the potential environmental effects as a result of this risk event occurring are **not significant**.

4.3 Decommissioning

4.3.1 The following section covers the decommissioning activities of the existing Cambridge WWTP.

Vulnerability of the Proposed Development to the effect of major accidents during decommissioning

4.3.2 Risk events relating to major accidents during decommissioning are:

- Fire and explosion – decommissioning
- Major air emission during decommissioning of the existing Cambridge WWTP
- Malicious damage or vandalism – deliberate damage or trespass compromise the Proposed Development during decommissioning.

Event risk - fire and explosion decommissioning digestors

4.3.3 In certain conditions and concentrations in air, biogas from the decommissioning activities of the existing plant could ignite in an explosive manner. The decommissioning of the anaerobic digestors can create an explosive environment and fire risk. This could impact the environment and human health.

Mitigation

4.3.4 Decommissioning works will be carried out by specialist contractors managed under measures within the Dangerous Substances and Explosive Atmosphere (DSEAR).

4.3.5 Decommissioning of the existing Cambridge WWTP would be subject to a Decommissioning Management Plan which is to be agreed with the Local Planning Authority. An outline Decommissioning Management Plan (Application document reference 7.18) describes measure applied to this activity. Post grant of the DCO and prior to commencement of decommissioning a detailed plan will be prepared and agreed with the Local Planning Authority.

4.3.6 In the event of an incident occurring as a result of malicious damage or vandalism the Principal Contractor(s) would enact Emergency Response Plans. These plans are also required by Part A of the CoCP (section 5.6) which requires that emergency procedures are developed in line ISO 14001 criteria and HSE standards by the appointed Principal Contractor(s) and incorporated into an Emergency Preparedness Plan(s).

- 4.3.7 The CoCP Part A (Application Document Reference: 5.4.2.1), Section 5.5, Fire prevention and control, requires the Principal Contractor(s) to have in place appropriate plans and management controls to prevent fires (in line with HSE standards).

Potential environmental effects as a result of the vulnerability of the Proposed Development to fire and explosion during decommissioning

- 4.3.8 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk - major leaks(airborne substances) Event risk - major leaks(airborne substances)

- 4.3.9 Decommissioning works will include the washdown of tanks, flushing of pipes and removal of residual sludge to prevent risk to the surrounding environment once the WWTP is no longer required operationally. These activities are completed as part of the permit surrender process for the existing Cambridge WWTP.

- 4.3.10 The desludging and cleaning of the tanks could expose toxic airborne substance into the nearby environment and people.

Mitigation

- 4.3.11 Decommissioning works will be carried out by specialist contractors managed under measures within the Dangerous Substances and Explosive Atmosphere (DSEAR).

- 4.3.12 Decommissioning of the existing Cambridge WWTP would be subject to a Decommissioning Management Plan which is to be agreed with the Local Planning Authority. An outline Decommissioning Management Plan (Application document reference 7.18) describes measure applied to this activity. Post grant of the DCO and prior to commencement of decommissioning a detailed plan will be prepared and agreed with the Local Planning Authority.

- 4.3.13 In the event of an incident occurring as a result of malicious damage or vandalism the Principal Contractor(s) would enact Emergency Response Plans. These plans are also required by section 5.6 of Part A of the CoCP which requires that emergency procedures are developed in line ISO 14001 criteria and HSE standards by the appointed Principal Contractor(s) and incorporated into an Emergency Preparedness Plan(s).

Potential environmental effects as a result of the vulnerability of the Proposed Development due to major leaks of airborne substances

- 4.3.14 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk – malicious damage or vandalism

- 4.3.15 See paragraph 4.2.24 to 4.2.26.

4.4 Operation

4.4.1 This section considers the effects relating to the occurrence of risk events during the operation and maintenance of the Proposed Development.

Vulnerability of the Proposed Development to major accidents

4.4.2 Risk events relating to major accidents in operation are:

- Landslip to earthworks
- Changes to avian population alters bird strike potential
- Presence of tall structures and lighting results in aviation risk
- Fire and explosion – battery storage
- Fire and explosion – anaerobic digestion
- Fire and explosion – LNG storage
- Cyber security – attack compromises normal operations of the Proposed WWTP
- Malicious damage or vandalism – deliberate damage or trespass compromise the Proposed WWTP.

Event risk – landslip

4.4.3 The earth bank surrounding the proposed WWTP may be subject to extreme conditions (cycles of drought and high rainfall) that could result in the earthwork structure being compromised and suffering from failure. This could result in earth slips within the proposed WWTP and or external to the earth bank.

4.4.4 This could result in a range of impacts including:

- Injury to people within and external to the earth bank
- Damage to habitats and planting as part of the landscape masterplan
- Access obstruction within or to/from the proposed WWTP and or obstruction to recreational paths within the landscape masterplan area.
- Secondary effects such a blocking of surface water drainage networks or impedance to treatment processes affecting effluent quality

4.4.5 Ground Investigations (GI) of the Proposed Development have been completed and are assessed within Chapter 14 Land Quality (Application Document Ref 5.2.14).

4.4.6 Chapter 9: Climate resilience (Application Document Ref 5.2.9) assesses the potential risks and effects associated with extreme weather events including increased winter and heavy rainfall events and drought events.

Mitigation

- 4.4.7 The earth bank will be designed and constructed according to industry best practice earthworks standards. The earth bank would be designed to have effective drainage and would be subject to ongoing monitoring as part of the Landscape Ecology and Recreation Management Plan (LERMP) which would be applied for 30 years as a minimum as part of the biodiversity net gain (BNG) obligation (Application Doc Ref 5.4.8.14).
- 4.4.8 In the event that structural failure of the earth bank occurred the Applicant would implement operational management plans and procedures. The management plans and procedures will sit within the EMS required under the environmental permitting regime. Including enacting emergency response plans.
- 4.4.9 Furthermore, the commitments to deliver mitigation (landscape screening) and the commitment to BNG mean that the Applicant would be obligated to fully restore the earth bank and associated planting.

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result of landslip

- 4.4.10 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk – aviation hazards (birdstrike)

- 4.4.11 The area of land required for the landscape masterplan and proposed WWTP is within the safeguarding area for Cambridge Airport. Land use changes in the safeguarding area can lead to changes in bird assemblages which present new or greater risks of birdstrike.
- 4.4.12 During the operation phase the maturing landscape planting represent land use changes that could alter bird populations within the safeguarding zone.
- 4.4.13 The Application includes a Wildlife Hazard Management Plan (Application Doc ref 5.4.18), of which section 4 assesses wildlife hazard potential associated with the Proposed Development.
- 4.4.14 Section 4 of the outline Wildlife Hazard Management Plan (WHMP) (Application Document Reference 5.4.8.18 provides a detailed assessment of bird assemblages and risks in operation.
- 4.4.15 The Proposed Development has been assessed in the context of the regulatory framework including Regulation (EU) 139/2014 (European Aviation Safety Agency 2018), and guidelines set out in the UK Government DfT / ODPM Circular 1/2003 (Department of Transport 2002) and CAP 772 Wildlife Hazard Management at Aerodromes, produced by the Civil Aviation Authority (2017).

Mitigation

- 4.4.16 Operation and maintenance activities required for the proposed WWTP would be subject to operational management plans and procedures. The management plans

and procedures will sit within the EMS required under the environmental permitting regime. The Applicant will implement the EMS that will set out the responsibilities of the site management to control risks arising from the proposed WWTP during operations.

4.4.17 The EMS will also include appropriate definitions of roles and responsibilities to ensure compliance with any conditions related to the requirement to manage risk from the Proposed Development including wildlife hazards (birdstrike) that may be associated with the proposed WWTP including landscaping.

4.4.18 Implementation of the EMS will include appointing an Environmental Manager who will be responsible for managing environmental issues through operational monitoring, including ongoing and adaptive risk management, subject to regular review. The Environment Manager will be responsible for the preparation and implementation of the operation WHMP including appointing suitably qualified and experience staff or contractors to undertake operational monitoring of birdstrike risk.

Further mitigation

4.4.19 An Operational Wildlife Hazard Management Plan would be prepared post consent in relation to the operation and maintenance of the proposed WWTP.

4.4.20 The Outline Wildlife Hazard Management Plan (Application Document Reference 5.4.8.18) requires further engagement with Cambridge Airport in relation to the production of a detailed WHMP for the operation and maintenance of the Proposed Development. The operational WHMP will align with changing landscape management activities and take account of the results of ongoing ecological monitoring of bird populations in the areas of land required for the landscape masterplan.

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result of changes to bird assemblages

4.4.21 The application of a WHMP and regular updates to the measures to adapt to changing conditions within the landscape masterplan will mean continued and adaptive management of the aviation risk from bird populations.

4.4.22 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk – aviation hazards (buildings, solar and lighting installations)

4.4.23 The area of land required for the construction of the Proposed Development is within the safeguarding area for Cambridge. The presence of new tall buildings may present a collision risk to aircraft. The presence of new lighting in this location may also present a risk to aviation. Responding to the changes in collision risks may result in delays to aviation users.

4.4.24 Effects of aviation incidents are delay to aviation journeys, damage to aircraft and the event of a serious aircraft accident fatal injuries and secondary effects from

firefighting and at the ground (such as fuel leaks, fire damage and contamination from fire water and foams).

- 4.4.25 A glint and glare study has been completed in support of the Application (Application Document Reference 5.4.15.4) to consider the possible impact upon road safety, residential amenity, and aviation activity at Cambridge Airport. No significant impacts are predicted upon aviation activity at Cambridge Airport.

Mitigation

- 4.4.26 Structures have been minimised to avoid the 55.82m Above Ordnance Datum (AOD) threshold indicated by the operators of Cambridge Airport.
- 4.4.27 The Lighting Design Strategy (Application Document Reference 5.4.2.5) sets out the approach to lighting within the Proposed Development and seeks to minimise the introduction of new lighting features in operation. Measures include avoiding lighting along the access road, the use of timed downward pointing lighting in external carpark areas, the use of structures to reduce light spill.
- 4.4.28 Further consultation with Cambridge Airport will be in relation to the detailed design and orientation of buildings and lighting.

Further mitigation

- 4.4.29 There will be ongoing engagement with Cambridge Airport in relation to communication of emergency works and planned maintenance requiring short term night time illuminations within the Proposed WWTP. This measure can be incorporated with the EMS procedures for the operational WWTP.

Potential environmental effects as a result of the vulnerability of the Proposed Development as a result of aviation hazards

- 4.4.30 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk- fire or explosion: storage of Liquefied Natural Gas(LNG)

- 4.4.31 Fires within the Proposed Development could cause a site wide outage impacting the normal operation of the proposed WWTP.
- 4.4.32 The storage of Liquefied Natural Gas (LNG) presents a fire and explosion hazard as it is highly flammable. If not contained correctly the storage facility could catch fire or explode.
- 4.4.33 The impacts from fires and explosions are damage/pollution of the local environment and risks to people.
- 4.4.34 Effects include pollution of soils and groundwater from fire water and foams, respiratory irritation to people from emission to air, impacts to local communities (disturbance due to the event). Secondary effects may occur from damage to the normal operations of the proposed WWTP with effects such as temporary poor water quality should effluent treatment be affected.

Mitigation

4.4.35 The design and installation of the storage facility would be in line with industry standards. Design features reducing the risk of damage to the LNG storage facility include:

- Siting controls and provision of adequate buffers to other infrastructure
- The inclusion of lightning protection in accordance with industry standards
- The inclusion of impact protection barriers around the storage facility
- The inclusion and use of the correct level of intrinsically safe equipment and protective systems would minimise the available ignition sources in a flammable atmosphere if there were to be a loss of LNG in the Proposed Development and reduce the risk of a major accident

4.4.36 To mitigation against fires the site operations will follow the industry guidance on lightning protection, storage of flammable liquids and electrical installations (HSE, 2023)

4.4.37 To mitigation against an on-site incident, under the EMS and operation procedures development for the proposed WWTP, the operator will prepare and test emergency procedures for dealing with the consequences of a major accident. A written EMS for the proposed WWTP is a requirement of the environmental permitting regime.

4.4.38 Safety measure as outlined in the Equipment and Protective Systems for Use in Potentially Explosive Atmospheres Regulations 1996 and 2016 (Gov.uk, 2023) and DSEAR (HSE, 2023)

Potential environmental effects as a result of the vulnerability of the Proposed Development to fire risk from LNG storage

4.4.39 The potential environmental effects as a result of this risk event occurring are **not significant** taking into account the application of mitigation measures.

Event risk- fire or explosion: anaerobic digester

4.4.40 Anaerobic digestors have a highly flammable atmosphere with risk of fire and explosion. Fires within the Proposed Development can cause a site wide outage impacting the use of the WWTP.

4.4.41 Accidental explosions and fires can impact human health through respiratory irritation, illness and nuisance to nearby populations, result in injury to people and result in pollution to air, water and land (Environment Agency, 2022).

Mitigation

4.4.42 The design of the anaerobic digestors includes measures to manage the risk of a major accident and will be compliant with DSEAR.

4.4.43 Specific design measures in relation to fire safety include:

- Gas and fire and leak detection systems to be installed into boiler house.

- Inclusion of valves to allow controlled emergency release of gas.
- Inclusion of emergency flare in design

- 4.4.44 Area Classification will be completed for Hazardous Area Classification for Flammable Gases and Vapours in accordance with industry standards to comply DSEAR. Area classification is a method of analysing and classifying the environment where explosive gas atmospheres may occur. The main purpose is to facilitate the proper selection and installation of apparatus to be used safely in that environment, taking into account the properties of the flammable materials that will be present. Outputs will be used to define hazard zones within the facility and subsequently define the types of equipment permitted in specific zones as well as informing the development of operational control plans.
- 4.4.45 Systems forming part of the anaerobic digestion equipment will be designed in line with the Applicants DSEAR guidance.
- 4.4.46 The biogas holder is to be shielded from areas of frequent access of the general public by the earth bank. The gas holder is located over 300m from the A14 and approximately 800m from the nearest public dwelling.
- 4.4.47 The risk of fire from flaring will be managed through designed in line with the Applicants DSEAR guidance. Specialist designers and subcontractors will be used for biogas flare design.
- 4.4.48 To mitigation against an on-site incident, under the EMS and operation procedures development for the proposed WWTP, the operator will prepare and test emergency procedures for dealing with the consequences of a major accident. The management system is required to include the risk management measures specified in the HAZOP and DSEAR plans and cover planned maintenance (Environment Agency, 2022)
- 4.4.49 The DSEAR assessment covers unauthorised access to site and maintenance workers, or contractors are not permitted on site without a suitable qualification and permission to do the work within the digester facility.
- Potential environmental effects as a result of the vulnerability of the Proposed Development to fire and explosion risk from anaerobic digestors*
- 4.4.50 The potential environmental effects as a result of this risk event occurring are not significant taking into account the application of mitigation measures.
- Event risk- fire or explosion: battery storage*
- 4.4.51 The installation of solar power generation will require an on-site battery energy storage system as part of the proposal. There are two primary technologies that currently could be utilised at the proposed WWTP – a lithium-ion battery, or variant of (e.g. Tesla) or a vanadium redox flow battery e.g. Invinity, which has inherently low fire risk.
- 4.4.52 Batteries over heating present a fire and in the worst-case explosion presenting a risk to life and human health. Such events have the associated impacts relating to fire response such as fire water and foams being released into the atmosphere.

4.4.53 As noted in paragraph 4.4.2 accidental explosions and fires can impact human health through respiratory irritation, illness and nuisance to nearby populations, result in injury to people and result in pollution to air, water and land.

Mitigation

4.4.54 the Proposed Development will use a cooling system which is designed to regulate temperatures within safe conditions to minimize risk of fire. The Proposed Development will have a monitoring system, fire and smoke detection. These will be linked to the site wide control system, which will be locally and remotely monitored.

4.4.55 To mitigation against an on-site incident, under the EMS and operation procedures development for the proposed WWTP, the operator will prepare and test emergency procedures for dealing with the consequences of a major accident.

4.4.56 The drainage system includes a segregated system which would capture run-off from firefighting activities for treatment within the proposed WWTP. The Drainage Strategy (App Doc Ref 5.4.20.12) requires that the requirements of the Environment Agency Approach to Groundwater Protection (Environment Agency, 2018) are to be followed in relation to the detailed drainage design. Section 4.8 of the Drainage Strategy (App Doc Ref 5.4.20.12) sets out how the drainage design will align with the Approach to Groundwater Protection.

Potential environmental effects as a result of the vulnerability of the Proposed Development to fire and explosion risk from battery storage

4.4.57 The potential environmental effects as a result of this risk event occurring are not significant taking into account the application of mitigation measures.

Event risk – Compromised site security

4.4.58 The Proposed Development is vulnerable to malicious attack resulting in damaging equipment within the site facilities. Damage to the equipment can lead to leaks and spillages of chemicals or fuels resulting in contamination or release of hazardous substances to the environment.

Mitigation

4.4.59 Design measures include the earth bank as well as perimeter fencing, the use of surveillance equipment to monitor the facility, security-controlled access and egress points.

4.4.60 Physical security design measures following NSPA guidance (NSPA, 2023) will be incorporated to ensuring the site is secure from unauthorized personnel.

4.4.61 Visitors to the Discovery Centre will be by appointment only.

4.4.62 To mitigation against an on-site incident, under the EMS and operation procedures development for the proposed WWTP, the operator will prepare and test emergency procedures for dealing with the consequences of a major accident including those resulting from malicious attacks.

Potential environmental effects as a result of the vulnerability of the Proposed Development to compromised site security

4.4.63 The potential environmental effects as a result of this risk event occurring are not significant taking into account the application of mitigation measures.

Event risk – Compromised cyber security

4.4.64 The Proposed Development is classed as critical national infrastructure (CNI). Disruption to this could cause serious damage to equipment, environmental and human health and the economy.

4.4.65 Attacks to CNI via digital networks could, for example, shut down or alter processes within the proposed WWTP with subsequent impacts resulting in changes to waste water treatment and effluent quality which could result in adverse effects to water quality and ecological receptors in the River Cam.

Mitigation

4.4.66 Prevention of unauthorized users and devices from accessing the network will be through the use software security design measures as stated in the NCSC guidance (NCSC, 2023).

4.4.67 In the event that a cyber attack was successful the operator would implement operational management plans and procedures. The management plans and procedures will sit within the EMS required under the environmental permitting regime. Including enacting emergency response and pollution incident response plans.

Potential environmental effects as a result of the vulnerability of the Proposed Development to compromised cyber security

4.4.68 The potential environmental effects as a result of this risk event occurring are not significant taking into account the application of mitigation measures.

Vulnerability of the Proposed Development to natural disasters

4.4.69 Risk events relating to natural disasters occurring during operation are :

- Storm events – result in river flooding / surface water inundation
- Extreme events (high heat events)– affect the Proposed Development during operations.

Event risk – extreme events (storms and heat events)

4.4.70 Severe weather such as storms could cause damage to equipment and/or flooding within the Proposed Development. Prolonged and or high intensity rainfall events can also result in capacity exceedance and the need to use storm overflows to ensure the Proposed Development does not flood.

- 4.4.71 Flooding within the proposed WWTP could become contaminated with materials from with the proposed WWTP and transferred to ground and surface water. This in turn could affect habitats and wildlife as well as presenting a risk to human health.
- 4.4.72 Flooding presents a risk to human health as well as potentially impacting the ability to access and operate the proposed WWTP.
- 4.4.73 The effects of flood events are also described the FRA (Application Document Reference 5.4.20.5).
- 4.4.74 Extreme heat events can also affect the operation of water treatment facilities including impacts to the anaerobic treatment processes and changes to optimum operating temperatures. Changes to treatment performance may impact effluent quality. The effects of heat events are described in Chapter 9: Climate Resilience.

Mitigation

- 4.4.75 To manage higher storm flows in the future and to continuously meet evolving permitting requirements, even in the case of low flow and future drought conditions, the Proposed Development will have capacity to add additional infrastructure including more storm storage, heat recovery, cooling system treatment infrastructure.
- 4.4.76 The Drainage Strategy (App Doc Ref 5.4.20.12) sets out how future climate predictions will be accounted for within the final drainage design to minimise the risk of flooding to the proposed WWTP. The strategy considers rainwater volumes for a 1 in 100 year event with an allowance for climate change (20% and 40%). The strategy considers attenuation and storage requirements under each scenario to be provided for in the detailed design.
- 4.4.77 The drainage strategy also requires that the surface water drainage design adopt a segregated system for areas of the proposed WWTP that present a pollution risk such as through spills so that run off is captured and routed through the proposed WWTP for treatment. The estimated greenfield runoff rates are subject to further discussion and agreement with the Lead Local Flood Authority (LLFA) as part of the detailed design development. The final drainage design will be prepared post consent and approved by the LLFA.
- 4.4.78 The Drainage Strategy (App Doc Ref 5.4.20.12) requires that the requirements of the Environment Agency Approach to Groundwater Protection (Environment Agency, 2018) are to be followed in relation to the detailed drainage design. Section 4.8 of the Drainage Strategy (App Doc Ref 5.4.20.12) sets out how the drainage design will align with the Approach to Groundwater Protection.

Potential environmental effects as a result of the vulnerability of the Proposed Development to extreme weather events (storms and high heat events)

- 4.4.79 The potential environmental effects as a result of this risk event occurring are not significant taking into account the application of mitigation measures.

5 Conclusion

- 5.1.1 The effects, and their significance, of the Proposed Development with respect to major accidents and disasters has been assessed on the information currently available.
- 5.1.2 The approach to the assessment has applied guidance outlined within the IEMA EIA Guide to: Major Accidents and Disasters in EIA: A Primer (IEMA, 2020)).
- 5.1.3 Event risks relevant to the construction and operation of the Proposed Development and the decommissioning the existing Cambridge WWTP for the purpose of permit surrender have been assessed in this Chapter.
- 5.1.4 Section 2.7 of this chapter explains mitigation measures in place in the construction and operational phases of the Proposed Development to ensure that the Proposed Development's vulnerability to accidents and disasters results in the risk of potential significant effects being ALARP.
- 5.1.5 Taking into account mitigation there are no expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters.

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