



Appendix 17-PD-1: Scoping of Major Accident and Disaster Risks

Table of Contents

Appendix 17-PD-1: Scoping of Major Accident and Disaster Risks	1
1. Introduction	1
2. Long List of Major Accidents and Disasters	1
3. References	10

Tables

Table 2-1 Scoping of Major Accident and Disaster Risks	2
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Appendix 17-PD-1: Scoping of Major Accident and Disaster Risks

1. Introduction

- 1.1.1 This appendix provides an overview of the scoping of the relevant hazards and threats for the Proposed Development, as first presented in the Scoping Report (see Appendix 17-1 in the Scoping Report contained within **Appendix 5-PD-1** in **Volume 4** of this PEI Report).
- 1.1.2 The assessment methodology for the scoping of the MA&Ds assessment has followed the staged process presented in Chapter 17: Major Accidents and Disasters of the Scoping Report (see **Appendix 5-PD-1** in **Volume 4** of this PEI Report). The assumptions, limitations and uncertainties presented in Chapter 17: Major Accidents and Disasters of the EIA Scoping Report (see **Appendix 5-PD-1** in **Volume 4** of this PEI Report) remain applicable.

2. Long List of Major Accidents and Disasters

2.1 Introduction

- 2.1.1 **Table 2-1** Table 2-1 presents the scoping of MA&D hazards and threats for the construction and operational phases of the Proposed Development (i.e. covering stages 1 to 2 of the MA&Ds staged methodology, as set out in the ISEP primer (Ref. 1). This was first presented in Chapter 17: Major Accidents and Disasters of the EIA Scoping Report (see **Appendix 5-PD-1** of **Volume 4** of this PEI Report) and has been updated where possible for the assessment of MA&Ds within this PEI Report.
- 2.1.2 Hazards and threats that were scope in at EIA Scoping are further assessed in the Preliminary Environmental Information Report (PEI Report) chapter where possible (see **Chapter 17: Major Accidents and Disasters** in **Volume 2** of this PEI Report) and the Environmental Statement (ES).
- 2.1.3 Hazards and threats scoped out whilst not be covered in the standalone MA&D assessment, may be addressed elsewhere in the PEI Report and ES (for example flood risk is addressed in **Appendix 22-PD-3: Preliminary Flood Risk Assessment** in PEI Report **Volume 4**), as part of another technical disciplines assessment (as signposted in Table 2-1**Table 2-1**). These are not assessed again for MA&Ds to avoid double counting of effects.

Table 2-1: Scoping of Major Accident and Disaster Risks

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
Construction Phase							
Flooding from rivers, surface water, groundwater, reservoirs, canals and sewers.	All	Extreme weather event Risk of failure of the reservoir embankment during construction	Flood event. Surface water flooding. Flash flooding. Flooding as a result of reservoirs or canals bursting their banks. Flooding as a result of measures to deal with excess water becoming overwhelmed and/or failing.	Nearby sensitive environmental receptors. Population in surrounding residential areas. Key infrastructure. Workers, including temporary workers or visitors, on the Site. Proposed Development	Serious harm to sensitive environmental receptors. Evacuation from homes and/or the area. Human injury and health impacts.	The Outline Construction Environmental Management Plan (Outline CEMP), which will be submitted with the Development Consent Order (DCO) application, will incorporate measures to reduce the risk of flooding to the construction site and to off-site receptors. A Qualified Civil engineer from Inspecting Engineers Panel under Reservoirs Act 1975 will be appointed to oversee the works. Canal & River Trust's (the 'Trust') process to be followed which involves creating a Temporary Water Level Management Plan and Flood Contingency Plan. In the event of emergency, Reservoir Onsite flood plan will be initiated to manage the incident. The Trust's Emergency Plan enables isolation of section of canal to reduce length of canal and therefore volume of water released. The permanent site drainage system, as set out within a Drainage Strategy to be submitted with the DCO application, will incorporate a range of measures to ensure that the Proposed Development is not at risk from flooding and that it does not increase flood risk to offsite receptors. A Flood Risk Assessment will be submitted with the DCO application to confirm that the design of the Proposed Development would not alter residual flood risk from all sources.	Out
Storms	All	Extreme weather event	Movement of debris and loose construction equipment. Works within the canal network affecting control of storm water. Storms overwhelming reservoir overflow capacity,	Workers, including temporary workers or visitors, on the Site. Proposed Development Key infrastructure.	Human injury and health impacts Damage to infrastructure	Commentary on the projected trends associated with the UK Climate Projection 2018 is provided in Chapter 10: Climate in PEI Report Volume 2. Whilst the presence of construction workers would introduce new receptors, arrangements would be put in place to ensure all risks are	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
			leading to breach of embankment.			minimised to be as low as reasonably practicable (ALARP). For example, this would include transferring storm flows past the works. First notification of a weather event will come from the Met Office, probably as an Early Warning within the National Severe Weather Warnings Service.	
Droughts	All	Extreme weather event	Ground shrinkage.	Proposed Development	Damage to infrastructure	The Outline CEMP will set out measures for the monitoring of adverse weather conditions, which could impact on the construction works, with works to be stopped, if weather conditions are unsafe to continue. The Outline CEMP will also include requirements for emergency preparedness and response plans.	Out
Heatwaves	All	Extreme weather event	Impact on the ability of the construction workers of the Proposed Development to work.	Workers, including temporary workers or visitors, on the Site.	Human injury and health impacts	Mitigation measures also include the implementation of a safe system of work which would be produced by the contractor(s) to state how health and safety matters are managed, risks are identified and reduced in accordance with the current best practices and legal requirements.	Out
Low temperatures and heavy snow (extreme cold weather resulting in snow and ice)	All	Low temperatures and heavy snow	Snow and ice causing a construction traffic accident or other construction accident.	Workers, including temporary workers or visitors, on the Site. Proposed Development	Human injury and health impacts Damage to infrastructure		Out
Wildfires	All	Wildfire caused by drought, heatwaves or lightning strike spreading to construction machinery, fuel storage, other buildings and the surrounding environment.	Dry conditions due to drought and/or heatwave enabling a fire to spread to construction machinery and other machinery and buildings Fire spreading from construction machinery to surrounding environment and infrastructure	Workers, including temporary workers or visitors, on the Site. Nearby sensitive environmental receptors. Key infrastructure. Proposed Development	Human injury and health impacts Damage to property and infrastructure. Serious harm to sensitive environmental receptors.	Fire safety risks at the construction site will be managed in compliance with CDM Regulations 2015 and relevant good industry practice. A Fire Risk Assessment will be completed prior to construction and implemented to manage the risks throughout construction, including emergency plans and procedures and measures for the safe storage and handling of fuel.	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
Ground or structural collapse	All	Failure of structure or geotechnical solution Unforeseen events such as unidentified mine workings and/or underground faults	Canal bank collapse during canal bank raising and or works.	Workers, including temporary workers or visitors, on the Site. Nearby sensitive environmental and residential receptors. Key infrastructure. Proposed Development	Human injury and health impacts Damage to property and infrastructure. Serious harm to sensitive environmental receptors.	These risks would be minimised through geotechnical design in accordance with relevant standards. Further assessment of the geotechnical and geo-environmental ground conditions underlying the site at specific areas would be undertaken, if deemed necessary at detailed design. An assessment of risks associated with ground stability is presented as part of Chapter 14: Ground Conditions in PEI Report Volume 2 . The Trust's existing emergency planning procedures also enable isolation of sections of canal, if required.	Out
Fire/ explosion (including from unexploded ordnance (UXO) or utility strike)	All	Fire / Explosions	Fire on-site during construction Disturbance of UXO during construction leading to explosion	Workers, including temporary workers or visitors, on the Site. Adjacent sensitive environmental receptors and human receptors in surrounding residential areas. Key infrastructure. Proposed Development	Human injury and health impacts Serious harm to sensitive environmental receptors. Damage to property and infrastructure	Any response required on site would be covered by the emergency arrangements and the implementation of a safe system of work which would be produced by the contractor(s) to set out how health and safety matters are managed, risks are identified and reduced in accordance with the current best practices and legal requirements. A fire risk assessment and emergency arrangements would be set out for the construction phase, as required, through the requirements for fire prevention and control on site set out in the CEMP. Note that PINS have stated in their Scoping Opinion (see Appendix 5-PD-2 in Volume 4 of this PEI Report, that were UXO risk is found to high across the Site, then the assessment of MA&Ds must consider fire/explosion (including from unexploded ordnance (UXO) or utility strike) during construction. If the Phase 1 desk-based assessment, which will form part of the baseline for Chapter 14: Ground Conditions, for the ES considers UXO risk to be high for any part of the study area, fire/explosion (including from unexploded ordnance (UXO) or utility strike) during construction will be assessed in relation to MA&Ds in the ES. The CEMP will outline the procedure required if a UXO is found during construction.	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
Pipeline Burst	All	Pipeline Burst	During the construction existing pipelines could burst as a result of change in pressure or damage caused by the proposed works.	Workers onsite as well as the adjacent population in surrounding residential areas. Proposed Development	Damage to property and infrastructure.	If a pipeline burst was to occur during construction this would be managed in accordance with the existing procedures enforced by Affinity Water/ Severn Trent. The CEMP would also include measures related to unexpected water releases and how they would be controlled.	Out
Pollution Incident	All	Flash flooding Surface water flooding Fuel spillage Accidental release of chemicals Ground Contamination	Pollution event (caused by construction related fuel spillage or movement of contaminated ground) in hydrologically connected watercourse caused by flooding. Pollution event related to release of ground contaminants migrating due to construction work e.g. via runoff. Direct damage to surrounding environment by fuel spillage.	Workers onsite as well as the adjacent population in surrounding residential areas. Adjacent sensitive environmental receptors and human receptors in surrounding residential areas.	Human injury and health impacts Serious harm to sensitive environmental receptors.	Measures for pollution prevention and control will be set out within the CEMP, including the requirement for an Emergency Response Plan to be prepared to manage any incidents.	Out
Impairment, interruption or severance of existing utilities (electricity, gas, water and telecommunications).	All	Accidental strike of a live service connection	Groundworks could cause an accidental strike of a live service connection (e.g. sewer, water main, high-pressure gas main) by construction machinery	Workers, including temporary workers or visitors, on the Site. Key infrastructure	Human injury and health impacts Serious harm to sensitive environmental receptors Serious contamination of non-human receptors. Damage to infrastructure	The CEMP will include the requirement for measures for the protection of existing utilities to be established, such as inspection pits and clearly demarcated clearances. Moreover the DCO will likely include protective provisions in respect of statutory undertakers' apparatus.	Out
Full or partial obstruction of emergency services.	All	Temporary road closures or diversions	During construction works, temporary road closures or diversions could result in longer routes for emergency services.	Workers, including temporary workers or visitors, on the Site as well as adjacent sensitive human receptors.	Human injury and health impacts Delay of care to humans.	An assessment to journey delays is provided as part of Chapter 21: Traffic and Transport in PEI Report Volume 2 . Procedures to address any highway incidents or vehicle breakdown of construction traffic especially at peak times will be requirement of the	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
					Delay in emergency response activities.	Construction Traffic Management Plan (CTMP), which will be produced prior to construction.	
Outbreak of Disease including animal health-notifiable disease, emerging infectious disease and pandemic influenza.	All	During construction an Influenza type disease (pandemic) outbreak could occur.	Influenza type disease (pandemic) outbreak could spread amongst the workers, including temporary workers or visitors, on the Site	Workers onsite as well as the adjacent population in surrounding residential areas.	Human injury and health impacts	No Project-specific mitigation is identified. National and regional guidelines would be enforced on site as appropriate.	Out
Severe Meteorology	All	Electrical storm	Impact on the ability of the construction workers of the Proposed Development to work.	Workers onsite	Human injury and health impacts	There is considered to be no pathway for the baseline risk for these natural hazards to be increased. Whilst the presence of construction workers would introduce new receptor, a significant space weather event may cause people on the ground to receive an unusual radiation dose, however it would be far too small to produce an observable health effect.	Out
Earthquakes	All	Earthquake	No pathway exists to exacerbate the baseline risk Structural failure is considered under 'Ground or Structural Collapse'	As there is no pathway, there cannot be a receptor.	None identified as source-pathway receptor linkage is not present.	There is considered to be no pathway for the baseline risk for these natural hazards to be increased.	Out
Volcanic Eruptions	All	Volcanic eruption	No pathway exists to exacerbate the baseline risk	As there is no pathway, there cannot be a receptor.	None identified as source-pathway receptor linkage is not present.	There is considered to be no pathway for the baseline risk for these natural hazards to be increased.	Out
Road Traffic Accident on the wider traffic network	All	Transport accident involving construction vehicles	Collision between construction vehicles and/or non-site related vehicles	Road users of the surrounding network.	Human injury and health impacts	During the construction phase, additional vehicles movements would be introduced onto the local highway network and could increase the risk of a road traffic accident occurring. This risk would be managed through a CTMP.	Out
Railway Incident	Part 1b	Construction of Part 1b pipeline underneath railway	Ground settlement underneath the railway infrastructure	Existing rail infrastructure Users of the railway	Human injury and health impacts Damage to infrastructure	The section of Part 1b pipeline crossing the railway lines and HS2 safeguarded areas will be tunnelled. Tunnelling depth and detailed designs would be agreed with Network Rail,	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
		lines and HS2 safeguarded area				to minimise the risk of ground settlement underneath the railway infrastructure.	
Boating Incident on the Canal Network or on the Reservoirs	Parts 2 and 3	Boating Incident as a result of the presence of construction works and machinery within the canal or the reservoirs. Failure of locks, or user error leaving locks/gates open	Construction works causing navigational risks Navigational errors by users of the canals	Users of the canal and reservoirs Workers on-site Residential moorings located along the canals could experience direct impacts Residential properties located within immediate proximity to the canal and reservoirs could experience indirect impacts Users of transport corridors that cross the canals Sensitive environmental receptors	Human injury and health impacts Damage to infrastructure and property Serious contamination of sensitive environmental receptors.	It is considered that further assessment of navigational impacts associated with Part 2 and Part 3 of the Proposed Development should be undertaken.	In
Operational							
Flooding from rivers, surface water, groundwater, reservoirs, canals and sewers.	All	Extreme weather event	Flood event Surface water flooding Flash flooding Flooding as a result of reservoirs or canals bursting their banks	Workers, including temporary workers or visitors, on the Site. Nearby sensitive environmental receptors and human receptors in surrounding residential areas. Key infrastructure.	Human injury and health impacts Serious harm to sensitive environmental receptors. Evacuation from homes and/or the area.	The permanent site drainage system, as set out within the Drainage Strategy, will incorporate a range of measures to ensure that the Proposed Development is not at risk from flooding and that it does not increase flood risk to offsite receptors. A Flood Risk Assessment will be submitted with the DCO application to confirm that the drainage design of the Proposed Development would not alter residual flood risk.	Out
Drought	All	Extreme weather event	Impact on the ability of the Proposed Development to supply potable water to the surrounding population. Ground shrinkage	Human receptors in surrounding residential areas. Rivers Tame and Trent Infrastructure	Loss of access to a potable water supply Loss of waterflow within Rivers Tame and Trent Integrity of infrastructure elements being compromised	The Proposed Development is designed to provide potable water supply during periods of drought. During periods of drought, if required, abstraction of water from the existing Minworth Wastewater Recycling Centre can be reduced and water supply topped up by the water stored within the Daventry and Drayton Reservoirs.	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
						Further information of climate change resilience is included in Chapter 10: Climate in PEI Report Volume 2 .	
Low temperatures and heavy snow (extreme cold weather resulting in snow and ice)	All	Extreme weather event	Extreme cold weather resulting in snow and ice on site	Infrastructure at the Proposed Development	Human injury and health impacts Damage to infrastructure across the Proposed Development.	There is considered to be no pathway for the baseline risk for these existing major accident hazards to be increased.	Out
Pollution Incident	Parts 1a and 4a	Fuel spillage Accidental release of chemicals	Pollution event caused by release of chemicals during transportation/ release of chemicals at the site of the Water Treatment Works. Direct damage to surrounding environment by fuel spillage.	Fatality/injury to public Damage to infrastructure Damage to habitats and injury/fatality of species Adjacent sensitive environmental receptors and human receptors in surrounding residential areas.	Human injury and health impacts Serious harm to sensitive environmental receptors.	During the operational phase of the Proposed Development, any chemicals would be stored in accordance with the relevant standards and/or permits. These standards and/or permits would require the adoption of measures which include but are not limited to: - Expiry dates of chemicals clearly recorded. - Suitable strong containers and bunds are used for storage. - All above ground containers must be situated on hardstanding. In the event of a spillage or leak, measures will be adopted to contain and reduce the impact of the spillage or leak in accordance with relevant emergency procedures.	Out
General mains network outage causing the Proposed Development to lose power	Parts 1a and 4a	Power cut / failure of generators	Impact on the ability of the Proposed Development to supply potable water to the surrounding population.	Workers, including temporary workers or visitors, on the Site. Customers of the water company.	Loss of access to water supply. Human injury and health impacts Serious contamination of sensitive environmental receptors.	The Proposed Development would be designed to shut down safely in the event of loss of power or emergency back up generators provided, if required.	Out
Major accidents caused by malicious acts/vandalism against the	All	Civil unrest or protest, including public mass transport strikes or public disorder. Any attempt to expose, alter, disable, destroy,	Impact on the ability of the Proposed Development to supply potable water to the surrounding population.	Workers, including temporary workers or visitors, on the Site. Customers of the water company.	Loss of access to water supply. Human injury and health impacts Serious contamination of sensitive environmental receptors.	Security arrangements would be implemented for the safe operation of the Proposed Development, in line with existing Severn Trent, Canal & River Trust and Affinity Water operating procedures. It is considered that malicious acts / vandalism along the canal network and reservoirs, which may result in water pollution, would not impact on the	Out

Risk Event	Part of the Proposed Development	Source	Pathway	Receptor	Reasonable worst consequence if event did occur	Mitigation	Scope in or scope out
Proposed Development		steal or gain unauthorised access to or make unauthorised use of an asset.				ability of the Proposed Development to provide water supply, as the water abstracted from the Grand Union Canal would be subsequently treated.	
Railway Incident	Part 1b	Railway Incident	No pathway exists during operation	As there is no pathway, there cannot be a receptor.	None identified as source-pathway receptor linkage is not present.	There is considered to be no pathway for the baseline risk for these existing major accident hazards to be increased.	Out
Boating Incident on the Canal Network or on the Reservoirs	Parts 2 and 3	Boating Incident Failure of locks, or user error leaving locks/gates open.	Changes to existing infrastructure causing navigational risks or errors caused by users of the canal	Users of the canal and reservoirs Residential moorings located along the canals could experience direct impacts Residential properties located within immediate proximity to the canal and reservoir could experience indirect impacts Users of transport corridors that cross the canals Sensitive environmental receptors	Human injury and health impacts Damage to infrastructure and property Serious contamination of sensitive environmental receptors.	It is considered that further assessment of navigational impacts associated with Part 2 and Part 3 of the Proposed Development should be undertaken.	In
Pipeline burst leading to flooding	Parts 1b and 4b	Pipeline Burst	Failure or burst of pipework associated with the operation of the Proposed Development	Properties in adjacent areas. Proposed Development	Damage to property and infrastructure.	A Flood Risk Assessment will be submitted with the DCO application to confirm that the Proposed Development would not alter residual flood risk from all sources, including pipeline burst.	Out
Severe Meteorology	All	Electrical storm	Impact on the ability of the construction workers of the Proposed Development to work.	Workers onsite	Human injury and health impacts	There is considered to be no pathway for the baseline risk for these natural hazards to be increased.	Out

3. References

- Ref. 1 Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment [IEMA]) (2020) Major Accidents and Disasters in EIA: An ISEP Primer – October 2020.