

The background is a vibrant yellow. It is decorated with several abstract geometric shapes in shades of blue, teal, and white. These include circles, semi-circles, and rounded rectangular shapes, some of which are layered or overlapping. The shapes are scattered across the page, creating a modern and dynamic visual effect.

Appendix A20.2
Hazard Identification
Record

Contents

Appendix A20.2: Hazard Identification Record 1

Appendix A20.2: Hazard Identification Record

Risk Event	Source and / or Pathway	Receptor	Source Document	Reasonable Worst-Case Consequence (in the event an occurrence)	Primary / Tertiary Mitigation	Could this Lead to a Major Accident and / or Disaster with Existing Mitigation in Place?	Is the Reasonable Worst-Case Consequence Managed to an Acceptable Level with Existing Mitigation in Place?	If No, What Secondary Mitigation is Required to Reach an Acceptable Level?
Construction Phase								
Ground Collapse	Trench / excavation collapse Encountering soft ground Unforeseen ground conditions encountered during construction works Extreme weather event (e.g. storm-triggered landslide)	Members of the public	Safety in Design (SiD) Assessment Chapter 14 (Land, Soils, Geology & Hydrogeology) Chapter 8 (Climate)	Fatality / injury Disruption to community services or infrastructure	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Ground Investigation and topographical surveys to confirm ground conditions. Trench / excavation depths to be limited. Design developed to facilitate safe methods of work, including provision of sufficient working space. Safe methods of work to be developed by the Designer.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Contamination Event – Encountering / Release of Chemical or Biological Substances	Encountering contaminated material during excavation (e.g. soil, asbestos pipes) Electricity Supply Board (ESB) cables Non-Native, invasive or poisonous plant species (e.g. Japanese Knotweed) Dust, vapours and fumes Sediment mobilisation	Watercourses Groundwater Ecological receptors	Safety in Design (SiD) Assessment Chapter 13 (Water) Chapter 14 (Land, Soils, Geology & Hydrogeology)	Fatality / injury Contamination to environmental receptor	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Pre-construction checks confirm presence of contaminated ground. Utility survey to confirm presence of asbestos pipes. Environmental surveys to confirm presence of invasive or poisonous plant species. Safe methods of work to be developed by the appointed contractor(s) Where encountered, contaminated materials to be managed appropriately. Materials and substances specified by the Designer / appointed contractor(s) to be used during the Construction Phase could present health and safety hazards. Materials and substances to be carefully considered and managed.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Contact with / Damage to High Voltage Power Lines (Overhead or Buried)	Strike of buried power lines during excavation works Strike of overhead power lines (including Luas, railway) during works	Members of the public	Safety in Design (SiD) Assessment	Fatality / injury Fire / explosion Disruption to community services or infrastructure	Utility surveys to confirm location of electricity cables. Safe methods of work to be developed by the appointed contractor(s) for working in the vicinity of overhead services as per the ESB Code of Practice for Avoiding Danger from Overhead Electricity Lines.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Contact with / Damage to Low Voltage Power Lines, Telecom Services and / or Fibre Optic Cables	Strike of buried services / cables during excavation works	Members of the public	Safety in Design (SiD) Assessment	Fatality / injury Disruption to community services	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Utility surveys to confirm location of telecom and fibre optic cables Safe methods of work to be developed by the Designer for working in the vicinity of services.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Gas Explosion	Strike of buried gas mains during excavation works Leaked gas trapping under pavement slabs	Members of the public Environmental receptors (ecological site, heritage assets etc.)	Safety in Design (SiD) Assessment	Fatality / injury Fire / explosion Disruption to community services or infrastructure, including structural damage Irreversible damage to environmental receptors	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Utility surveys to confirm location of gas mains. Ground Penetrating Radar surveys to be undertaken. Safe methods of work to be developed by the Designer for working in the vicinity of services.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Contact with / Damage to Combined Sewers	Strike of combined sewers during excavation works	Members of the public Environmental receptors	Safety in Design (SiD) Assessment	Injury Contamination of environmental receptor from wastewater	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Utility surveys to confirm location of sewers.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A

Risk Event	Source and / or Pathway	Receptor	Source Document	Reasonable Worst-Case Consequence (in the event an occurrence)	Primary / Tertiary Mitigation	Could this Lead to a Major Accident and / or Disaster with Existing Mitigation in Place?	Is the Reasonable Worst-Case Consequence Managed to an Acceptable Level with Existing Mitigation in Place?	If No, What Secondary Mitigation is Required to Reach an Acceptable Level?
		(watercourses, groundwater, ecological site)		Disruption to community services or infrastructure (localised flooding)	Ground Penetrating Radar surveys to be undertaken. Safe methods of work to be developed by the Designer for working in the vicinity of services.			
Contact with / Damage to Mains Water Supply	Strike of water mains during excavation works	Members of the public	Safety in Design (SiD) Assessment	Injury Disruption to community services or infrastructure (localised flooding)	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Utility surveys to confirm location of water mains. Ground Penetrating Radar surveys to be undertaken. Safe methods of work to be developed by the Designer for working in the vicinity of services.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Road Traffic Related Incident	Works alongside live (including high-speed) traffic Errant vehicles entering works area Collision between construction vehicles and public vehicles at site entrances and exits Restricted visibility at junctions and property entrances Contact of construction cyclists, pedestrians and those with mobility impairment with the works, or slipping on uneven ground during works on the footpath	Members of the public	Safety in Design (SiD) Assessment National Risk Assessment for Ireland 2021/2022 Chapter 6 (Traffic & Transport)	Fatality / injury Vehicle fire Pollution of groundwater/surface water receptors due to fuel spillages, fire water run off Disruption to community services or infrastructure	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Traffic Management Plan to be implemented including appropriate speed restrictions. Traffic management planned in accordance with Chapter 8 Regulations. Physical segregation of traffic and pedestrians from the works including partial closing of roads and footpaths. Placement of warning signs. Trafficked lanes to be swept regularly. Temporary bus stop locations where necessary. Designer to minimise night work. Safe access to houses, businesses, schools, churches, hospitals, shopping centers, major car parks etc. to be maintained during working hours	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Rail or Luas Related Incident	Derailment of train / Luas Interaction with transport systems e.g. collision of construction vehicles with Luas	Members of the public	Safety in Design (SiD) Assessment National Risk Assessment for Ireland 2021/2022	Fatality / injury Fire Pollution of groundwater / surface water receptors due to fuel spillages, fire water run off Disruption to community services or infrastructure	Traffic management planned in accordance with Regulations. Traffic Management Plan to be implemented. Existing transport systems managed in accordance with relevant standards, codes and plans.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Structural Damage / Collapse (Bridges, Retaining Walls)	Works to existing structures / construction of new structures Strike of structures by construction vehicles/plant Vibration from construction activities	Members of the public Environmental receptors (heritage assets etc.)	Arup Designer Risk Assessments Chapter 9 (Noise & Vibration)	Fatality / injury Disruption to community services or infrastructure, including structural damage Irreversible damage to environmental receptors	Structural assessment of existing structures will be carried out to determine their suitability for the intended use and where modifications / repairs to the structure are required. Design developed to facilitate safe methods of work, including provision of sufficient working space. Safe methods of work to be developed by the designer / appointed contractor(s) Structures designed in accordance with relevant standards. Vibration assessment undertaken.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Extreme Weather (Including Snow / Low Temperatures, Storms, Flooding, Drought, High Temperatures)	Localised flooding Ground collapse/landslides Poor weather conditions resulting in traffic accidents Fallen trees	Members of the public	National Risk Assessment for Ireland 2020 Chapter 8 (Climate)	Fatality / injury Contamination of environmental receptor from wastewater (flooding) Disruption to community services or infrastructure	Flood Risk Assessment undertaken to inform design.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures by design outlined are correctly implemented.	N/A

Risk Event	Source and / or Pathway	Receptor	Source Document	Reasonable Worst-Case Consequence (in the event an occurrence)	Primary / Tertiary Mitigation	Could this Lead to a Major Accident and / or Disaster with Existing Mitigation in Place?	Is the Reasonable Worst-Case Consequence Managed to an Acceptable Level with Existing Mitigation in Place?	If No, What Secondary Mitigation is Required to Reach an Acceptable Level?
	Disruption to services (e.g. trees striking overhead cables)							
Fire	Vehicle fire (due to road traffic incident) Wildfire (due to extreme weather event) Arson Gas explosion (utility strike during excavation works)	Members of the public Environmental receptors (heritage assets etc.)	National Risk Assessment for Ireland 2021/2022	Fatality / injury Disruption to community services or infrastructure, including structural damage Pollution of groundwater / surface water receptors due fire water run off Irreversible damage to environmental receptor	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan. Utility surveys to confirm location of gas mains. Ground Penetrating Radar surveys to be undertaken. Safe methods of work to be developed by the designer / appointed contractor(s) for working in the vicinity of services.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Industrial Accidents	Seveso sites Impact on personnel in the event of an incident occurring at a Seveso site that is located within close proximity to works Disruption to emergency response due to Proposed Scheme construction works (incl. traffic delays and diversions)	Members of the public Environmental receptors (ecological site, heritage assets etc.)	National Risk Assessment for Ireland 2021/2022	Fatality / injury Fire / explosion Pollution of groundwater / surface water receptors due to fuel spillages, fire water run off Disruption / damage to community services or infrastructure Irreversible damage to environmental receptors	Seveso sites managed in accordance with S.I. No. 209/2015 – Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015. Applicant to consult with Health Service Authority (HSA) where the Proposed Scheme falls within the consultation zone of a Seveso site. Traffic Management Plan to be implemented to minimise disruption to emergency response vehicles	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Disruption to Emergency Response Vehicles (Fire, Ambulance and An Garda Síochána)	Traffic diversions and / or delays associated with the construction works for the Proposed Scheme	Members of the public Environmental receptors	Arup Designer Risk Assessments	Fatality / injury Disruption to community services or infrastructure Irreversible damage to environmental receptors	Traffic Management Plan to be implemented to minimise disruption to emergency response vehicles	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Operational Phase								
Structural Damage / Collapse	Strike of structures by vehicles	Members of the public Environmental receptors (heritage assets etc.)	Arup Designer Risk Assessments	Fatality / injury Disruption / damage to community services or infrastructure Irreversible damage to environmental receptor	Structures designed in accordance with and to be maintained in accordance with relevant standards.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Extreme Weather (Including Snow / Low Temperatures, Storms, Flooding, Drought, High Temperatures)	Localised flooding Ground collapse/landslides Poor weather conditions resulting in traffic accidents Fallen trees	Members of the public	National Risk Assessment for Ireland 2021/2022 Chapter 8 (Climate)	Fatality / injury Disruption to community services or infrastructure	Proposed Scheme design developed in accordance with standards, including climate change allowances.	Yes	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	N/A
Risk Events Managed by Health and Safety Legislation								
Falling from Height	Excavations Embankments Structures e.g. bridges, gantries Signs, poles, and lightning columns	Construction site personnel	Safety in Design (SiD) Assessment	Fatality / injury	Managed via Concept Design Stage Preliminary Safety and Health Plan. Design developed to facilitate safe methods of work, including provision of sufficient working space. Ground Investigation survey to confirm absence of soft ground.	No	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	

Risk Event	Source and / or Pathway	Receptor	Source Document	Reasonable Worst-Case Consequence (in the event an occurrence)	Primary / Tertiary Mitigation	Could this Lead to a Major Accident and / or Disaster with Existing Mitigation in Place?	Is the Reasonable Worst-Case Consequence Managed to an Acceptable Level with Existing Mitigation in Place?	If No, What Secondary Mitigation is Required to Reach an Acceptable Level?
Drowning	Work close to watercourses (e.g. Grand Canal etc.)	Construction site personnel	Safety in Design (SiD) Assessment	Fatality / injury	Managed via Concept Design Stage Preliminary Safety and Health Plan. Safe methods of work to be developed by the Designer for working close/adjacent to watercourses.	No	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	
Assembly or Dismantling of Heavy Prefabricated Components	Contact with moving plant, machinery and prefabricated components Demolition activities	Construction site personnel Members of the public	Safety in Design (SiD) Assessment	Fatality / injury	Managed via Concept Design Stage Preliminary Safety and Health Plan. Design developed to facilitate safe methods of work, including provision of sufficient working space. Heavy prefabricated components minimised through design.	No	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	
Contact with Heavy Machinery	Movement of heavy machinery Demolition activities	Construction site personnel	Safety in Design (SiD) Assessment	Fatality / injury	Managed via Concept Design Stage Preliminary Safety and Health Plan. Design developed to facilitate safe methods of work, including provision of sufficient working space.	No	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	
Demolition and Felling Activities	Dust generation and exposure Falling debris, trees / branches	Construction site personnel Members of the public	Safety in Design (SiD) Assessment	Fatality / injury	Managed via Concept Design Stage Preliminary Safety and Health Plan. Tree surveys to be undertaken. Number of trees to be removed to be minimised. Safe system of work to be implemented, including implementation and management of exclusion zones.	No	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	
Work which puts Persons at Risk from Chemical or Biological Substances Constituting a Particular Danger to the Safety and Health of Such Persons or Involving a Statutory Requirement for Health Monitoring	Zoonoses (e.g. Weil's disease) Construction chemicals including bitumen, cement, road marking paints, fuel, oils, etc. Exposure to dust, vapors, and fumes	Construction site personnel	Safety in Design (SiD) Assessment	Ill-health	Managed via Concept Design Stage Preliminary Safety and Health Plan and Construction Environmental Management Plan.	No	Yes - Considered to be managed to an acceptable level if all mitigation measures outlined are correctly implemented.	