

Connah's Quay Low Carbon Power

Environmental Statement Volume IV Appendix 22-A: Long List of Major Accidents and Disasters

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1. Long List of Major Accidents and Disasters Risk Events

1.1.1 Taking into consideration baseline conditions, the identified construction, commissioning, operational (including maintenance) and decommissioning activities which would be carried out as part of the Proposed Development, and the hazardous substances likely to be present, a long list of potential Major Accidents and Disaster risk events has been prepared and is presented in **Table 1**. Risk events identified to require further consideration are detailed within the **Chapter 22: Major Accidents and Disasters (EN010166/APP/6.2.22)**.

Table 1: Long List of Major Accidents and Disasters Risk Events

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
Construction Hazards			
Release of diesel	<p>Diesel would be used and / or temporarily stored on within the Main Development Area during construction as fuel for vehicles. A release which is ignited could cause harm to people via exposure to thermal radiation in a fire. A release which is unignited can cause harm to people if inhaled, ingested or exposed to skin. A release of diesel to the environment such as the Dee Estuary could result in harm to flora and fauna.</p>	<p>The quantities of Diesel to be stored on site would likely to be relatively minor (probably a few m³) and would be stored in appropriately bunded / self-contained areas. As such, an accidental release of diesel would be retained locally, and be readily cleaned up, due to these small quantities. If the release contacts with a source of ignition, the resulting fire would be relatively minor and localised, with a low potential for significant harm. Secondary containment measures would be adopted for temporary diesel storage. An appropriate firefighting strategy would be in place.</p>	No
Release of liquid concrete	<p>Liquid Concrete would likely be produced within the Main Development Area from cement powder, this is classified as an irritant to skin as contact can cause alkali burns. Cement powder can also harm the eyes and the respiratory system via inhalation of dust. If cement or wet concrete enters drains or watercourses, there is the potential for it to cause harm to the aquatic environment by increasing the pH of the water.</p>	<p>An accidental release of liquid concrete would be contained for recovery or disposal and is unlikely to reach the environmental receptors, i.e. the River Dee.</p>	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
Release of Acetylene	Acetylene is used in welding activities, stored in compressed gas cylinders and is a flammable gas. A release of Acetylene gas can lead to fires / explosions if ignited. An unignited release can cause asphyxiation in an enclosed area.	The quantity of material stored within the Main Development Area would be relatively small and limited to that contained within single cylinders, dotted around the site, associated with welding units. As such, an accidental release from a single cylinder is unlikely to cause harm to human health or the environment. If a release is ignited the resulting fire would be relatively minor and localised, with a low potential for significant harm.	No
Release of Nitrogen	Nitrogen is used in welding activities, stored in compressed gas cylinders. A release of Nitrogen can cause asphyxiation in an enclosed area.	The quantity of material stored within the Main Development Area would be relatively minor and limited to that contained within single cylinders, dotted around the site, associated with welding units. As such, an accidental release is unlikely to cause harm to human health.	No
Ground instability	<p>Construction activity results in disturbance of manmade or naturally occurring ground related hazards.</p> <p>Vibration causes ground instability / collapse / settlement.</p>	<p>Construction activity has the potential to cause instability and vibration resulting in ground instability / collapse / settlement which has the potential to cause harm to onsite workers.</p> <p>There is a need to consider relevant procedural controls and industry standards in more detail. Indicative measures are outlined in the Framework Construction Environmental Management Plan (CEMP)</p>	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		(EN010166/APP/6.5) and would be confirmed by the contractor(s) as part of the final CEMP.	
Structural collapse / accidental impact	Collapse of new and existing buildings, structures and excavations via accidental impact with vehicles or via other failure mechanisms.	Can cause injury / harm to onsite workers. Compliance with Construction Design Management (CDM) requirements, including Construction Phase Plan. There is a need to consider relevant procedural controls and industry standards in more detail. Indicative measures are outlined in the Framework CEMP (EN010166/APP/6.5) and would be confirmed by the contractor(s) as part of the final CEMP.	Yes
Utility (Pipeline or Electrical cable) strike / unexploded ordnance (UXO) strike	Impact on high-pressure gas pipelines could cause flammable gas to be released which, if ignited, can lead to injury / harm to persons within the vicinity. Potential damage to the environment via fire water run-off. Impact with utilities, i.e. a HV transmission cable would cause immediate harm to workers.	Can cause harm / injury to onsite workers and potentially the environment. Undertake UXO survey prior to commencement of site-based activities. There is a need to consider relevant procedural controls and industry standards in more detail. Indicative measures are outlined in the Framework CEMP (EN010166/APP/6.5) and would be confirmed by the contractor(s) as part of the final CEMP.	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
Domino Effects with neighbouring COMAH Establishments	<p>An event on the construction site impacts and escalates to a neighboring hazardous Control of Major Accident Hazards (COMAH) site. Alternatively, an event at a neighboring hazardous (COMAH) site impacts the Proposed Development.</p>	<p>Domino effects can cause harm / injury and is considered under the COMAH requirements of a site. The COMAH status of the Proposed Development is to be determined. There are a number of Lower and Upper-Tier COMAH establishments within the Major Accidents and Disasters (MAD) study area (5 km distance).</p>	Yes
Accidental Vehicle Impact	<p>Construction / delivery / Abnormal Indivisible Load (AIL) vehicle collisions which effect drivers or other onsite workers.</p>	<p>The Framework CEMP (EN010166/APP/6.5) identifies the relevant measures to control potential impacts from construction works. The Framework Construction Traffic Management Plan (CTMP) (EN010166/APP/6.6) identifies measures to improve the safety and reliability of deliveries to a site and reduce congestion.</p>	Yes
Aircraft / Drone Impact	<p>Aircraft / drone incident results in harm to site personnel and / or member of public and / or irreversible damage to environmental receptor (ecological site, watercourse etc.).</p>	<p>The Proposed Development is located in an area close to Hawarden airport (aerodrome). Consultation with Airbus has confirmed the absorber and HRSG stacks would infringe the outer horizontal surface. The requirement for aviation warning lighting to be fitted to chimney stacks and any construction equipment 50 metres or more in height (above ground level) is defined in Air Navigation Order Article 222. An aviation lighting scheme would also be submitted for</p>	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		approval from the Planning Authority in conjunction with the Ministry of Defence. Ongoing consultation with the relevant Airbus/ CAA would occur as required by the final CEMP to manage interfaces and define further appropriate control measures to minimise risk of collision, such as crane lighting.	
Vandalism	Harm to onsite personnel and / or members of the public off site from fire / explosion / loss of containment. Damage to environmental receptors from loss of containment.	Appropriate security measures would be installed at the construction site, including CCTV, site security and fencing to prevent trespassers and mitigate this risk to ALARP as per the Framework CEMP (EN010166/APP/6.5) . During construction, the on-site chemicals inventory would likely be limited to small volumes (diesel etc.) and thus the severity of a potential incident would be limited.	Yes
Commissioning Hazards			
Release of Nitrogen	Nitrogen may be used for gassing up and dewatering pipelines before operation, a release of which can cause asphyxiation in enclosed areas.	The Main Development Area is located in a well-ventilated area, with limited enclosed areas. This activity would be subject to a task risk assessment and appropriate mitigation controls put in place to prevent an accidental release. Consequently, an accidental release is unlikely to cause harm to human health.	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
Release of Propane	Propane is commonly used in pilot ignition systems for combustion plants and as reference gases in the continuous emissions monitoring systems installed within the stack(s). A release of this material could cause a fire / explosion if ignited.	The areas where propane would be used are well-ventilated areas and the quantities of propane to be used / stored onsite would be relatively small. Consequently, an accidental release is unlikely to cause harm to human health.	No
Wet Testing of Equipment and Charging Storage Vessels	Equipment needs to be clean when brought online and charged / used for the first time. If equipment has not been sufficiently purged of construction materials, i.e. cleaning agents or flushing oils, there may be unwanted reactions or loss of containment.	A Commissioning Strategy / Plan would be required for sharing with the Health and Safety Executive (HSE) and Notifiable Reportable Work (NRW) as part of both the COMAH and Environmental Permitting regimes. The operator would need to consider in more detail procedural controls and industry standards.	Yes
Testing of Critical Instrument and Control Systems	Failure of critical instrument and control systems and critical equipment during testing may lead to loss of containment of materials.	A Commissioning Strategy / Plan would be required for sharing with the HSE and NRW as part of both the COMAH and Environmental Permitting regimes. The operator would need to consider in more detail procedural controls and industry standards.	Yes

Operational Phase

Process Hazards			
Fire and / or Explosion of Natural Gas / Hydrogen	Natural Gas would be used as the main fuel source for the Combined Cycle Gas Turbine	Potential harm / injury to onsite and offsite persons.	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
	<p>(CCGT), supplied via the National Grid National Transmission System. A release of gas can lead to a major fire / explosion if ignited.</p> <p>Hydrogen is used as a reagent for removing oxygen from the CO₂ product, and as a generator coolant. The exact volumes and nature of storage (cylinders etc.) has yet to be confirmed but hydrogen is extremely flammable, and a release of pressurised hydrogen could result in an explosion.</p> <p>Potential for onsite personnel injury / harm from fire / explosion.</p> <p>Potential for injury / harm to off-site people.</p> <p>Potential damage to environmental receptors from contaminated firewater.</p>	<p>Potential impact on environmental receptors from contaminated firewater.</p> <p>The design of the Proposed Development would have fire safety measures embedded, both as hard systems i.e., fire detection and soft systems i.e., fire drill procedure. The natural gas and hydrogen systems would comply with industry codes and standards for gas use in fired systems and pipelines and hydrogen respectively.</p> <p>The operator would need to consider in more detail design codes, fire detection, procedural controls and industry standards.</p>	
Asphyxiant Gas Release- CO ₂	<p>CO₂ is a combustion by-product which is captured from the power plant, concentrated, and transported off site for secure storage under the sea. This substance is an odorless gas which is heavier than air and is an asphyxiant.</p> <p>CO₂ could cause harm / injury and there are historic cases of fatalities within breweries, associated with personnel being overcome by CO₂ asphyxiation.</p>	<p>A major release is unlikely to affect offsite receptors due to the dispersal of the substance over distance. A major release of CO₂ gas could result in significant harm / injury to people onsite.</p> <p>The design of the Proposed Development has CO₂ containment safety measures embedded, such as recognised design codes for plant / equipment / pipelines, and CO₂ detection systems (fixed site locations and personnel monitors).</p>	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		The operator would need to consider in more detail design codes, CO ₂ detection, procedural controls and industry standards.	
Release of Amine Solution	Used as a solvent in the carbon capture processes, this material is an irritant when inhaled or makes skin contact and is also toxic to aquatic environments as such there is potential to cause major harm to the environment if this substance reaches the River Dee.	Potential harm / injury to onsite persons. Potential impact on environmental receptors, especially aquatic environments. Appropriate systems, such as bunding, drainage sumps and an attenuation pond, would be put into place to minimise risk of this material reaching the environment. The operator would need to consider in more detail design codes, procedural controls and industry standards once the type of amine used has been confirmed.	Yes
Release of Acidic / Basic Solutions	Acidic / Basic Solution would be used in the water treatment plant for the preparation of demineralised water for the steam cycle makeup to the CCGT. These materials have the potential to harm the environment by changing the pH and are corrosive. They can cause injury / harm to onsite personnel.	The quantity of material stored on site would be relatively small. An accidental release of solution from storage would be contained within the appropriate containment systems, i.e. bunding and spill kits. As such, accidental release is unlikely to cause harm to human health or the environment.	No
Release of Diesel fuel	Diesel would likely to be used in back-up generators and firewater pumps on site. This material is flammable and toxic to aquatic environments.	The quantity of material stored on site would be relatively minor. As such, an accidental release is unlikely to cause harm to human health / the environment.	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
Release of Ammonia / Urea	<p>Ammonia / Urea may be used in the Selective Catalytic Reduction (SCR).</p> <p>These substances are very toxic to aquatic life and can cause harm to human health via skin burns and eye damage.</p>	<p>The quantity of material stored on site would likely be relatively minor. As such, an accidental release is unlikely to cause harm to human health / the environment.</p>	No
Release of Hazardous Materials from Battery Energy Storage Site (BESS)	<p>A backup battery may be included in the Proposed Development as part of a 'black-start' system to allow startup without reliance on the UK transmission system.</p> <p>Hazardous materials may present dependent on the type of battery used, including chemicals containing fluoride and chloride. Batteries can ignite which in turn could lead to a thermal runaway where the battery / batteries would self-generate more heat than can be dissipated.</p> <p>There is also potential damage to environmental receptors from contaminated firewater.</p>	<p>No BESS is proposed as part of the Proposed Development. The backup battery would likely only account for a small area on site separate to the main operating area, as such an accident is unlikely to cause harm to human health.</p> <p>Given the small size of the battery, there is limited potential for impact on environmental receptors from firewater runoff.</p> <p>The design of the Proposed Development has fire safety measures embedded as well as appropriate drainage strategies to stop firewater from reaching the environment.</p>	No
Domino Event-Industrial	<p>An incident at another facility close to the Proposed Development or at the existing Connah's Quay Power Station, such as a fire / explosion, may impact the Site potentially leading to knock on effects.</p> <p>Similarly, an incident at the Proposed Development could impact COMAH establishments in the locality.</p>	<p>Shotton Steel works is within 1 km from the Proposed Development and, as this is a COMAH site, it is required to take all measures necessary to ensure safe operations with regards to the potential Domino effect on neighbors. It is likely the Shotton Sites Domino effects assessment would need to be reviewed as a consequence of the Proposed Development, if consented.</p>	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		The Proposed Development would have to assess the potential for Domino effects either being the initiator or the receptor of an event. Appropriate mitigation measures would need to be implemented such that the Principles of As Low As Reasonably Practicable (ALARP), are upheld, as part of the COMAH process, to minimise risk.	
Accidental Vehicle Impact	Delivery / onsite / AIL vehicle collisions which effect drivers or other onsite workers.	Potential to cause harm / injury to site personnel. Traffic movements much reduced in operational phase after construction. Limited to site deliveries of chemicals-which are very infrequent and maintenance / operator movement. Site Health, Safety, Security and Environment provisions would cover traffic movements on site, such as induction procedures for visiting drivers at the site entrance, one-way routes on-site, requirements for Personal Protective Equipment (PPE), and supervision by operators. Considered low risk and Tolerable.	No
Other Industrial Hazards			
Electrical power supply failure	Electrical failure or power loss can be caused by supply issues or disruption to infrastructure, which may lead to the emergency shutdown of operations.	Process equipment and instrumentation would be designed to fail to a safe condition, i.e. valves close to "lock in" process gases, feed supplies are isolated to the process etc. A UPS (Uninterruptible Power Supply) back-	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		up power generator would be installed to ensure power to the Connah's Quay Low Carbon Power (CQLCP) Abated Generating Station.	
System/utilities failures	Disruption to water supplies and effluent disposal / release will have an impact on process operations.	The Proposed Development has been and would be designed to handle such failures such that they do not cause any impact on the surrounding environment or the health and amenity of surrounding populace. The plant and equipment would be designed to fail safe, which includes protection of the environment.	No
Meteorological Hazards			
High windspeed	Major Storms could result in damage to site infrastructure, recognising that the CQLCP Abated Generating Station would have large structures, i.e. Carbon Capture Plant (CCP) adsorption towers. Potential to directly impact the onsite workforce to cause harm / injury.	This would be addressed during the design process and the appropriate standards would be applied such that impacts are mitigated. Extreme weather working practices and procedures would be in place and with worsening weather conditions, construction activities would be stopped, to ensure safety to the workforce / members of the public. Protection from adverse weather (working outdoors) is required as part of the CDM Regulations. Suitable sheltering / housing would be provided.	No
Low temperatures and heavy snow	In the event of extreme, prolonged low temperatures and snowfall, there is the potential	This would be addressed during the design process and the appropriate standards would	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
	<p>for snow loading on buildings and freezing liquids in pipework.</p> <p>Potential to directly impact the onsite workforce to cause harm / injury.</p>	<p>be applied such that impacts are mitigated, such as the application of insulation around sensitive pipework.</p> <p>Extreme weather working practices and procedures would be in place and with worsening weather conditions, construction activities would be stopped, to ensure safety to the workforce / members of the public.</p> <p>Protection from adverse weather (working outdoors) is required as part of the CDM Regulations. Suitable sheltering / housing would be provided.</p>	
High temperatures/ heatwave	<p>In the event of a prolonged period of hot weather there is the potential for an impact to temperature sensitive equipment such as process cooling systems and electrical switchgear.</p> <p>Potential to directly impact the onsite workforce to cause harm / injury.</p>	<p>This would be addressed during the design process and the appropriate standards would be applied such that impacts are mitigated.</p> <p>Extreme weather working practices and procedures would be in place and with worsening weather conditions, construction activities would be stopped, to ensure safety to the workforce / members of the public.</p> <p>Protection from adverse weather (working outdoors) is required as part of the CDM Regulations. Suitable sheltering / housing would be provided.</p>	No
Drought	Reduction of water availability for the CQLCP Abated Generating Station.	The Proposed Development is not expected to be vulnerable to drought conditions, as there is a low risk of interruptions to the supplies of water in this location which	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		accesses water from an intake located in the River Dee / Dee Estuary.	
Electrical storms	Lightning could result in damage to the CQLCP Abated Generating Station as a result of a direct strike to buildings or structures. Lightning could also act as an ignition source if there was a release of flammable substance as a result of infrastructural damage from the storm, i.e., natural gas.	This would be addressed during the design process and the appropriate standards would be applied such that impacts are mitigated, such as the application of lightning protection systems on buildings and structures.	No
Geophysical Hazards			
Earthquake	This could cause damage to infrastructure, i.e., pipelines, buildings, structures.	There is a low record of seismic activity observed in the location of the Order limits and severe damage, as a result of an earthquake, is unlikely. Appropriate standards would be applied such that impacts are minimised, e.g. protective measures for expected stresses and loadings would be incorporated within the civil and structural engineering design of the Proposed Development.	No
Ground stability	Unstable ground and events such as landslides could cause damage to infrastructure, i.e., pipelines, buildings, structures.	The area within and around the Order limits has a low risk of landslides, ground collapse, ground compression, or sinkholes associated with site geology. Groundworks carried out prior to construction would provide a stable Main Development Area and within the Proposed CO ₂	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		Connection Corridor prior to construction. Appropriate standards would be applied such that impacts are minimised.	
Hydrological Hazards			
Coastal / Fluvial flood	<p>Flooding could result in damage to site assets such as storage tanks and pipework, with the potential for subsequent loss of containment of hazardous substances.</p> <p>There is also the potential for flooding to increase the buoyancy of the natural gas pipeline, such that the underground pipeline rises causing structural damage to the pipeline.</p>	<p>A Flood Consequence Assessment (FCA) is provided in Appendix 13-C: Flood Consequences Assessment (EN010166/APP/6.4).</p> <p>The Site is located in a Flood Zone 3. The FCA has informed the design of the Proposed Development in terms of surface water management and the selection of finished floor levels (7.7m above ordnance datum (AoD)).</p> <p>Mitigation measures include:</p> <ul style="list-style-type: none"> • identifying a suitable level for the development platform for the Site (7.4 m AoD); • building the Proposed Development using Flood Resistant and Resilience design standards; • a system for monitoring flood warnings; and • the development of a Flood Emergency Response Plan. <p>The Main Development Area would be on a suitably raised platform (7.4 m AoD) to</p>	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		<p>accommodate the flood zone and hence critical electrical equipment, such as transformers and switchgear, would be located above the predicted flood levels.</p> <p>Flooding is considered by the HSE under COMAH as a potential “initiating event” to a Major Accident and consequently mitigation measures are required to be defined in the COMAH Safety Report, to demonstrate risks have been mitigated to ALARP.</p> <p>Flooding guidance is provided by NRW for sites regulated under the EPR, this has been embedded within design of the Proposed Development.</p>	
Pluvial flood	<p>Flooding could result in damage to site assets such as storage tanks and pipework, with the potential for subsequent loss of containment of hazardous substances.</p> <p>There is also the potential for flooding to increase the buoyancy of the natural gas pipeline, such that the underground pipeline rises causing structural damage to the pipeline.</p>	<p>As described in Chapter 13: Water Environment and Flood Risk (EN010166/APP/6.2.13) the Main Development Area experiences relatively low levels of rainfall, at an average of 728.74 mm of rainfall per year, with it raining more than 1 mm on around 136 days per year. As such the site is at a low risk of pluvial flooding.</p>	No
Groundwater flood	<p>Flooding could result in damage to site assets such as storage tanks and pipework, with the potential for subsequent loss of containment of hazardous substances.</p> <p>There is also the potential for flooding to increase the buoyancy of the natural gas pipeline, such</p>	<p>The Main Development Area is mostly underlain by low permeability silts and clays and as such is at very low risk of flooding from ground water.</p>	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
	that the underground pipeline rises causing structural damage to the pipeline.		
Other Natural Hazards			
Poor air quality	Emissions from the proposed development may harm the health of the surrounding populace and the environment.	<p>Pollution episodes are known to occur in the UK, but the Proposed Development is not expected to be particularly vulnerable to this hazard.</p> <p>The Proposed Development would not contribute significantly to road transport pollution in the area.</p> <p>Air intakes for combustion equipment would be fitted with the appropriate filtration systems to prevent damage from poor air quality.</p> <p>Emissions from combustion equipment would be controlled and regulated in accordance with an Environmental Permit and would have appropriate pollution abatement.</p> <p>An assessment of likely significant effects arising from the transportation of hazardous loads and emissions from the operation of the CQLCP Abated Generating Station has been carried out in the Environmental Statement (ES) as described in Chapter 8: Air Quality (EN010166/APP/6.2.8).</p> <p>No MA&D scenarios have been identified.</p>	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		Air quality impacts are fully assessed in Chapter 8: Air Quality (EN010166/APP/6.2.8) .	
Wildfires	This could cause damage to site personnel and infrastructure.	Severe wildfires are infrequent in the UK and the Proposed Development is not located in an environment particularly vulnerable to wildfire.	No
Climate Change	The impact of climate change causing extremes of temperature, flooding and winds may affect process operation of the Power and Carbon Capture (PCC) such as the cooling systems and structural stability. This could potentially impact the operation and efficiency of the CQLCP Abated Generating Station.	These have been assessed individually under meteorological hazards and flooding events (see above). Further detail is also provided within Chapter 20: Climate Change (EN010166/APP/6.2.20) .	No
Societal Hazards			
Aircraft / Drone Impact	The CQLCP Abated Generating Station contains would contain tall structures such as adsorber towers and associated stacks which are anticipated to be up to 150 m Above Ground Level (AGL). The site is located approximately 9 km from Hawarden Airport, towards the south-east along the River Dee.	The Proposed Development is located in an area close to Hawarden airport (aerodrome). Consultation with Airbus has confirmed the adsorber and HRSG stacks would infringe the outer horizontal surface. The requirement for aviation warning lighting to be fitted to chimney stacks and any construction equipment 50 metres or more in height (above ground level) is defined in Air Navigation Order Article 222. An aviation lighting scheme would also be submitted for	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		<p>approval from the Planning Authority in conjunction with the Ministry of Defence. Ongoing consultation with the relevant Airbus/ CAA would occur as required by the final CEMP to manage interfaces and define further appropriate control measures to minimise risk of collision, such as crane lighting.</p>	
Malicious attacks	<p>Violence to people, arson or other methods of destruction of property, cyber-attacks, or chemical, biological, or nuclear attacks by terrorists or other actors, may cause damage to infrastructure at site or lead to direct release of hazardous substances.</p>	<p>Software security would be incorporated within the process control systems and physical security measures such as fencing, security guards and CCTV would be installed.</p> <p>As a supplier of energy, the Proposed Development would include appropriate measures as a matter of National Security and liaison with appropriate government bodies would be undertaken, e.g. National Counter Terrorism Security Office (NaCTSO) and the Centre for Protection of National Infrastructure (CPNI).</p>	No
Vandalism	<p>A malicious destructive act onsite whereby material loss of containment could occur, resulting in fire / explosions / pollution incidents. Harm to onsite personnel and members of the public off site from fire / explosions.</p> <p>Potential damage to environmental receptors.</p>	<p>Appropriate security measures would be installed at the Proposed Development through each phase of the development (Construction, Operation and Decommissioning).</p>	Yes

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
Pandemic	Civil Emergency with restricted people movements, people falling ill, workforce restrictions.	Operators are more prepared (following the Covid pandemic) for the impact of a pandemic and the need for operational / business continuity. As this is a National Infrastructure project-robust contingency plans would be developed and implemented across all phases of the development (Construction, Commissioning, Operation, Decommissioning).	No

Decommissioning Phase

Decommissioning Hazards			
Release of Residual Inventory of Operational Phase Substances	A failure to de-inventory the process systems, which leads to the accidental release of substances used for the operational phase, potentially causing harm to human health and the environment. For example, a release of natural gas that initiates a fire / explosion or a release of diesel or amine that impacts upon the environment.	The design of the Proposed Development should consider decommissioning, e.g., drain legs on pipework and the avoidance of "dead leg" areas, where fluids would accumulate and cannot be drained. Application of a Decommissioning Plan and Standard Practice would minimise the risk such that it is tolerable. There is a need to consider in more detail the design philosophy, decommissioning procedural controls and industry standards.	Yes

Demolition Hazards

Release of diesel	Diesel would be used and / or temporarily stored on within the Main Development Area during construction as fuel for vehicles. A release which	The quantities of Diesel to be stored on site would likely to be relatively minor (probably a few m ³) and would be stored in appropriately	No
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Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
	is ignited could cause harm to people via exposure to thermal radiation in a fire. A release which is unignited can cause harm to people if inhaled, ingested or exposed to skin. A release of diesel to the environment such as the Dee Estuary could result in harm to flora and fauna.	bunded / self-contained areas. As such, an accidental release of diesel would be retained locally, and be readily cleaned up, due to these small quantities. If the release contacts with a source of ignition, the resulting fire would be relatively minor and localised, with a low potential for significant harm. Secondary containment measures would be adopted for temporary diesel storage. An appropriate firefighting strategy would be in place.	
Release of Acetylene	Acetylene may be used in hot cutting activities, stored in compressed gas cylinders and is a flammable gas. A release of Acetylene gas can lead to fires / explosions if ignited. An unignited release can cause asphyxiation in an enclosed area.	The quantity of material stored within the Main Development Area would be relatively small and limited to that contained within single cylinders, dotted around the site, associated with hot cutting units. As such, an accidental release from a single cylinder is unlikely to cause harm to human health or the environment. If a release is ignited the resulting fire would be relatively minor and localised, with a low potential for significant harm.	No
Release of Nitrogen	Nitrogen may be used in hot cutting activities, stored in compressed gas cylinders. A release of Nitrogen can cause asphyxiation in an enclosed area.	The quantity of material stored within the Main Development Area would be relatively minor and limited to that contained within single cylinders, dotted around the site, associated with hot cutting units. As such, an	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		accidental release is unlikely to cause harm to human health.	
Structural collapse / accidental impact	Collapse of existing buildings, structures and excavations via accidental impact with vehicles or via other failure mechanisms.	Can cause injury / harm to onsite workers. Compliance with CDM requirements, including Demolition Phase Plan. Further measures would be outlined within a Demolition Environmental Management Plan (DEMP) which would be broadly similar to those captured in the final CEMP.	No
UXO strike	Impact on high-pressure gas pipelines could cause flammable gas to be released which, if ignited, can lead to injury / harm to persons within the vicinity. Potential damage to the environment via fire water run-off. Impact with utilities, i.e. a HV transmission cable would cause immediate harm to workers.	Can cause harm / injury to onsite workers and potentially the environment. Further measures would be outlined within a DEMP which would be broadly similar to those captured in the final CEMP.	No
Domino Effects through Loss of Containment / Fire / Explosion etc.	An event on the demolition site impacts and escalates to a neighboring hazardous Control of Major Accident Hazards (COMAH) site. Alternatively, an event at a neighboring hazardous (COMAH) site impacts the Proposed Development.	Domino effects can cause harm / injury and is considered under the COMAH requirements of a site. The COMAH status of the Proposed Development is to be determined. There are a number of Lower and Upper-Tier COMAH establishments within the Major Accidents and Disasters (MAD) study area (5 km distance).	No

Risk Event	Potential Impacts	Initial Risk Level Assessment	Considered further
		Further measures would be outlined within a DEMP which would be broadly similar to those captured in the final CEMP.	
Accidental Vehicle Impact	Demolition / delivery vehicle collisions which effect drivers or other onsite workers.	Potential to cause harm / injury to site personnel. Further measures would be outlined within a DEMP which would be broadly similar to those captured in the final CEMP.	No
Aircraft / Drone Impact	Aircraft / drone incident results in harm to site personnel and / or member of public and / or irreversible damage to environmental receptor (ecological site, watercourse etc.).	The Proposed Development is located in an area close to Hawarden Airport (Aerodrome). Further measures would be outlined within a DEMP which would be broadly similar to those captured in the final CEMP.	No
Vandalism	Harm to onsite personnel and / or members of the public off site from fire / explosion / loss of containment. Damage to environmental receptors from loss of containment.	Appropriate security measures would be installed at the construction site, including CCTV, site security and fencing to prevent trespassers and mitigate this risk to ALARP as per the Framework CEMP (EN010166/APP/6.5) During demolition, the on-site chemicals inventory would likely be limited to small volumes (diesel etc.) and thus the severity of a potential incident would be limited. Further measures would be outlined within a DEMP which would be broadly similar to those captured in the final CEMP.	No

1.1.2 The following risk events during the construction of the Proposed Development have been identified as requiring further assessment:

- ground instability;
- structural collapse / accidental impact;
- utility (pipeline or electrical cable) strike / UXO impact;
- domino effects with neighboring COMAH establishments;
- accidental vehicle impact;
- aircraft / drone impact; and
- vandalism.

1.1.3 The following risk events during the commissioning of the Proposed Development have been identified for further analysis:

- wet testing of equipment and charging of storage vessels; and
- testing of critical instrument and control systems.

1.1.4 The following risk events during the operation of the Proposed Development have been identified for further analysis:

- fire and / or explosion of natural gas;
- asphyxiant gas release carbon dioxide;
- release of amine solution;
- domino event - industrial;
- coastal / fluvial flooding;
- aircraft / drone impact; and
- vandalism.

1.1.5 The following risk event during the decommissioning of the Proposed Development have been identified as requiring further assessment:

- release of residual inventory substances used during operational phase.

