

Qualitative Risk Assessment

Methodology

The following tables in this section assess the potential risk to receptors from the following hazards, taking into account the measures proposed to reduce those risks.

The method relies on a scoring system that is based on the frequency or probability of the event occurring and the resulting consequence or potential effect of the event on the environment.

Controls or mitigation are also identified in the assessment, which consist of measures or actions that can be carried out to limit the potential for impacts.

The probability of exposure is the likelihood of the receptors being exposed to the hazard, and is defined as low, medium or high. These terms are qualified as follows:

- Low: exposure is unlikely, barriers in place to mitigate against exposure;
- Medium: exposure is fairly probable, barriers to exposure less controllable; and
- High: exposure is probable, direct exposure likely with few barriers.

The aim is to reduce the risk of fugitive emissions from the facility or the impact of the emissions on the environment, through specific mitigation measures identified for each specific risk.

Control and mitigation measures have been identified for all risks identified in the assessment, based on the Best Available Techniques (BAT) measures set out in the guidelines and on operational experience. The measures specific to each risk are described in the assessment. The mitigation measures will be incorporated into the Site management processes and Site operatives will be made aware of these measures during training.

More general mitigation measures to avoid emissions, in line with indicative BAT standards, are also set out in the relevant sections of the Main Supporting Document.

Figure 1: Risk Assessment Matrix

Consequence	Exposure probability		
	Low	Medium	High
Low	Low Risk	Low Risk	Medium Risk
Medium	Low Risk	Medium Risk	High Risk
High	Medium Risk	High Risk	High Risk

Table 3.1: Severity Index

Severity of harm	Severity Index
Impact to people or designated receptor	High
Impact to non-designated receptor	Medium
All other impacts	Low

Table 3.2: Probability Index

Likelihood of harm occurring	Probability Index
Harm is near certain or very likely to occur	High
Harm is likely to occur	Medium
Harm is unlikely	Low

Table 3.3: Magnitude of risk

Magnitude of risk	Probability index		
	Low	Medium	High
Severity index	Low	Medium	High
Low	Low	Medium	High
Medium	Low	Medium	High
High	Medium	High	High

Figure 3 outlines the methodology applied to the Climate Change Adaptation Risk Assessment. This has been developed using the former Environment Agency Climate Change Adaptation Risk Assessment Matrix as an initial guide.

Figure 2: Climate Change Risk Assessment Matrix

Risk Assessment	Definition	Score Range
Frequency (or probability)	Describes the likelihood of the event occurring.	1 (least frequent) – 6 (most frequent)
Consequence	Describes the potential effect of the event on the environment.	1 (least consequent) – 6 (most consequent)
Risk	Risk is frequency multiplied by consequence.	1 – 36 (36 greatest risk)

Emissions to air

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Emissions to air from CCGT	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Air	<p>The CCGT has been designed and will be operated in accordance with the Large Combustion Plant (LCP) Best Available Techniques Reference Document (BRef) (Appendix C of the Main Supporting Document). It is considered that the BAT-AELs can be met through the use of primary combustion controls and therefore no secondary abatement in the form of Selective Catalytic Reduction is required.</p> <p>An Air Quality Impact Assessment (Appendix F of the Main Supporting Document) was conducted including an assessment of the operation of the CCGT, the auxiliary boiler and the two JT heaters. The impacts on human health were assessed and the effects were found to be insignificant for annual mean NO₂, hourly mean CO and CO 8-hour rolling mean. The results for hourly mean NO₂ were found to be insignificant at the discrete human receptor locations.</p> <p>The impacts on ecological receptors have been assessed and for annual mean NO_x, the results were found to be insignificant at all but one of the ecological receptors. At receptor E2 (Humber Estuary Special Area of Conservation), the effects could not be screened out using the EA criteria, however the predicted environmental concentration is below the critical level and the impacts are therefore considered to be not significant. The impacts on ecological receptors for daily NO_x could not be screened out as insignificant for all receptors, however the predicted environmental concentrations are all below the critical level and are therefore considered to be not significant.</p> <p>Nitrogen deposition and acid deposition can be screened out using the EA criteria, as the process contribution is less than 1% of the relevant critical loads for all ecological receptors assessed.</p> <p>The emergency diesel generator has been assessed, via the SCAIL tool, under planned testing and maintenance operations as well as an emergency scenario. The results of the SCAIL assessment indicate that the effects of the planned testing and maintenance activities and the emergency scenario would be insignificant for all human and ecological receptors.</p> <p>Overall, it can be concluded that there are no significant effects from the Installation on air quality.</p> <p>The plant will be fitted with a Continuous Emissions Monitoring System (CEMS) to monitor emissions. In addition, the CCGT will be operated efficiently to minimise the risk of impacts on nearby receptors. The operation of the plant shall be in accordance with the Environmental Management System (EMS). The efficiency of the CCGT is compliant with the requirements of the LCP BRefc (BAT12). The onsite processes will be highly automated, and in process controls and monitoring systems will enable the plant to operate efficiently. The plant will undergo regular maintenance and inspections as required under the EMS. The maintenance and operational activities will be carried out by personnel who have received suitable training, thereby minimising the risk of errors and ensure the plant remains operational.</p>	Medium due to design and operational measures in place.	Low due to findings of the Air Impact Assessment	Medium	Low	Low

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Emissions to air from Auxiliary Boiler	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Air	<p>The proposed operating regime will result in multiple start-ups and shutdowns per annum which will require the operation of the auxiliary boiler. This is anticipated to be less than 500 hours per annum. The plant will be subject to inspection and maintenance routines required as part of the Environmental Management System.</p> <p>Monitoring of the plant will be undertaken in accordance with MCERTS.</p> <p>In addition to the design of the Installation minimising impacts to receptors, the auxiliary boiler will be operated efficiently and in accordance with the Environmental Management System. The efficient operation of the plant will help to minimise the risk of impacts on nearby receptors. The onsite processes will be highly automated and will be operated using a Distributed Control System (DCS). The control system will continuously undertake automatic checks to ensure the Installation's safety protection system is operating efficiently.</p> <p>The plant will undergo regular maintenance and inspections as required under the EMS. The maintenance and operational activities will be carried out by personnel who have received suitable training, thereby minimising the risk of errors and ensure the plant remains operational.</p>	Low due to limited operating hours and design and operational measures in place.	Low due to findings of the Air Impact Assessment	Low	Low	Low
Emissions to air from Joules Thomson (JT) heaters	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Air	<p>The in process heaters are required to counteract the Joules-Thomson effect on the natural gas. The operation of the plant is dependent on the features of the incoming gas. As such their operation will not be continuous. Based on examples at other sites the operation of the heaters will not exceed 500 hours per annum.</p> <p>An Air Quality Impact Assessment (presented in Appendix F of the Main Supporting Document) concluded overall that the impacts from the combustion of all plant at the Installation is not considered to be significant on human and ecological receptors against the relevant AQS. Monitoring of the plant will be undertaken in accordance with MCERTS.</p> <p>In addition to the design of the Installation minimising impacts to receptors, the JT heaters will be operated efficiently. The efficient operation of the plant will help to minimise the risk of impacts on nearby receptors in accordance with the Environmental Management Plan. The onsite processes will be highly automated and will be operated using a DCS. The control system will continuously undertake automatic checks to ensure the Installation's safety protection system is operating efficiently.</p> <p>The plant will undergo regular maintenance and inspections as required under the Environmental Management System. The maintenance and operational activities will be carried out by personnel who have received suitable training, thereby minimising the risk of errors and ensure the plant remains operational.</p>	Low due to limited operating hours and design and operational measures in place.	Low due to findings of the Air Impact Assessment	Low	Low	Low
Emissions to air from emergency diesel generator	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Air	<p>The purpose of the emergency diesel generator is to provide power to critical systems during a power outage event. The emergency diesel generator will also be required to undergo regular testing to ensure that it is readily available for use during a power outage. The number of hours of testing per annum will be no greater than 50. The selected diesel generator is yet to be confirmed however it will keep to one or more of the former 2g TA Luft and United States Environment Protection Agency (EPA) Tier 2 (or equivalent) standards. As outlined in the Environment Agency's guidance on Emergency backup diesel engines on installations: best available techniques, compliance with the standards is proof of BAT.</p> <p>The diesel generator emissions were assessed using the Simple Calculation of Atmospheric Impact Limits (SCAIL) assessment tool. The assessment has considered both testing and potential emergency scenarios. The results of the assessment concluded that the impacts on human and ecological receptors are considered to be insignificant. The SCAIL assessment is presented in Annex A, of Appendix F of the Main Supporting Document. Monitoring of the plant will be undertaken in accordance with MCERTS.</p> <p>The plant will undergo regular maintenance and inspections as required under the Environmental Management System. The maintenance and operational activities will be carried out by personnel who have received suitable training, thereby minimising the risk of errors and ensure the plant remains operational.</p>	Low due to limited operating hours and design and operational measures in place.	Low due to findings of the Air Impact Assessment	Low	Low	Low

Emissions to water

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Emissions from W1	Humber Estuary and ecological receptors listed in Main Supporting Document Table 7-2	Surface water	<p>The site currently holds an Environmental Permit which sets out emission limits for the discharges from the site to the Humber Estuary via W1. The changes to the permitted activity outlined in this variation application will be able to meet the limits set within the existing permit.</p> <p>The wastewater will comprise the following which has a similar profile to that with is already included in the Environmental Permit:</p> <ul style="list-style-type: none"> • Cooling tower water blow down (containing small amounts of chemicals added for the conditioning of the cooling water). • Combined effluents from onsite processes used for cooling tower water make-up (this will include HRSG blowdown, RO rejects (from demineralisation treatment plant), effluent from the condenser and treated water from the oil/ water separator). • Cooling tower water sediment (comprising a concentrated solution of the solids already present in the raw river water) <p>Though not specifically mentioned in the existing permit the following streams were incorporated in the previous permit application:</p> <ul style="list-style-type: none"> • Surface water drainage • Treated surface water from oil separators <p>As part of this Environmental Permit variation there may be the addition of a package sanitary waste treatment plant to treat wastewater from welfare facilities (i.e. toilets and sinks), if a connection to local sewer is not possible.</p> <p>Where possible water used within the process will be reused as cooling water make-up.</p> <p>As a result of this permit variation there will be a reduction in effluent being discharged via W1. Discharge will also be subject to monitoring</p>	Medium due to frequency of discharge	Low as the discharge will be within the emission limits of the current permit	Medium	Low	Low
Emissions from W2	Humber Estuary and ecological receptors listed in Main Supporting Document Table 7-2	Surface water	<p>At present natural surface water runoff from the Installation area flows into an existing pond located outside of the Installation Boundary to the south east of the Installation. If all surface water is discharged via W1 there is concern regarding the lack of flow into the existing pond which supports Marsh Harrier and Water Vole. It is therefore proposed that some uncontaminated surface water drainage from the Installation will be discharged from the surface water retention pond to the existing pond to maintain the water level in the pond via an additional emission point, W2.</p> <p>The uncontaminated surface water will be sourced from areas such as building roofs, paved process areas, and roads. Before entering surface water retention pond, the uncontaminated surface water will pass</p>	Medium due to the frequency of discharge (which is required to maintain the flow to the pond).	Low due to the type of effluent produced and the on-site treatment measures (mechanical screens and interceptor).	Medium	Low	Low

Fugitive emissions

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Release of natural gas through leakage and valves	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Gas carried on wind leading to the development of flammable atmospheres	<p>No on-site gas storage facilities, minimising the likelihood of large gas release and the development of an explosive atmosphere on site.</p> <p>An emergency shutdown valve will be in place. The valve will be quick acting and hard-wired and be able to be activated from the central control room and will meet the IGEM standards for ESDV and also in accordance with IEC 61508 and IEC 61511. All pressure relief, safety relief valves and vents, shall be provided with independent discharge piping routed to a safe location. Each vent will have a capped connection downstream to allow sampling of the vents.</p> <p>The site will be fitted with fire and gas detection which will be connected to the DCS.</p> <p>All pipework will be constructed and maintained in accordance with the relevant safety standards. Safety mechanisms, such as safety valves, and pressure relief valves will be integrated to protect against overpressure and overheating. Regular inspection of the site infrastructure will be undertaken by suitably trained personnel.</p>	Low exposure probability due to implementation of risk reduction measures to prevent a gas leak	Medium potential consequence on human health and ecological receptors in surrounding area.	Low	Medium	Low

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Spillage of diesel to surface water or groundwater during filling operations	Local surface water and groundwater	Flow path is determined by surface topography and drainage systems	<p>Site drains will be designed in accordance with industry best practice and appropriate safety standards including CIRIA Guidance 736. The diesel (primarily used within the emergency diesel generators) will be stored in accordance with Oil Storage Regulations.</p> <p>Diesel will be delivered by an approved contractor. Appropriate site training/ induction will be in place and appropriate monitoring points and audio/ visual alarms will be present during any bulk chemical transfers to minimise chance of leaks/ overfill. Diesel generators and tankered areas will be paved and kerbed/ bunded to prevent contamination and will be stored in an appropriately bunded container which will be regularly inspected. Spill kits designed to deal with the stored material will be in the proximity of storage areas and fill points in the event of a spill.</p> <p>The EMS will comprise procedures for controlling raw material delivery including for oil transfer operations, and spill response procedures. All relevant personnel will be trained on how to handle a spill incident.</p>	Low exposure probability due to implementation of risk reduction measures to prevent escape of diesel.	Medium potential consequence on human health and ecological receptors in surrounding area.	Low	Medium	Low
Spillage/ escape of other raw materials including chemicals	Local surface water and groundwater	Flow path is determined by surface topography and drainage systems	<p>Chemicals will be stored in self bunded leak proof containers or in a secure impermeable bunded area. Bunding will have a minimum capacity of either 110% of the capacity of the largest tank or 25% of the total capacity of all the tanks within the bund whichever is the greater. Storage tanks will be designed to industry codes and standards. Installation of the storage tanks within a secondary containment system (bund) designed in accordance with CIRIA C736 guidance.</p> <p>All process equipment and pipework where leakages are expected shall be provided with drip pans which will collect and direct escaped fluids to a closed drainage system and prevent it from spilling to the environment.</p>	Low due to site design and management procedures.	Medium potential consequence on human health and ecological receptors in surrounding area.	Low	Medium	Low

Nuisances

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Waste generation	Land and water	Staff and public	<p>All solid waste will be stored in a dedicated waste management area located within the Installation. Waste will be temporarily stored and collected for offsite treatment or disposal from this location. The waste storage area will also be designed in accordance with the following:</p> <ul style="list-style-type: none"> - The area will be designated and located away from any watercourses and sensitive boundaries (e.g. those with public access); - The area will have signs and notices and be clearly marked-out for waste segregation, and all containers and packages will be clearly labelled; - The area will have appropriate kerbing and bunding; - The maximum storage capacity of the area will be defined and not exceeded, and the maximum storage period for containers will be specified and adhered to; - Appropriate storage facilities will be provided for waste substances with specific requirements (e.g. flammable, sensitive to heat or light); - Where required, waste containers will be stored with lids, caps and valves secured and in place; - All waste containers, drums and small packages will be regularly inspected; - Spill response procedures will be in place to deal with damaged or leaking waste; - For liquid wastes stored in the waste management area, the container will be bunded with at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater). 	Low exposure probability due to implementation of waste management measures	Low adverse impacts on local receptors	Low	Low	Low
Mud/ litter carried onto highway	Land and water	Public	All internal roads, storage and processing areas will be hard-surfaced with concrete or tarmac and swept when required	Low due to site design and management procedures	Low adverse impacts on local receptors	Low	Low	Low
Pest, vermin and scavengers	Land and water	Staff and public	Due to the nature of the proposed activity, pest/ vermin/ scavengers are unlikely to be an issue.	Low due to nature of the site.	Low adverse impacts on local receptors	Low	Low	Low

Noise

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Noise and vibration from the operation of the Installation	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Air/ wind	<p>A Noise Impact Assessment (NIA) has been undertaken to assess the potential noise impacts associated with the operation of the proposed changes to the Installation on the nearest Noise Sensitive Receptor (NSR).</p> <p>Embedded noise reduction measures include the following:</p> <ul style="list-style-type: none"> - Selection of low noise plant and systems - High insulating doors - Noise enclosures - Sound insulation <p>The results of the NIA concluded that the predicted noise emissions arising from the Installation with embedded mitigation, do not exceed the background sound levels at the nearest residential receptors. Given that the predicted absolute noise levels are low and that the existing sound environment at the noise sensitive receptors includes an element of industrial noise, it is concluded that the Installation would result in a low impact at the nearest residential receptors.</p> <p>The impact at the nearest ecological receptor, North Killingholme Haven Pits SSSI is also predicted to be low. Noise from the Installation would be of a similar magnitude to the lowest measured baseline sound levels at this location and well below the highest measured baseline sound levels. It is therefore concluded that the Installation would not cause a new impact on sensitive ecological receptors.</p> <p>A low level of impact indicates that no further action is needed beyond the mitigation measures specified and embedded in the</p>	Medium due to frequency of operation	Low due to embedded mitigation	Medium	Low	Low

Odour

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probabi	Potential consequen	Exposure rating	Consequence rating	Overall risk
Odour resulting from operation of the plant or from escape of stored chemicals	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Air/ wind	<p>It is considered that, due to its inherent nature of the materials used onsite and the containment applied to the stored materials, that the proposed plant will not generate significant odour.</p> <p>The CCGT plant will use natural gas as a fuel, it is expected that odour from the proposed CCGT operations will not be a significant issue.</p> <p>Chemicals such as ammonia may have the potential to produce odour. Ammonia will be used within the cooling water dosing system. The Installation will use good engineering design practice, along with appropriate techniques or methods during maintenance activities, to ensure that site activities will be free from odour at levels likely to cause annoyance outside the site boundary.</p>	Low due to the nature of the facility, site design and management procedures.	Low adverse odour impact on local receptors.	Low	Low	Low

Accidental release

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Fire	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Emission of smoke to the air, transported by the wind. Emission of firewater and foam to drainage systems, water and land.	<p>Fire/ gas detection and protection systems will be implemented across the Installation. The details of the systems are yet to be confirmed however the measures will be similar to those at existing Uniper sites which include the following:</p> <ul style="list-style-type: none"> - The layout has been designed such that location of areas and equipment minimise the risk of an ignition. - Chosen plant and building design will comply with the relevant industry standards. - Use of heat sensors, automatic spray nozzles and smoke detectors. - Pressure sensing instrumentation will be present on gas systems, alerting operators to a loss of pressure. - Continuous monitoring systems for natural gas, CO, H₂S and hydrogen. - In the event of a fire within the turbine hall, a total flood CO₂ system will be employed. In addition to this the turbine halls will be fitted with fixed water spray protection systems. - DCS will have a series of automated Emergency Shutdown (ESD) procedures <p>Firewater would be directed through the surface water drainage system and collected in a retention pond. Once contained within the pond, the effluent will be tested. If the results show that the firewater contains contamination it would be disposed oofsite in compliance with waste management legislation. If the the results of the testign show the water is not contaminated it will be discharged via W1 in accordance with the limis outlined in the Environmental Permit.</p>	Medium due to fire risk reduction measures	Medium adverse impact on local ecological receptors	Medium	Medium	Medium

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Flooding	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Flow path is determined by topography and drainage systems	<p>The EA 'Flood map for planning' indicates that the whole of the Installation is located within a Flood Zone 3 which is defined as "<i>land having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year</i>".</p> <p>A Flood Risk Assessment was submitted with the DCO for North Killingholme, in 2013. As part of a Non-Material Amendment to the DCO submitted in July 2025, a review changes in environmental effects predicted as a result of the proposed non-material change. It was concluded that there would be no change to flood risk. In It was concluded that the site benefits from existing coastal flood defences, these defences are expected to become less effective over time due to projected sea level rise and increased storm intensity driven by climate change. As such this risk has been incorporated into the design of the Installation.</p> <p>In addition the following mitigation measures have been considered to protect the Installation from flood, in accordance with the legislative and regulatory authority requirements:</p> <ul style="list-style-type: none"> - Flood resistance and resilience measures; - Flood Emergency Response Plans; - Flood Warnings and Alerts; - Emergency access and egress; and - Design capacity exceedance. <p>The Installation site is not located within any Groundwater Source Protection Zone.</p>	Medium due to proposed potential flood mitigation options being considered.	Medium adverse impact on local ecological receptors	Medium	Medium	Medium

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Security and vandalism	Local residents and businesses beyond the boundary of the Installation. See human and ecological receptors listed in Main Supporting Document Table 7-1 and 7-2	Pathway of emissions could be land, air or water. Emissions could potentially occur due to failure/ reduced performance of equipment and infrastructure	The site will be located with a security fence with CCTV present around the site perimeter. 24/7 security personnel will be present at the Installation. The entrance to the site will be gated and manned.	Low due to extensive security measures.	Low	Low	Low	Low

Global warming potential

Hazard	Receptor	Pathway	Risk reduction measures	Exposure probability	Potential consequences	Exposure rating	Consequence rating	Overall risk
Generation of greenhouse gas emissions	National and global climate	Air	<p>The Installation is to be consented in stages. It is the intention to construct a carbon capture plant at the Installation, which will be subject to a further Environmental Permit variation at a later date. The capture plant is still under design therefore the CO₂ capture efficiency cannot yet be confirmed however at this stage it is anticipated that under normal operations the target capture rate will be 95%. As such the generation and release of greenhouses gases during operation is expected to be low.</p> <p>CO₂ emissions will be recorded and managed through the UK Emissions Trading Scheme.</p>	Medium due to future construction of CCP	Medium adverse impacts on local receptors	Medium	Medium	Medium

Climate change risk assessment

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
1) Summer daily maximum temperature may be around 7°C warmer than average summer temperatures now	Reduced efficiency of CCGT	1	2	2	The power plant is designed to operate over a large range of ambient conditions. Temperature changes may have have a noticeable impact on plant efficiency however these are expected to be acceptable.	1	2	2
2) Winter daily maximum temperature could be 4°C more than the current average, with the potential for more extreme temperatures, both warmer and colder than present.	Increases in temperature may cause a drop in efficiency, but a lower risk than in summer.	1	2	2	The power plant is designed to operate over a large range of ambient conditions. Temperature changes may have have a noticeable impact on plant efficiency however these are expected to be acceptable.	1	2	2

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
3) Daily rainfall intensity could increase by up to 20% on today's values resulting in flooding on the Site.	<p>Surface water flooding and standing water.</p> <p>Increased soil moisture levels leading to deterioration of structure or foundations.</p> <p>Damage to infrastructure through storm surge and river flooding</p> <p>Excess surface water impacting drainage systems</p>	3	3	9	<p>The site is located within Flood Zone 3. A Flood Risk Assessment was submitted with the DCO for North Killingholme, in 2013. It was concluded that the site benefits from existing coastal flood defences, these defences are expected to become less effective over time due to projected sea level rise and increased storm intensity driven by climate change. As such the risk of future flooding has been incorporated into the design of the Installation.</p> <p>In addition the following mitigation measures have been considered to protect the Installation from flood, in accordance with the legislative and regulatory authority requirements:</p> <ul style="list-style-type: none"> - Flood resistance and resilience measures; - Flood Emergency Response Plans; - Flood Warnings and Alerts; - Emergency access and egress; and - Design capacity exceedance. <p>The Installation EMS will include emergency procedures to account for flooding at the Installation. This will include management of drainage system infrastructure and protection of critical</p>	2	3	6

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
4) Average winter rainfall may increase by over 40% on today's averages resulting in potential increased risk of Site surface flooding and could impact Site wide drainage capacity	<p>Flash flooding on Site</p> <p>Surface water run-off systems need to be cleared and account for increased flows to prevent them being overwhelmed</p> <p>Potential for increased Site Surface water flooding</p> <p>Excess surface water impacting drainage systems</p> <p>Damage to buildings and critical infrastructure</p>	3	3	9	<p>As part of the original DCO application in 2013 which included the CCGT, a flood risk assessment was completed. The site is located within an area with a 3.3% chance of surface water flooding each year. The DCO later had an amendment in 2021 and a non-material amendment in 2025. The changes concluded that there was no change in risk of flooding.</p> <p>Mitigation measures include:</p> <ul style="list-style-type: none"> - situating critical infrastructure on higher ground. - Elevating access and egress routes - Designing any underground cabling and pipework to consider the risk of groundwater flooding. - Inclusion of emergency procedures into the EMS to account for flooding at the Installation. This will include management of drainage system infrastructure and protection of critical infrastructure and buildings. <p>In addition the following management mitigation measures have been considered to protect the Installation from flood, in accordance with the legislative and regulatory authority requirements:</p> <ul style="list-style-type: none"> - Flood resistance and resilience measures; - Flood Emergency Response Plans; - Flood Warnings and Alerts; - Emergency access and egress; and 	2	3	6

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
5) Sea level rise which could be as much as 0.6m higher compared to today's level.	<p>Fluvial flooding on the Site.</p> <p>Site surface water systems and effluent treatment plant may become overwhelmed and unable to discharge for prolonged periods due to backing up.</p> <p>Excess surface water impacting drainage systems</p> <p>Damage to buildings and critical infrastructure</p>	3	3	9	<p>The site is located within Flood Zone 3. A Flood Risk Assessment was submitted with the DCO for North Killingholme, in 2013. It was concluded that the site benefits from existing coastal flood defences, these defences are expected to become less effective over time due to projected sea level rise and increased storm intensity driven by climate change. As such the risk of future flooding has been incorporated into the design of the Installation.</p> <p>In addition the following mitigation measures have been considered to protect the Installation from flood, in accordance with the legislative and regulatory authority requirements:</p> <ul style="list-style-type: none"> - Flood resistance and resilience measures; - Flood Emergency Response Plans; - Flood Warnings and Alerts; - Emergency access and egress; and - Design capacity exceedance. <p>The Installation EMS will include emergency procedures to account for flooding at the Installation. This will include management of drainage system infrastructure and protection of critical</p>	2	3	6

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
6) Drier summers which could see potentially up to 40% less rain than now.	Reduction of water availability for consumption on Site	1	2	2	An abstraction licence is in place which provides the right to abstract water from the Humber estuary. As outlined in in above sections, there is a risk of sea level rise ¹ . As water will be sourced from an estuary it is anticipated that the availability of water will be less impacted from rainfall in comparison to other surface water and groundwater sources (i.e. aquifers). The consumption of water will be carried out in accordance with the Abstraction Licence (reference 4/29/09/*T/0132).	1	2	2
7) Flows in river could be 50% more than now at its peak and 80% less than now at its lowest - Fluvial Flooding	Fluvial flooding	3	2	6	The site is located within Flood Zone 3. A Flood Risk Assessment was submitted with the DCO for North Killingholme, in 2013. It was concluded that the site benefits from existing coastal flood defences, these defences are expected to become less effective over time due to projected sea level rise and increased storm intensity driven by climate change. As such the risk of future flooding has been incorporated into the design of the Installation. In addition the following mitigation measures have been considered to protect the Installation from flood, in accordance with the legislative and regulatory authority requirements: - Flood resistance and resilience measures; - Flood Emergency Response Plans; - Flood Warnings and Alerts; - Emergency access and egress; and - Design capacity exceedance.	2	2	4

Potential change	Impact	Likelihood	Severity	Risk	Mitigation	Likelihood (after mitigation)	Severity (after mitigation)	Residual Risk
7) Flows in river could be 50% more than now at its peak and 80% less than now at its lowest - Surface Water Flooding	Surface flooding	3	3	9	<p>The site is located within an area with a 3.3% chance of surface water flooding each year. The risk of flooding has been incorporated into the design of the facility.</p> <p>In addition the following mitigation measures have been considered to protect the Installation from flood, in accordance with the legislative and regulatory authority requirements:</p> <ul style="list-style-type: none"> - Flood resistance and resilience measures; - Flood Emergency Response Plans; - Flood Warnings and Alerts; - Emergency access and egress; and - Design capacity exceedance. 	1	3	3
8) Storms	Storms could see a change in frequency and intensity. The unique combination of increased wind speeds, increased rainfall, and lightning during these events provides the potential for more extreme storm impacts.	3	2	6	<p>The Installation will be designed, constructed and operated in accordance with the relevant building standards ensuring structural integrity.</p> <p>Increase rainfall events have been factored into the design of the on-site drainage system.</p>	2	2	4