



Accident Management Plan

University of Liverpool Energy Company



Report produced for University of Liverpool Energy Company Ltd

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1.0	17/06/2022	First issue

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1.0 EMERGENCY INFORMATION

1.1 Site Location Details

Company:	University of Liverpool Energy Company Ltd
Access via:	Ashton Street
Office Phone:	0151 794 5349
Site mobile phone:	07973 247781
Site Grid reference:	SJ 3577 9046

1.2 Emergency Contacts

Emergency services:	999
Local Police:	101
Environment Agency Hotline:	0800 807 060
Health and Safety Executive:	0345 300 9923
Electricity Supplier (Emergency):	SSE - 0800 195 4141
Local Authority:	Liverpool City Council - 0151 233 3000
Gas Supplier:	Gazprom - 0800 111 999
Gas Network:	Cadent - 0800 389 8000
Sewerage Undertaker:	United Utilities - 0345 672 3723

1.3 Out of Hours

Campus Security: 0151 794 2000

2.0 ACCIDENT MANAGEMENT PLAN

Development of the Accident Management Plan has been made in line with the requirements set in Section 2.8 of the IPPC Technical Guidance Note for the Combustion Sector. For accident management, there are three particular components:

- Identification of the hazards posed by the installation/activity;
- Assessment of the risks (hazard x probability) of accidents and their possible consequences; and
- Implementation of measures to reduce the risks of accidents, and contingency plans for any accidents that do occur.

2.1 Identified Hazards

- Overpressure of CHPs and Boilers
- Failure of mains services
- Noise pollution and vibrations
- Gas leaks
- Accidental explosion of gas or fire
- Operator error
- Site security and vandalism

2.2 Assessment of Risks

Hazard	Source Frequency	Risk Evaluation	Emission Prediction	Consequences	Risk
Overpressure of CHPs and Boilers	<p>Rare: the pressure level of the CHPs and boilers are monitored through the TMS and BMS systems respectively.</p> <p>Gas flow rate to be monitored via the TMS and BMS systems.</p>	Over pressurisation of CHPs and boilers may lead to gas leaks and increased risk of explosion.	CHPs and boilers are located within the Energy Centre buildings therefore gas emissions would be contained. High pressure related explosions may lead to potential aerial dispersion of gas/odour emissions to atmosphere/nearby local residents.	<p>Risk of fire, explosion, damage to infrastructure, damage to human health - at low concentrations; eye irritation, respiratory irritation, nausea and headaches, leading to asphyxiation at higher concentrations.</p> <p>Serious injury or death to site operatives and local residents.</p> <p>Potential respiratory harm from toxic smoke, which may result in death.</p> <p>Closure of the site for a potentially significant period.</p> <p>Impact on surrounding buildings.</p>	Very low: very low probability of an event occurring due to the proactive management and control of gas pressures. Medium to high potential consequence.
Failure of mains services	Very rare: infrastructure well maintained.	In the event of mains service failure, the facility will shut down, with safety critical equipment operated by a backup generator.	Potential aerial dispersion of gas/odour emissions to atmosphere/nearby local residents.	<p>Failure of mains services could force the temporary closure of the site.</p> <p>Potential result in gas leaks and lead to odour release</p>	Extremely low: minimal probability of event with a medium potential consequence.

Hazard	Source Frequency	Risk Evaluation	Emission Prediction	Consequences	Risk
				due to the shutdown of the control systems.	
Noise pollution and vibrations	Rare - Local residents often sensitive to noise and vibration but there is very low potential for exposure due to nature of the site and all CHPs and Boilers are within an enclosed building. Energy centre designed and built to be within Local Authority limits for noise.	Noise through the air and vibration through the ground.	As a standard rule, emissions shall be free from noise and vibration. Equipment is well maintained.	Environmental nuisance complaints, loss of amenity and disruption to sleep.	Very Low: rare potential for exposure and very low impact.
Gas Leaks	Low - monitoring is ongoing with detection systems in place. Periodic gas pipework tightness testing in place.	Air transport and inhalation of toxic gases. Potential for fire or explosion. Release of greenhouse gases into the atmosphere.	Gas releases that are flammable, explosive or immediately toxic. Greenhouse gas emissions contribute to pollution of the atmosphere.	Risk of fire, explosion, damage to infrastructure, damage to human health - at low concentrations; eye irritation, respiratory irritation, nausea and headaches, leading to asphyxiation at higher concentrations.	Moderate: low probability of event with high potential consequence.
Accidental explosion of gas / fire	Extremely Rare - reduced by effective management systems.	Potential for harm to site operatives and local residents from smoke and fire. Damage to other equipment and buildings on site.	Depending on the size of the explosion, harm could come to site operatives and nearby residents should parts of equipment become airborne.	Serious injury or death to site operatives and local residents. Potential respiratory harm from toxic smoke, which may result in death.	Low to Medium: negligible probability of event with high potential consequence.

Hazard	Source Frequency	Risk Evaluation	Emission Prediction	Consequences	Risk
		<p>Potentially toxic and polluting smoke</p> <p>Potential risk of a fire spreading outside the site boundary to the surrounding environment.</p> <p>Water used to extinguish a fire could be harmful to the surrounding environment if it isn't contained within the site.</p>	<p>Aerial dispersion of smoke to local residents and workplaces.</p> <p>Fire water direct run-off from site and via surface water drains, causing land and groundwater contamination.</p>	<p>Closure of the site for a potentially significant period.</p> <p>Contamination of land and groundwater.</p> <p>Destruction of surrounding buildings if the explosion and associated fire spread beyond the site.</p>	
Operator error	Rare – all operators complete Point of Work Risk Assessments prior to commencing any activities. Regular toolbox talks are also undertaken.	<p>Damage to infrastructure and equipment.</p> <p>Potential to effects to be felt by local receptors depending on nature of incident.</p>	Variable impacts depending on the nature of the incident.	<p>Serious injury or death to site operatives.</p> <p>Increased risk of fire, gas leaks or temporary closure of the site.</p> <p>Impact on surrounding buildings.</p>	Low to Medium: Negligible probability of event with high potential consequences.
Site security failures / vandalism / arson	Very rare: the energy centre is fitted with security alarms and there is 24-hour security on the University Campus. The area is also covered by CCTV and Ashton Street is a	Damage to infrastructure and equipment.	Variable impacts depending on the damage caused. Possible gas emissions to atmosphere.	Failure of site infrastructure could result in risks of fire, explosions, gas leaks or temporary closure of the site.	Very low: minimal probability of event the site is secure and not accessible to the public with a low to medium potential consequence.

Hazard	Source Frequency	Risk Evaluation	Emission Prediction	Consequences	Risk
	private road with barriers.				

2.3 Risk Mitigation Measures

Hazard	Equipment at Risk	Preventative Measures	Who to Inform	Monitoring Mitigation	Response Measures	System Procedures
Overpressure of CHPs and Boilers	CHPs Boilers Pipework	Pressure levels within the CHPs and Boilers and flow rates of natural gas are monitored through the TMS and BMS systems, with high level alarms in place to alert operative to exceedances of critical limits and a high-pressure safety valve. Implementation of the ULEC risk register.	Carbon and Utilities Manager Primary Site Operational Lead Maintenance and Engineering Hub Manager Facilities Engineer and Contracted Engineers	The conditions of the CHPs and Boilers are regularly inspected as part of the standard site checks. The pressure level and flow rate of the CHPs and boilers are continuously monitored on the TMS and BMS system with high level alarm.	Feeding of gas into CHPs and boilers will then be reduced. If this cannot be actioned the system will be shut down until pressure can be reduced to within critical limits.	ULEC Risk Register
Failure of mains services	Energy Centre	N/A	Carbon and Utilities Manager Maintenance and Engineering Hub Manager Facilities Engineer Local Power Company.		HV SAPs and Aps on site who can switch ring main. Inform service provider to identify cause and restore service immediately. Cease all operations within the Energy Centre. Depending on the timescale to repair, re-starting of operations would not be undertaken until agreed with the EA.	Accident Management Plan

Hazard	Equipment at Risk	Preventative Measures	Who to Inform	Monitoring Mitigation	Response Measures	System Procedures
			Environment Agency (if leading to pollution incident).			
Noise pollution and vibrations	N/A	<p>Staff and visitors shall be provided with appropriate PPE (Ear defenders).</p> <p>Boilers have annual service inspection and CHPs have maintenance contract in place.</p>	Carbon and Utilities Manager will be informed of any noise complaints.	<p>The site will investigate any noise complaints from sensitive receptors.</p> <p>Noise levels were tested during handover of site to ensure compliance with Local Authority limits.</p>	Noise complaints from sensitive receptors will be investigated and recorded in a complaints log.	Complaints procedure.
Gas Leaks	Gas can cause rapid corrosion or failure of electrical equipment, gas handling piping and building components.	<p>Continuous automated monitoring.</p> <p>GDS Combi gas alarm which alerts operators and shuts down the plant.</p> <p>Boilers have annual service inspection and CHPs have maintenance contract in place.</p> <p>Periodic gas pipework tightness testing.</p>	<p>Emergency services.</p> <p>Contracted Engineers</p> <p>Cadent</p> <p>Environment Agency.</p> <p>Local sensitive receptors.</p>	Continual monitoring of CHP and boiler emissions.	<p>If a gas leak occurs on site, follow emergency procedures.</p> <p>Following a gas leak the Carbon and Utilities Manager shall inform the EA.</p>	<p>Accident Management Plan</p> <p>ULEC Risk Register</p>

Hazard	Equipment at Risk	Preventative Measures	Who to Inform	Monitoring Mitigation	Response Measures	System Procedures
Accidental explosion of gas / fire	Any equipment within the vicinity of explosion/ fire.	<p>Automated pressure monitoring.</p> <p>Staff receive training to ensure they can competently operate the plant.</p> <p>Boilers have annual service inspection and CHPs have maintenance contract in place.</p> <p>No smoking within the energy centre or near equipment.</p>	<p>Emergency services.</p> <p>Line Manager</p> <p>Campus Security</p> <p>Carbon and Utilities Manager</p> <p>Environment Agency.</p>	Automated plant monitoring.	<p>The Emergency Procedure within ULEC Risk Register will be followed.</p> <p>Evacuate the site and assemble at fire assembly points.</p> <p>If possible, turn off equipment which could trigger a secondary explosion.</p> <p>Call the fire service and other fire services required.</p> <p>Inform Carbon and Utilities Manager.</p> <p>Post member of staff at safe distance from the Energy Centre to direct emergency services.</p> <p>Liaise with and follow instructions of emergency team and make them aware of any hazards on site.</p> <p>Fire water collected should be treated at an appropriate water treatment works.</p>	Accident Management Plan.

Hazard	Equipment at Risk	Preventative Measures	Who to Inform	Monitoring Mitigation	Response Measures	System Procedures
					<p>No further combustion will be undertaken until agreed by the EA.</p> <p>Record incident.</p> <p>Full investigation into route cause of the incident shall take place.</p>	
Operator error	All	<p>Staff receive training to ensure they can competently operate the plant.</p> <p>All operative complete a Point of Work Risk Assessment before commencing any works.</p> <p>Regular toolbox talk training for all operatives.</p>	<p>Carbon and Utilities Manager</p> <p>Environment Agency</p>	Training records for all operatives.	<p>Assess the damage and mitigate and further damage or pollution that could be caused.</p> <p>Inform the carbon and utilities manager.</p> <p>Inform the EA, if required.</p> <p>Review training requirements</p>	Accident Management Plan
Site security failures / vandalism / arson	All	<p>Security measures in place to prevent unauthorised access.</p> <p>Ashton Street is a private road with security barriers.</p> <p>Energy centre is fitted with security alarms.</p>	<p>Line Manager</p> <p>Campus Security</p> <p>Police (other emergency services if required).</p>	Locking of the energy centre out of hours.	<p>Assess the damage and mitigate and further damage or pollution that could be caused.</p> <p>Inform the carbon and utilities manager.</p> <p>Inform the police.</p>	Accident Management Plan.

Hazard	Equipment at Risk	Preventative Measures	Who to Inform	Monitoring Mitigation	Response Measures	System Procedures
		<p>24-hour security presence on campus.</p> <p>CCTV covering the area around the energy centre.</p> <p>Equipment is secured when not in use where possible.</p>	<p>Environment Agency if break-in leads to pollution incident.</p>		<p>Inform the EA, if required.</p>	



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