

**Tier Environmental Ltd**

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TECHNICAL NOTE

ATEX RISK ASSESSMENT TO SUPPORT VENT STACK REDUCTION WORKS AT FORMER CRANTON COLLIERY, CRANTON ROAD, L35 3SU.

Client:	Tritax Symmetry Ltd	Version:	Final
Reference:	TE1163-TE-00-TN-GE-003-V01	Author:	Alex Preston
Date:	08/08/2023	Approved:	Sean Lee

This short technical note is produced to present the ATEX risk assessment that Tier Environmental has undertaken to aid with the proposed works to reduce the height of the former mine shaft compound and gas vent stacks. It is proposed, to aid with the development of the former Cranton Colliery, that the land surrounding the shafts and associated compounds are reduced. This will include the removal of the palisade fencing, concrete hardstanding and dismantling of the vent stacks. Reduction of ground levels by up to 3m, then reassembly of the vent stacks and installation of new paladin fencing.

A temporary licence to occupy their premises will be obtained from the Coal Authority prior to commencement of the works.



General Information

Tier Job No.	TE1163
Site Name	Former Cronton Colliery
Site address	South of Halsnead Farm Livery Stables, Fox's Bank Lane, Cronton, L353SU.
National Grid Reference	SJ 47493 89537
Location description	The Site is located south of the M62 in a predominantly agricultural area. The closest town is Whiston which is 2.3 km North of the Site.
Approximate Site area	50.84ha
Site shape	Irregular with the longest axis in the east to west direction and the shortest axis being in the north to south direction.
Current land use	The Site is currently occupied by the construction site for a logistic facility with 1 No. warehouse currently being constructed.
Pertinent area of site	Compounds of 3 No. former mine shafts and vent stacks, 347389-001, 347389-002, 347389-003
Zone Classification	Zone 1

Site Checklist

Date of initial operation Unknown
Date of any modifications None
Maximum methane concentrations in last year 7
Typical gas concentrations:

CH4 13.5
CO2 0.9
O2 2

Typical gas flows 1l/s
Should site comply with ATEX yes



Vent

Vent number L150.3
Diameter of vent 250mm
Approximate height of vent 5m

Flame Arrester

Type TO BE DETERMINED
ATEX approved
Manufacturer
Date of manufacture
Serial number
Date of last service
Maintenance period 2 yearly

Isolation Valve

Type TO BE DETERMINED
ATEX approved
Manufacturer
Date of manufacture
Date of last service
Maintenance period 3 months

Proposed Works Reducing height of mine shaft compounds, including vent stacks and concrete hardstanding.
Work Area Compounds within palisade fencing, with lockable gate
Distance to nearest receptor over 200m
Size of compound 5.5 x 5.5 x 2.4m
Access Locked palisade compound
Security Abus 601 lock
Signs ATEX and CA
Zone classification Zone 1
Date of risk assessment 08/08/2023
Date of risk assessment review 10/08/2024
Contractor responsible for site Tier / TBC
Duration of Works 12 Weeks

Zone Classification

State	Gas
Type	Methane (Natural)
Minimum ventilation flow required (m3/s)	0.012
Hypothetical volume of explosive gas (m3)	0.13
Hypothetical radius of flammable sphere (m)	0.35
Grade of Release	Primary
Rate of Release (kg/s)	Primary state – the gas is released periodically or occasionally during normal operation. 0.0001



Work area / compound dimensions:	Length (m)	5.5
	Width (m)	5.5
	Height (m)	5
Stack height (m)		151.25
Notional no of air changes through volume if airflow is 0.5m/s		0.9
Typical methane concentration (%)		13.5
Estimated flow rate (m3/s)		0.0001
Estimated flow rate of methane (m3/s)		0.00012
Estimated mass flow rate (kg/s)		0.0001
Gas discharge temperature (°C)		260
Safety factor prop. to grade of release (k)		0.25
Impeded air factor (f)		1

Zone Type	Zone 1
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Justification	Tier have reviewed CA monitoring results in detail. Within Shaft No. 1 and No. 2 almost no methane has been observed since 2015. Shaft 3 has down bit some atmospheric pumping or breathing, where when lower atmospheric pressures are observed some increased gas concentrations are observed. However it is noted that this has reduced over recent years. Within shaft No. 3 since 2025 the average methane concentration is 2.2%. The maximum is 18.1% recorded in 2017. No recorded concentrations above 5 % have been recorded since 2023 and most readings recorded 0%. Therefore a conservative typical methane concentration of 13.5% was used.
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Hazards	Pathway	Receptor	Risk Control Measures (e.g. What Controls Are Already in Place)	Existing Risk Level -			Recommended Risk Control Measures	When do these need to be done by?	Residual Risk Level -			Comments
				Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
Combustion of flammable gas due to shaft reduction works	Direct contact at the site	Site operatives/contractors, buildings and services,	Secure work area with locked gate to encompass potential explosive zone. No hot works will be undertaken within the existing compound areas. Detailed RAMS will be produced and all site personal will receive a site induction prior to entry into the shaft compound areas. Notices of hazard and contact details. Gases will be continuously monitored during all site works.	4	3	12	Ensure that all site users are properly trained and that all employees (including third parties as defined by ATEX) follow a written procedure for working on the site. Ensure vehicle access is available in case of emergency. Ensure appropriate PPE is work on site namely anti static work boots. All equipment within the hazardous zone must conform to the requirements of ATEX Zone 1. Ensure all stakeholders are informed of the hazard. Update signage. Review risk assessment, if change in gas regime. No smoking. Ambient	Before Works commence	3	2	6	
	Ambient air	Site operatives/contractors	Gas discharges 5.0m above ground and compound is 5.5m x 5.5m	3	2	6	Monitoring of Gases, if any gases above LEL, evacuate work area momentarily. Fire Extinguishers and flame retardants kept close to work area at all times. No smoking.	During Works	3	2	6	
	Migration of gases	Buildings and services	Gas will also be monitored a nominal distance from work area to check for migration, initially upwind then downwind	4	2	8	Monitoring of Gases. No Smoking	During Works	3	2	6	
Hazardous Mine Gases	Outdoor Inhalation	Site operatives/contractors	Gases will be monitored throughout all works	3	2	6	Works undertaken outdoors so hazardous gases should dissipate in to the atmosphere	During Works	3	2	6	

The hazard **severity** can be assessed on a scale of 1 to 5:-

- 1 = minor injury/illness, not requiring first aid
- 2 = minor injury/illness requiring first aid
- 3 = moderate injury/illness requiring hospital treatment
- 4 = major injury/illness - life changing
- 5 = death

To determine severity consider:
 • the harmful effects of the hazards
 • the parts of the body affected

Then decide the likelihood of the harm (table opposite).

The **likelihood** of occurrence can be assessed on a scale of 1 to 5:

- 1 = remote
- 2 = unlikely
- 3 = possible
- 4 = likely
- 5 = certain

To determine likelihood consider:
 • the frequency and duration of exposure
 • the number of persons exposed
 • the resultant injury or the adverse health effect
 • the skills/knowledge/experience/training of the persons involved and supervision required

Then decide on the reasonably foreseeable outcome. The aim is to reduce risks to the lowest level reasonably practicable - weighing a risk against the effort, time and money needed to control it.

