1. Abbreviations and Definitions

Definitions for the Odour Risk Assessment	
Activity / Event	The specific operation being undertaken relating to the proposed hazard and risk.
Hazard	The hazards category i.e. type of emission.
Source	The pollutants from the activity taking place such as flaring.
Pathway	The pathway the pollutant is taking such as air or unsaturated zones.
Receptor	Those who it may have an adverse effect on i.e. surrounding residents, wildlife and habitats, designated sites.
Exposure Probability	The chance of the hazard occurring without taking into account mitigation measures.
Impact Severity	The impact of the hazard should it occur without taking into account mitigation measures.
Risk Magnitude	A hazard that has been assessed and has been given a risk rating level pre-mitigation measures.
Risk Management	Mitigation measures that will be put in place to control the risks so far as reasonably practicable.
Residual Risk	A hazard that has been assessed and has been given a risk rating level post mitigation measures.
Not Significant	The severity, together with the likelihood of the risk is not expected to cause any harm to the environment.
Low	The severity, together with the likelihood of the risk has low potential to cause harm to the environment.
Medium	The severity, together with the likelihood of the risk has moderate potential to cause harm to the environment.
High	The severity, together with the likelihood of the risk has a high potential to cause harm to the environment.

Table 1: Definitions

2. Methodology

The structure of the Odour Risk Assessment follows the Environment Agency online guidance and uses a model known as the 'Source-Pathway-Receptor' model. The Odour Risk Assessment shall:

- Identify the risk from the site;
- Assess risks and checking they are acceptable;
- Justify appropriate measures to control the risk (if needed); and
- Present the findings of the risk assessment.

3. Scoring Criteria

In order to establish a risk rating for each Source-Pathway-Receptor (S-P-R) linkage both the Likelihood (Exposure Probability) and Consequence (Impact Severity) have been issued with a score using Table 2 and Table 3 respectively. The score is used in conjunction with Table 4 to provide an overall risk rating of the activity. All scores and risk ratings are provided on the basis that the mitigation measure are not in place.

The Residual Risk uses the same scoring system but does consider the proposed mitigation measures.

Likelihood	Descriptor
Very Low	Rarely encountered, never reported or highly unlikely.
Low	Infrequent occurrences.
Medium	Can be expected to occur several times per year.
High	Repeated Occurrences.

Table 2: Scoring System Likelihood

Consequence	Descriptor
Very Low	Slight environmental effect that does not exceed a regulatory standard.
Low	Minor environmental effect, may breach a regulatory standard, localised to the point of release with no significant impact.
Medium	Moderate, localised effect on people and the environment in the vicinity of the incident.
High	A major environmental incident resulting in significant damage to the environment and harm to human health.

Table 3: Scoring System Consequence

The risk matrix presented in Table 4 provides a risk rating for each S-P-R linkage identified within this Odour Risk Assessment.

Risk Rating		Consequence			
		Very Low	Low	Medium	High
Likelihood	Very Low	Not Significant	Not Significant	Low	Low
	Low	Not Significant	Low	Medium	Medium
	Medium	Low	Medium	Medium	High
	High	Low	Medium	High	High

Table 4: Risk Matrix

Odour risks are assigned a Not Significant, Low, Medium or High risk rating and coded using a colour coded system. A description of each risk rating is presented in Table 5 below.

Consequence	Acceptable	Descriptor
Not Significant	Acceptable	Near-certain that an incident will not occur, or the consequences would not be significant.
Low	Acceptable	Unlikely an incident will occur, or the consequences would be minor confined to the immediate area.
Medium	Tolerable	Activity can only take place provided that impacts are localised and risk remediation is readily
High	Unacceptable	The risk must be further reduced before the activity can commence.

Table 5: Risk Rating Definition

Statutory and Designated Receptors	Search Radius	Name	Distance from Site	Direction from Site	Grid Reference	Area (Ha)
Special Areas of Conservation (SAC)	**10 Km**	Beast Cliff-Whitby (Robin Hoods Bay)	6.04 Km	North	TA 00520 98710	265.38
		North York Moors	7.58 Km	Northwest	TA 97485 98904	44,094.41
			9.03 Km	Northwest	TA 94765 98147	
Special Protection Areas (SPA)	**10 Km**	North York Moors	7.58 Km	Northwest	TA 97485 98904	44,094.41
			9.03 Km	Northwest	TA 94765 98147	
		Flamborough and Filey Coast	9.36 Km	Southeast	TA 09017 86446	7,857.99
Special Protection Areas (Marine)	**10 Km**	Flamborough and Filey Coast	9.36 Km	Southeast	TA 09017 86446	7,857.99
RAMSAR	**10 Km**	No Receptors Found	-	-	-	-
Special Areas of Conservation (Marine)	**10 Km**	No Receptors Found	-	-	-	-
Marine Conservation Zones	**10 Km**	No Receptors Found	-	-	-	-
World Heritage Sites	**10 Km**	No Receptors Found	-	-	-	-
Areas of Outstanding Natural Beauty (AONB)	**10 Km**	No Receptors Found	-	-	-	-
Sites of Special Scientific Interest (SSSI)	**2 Km**	Iron Scar and Hundale Point to Scalby Ness	0.64 Km	East	TA 02711 93128	116.87
			1.11 Km	Southeast	TA 02866 91953	
			1.39 Km	Northeast	TA 02766 94133	
National Parks	**2 Km**	North York Moors	0.81 Km	North	TA 02075 93717	144,100
			0.82 Km	Northwest	TA 01480 93448	
Scheduled Ancient Monuments (SAM)	**2 Km**	Post-medieval dovecote 40mk south of Cloughton Hall	1.77 Km	Northwest	TA 00881 94190	0.005
National Nature Reserves (NNR)	**2 Km**	No Receptors Found	-	-	-	-
National Forest	**2 Km**	No Receptors Found	-	-	-	-
RSPB Reserves	**2 Km**	No Receptors Found	-	-	-	-
Registered Battlefields	**2 Km**	No Receptors Found	-	-	-	-
Registered Parks and Gardens	**2 Km**	No Receptors Found	-	-	-	-

Statutory and Designated Receptors	Search Radius	Name	Distance from Site	Direction from Site	Grid Reference	Area (Ha)
Wood Pastures and Parkland BAP Priority Habitat	**2 Km**	No Receptors Found	-	-	-	-
		No Receptors Found	-	-	-	-
Local Nature Reserves (LNR)	**2 Km**	No Receptors Found	-	-	-	-

Sensitive Receptors	Search Radius	Name	Distance from Site	Direction from Site	Grid Reference	Area (Ha)
Sensitive Receptors: Households / Businesses	**2 Km**	Blue Star Welding & Maintenance	0.15 Km	West	TA 01884 92670	-
		Building housing: • Alonzecustom • Craft Beer Direct • Secondary Developments Custom Speed Shop	0.19 Km	West	TA 01875 92627	-
		Scarborough and Burniston CRE	0.23 Km	West	TA 01813 92625	-
		Wayside Farm	0.28 Km	West	TA 01793 92571	-
		Burniston	0.31 Km	West	TA 01639 92760	-
		Water Treatment Works	0.66 Km	Southeast	TA 02560 92289	-
		Ians Field Farm	0.77 Km	South	TA 01981 91975	-
		Cliff Top House	0.94 Km	Northeast	TA 02465 93766	-
		Westfield Farm	1.02 Km	Northwest	TA 01486 93716	-
		Swarthlands Farm	1.06 Km	Southwest	TA 01063 92214	-
		Cloughton Fields Cottage	1.14 Km	North	TA 02012 94035	-
		Scalby Lodge	1.26 Km	South	TA 02597 91593	-
		Fields Farm	1.30 Km	North	TA 01900 94184	-
		Scarborough RUFC	1.42 Km	Southwest	TA 01393 91469	-
		Cloughton	1.54 Km	Northwest	TA 01044 94029	-
		Scarborough	1.67 Km	South	TA 02244 91078	-
		Highlands Farm	1.97 Km	Northwest	TA 00138 93551	-

Surface Water Features	Search Radius	Name	Distance from Site	Direction from Site	Grid Reference	Area (Ha)
Surface Water Features	**2 Km**	Body of Water	0.09 Km	Southwest	TA 01968 92687	-
		Field Drain	0.12 Km	West	TA 01892 92662	-
		Field Drain	0.22 Km	North	TA 02115 93110	-
		Body of Water	0.24 Km	West	TA 01728 92701	-
		Body of Water	0.29 Km	South	TA 02011 92448	-
		Burniston Beck	0.38 Km	West	TA 01570 92760	-
		Body of Water	0.59 Km	Northwest	TA 01458 93091	-
		Body of Water	0.66 Km	Southeast	TA 02726 92530	-
		Body of Water	0.74 Km	South	TA 01876 92030	-
		Body of Water	0.82 Km	Northwest	TA 01483 93446	-
		North Sea	0.86 Km	East	TA 03002 92753	-
		Body of Water	0.95 Km	West	TA 01003 92748	-
		Body of Water	0.98 Km	North	TA 02359 93839	-
		Body of Water	0.99 Km	North	TA 01671 93770	-
		Body of Water	1.08 Km	Southwest	TA 01734 91700	-
		Body of Water	1.12 Km	Southwest	TA 01224 91925	-
		Body of Water	1.20 Km	Southwest	TA 01163 91866	-
		Body of Water	1.25 Km	West	TA 00730 92545	-
		Body of Water	1.32 Km	South	TA 02374 91453	-
		Body of Water	1.37 Km	North	TA 02112 94260	-
		Body of Water	1.43 Km	Southeast	TA 02713 91469	-
		Washy Cote Beck	1.44 Km	Southwest	TA 01103 91601	-
		Body of Water	1.55 Km	Northwest	TA 00767 93782	-
		Body of Water	1.68 Km	West	TA 00273 92738	-
		Body of Water	1.73 Km	Northwest	TA 00483 93686	-
		Body of Water	1.76 Km	Northwest	TA 00305 93404	-

Surface Water Features	Search Radius	Name	Distance from Site	Direction from Site	Grid Reference	Area (Ha)
Surface Water Features (cont.)	**2 Km**	Body of Water	1.77 Km	Northwest	TA 01134 94371	-
		Body of Water	1.83 Km	Northwest	TA 01171 94462	-
		Body of Water	1.86 Km	Northwest	TA 00316 93669	-
		Body of Water	1.88 Km	West	TA 00073 92812	-
		Body of Water	1.91 Km	Northwest	TA 00062 93058	-
Aquifers (Bedrock)	**2 Km**	Secondary A	Site located within designation			-
Aquifers (Superficial Drift)	**2 Km**	Secondary (undifferentiated)	Site located within designation			-
		Secondary A	0.32 Km	West	TA 01743 92437	-

Statutory and Designated Water Receptors	Search Radius	Safeguard Zone ID	Waterbody ID	Safeguard Zone Name	Source Protection Zone ID	Source Protection Zone Name	Source Protection Zone Number	Distance From site	Direction From site	Grid Reference
Drinking Water Safeguard Zones (Surface Water)	**2 km**	SWSGZ6008		Humber_SWSGZ6008_Elvington & Loftsome Bridge				Site located within designation		
Drinking Water Protected Areas (Surface Water)	**2 km**	No Receptors Found						-	-	-
Drinking Water Safeguard Zones (Groundwater)	**2 km**	No Receptors Found						-	-	-
Bathing Waters	**2 km**	No Receptors Found						-	-	-
Source Protection Zones	**2 km**	No Receptors Found						-	-	-

ID	Activity / Event Leading to Emission	Potential Release Point	S-P-R Linkage			Exposure Probability	Impact Severity	Risk Magnitude	Risk Management	Residual Risk
			Source	Pathway	Receptor					
ASSESSMENT OF ODOUR EMISSIONS - MAJOR										
01	Odour Emissions from the Incineration of Natural Gas	• Flare Tip / Stack	• Gas and Particulate Matter Emissions	Emitted to air and carried on wind	See Receptor Table	Medium	Medium	Medium	Air Quality Impact Assessment concludes no significant impact. Combustion unit subject to approval by the EA. Dedicated scrubbers in place to remove H_2S from natural gas, if necessary. Equipment installed, serviced and maintained by competent and qualified contractors. Flare monitoring (to be) in place with results reported in accordance with EA permit. H_2S is not anticipated. Odour Management Plan implemented for the site, if required. Plant, tanks and pipework tested for leaks prior to first use to confirm integrity. Potential for small volumes of gas upon completion of acidisation. Propane shall be used to increase the calorific value of the gas whilst heavy with Nitrogen(N_2) / Carbon Dioxide (CO_2) to encourage combustion. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Trained persons to operate flare unit. Well clean up anticipated to last no longer than 45 minutes per occurrence. Working personnel subject to a site induction covering odour management.	Not Significant
02	Odour Emissions from Well Clean Up / Cold Venting	• Flare Tip / Stack	• Wellbore Gas	Emitted to air and carried on wind	See Receptor Table	Low	High	Medium	Combustion temperature managed to ensure efficient (>98%) combustion efficiency. Combustion unit subject to approval by the EA. Dedicated scrubbers in place to remove H_2S from natural gas, if necessary. Equipment installed, serviced and maintained by competent and qualified contractors. Flare monitoring (to be) in place with results reported in accordance with EA permit. H_2S is not anticipated. Odour Management Plan implemented for the site, if required. Potential for small volumes of gas upon completion of acidisation. Propane shall be used to increase the calorific value of the gas whilst heavy with Nitrogen(N_2) / Carbon Dioxide (CO_2) to encourage combustion. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Trained persons to operate flare unit. Vehicles and plant serviced and maintained in line with manufacturer requirements. Well clean up anticipated to last no longer than 45 minutes per occurrence. Working personnel subject to a site induction covering odour management.	Not Significant

ID	Activity / Event Leading to Emission	Potential Release Point	S-P-R Linkage			Exposure Probability	Impact Severity	Risk Magnitude	Risk Management	Residual Risk
			Source	Pathway	Receptor					
03	Odour Emissions from Engine Exhausts including:	• Vehicles • Ancillary Plant (Generators) • Drilling Rig • Workover Rig • Well Test Spread	• Gas and Particulate Matter Emissions	Emitted to air and carried on wind	See Receptor Table	High	Low	Medium	Air Quality Impact Assessment concludes no significant impact. Equipment installed, serviced and maintained by competent and qualified contractors. Odour Management Plan implemented for the site, if required. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Vehicles and plant switched off when not in use. Working personnel subject to a site induction covering odour management.	Not Significant
ASSESSMENT OF ODOUR EMISSIONS - MINOR										
04	Odour Emissions from Breaking of Containment	• Storage Tanks • Pipework • Wellhead • Separator • Any Other Equipment	• Oil • Formation Water • Drilling Fluids • Well Treatment Fluids • Natural Gas	Emitted to air and carried on wind	See Receptor Table	Medium	Low	Medium	Air Quality Impact Assessment concludes no significant impact. Breaking containment of tanks and pipework systems shall minimised. Equipment cleaned / purged where possible prior to breaking containment. Plant, tanks and pipework capped / plugged after breaking containment. Plant, tanks and pipework cleaned / purged where possible prior to breaking containment. Odour Management Plan implemented for the site, if required. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Trained persons to operate vehicles and site plant. Working personnel subject to a site induction covering odour management.	Not Significant
05	Odour Emissions from Storage of Low Volume Odorous Products	• Damaged / Unsealed Storage Containers	• Hydraulic Oils • Diesel Fuel • Lubricating Oils and Similar Products	Emitted to air and carried on wind	See Receptor Table	Low	Low	Low	Air Quality Impact Assessment concludes no significant impact. Chemicals segregated, stored correctly and sealed when not in use. Competent personnel only to store / use chemicals. Containers checked on delivery, pre-use and periodically for signs of damage/leaks. Odour Management Plan implemented for the site, if required. Odourless products used ahead of those which give rise to odour where practicable. Products kept within their dedicated storage area when not in use. Quantities of odorous products to be kept to a minimum. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Tanks monitored and emptied as required. Tanks self-contained / enclosed where necessary to limit emissions to air. Working personnel subject to a site induction covering odour management.	Not Significant

ID	Activity / Event Leading to Emission	Potential Release Point	S-P-R Linkage			Exposure Probability	Impact Severity	Risk Magnitude	Risk Management	Residual Risk
			Source	Pathway	Receptor					
06	Odour Emissions from Produced fluids on the surface of wellbore equipment.	• Drilling Rig • Drill Pipe • Wellhead • Any Other Equipment	• Oil • Formation Water • Drilling Fluids • Well Treatment Fluids	Emitted to air and carried on wind	See Receptor Table	Low	Low	Low	Cleaning and purging where possible prior to pulling out of hole. Odour Management Plan implemented for the site, if required. Records kept of complaints and subsequent mitigation imposed if necessary. Volume of produced fluids on wellbore equipment is expected to be minimal. Working personnel subject to a site induction covering odour management.	Not Significant
07	Odour Emissions from Use of / Decanting of Low Volume Odorous Products	• Storage Area • Decanting Area • Product Container	• Hydraulic Oils • Diesel Fuel • Lubricating Oils and Similar Products	Emitted to air and carried on wind	See Receptor Table	Low	Low	Low	Air Quality Impact Assessment concludes no significant impact. Chemicals segregated, stored correctly and sealed when not in use. Competent personnel only to store / use chemicals. Containers checked on delivery, pre-use and periodically for signs of damage/leaks. Odourless products used ahead of those which give rise to odour where practicable. Odour Management Plan implemented for the site, if required. Products kept within their dedicated storage area when not in use. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Working personnel subject to a site induction covering odour management.	Not Significant
08	Odour Emissions from Storage of Sewage	• Sewage Tanks	• Sewage	Emitted to air and carried on wind	See Receptor Table	Medium	Low	Medium	Breaking containment of tanks and pipework systems shall minimised. Equipment cleaned / purged where possible prior to breaking containment. Plant, tanks and pipework capped / plugged after breaking containment. Plant, tanks and pipework cleaned / purged where possible prior to breaking containment. Odour Management Plan implemented for the site, if required. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Tanks monitored and emptied as required. Tanks self-contained / enclosed where necessary to limit emissions to air. Working personnel subject to a site induction covering odour management.	Not Significant

ID	Activity / Event Leading to Emission	Potential Release Point	S-P-R Linkage			Exposure Probability	Impact Severity	Risk Magnitude	Risk Management	Residual Risk
			Source	Pathway	Receptor					
09	Odour Emissions from Storage of General Waste	• General Waste Skips	• General Waste	Emitted to air and carried on wind	See Receptor Table	Medium	Low	Medium	Odour Management Plan implemented for the site, if required. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Skips clearly marked to ensure waste segregation and avoid cross contamination. Skips monitored daily and emptied as required. Skips self-contained / enclosed to prevent emissions. Working personnel subject to a site induction covering odour management.	Not Significant
10	Odour Emissions from the Storage of Odorous Waste Products	• Waste Containers • Waste Storage Tanks • Waste Skips	• General Waste	Emitted to air and carried on wind	See Receptor Table	Medium	Low	Medium	Odour Management Plan implemented for the site, if required. Records kept of complaints and subsequent mitigation imposed if necessary. Regular maintenance and inspections conducted as directed by written procedures. Skips clearly marked to ensure waste segregation and avoid cross contamination. Skips monitored daily and emptied as required. Skips self-contained / enclosed to prevent emissions. Working personnel subject to a site induction covering odour management.	Not Significant