

Rathlin Energy

Vapour Recovery Plan

Environmental Permit
Variation

West Newton A
Wellsite




East Riding of Yorkshire

PEDL 183

December 2018



APPROVAL LIST

	Title	Name	Signature
Prepared By	HSE & Permit Advisor	Sean Smart	
Reviewed By	HSE and Planning Manager	Jonathan Foster	
Approved By	Country Manager	Tom Selkirk	

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1. INTRODUCTION

Rathlin Energy (UK) Limited (Rathlin) is a private company with its head office in Beverley, East Riding of Yorkshire. Rathlin is a petroleum exploration, development and production company with operations in the United Kingdom. Rathlin is the operator of PEDL183.

The purpose of the Vapour Recovery Plan is to present and outline the vapour recovery management arrangements for the West Newton A wellsite.

2. SCOPE

This Vapour Recovery Plan is applicable to the West Newton A wellsite in accordance with environmental permits and planning consent.

It is applicable to Rathlin, its contractors and subcontractors and can be used in support of applications to the Environment Agency under the Environmental Permitting (England and Wales) Regulations 2016 (EPR2016), where there is a requirement to provide a Vapour Recovery Plan.

3. DEFINITIONS

COB: Chairman of the Board

EPR2016: Environmental Permitting (England & Wales) Regulations 2016

HSE: Health, Safety and Environmental

PEDL: Petroleum Exploration and Development Licence.

Rathlin: Rathlin Energy (UK) Limited

UK: United Kingdom

4. ROLES AND RESPONSIBILITIES

Role	Key Responsibilities
Chairman of the Board	<p>The Chairman of the Board (COB) is overall responsible for all Rathlin business activities and has to ensure that suitable and sufficient systems, processes and resources are provided to adhere to the HSE Management System, legislative and regulative requirements in relation to this plan.</p> <p>The COB shall:</p> <ul style="list-style-type: none"> ▪ Apply HSE Management System standards and procedures throughout the project; ▪ Provide suitable and sufficient input and resources required to maintain an effective HSE Management System; ▪ Stipulate project requirements and conditions, e.g. budget, time constraints, milestones and feedback; and ▪ Ensure that a proactive and robust system is in place for the management of vapour recovery during well testing operations, production operations, associated workover operations and well abandonment operations.
Country Manager	<p>The Country Manager is responsible for:</p> <ul style="list-style-type: none"> ▪ The communication and implementation of the Vapour Recovery Plan; ▪ The communication of the Environmental Management System structure and responsibilities to the Wellsite Supervisor; ▪ Providing assistance and guidance in the update and approval of the Vapour Recovery Plan; ▪ Ensuring that legislative compliance is maintained through the provision of adequate competent resources; ▪ Ensuring that competent personnel are available to implement, monitor and assess the requirements of the Vapour Recovery Plan; ▪ Ensuring that roles and responsibilities are identified and the assessment of individuals is recorded; ▪ Selecting contractors who can meet Rathlin’s HSE standards through a robust tendering and/or selection process and the monitoring of contractors to ensure that these standards are being met; ▪ Identifying training requirements and where required, provide training for those involved in the management of vapour recovery; ▪ The development and training of staff or assessing the competence of contractors so that they are competent and capable of carrying out their work to the required standards; ▪ Ensuring that emergency response procedures are developed, maintained, communicated and tested for effectiveness; and ▪ Conducting periodic audits of compliance and communicating environmental performance, significant findings and non-conformances.

Role	Key Responsibilities
Wellsite Supervisor	<p>The Wellsite Supervisor is responsible for:</p> <ul style="list-style-type: none"> ▪ The communication and implementation of the Vapour Recovery Plan to site operatives and contractors; ▪ Providing assistance and guidance in the update of the Vapour Recovery Plan; ▪ Ensuring that leadership is clearly established and promoting a high degree of HSE awareness through communication of HSE Policies and responsibilities; ▪ Ensuring that defined practices and processes are communicated; ▪ Ensuring that, where required, monitoring and reporting relating to regulatory compliance is carried out; ▪ Ensuring that emissions are reported and investigated in accordance with Rathlin's HSE policies; ▪ Ensuring that where required, emissions are sampled to determine source and composition of the emission; ▪ Ensuring that spillages are remediated as soon as reasonably practicable; ▪ Ensuring that training is provided to all personnel on pollution prevention and pollution control; ▪ Ensuring that all incidents, involving, or having the potential to cause, injury or harm to personnel, damage to infrastructure or the environment are thoroughly investigated; ▪ Ensuring that emergency response plans are tested on a regular basis, recording the results, identifying, implementing and communicating corrective actions; ▪ Ensuring that complaints are reported to Rathlin and thoroughly investigated; ▪ Monitoring compliance with the Vapour Recovery Plan; ▪ Ensuring sufficient priority is placed on undertaking audits; and ▪ Ensuring that performance and findings from audits, inspections and non-conformances is communicated.
All personnel	<p>All personnel are to follow the requirements of this Vapour Recovery Plan and cooperate fully with senior management.</p> <p>All personnel must take reasonable care to ensure that their actions do not have an adverse impact on the environment. Personnel must not intentionally or recklessly interfere with, or misuse anything that is provided in the interest of health, safety and the environment.</p>

5. VAPOUR RECOVERY PLAN

This Vapour Recovery Plan covers the following operations to be conducted at the West Newton A wellsite:

- Well testing operations;
- Workover operations; and
- Well abandonment operations.

5.1 Objectives of the Vapour Recovery Plan

The primary objective of this Vapour Recovery Plan is to prevent significant impacts from the emission of Volatile Organic Compounds (VOCs), whose emission to air could cause pollution on local amenities, human health and the environment. This objective will be achieved through:

- Assessment of risks;
- Management of vapour recovery;
- Arrangements for the recovery of VOCs;
- Implementation of pollution control measures;
- Containment of emissions;
- Maintenance and servicing procedures;
- Emergency response procedures;
- Arrangements for monitoring and recording;
- Training of personnel;
- Audit requirements; and
- Arrangements for reviewing and revising the Vapour Recovery Plan.

5.2 Distribution of the Approved Vapour Recovery Plan

Rathlin will communicate the Vapour Recovery Plan to the Wellsite Supervisor. The Vapour Recovery Plan may be issued as an electronic version or paper copy and a copy of receipt or transmittal will be recorded by Rathlin. A copy of the Vapour Recovery Plan is to be held within the Wellsite Supervisor's office and be available for review by regulatory bodies.

The Vapour Recovery Plan will be communicated to site personnel during site induction and a record of induction will be recorded. A copy of the Vapour Recovery Plan will be displayed and made available on site to all personnel during operations.

5.3 Alterations to the Vapour Recovery Plan

Any required changes or deviations from this Vapour Recovery Plan are to be referred to Rathlin or to the Wellsite Supervisor in the first instance. No changes to, or deviations from, this Vapour Recovery Plan are to be implemented until the required changes or deviations have been reviewed and approved by Rathlin. Alterations to the plan will be submitted to the Environment Agency for approval; however, alterations may be implemented as an immediate control measure to resolve an identified problem prior to notification to the Environment Agency.

5.4 Changes to Operations, Processes or Equipment

In the event that there are significant or material changes to operations, processes or equipment during the West Newton A exploratory operations, Rathlin will review the Vapour Recovery Plan. Rathlin will communicate a copy of any revised Vapour Recovery Plan to the Wellsite Supervisor and forward a copy to the Environment Agency.

6. ASSESSMENT OF RISKS

6.1 Crude Oil Vapour Risk Assessment

In support of the Vapour Recovery Plan, a risk assessment of potential VOC vapours that may be generated during the transfer, loading and unloading of crude oil has been undertaken.

The Crude Oil Vapour Risk Assessment is qualitative and details the activities and events that may lead to environmental impact on one or more receptors.

The Crude Oil Vapour Risk Assessment has assessed the potential odour risks from the proposed well testing operations to be undertaken and includes the following information:

- Potential release points;
- Potential sources of pollution;
- Operations being carried out which may lead to emissions;
- Receptors;
- Pathway;
- Probability of exposure;
- Consequence;
- Magnitude of Risk;
- Risk management to control or minimise vapour release;
- Residual Risk; and
- Responsible Person for monitoring release points.

For clarity, the Crude Oil Vapour Risk Assessment has assessed the volume of VOCs within vapours contained within crude oil storage tanks as 'very low'. This was based on the following:

1. Natural gas and crude oil are separated by the three phase separator; and
2. Gas vented from storage tanks has been assessed as normal air with trace amounts of VOCs.

A copy of the Crude Oil Vapour Risk Assessment is included in Appendix 1.

7. MANAGEMENT OF VAPOUR RECOVERY

Vapours containing potential VOCs are generated from the agitation of crude oil as it is transferred in to crude oil storage tanks and road tankers.

During the transfer, loading and unloading of crude oil, there is the potential for VOCs to be emitted to atmosphere from storage tank vents and road tanker inspection hatches.

Details of the proposed vapour recovery measures to be implemented within the West Newton A wellsite are detailed in Section 7.1.1 and Section 7.1.2.

7.1 Arrangements for the Recovery of VOCs

7.1.1 Recovery of VOCs from Oil Storage Tanks

Vapours within crude oil storage tanks will be vented to atmosphere from a single co-joined vent stack connecting all crude oil storage tanks located within the West Newton A wellsite.

Rathlin propose to install a VOC scrubber on the single co-joined vent stack to recover VOCs from vapours emitted from the crude oil storage tanks.

The scrubber will be designed to allow the capture and recovery of VOCs from vapours being vented during the following operations:

1. Loading (filling) of crude oil storage tanks;
2. Transfer of crude oil between crude oil storage tanks; and
3. Back venting of vapours from loading (filling) road tankers used in the transportation of crude oil offsite to the local refinery.

For safety and environmental reasons, the scrubber to be installed **must** be capable of allowing air flow both in to, and out of, the crude oil storage tanks to prevent over-pressurisation and under-pressurisation of the crude oil storage tank.

The Crude Oil Vapour Risk Assessment has assessed the risk from VOCs emitted to atmosphere with no VOC scrubber installed as '*not significant*' and the risk of VOCs emitted to atmosphere with a VOC scrubber installed as '*insignificant*'.

7.1.2 Recovery of VOCs from Road Tankers

During the loading of road tankers used for the transportation of crude oil offsite, vapours within the road tanker are back vented to the crude oil storage tank. The vapours flow from the road tanker via a flexible hose, to the crude oil storage tank where they will be managed in accordance with Section 7.1.1.

The Crude Oil Vapour Risk Assessment has assessed the risk from VOCs emitted to atmosphere from the road tanker as '*not significant*'.

The Crude Oil Vapour Risk Assessment has assessed the risk from VOCs emitted to atmosphere from the back venting of vapours to the crude oil storage tank with no VOC scrubber installed as '*not significant*' and the risk of VOCs emitted to atmosphere with a VOC scrubber installed as '*insignificant*'.

8. IMPLEMENTATION OF POLLUTION CONTROL MEASURES

Control measures shall be implemented to prevent the emission of vapours containing VOCs, whose emission to air could cause pollution. Control measures to be implemented include, but are not limited to:

- Installation of VOC scrubbers on the single co-joined vent stack;
- Tank levels monitored to prevent overfilling;
- Transfer of products to be monitored by wellsite personnel;
- Checks of containment and transfer systems to ensure integrity is maintained;
- Where possible, breaking containment to be undertaken at cessation of operations;
- Purge equipment prior to breaking containment;
- Plug / cap tanks, pipes, hoses etc. after breaking containment;
- Wellsite / vehicle spillage kits to be readily available;
- Spillages to be remediated immediately;
- All spillages to be reported;
- Emergency response plan established / tested; and
- Training on environmental awareness for wellsite personnel.

9. CONTAINMENT OF EMISSIONS

There is the potential for vapours containing VOCs to be contained within pipes, hoses etc. used within crude oil transfer and loading operations.

Where practicable, pipes, hoses etc. will remain sealed until cessation of operations thus reducing the likelihood of potential emissions. Where possible, purging of the system is to be undertaken prior to breaking containment.

Tanks and pipework containing potential emissions are to be checked on a regular basis by the service provider and the Wellsite Supervisor for leaks and / or damage to the containment system. All checks are to be recorded and a record held within the Wellsite Supervisor's office and be available for review by regulatory bodies.

10. MAINTENANCE AND SERVICING PROCEDURES

Maintenance and servicing of storage tanks, equipment, pipework, hoses, scrubbers etc. will be undertaken in accordance with the manufacturer's recommendations. Rathlin will ensure that the risk of potential emissions from the breaking of containment during maintenance and servicing of equipment is reduced to a minimum and the potential for equipment failure is reduced.

Control measures to eliminate or reduce potential emissions include, but are not limited to:

- Purging equipment prior to breaking containment;
- Conducting maintenance or servicing inside buildings or covered areas where practicable;
- Containment of emissions; and
- Compliance with waste storage / disposal procedures.

11. EMERGENCY RESPONSE PROCEDURES

11.1 Emergency Action Plan

In the event of an incident occurring, the Wellsite Supervisor is to comply with the Emergency Response Plan ensuring, if safe to do so, immediate action is undertaken to isolate, contain and prevent an emission of vapours from entering the atmosphere.

Spillages occurring during the transfer of crude oil are not to be hosed down or detergents used to remediate the spillage.

Remediation of the spillage is to be undertaken and the contaminated soil is to be removed, segregated and disposed of to an Environment Agency licensed facility as hazardous waste.

11.2 Spillage Response Equipment

Spillage response equipment is located onsite. During site inductions, personnel will be shown the location of spillage equipment, how to use the equipment correctly and how to store and use materials safely.

Spillage equipment is to be labelled and checked on a regular basis by the Wellsite Supervisor and unserviceable items quarantined and replaced.

12. MANAGEMENT ARRANGEMENTS

12.1 Monitoring and Recording

12.1.1 Daily Environmental Monitoring

The Wellsite Supervisor is to undertake daily environmental monitoring and a record is to be held onsite. Environmental monitoring is to include checks on wellsite equipment, secondary containment systems and hazardous materials for visible signs of leaks, damage or contamination. The Environmental Checklist is to include components and equipment that have the potential to emit vapours containing VOCs including, but not limited to:

- Crude oil storage tanks, associated pipework and vent stacks;
- VOC scrubbers; and
- Pipes and hoses etc. used in the transfer of crude oil.

12.2 Training of Personnel

All personnel involved in the management of vapour recovery will receive training prior to commencement of their responsibilities. Training will be undertaken by Rathlin and a record of training will be recorded and held on site.

12.3 Audit Requirements

Senior management will conduct periodic audits of compliance with the Vapour Recovery Plan and communicate environmental performance, significant findings and non-conformances.

The Wellsite Supervisor will ensure sufficient priority is placed on undertaking audits and ensure that performance and findings from audits, inspections and non-conformances is communicated to site personnel and contractors.

12.4 Arrangements for Reviewing and Revising the Vapour Recovery Plan

Rathlin will periodically review the Vapour Recovery Plan or when significant changes to operations or site equipment have occurred and amend where necessary in accordance with the Rathlin document control procedure.

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APPENDIX 1 – CRUDE OIL VAPOUR RISK ASSESSMENT

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Scoring Criteria

In order to establish a risk rating for each Source-Pathway-Receptor (S-P-R) linkage both the Likelihood (Probability of Exposure) and Consequence have been issued a score.

The score is used in conjunction with Table 1.1 to provide an overall risk rating of the activity. All scores and risk ratings are provided on the basis that the mitigation measures are in place.

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 1.1: Scoring System - Likelihood

Consequence	Descriptor
Very Low	Slight environmental effect that does not exceed a regulatory standard.
Low	Minor environmental effect which may breach a regulatory standard but is localised to the point of release with no significant impact on the environment or human health.
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 1.2: Scoring System - Consequence

The risk matrix presented in Table 1.3 derives a risk rating for each S-P-R linkage identified within this Crude Oil Vapour Risk Assessment.

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

Table 1.3: Risk Matrix

Crude oil vapour emission risks are assigned a Insignificant, 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 1.4.

Risk Rating	Acceptable?	Descriptor
Insignificant	Acceptable	Near-certain that an incident will not occur. If it did occur the consequences would be too small to be worth consideration.
Not Significant	Acceptable	Near-certain that an incident will not occur. If it did occur the consequences would not be significant.
Low	Acceptable	Unlikely an incident will occur or give rise to anything more than a minor consequence on the immediate area.
Medium	Tolerable	The activity can only take place provided that any impacts remain localised and risk remediation is readily available.
High	Unacceptable	The risk must be further reduced before the activity can commence.

Table 1.4: Risk Rating Definitions

WNA Crude Oil Vapour Risk Assessment

ID	Potential Release Point (Hazard)	Potential Sources of Odour (Source)	Operations being carried out which may lead to odour emissions	Receptors	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Risk Management	Residual Risk	Responsible Person for Monitoring Release Point
WNA-001	Crude oil storage tank vent stack - VOC scrubber not installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Storage of Crude Oil	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Monitor levels to prevent overfilling/spillage. Ensure connections to storage tanks fitted correctly. Pressure test equipment prior to use. Competent operators. Equipment to be serviced/maintained. Regular inspection of storage tank connections and pipes for failure or leaks. Personnel inducted/trained on emergency response procedures. 	Not Significant	Wellsite Supervisor
WNA-002	Crude oil storage tank vent stack - VOC scrubber not installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Planned breaking of containment	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Where possible, plan for breaking containment operations at cessation of operations. Purge equipment prior to breaking containment. Plug/cap tanks, pipes, hoses etc. after breaking containment. Regular inspection of tanks, connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Not Significant	Wellsite Supervisor
WNA-003	Crude oil storage tank vent stack - VOC scrubber not installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Equipment failure	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Tanks and associated pipework protected. Equipment to be serviced/maintained. Regular inspection of connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Not Significant	Wellsite Supervisor
WNA-004	Crude oil storage tank vent stack - VOC scrubber installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Storage of Crude Oil	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Installation of VOC Scrubber. Monitor levels to prevent overfilling/spillage. Ensure connections to storage tanks fitted correctly. Pressure test equipment prior to use. Competent operators. Equipment to be serviced/maintained. Regular inspection of storage tank connections and pipes for failure or leaks. Personnel inducted/trained on emergency response procedures. 	Insignificant	Wellsite Supervisor
WNA-005	Crude oil storage tank vent stack - VOC scrubber installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Planned breaking of containment	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Installation of VOC Scrubber. Where possible, plan for breaking containment operations at cessation of operations. Purge equipment prior to breaking containment. Plug/cap tanks, pipes, hoses etc. after breaking containment. Regular inspection of tanks, connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Insignificant	Wellsite Supervisor
WNA-006	Crude oil storage tank vent stack - VOC scrubber installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Equipment failure	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Installation of VOC Scrubber. Tanks and associated pipework protected. Equipment to be serviced/maintained. Regular inspection of connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Insignificant	Wellsite Supervisor

ID	Potential Release Point (Hazard)	Potential Sources of Odour (Source)	Operations being carried out which may lead to odour emissions	Receptors	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Risk Management	Residual Risk	Responsible Person for Monitoring Release Point
WNA-007	Crude oil storage tank vent stack - VOC scrubber not installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Back venting vapours containing VOCs	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere)	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Monitor levels to prevent overfilling/spillage. Ensure connections to storage tanks fitted correctly. Pressure test equipment prior to use. Competent operators. Equipment to be serviced/maintained. Regular inspection of storage tank connections and pipes for failure or leaks. Personnel inducted/trained on emergency response procedures. 	Not Significant	Wellsite Supervisor
WNA-008	Crude oil storage tank vent stack - VOC scrubber installed	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Back venting vapours containing VOCs	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere)	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Installation of VOC Scrubber. Monitor levels to prevent overfilling/spillage. Ensure connections to storage tanks fitted correctly. Pressure test equipment prior to use. Competent operators. Equipment to be serviced/maintained. Regular inspection of storage tank connections and pipes for failure or leaks. Personnel inducted/trained on emergency response procedures. 	Insignificant	Wellsite Supervisor
WNA-009	Road tanker used for the transfer of crude oil offsite	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Loading of Crude Oil	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere)	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds / drip trays. Ensure correct connections. Monitor levels to prevent overfilling/spillage. Ensure connections fitted correctly. Ensure inspection hatches closed prior to delivery. Pipes used within the transfer to be capped after use. Tanks sealed after transfer. Competent operators. Transfer operations monitored by site personnel. Equipment to be serviced/maintained. Regular inspection of connections and pipes for failure or leaks during transfer. Personnel inducted/trained on emergency response procedures. 	Not Significant	Road Tanker Operator / Wellsite Supervisor
WNA-010	Road tanker used for the transfer of crude oil offsite	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Planned breaking of containment	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere)	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Where possible, plan for breaking containment operations at cessation of operations. Where possible, purge equipment prior to breaking containment. Plug/cap tanks, pipes, hoses etc. after breaking containment. Regular inspection of tanks, connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Not Significant	Road Tanker Operator / Wellsite Supervisor
WNA-011	Road tanker used for the transfer of crude oil offsite	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Equipment failure	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere)	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Tanks and associated pipework protected. Equipment to be serviced/maintained. Regular inspection of connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Not Significant	Road Tanker Operator / Wellsite Supervisor
WNA-012	Hoses and pipes used in the transfer of crude oil	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Planned breaking of containment	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere)	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> Use of secondary containment systems / bunds. Where possible, plan for breaking containment operations at cessation of operations. Where possible, purge equipment prior to breaking containment. Plug/cap tanks, pipes, hoses etc. after breaking containment. Regular inspection of tanks, connections and pipes for failure or leaks. Competent operators. Personnel inducted/trained on emergency response procedures. 	Not Significant	Road Tanker Operator / Wellsite Supervisor

ID	Potential Release Point (Hazard)	Potential Sources of Odour (Source)	Operations being carried out which may lead to odour emissions	Receptors	Pathway	Probability of Exposure	Consequence	Magnitude of Risk	Risk Management	Residual Risk	Responsible Person for Monitoring Release Point
WNA-013	Hoses and pipes used in the transfer of crude oil	Vapours containing VOCs (Vapours assessed as containing very low volumes of VOCs)	Equipment failure	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> • Use of secondary containment systems / bunds. • Tanks and associated pipework protected. • Equipment to be serviced/maintained. • Regular inspection of connections and pipes for failure or leaks. • Competent operators. • Personnel inducted/trained on emergency response procedures. 	Not Significant	Road Tanker Operator / Wellsite Supervisor
WNA-014	Various - within the site boundary	Vapours containing VOCs from spillages of crude oil (Vapours assessed as containing very low volumes of VOCs)	Spillages	Special Protection Areas (SPA) Marine Protection Areas (MPA) Sites of Special Scientific Interest (SSSI) Local Wildlife Sites Sensitive Receptors: Households / Businesses Water Features (Closest in All Directions) Surrounding Environment (Wellsite Surface and Subsurface Soils & Groundwater Atmosphere	Air - Prevailing winds from south west (average statistics from the Met Office)	Low	Low	Low	<ul style="list-style-type: none"> • Use of secondary containment systems / portable bunds / drip trays. • Spillages to be remediated as soon as reasonably practicable. • Where practicable, use of vacuums to remediate spillages. • Notification to emergency services of commencement of operations on mobilisation. • Used spillage equipment to be segregated and contained to prevent odour prior to offsite disposal. • Competent operators. • Personnel inducted/trained on emergency response procedures. 	Not Significant	Wellsite Supervisor

WNA Receptors

Receptors	Search Radius	Name	Distance from Site	Direction from Site	Grid Reference (Edge)
RAMSAR	10km	None	-	-	-
Special Areas of Conservation (SAC)	10km	None	-	-	-
Special Protection Areas (SPA)	10km	Hornsea Mere	6.92km	North	TA 17983 46008
		Greater Wash	5.39km	East	TA 24044 41899
Sites of Special Scientific Interest (SSSI)	2km	Lambwath Meadows	1.00km	Northeast	TA 20100 39699
Scheduled Ancient Monuments	2km	None	-	-	-
National Nature Reserves	2km	None	-	-	-
Local Nature Reserves	2km	None	-	-	-
Local Wildlife Sites	2km	Burton Constable Parkland	1.78km	South	TA 19098 37311
		Mill Avenue, Burton Constable	2.00km	South	TA 19442 37093
		Sallymere Plantation	1.70km	Southwest	TA 17778 38222
		The Moors, Burton Constable	0.82km	Southwest	TA 18876 38359
		Wycliffe, North Plantation	0.90km	Southwest	TA 18676 38389
Sensitive Receptors: Households / Businesses	2km	Church House	0.53km	Southwest	TA 18916 38673
		Old School House	0.58km	Southwest	TA 18948 38593
		Wood End Farm	0.63km	West	TA 18625 38977
		Black Bush Farm	0.67km	East	TA 19892 39301
		Caley Cottage	0.70km	East	TA 19947 39168
		High Fosham Cottage	0.74km	East	TA 19991 39142
		Marton Farm	0.78km	West	TA 18481 39216
		White House Farm	0.84km	Southwest	TA 18618 38534
		Piper Garth	1.05km	West	TA 18214 39235
		Straits Farm (Withernwick)	1.08km	North	TA 19571 40124
		Manor House	1.12km	Northeast	TA 19804 40071
		Wood House	1.15km	South	TA 19077 37949
		The Crescent (West Newton Village)	1.15km	South	TA 19501 37967
		Heywood Farm	1.16km	West	TA 18095 39261
		The Cottage	1.17km	South	TA 19367 37922
		Treasure Cottage	1.30km	West	TA 17952 39248
		Model Farm	1.45km	Southeast	TA 19912 37803
		Hill Farm	1.52km	West	TA 17710 39289
		Mount Pleasant	1.54km	Southeast	TA 20163 37846
		Homer House	1.55km	Northeast	TA 20285 40378
		Farm at Low Fosham	1.65km	East	TA 20878 38786
		Old Farm Cottage	1.67km	Southeast	TA 20352 37829
		Withernwick Hall	1.85km	North	TA 19635 41070
Longdykes Farm	1.91km	Northwest	TA 18325 40764		
Northfield Cottage	2.00km	North	TA 19463 41185		
Water Features (Closest in All Directions)	2km	Field Drain	0.01km	South	TA 19247 39072
		Field Drain	0.01km	West	TA 19231 39097
		Pond at Black Bush Cottage	0.50km	East	TA 19815 39298
		Field Drain	0.06km	North	TA 19235 39265
		Field Drain	1.08km	East	TA 20381 39178
Surrounding Environment(No Designation)	N/A	Wellsite surface and wellsite subsurface soils	N/A	All Direction	N/A