# APPENDIX A

VOP Well Sites Summary

**Table A1 Summary of production wells within Vale of Pickering**

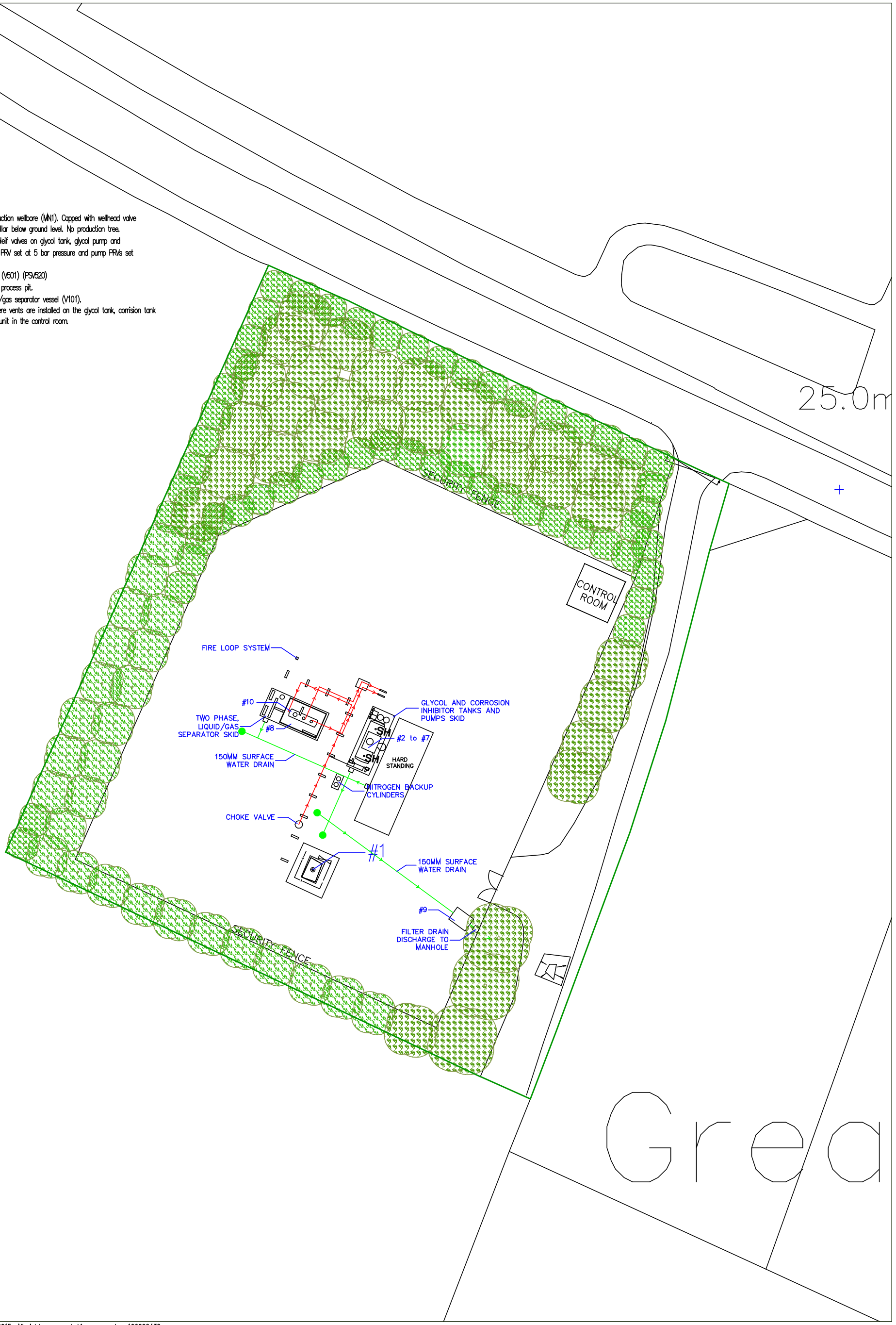
| Well Site | Well | Construction Year | Function |
|---|---|---|---|
| **Pickering (PK)** | PK-1 | 1991/1992 | Production well – suspended.<br><br>Modified in 2017 to permit re-injection of produced water. |
| | PK-2 | 2009 | Production well. |
| **Kirby Misperton A (KM-A)** | KM-1 | 1985 | Production well – suspended. |
| | KM-3 | 1987 | Produced water injection well. |
| | KM-7 | 2012 | Production well – suspended. Sidetrack from KM-1. |
| | KM-8 | 2013 | Production well – not yet in service. |
| **Kirby Misperton B (KM-B)** | KM-5 | 2009 | Production well. Sidetrack from KM-2. |
| | KM- 6 | 2011 | Production well – suspended. |
| **Malton A (MN-A)** | MN-1 | 1970 | Production well – suspended. |
| **Malton B (MN-B)** | MN-4 | 1985 | Production well – suspended. Formerly MN-2, MN-3. |
| **Marishes (Mn)** | MS-2z | 2001 | Production well. Sidetrack from MS-2 (formerly MS-1). |
| | MS-3y | 2004 | Production well. Sidetrack from MS-3z (formerly MS-3). |

# APPENDIX B

Site Layout Plans

EQUIPMENT LIST:

#1. Existing gas production wellbore (MN1). Capped with wellhead valve assembly in drilling cellar below ground level. No production tree.
#2 to #7. Pressure releif valves on glycol tank, glycol pump and corrosion pump (tank PRV set at 5 bar pressure and pump PRVs set at 148 bar pressure.
#8. PRV on separator (V501) (PSV520)
#9. Groundwater filter process pit.
#10. Two phase liquid/gas separator vessel (V101).
NB. Open to atmosphere vents are installed on the glycol tank, corrision tank and hydraulic control unit in the control room.






LEGEND.

- Process Pipework
- Surface Water Drainage
- Rodding Point (Surface Water Drainage)

THIRD ENERGY

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DRAWING TITLE.

MALTON A WELLSITE
ENVIRONMENTAL PLAN

A3

DRAWING SCALE. 1:500

DRAWN BY. Jonathan Foster

CHECKED BY. S Zablocki

ISSUED. 10/02/2016

DRAWING NUMBER. TEGL-MNA-ENV-001

REVISION. 0

# APPENDIX C

Water Features

**Table C1 Licensed Abstractions within 2km**

| Source No. on Figure 6 | Licence No. | Point of Abstraction | Location | Easting | Northing | Distance from Site |
|---|---|---|---|---|---|---|
| 1 | 2/27/25/155 | Surface water – River Rye | Little Habton | 474220 | 477410 | 1.6km |

**Table C2 Private Water Supplies within 2km**

| Source No. on Figure 6 | Location | Easting | Northing | Distance from Site |
|---|---|---|---|---|
| 2 | The Villa | 475070 | 476430 | 0.5km |
| 3 | Coultas Farm | 475200 | 476750 | 0.5km |

**Table C3 Potential Private Water Supplies within 2km**

| Source No. on Figure 6 | Location | Easting | Northing | Distance from Site |
|---|---|---|---|---|
| 4 | Haverfield House | 474490 | 476110 | 1.1km |
| 5 | Raikes Farm | 476330 | 478050 | 1.8km |
| 6 | Low Farm | 477420 | 476070 | 2.0km |
| 7 | Lower Buterwick | 473710 | 477070 | 2.0km |

**Table C4 BGS Records within 2km**

| Source No. on Figure 6 | BGS Ref. | Location | Aquifer | Depth | Easting | Northing | Distance from Site |
|---|---|---|---|---|---|---|---|
| 8 | SE77/56 | White Farm, Great Habton | Superficial Deposits | 3.2m | 475660 | 476300 | 0.2km |
| 9 | SE77/4B | Great Habton | Superficial Deposits | 20.7m | 475450 | 476870 | 0.5km |
| 10 | SE77/4A | Great Habton | Superficial Deposits | 21.3m | 475690 | 477460 | 1.1km |
| 11 | SE77/57 | Shortten Hall | Superficial Deposits | 19.8m | 476500 | 477400 | 1.4km |
| 12 | SE77/58 | Gosling Green | Superficial Deposits | 2.4m | 476880 | 477200 | 1.6km |
| 13 | SE77/6A | Shortten Hall | Superficial Deposits | 21.3m | 476860 | 477450 | 1.7km |
| 14 | SE77/59 | Park Farm | Superficial Deposits | 3.0m | 477270 | 476820 | 1.8km |
| 15 | SE77/40 | Kirby Misperton (Great Habton) | Kimmeridge Clay | 42.7m | 475900 | 476300 | 0.4km |
| 16 | SE77/55 | Manor Farm, Great Habton | Unknown | Unknown | 476000 | 476400 | 0.4km |

# APPENDIX D

Tier 1 Risk Assessment Methodology

## Introduction

DEFRA's GL III [Ref. 1] contains generic guidelines for the assessment and management of environmental risks. GL III outlines a staged approach to risk assessment and the document is intended to guide regulatory staff in Government and its agencies, as well as those carrying out assessments, to reach a decision on managing environmental risk.

A hydrogeological risk assessment for the proposed development has been carried out in accordance with the Source-Pathway-Receptor (S-P-R) approach described in GL III [Ref. 1] and Environment Agency guidance [Ref. 2]. Where S-P-R linkages have been identified, the sensitivity of the receptor, magnitude of impact and significance of effect has been considered in order to assess potential risks.

Ref.2 describes a tiered approach to risk assessment, starting at Tier 1 and progressing to Tier 3. Tier 1 is essentially a qualitative approach and Tier 3 is a highly quantitative approach. The choice of approach should be based on how complicated the system is, how high the risks are, and how easily and fully the risks can be mitigated. As such the selection process is iterative, and in complex systems there may be a mixture of approaches where simple, low risk sub-systems are assessed with a Tier 1 approach and more complex aspects with risks that cannot be fully mitigated may need a complex quantitative approach. The methodology described in this Appendix is for a Tier 1/2 assessment.

## Receptor Sensitivity

The sensitivity of water resource receptors is based on their status and considered resource value, as described in Table 1.

**Table 1 Receptor Sensitivity**

| Receptor Sensitivity | Description | Examples |
|---|---|---|
| **Very High** | Water resource with an importance and rarity at an international level with limited potential for substitution. | • A water resource making up a vital component of an SAC or SPA under the EC Habitats Directive<br>• A water body achieving a status of 'High status or potential' under the WFD<br>• Principal aquifer providing potable water to a large population<br>• EC designated Salmonid fishery |
| **High** | Water resource with a high quality and rarity at a national or regional level and limited potential for substitution. | • A water resource designated or directly linked to a SSSI.<br>• Principal aquifer providing potable water to a small population<br>• A river designated as being of Good status or with a target of Good status or potential under the WFD<br>• A water body used for national sporting events such as regattas or sailing events<br>• EC designated Cyprinid fishery |

| Receptor Sensitivity | Description | Examples |
|---|---|---|
| **Medium** | Water resource with a high quality and rarity at a local scale; or Water resource with a medium quality and rarity at a regional or national scale. | • Secondary aquifer providing potable water to a small population<br>• An aquifer providing abstraction water for agricultural and industrial use |
| **Low** | Water resource with a low quality and rarity at a local scale. | • A non 'main' river or stream or other water body without significant ecological habitat |

## Magnitude of Impact

The magnitude of a potential impact on a receptor depends on the nature and extent of the proposed development, and is independent of the sensitivity of the water resource, as described in Table 2.

**Table 2 Magnitude of Impact**

| Magnitude of Impact | Description | Examples |
|---|---|---|
| **High** | Results in a major change to attributes. | • Loss of EU designated Salmonid fishery<br>• Change in WFD classification of a water body.<br>• Compromise employment source<br>• Loss of flood storage/increased flood risk<br>• Pollution of potable source of abstraction |
| **Medium** | Results in impact on integrity of attribute or loss of part of attribute. | • Loss / gain in productivity of a fishery.<br>• Contribution / reduction of a significant proportion of the effluent in a receiving river, but insufficient to change its WFD classification<br>• Reduction / increase in the economic value of the feature |
| **Low** | Results in minor impact to attributes. | • Measurable changes in attribute, but of limited size and/or proportion |
| **Very Low** | Results in an impact on attribute but of insignificant magnitude to affect use and/or integrity. | • Physical impact to a water resource, but no significant reduction/ increase in quality, productivity or biodiversity<br>• No significant impact on the economic value of the feature<br>• No increase in flood risk |

## Significance of Effect

The significance of the potential effect is derived by combining the assessments of both the sensitivity of the water resource and the magnitude of the impact in a simple matrix, as presented in Table 3. Effects which are assessed to be major or moderate are considered to be significant, whilst those that are minor or negligible are not significant.

**Table 3 Significance of Effect**

| Receptor Sensitivity | Magnitude of Impact | | | |
|---|---|---|---|---|
| | **High** | **Medium** | **Low** | **Very Low** |
| **Very High** | Major | Major | Moderate | Moderate |
| **High** | Major | Moderate | Moderate | Minor |
| **Medium** | Moderate | Moderate | Minor | Negligible |
| **Low** | Moderate | Minor | Negligible | Negligible |

## Qualitative Likelihood

The qualitative likelihood of occurrence of a potential impact on a receptor is defined as described in Table 4.

**Table 4 Qualitative Likelihood of Occurrence**

| Qualitative Likelihood of Occurrence | Description | Examples |
|---|---|---|
| **Highly Likely** | High probability of occurrence | • Spillage at a poorly maintained and operated facility<br>• Uncontrolled activity in or on an aquifer, close to surface water<br>• Uncontrolled known discharge |
| **Likely** | On balance could occur | • Controlled but un-mitigated activity<br>• Complex process where failure of a part is likely to lead to release<br>• Large area where 100% sealing cannot reasonably be expected |
| **Moderate** | Equally likely/unlikely | • Unmitigated, low risk<br>• Controllable activity<br>• Partially contained site |
| **Unlikely** | On balance wouldn't occur | • Mitigated higher risk<br>• Simple, controllable activity<br>• Underlain by poorly permeable strata<br>• Existing contained site |
| **Very Unlikely** | Very low probability of occurrence | • Essentially no risk<br>• Extreme set of circumstances required to generate low probability<br>• Fully mitigated low or medium risk |

## Qualitative Risk Analysis

The residual qualitative risk is derived by combining the likelihood of occurrence and the significance of effect of a potential impact on a receptor in a simple matrix, as presented in Table 5. Risks which are assessed to be very high, high or medium are considered to be significant, whilst those that are low, very low or none are not significant.

**Table 5 Qualitative Risk Analysis**

| Qualitative Likelihood of Occurrence | Significance of Effect | | | |
|---|---|---|---|---|
| | **Major** | **Moderate** | **Minor** | **Negligible** |
| **Highly Likely** | Very High | High | Medium | Low |
| **Likely** | High | Medium | Low | Very Low |
| **Moderate** | Medium | Low | Very Low | None |
| **Unlikely** | Low | Very Low | None | None |
| **Very Unlikely** | Very Low | None | None | None |

## References

Ref. 1: Green Leaves III - Guidelines for Environmental Risk Assessment and Management: Green Leaves III. Revised Departmental Guidance Prepared by Defra and the Collaborative Centre of Excellence in Understanding and Managing Natural and Environmental Risks, Cranfield University November, 2011.

Ref. 2: Groundwater risk assessment for your environmental permit. Environment Agency, 14 March 2017. https://www.gov.uk/guidance/groundwater-risk-assessment-for-your-environmental-per