Northern Ireland Environment Agency (NIEA) Department of Agriculture Environment and Rural Affairs (DAERA

Mobuoy Road Waste Site Remediation

Stage 1 – Phase 1 Services, Task Order 1

Updated Gas Risk Assessment September 2022
Project No: MOBUOY-TTE-XX-XXRP-I-0014
Status: S3

September, 2022

TETRA TECH

Mobuoy Road Waste Site Remediation
Stage 1 – Phase 1 Services, Task Order 1

September, 2022

PRESENTED TO

Northern Ireland Environment Agency (NIEA)
Department of Agriculture Environment and Rural Affairs (DAERA)

PRESENTED BY

Tetra Tech Limited
1 Locksley Business Park
Montgomery Road
Belfast
BT6 9UP

tetratech.com

Prepared by:

[redacted]
Associate Consultant MIEnvSc CEnv

Date
30/09/22

Reviewed by:

[redacted]
Associate Director

Date
30/09/22

Authorized by:

[redacted]
Technical Director

Date
30/09/22

EXECUTIVE SUMMARY

The Brief	Tetra Tech Limited (Tetra Tech) were appointed by Northern Ireland Environment Agency (NIEA), an executive Agency within the Department of Agriculture, Environment and Rural Affairs (DAERA) under the Mobuoy Road Waste Site Remediation Project to undertake all aspects required to recommend and implement a remediation strategy for the Mobuoy Road waste site in Co. Londonderry.
Report Context	As part of this brief, Section 1.18 requires an Update of the existing Ground Gas Risk Assessment (WYG Report No. A089594 dated May 2016) to incorporate NIEA site gas monitoring data and assess and update the outline gas risk in cognisance of the addition data set. This Updated Gas Risk Assessment (Project No: MOBUOY-TTE-XX-XX-RP-I-0008) was issued March 2022. The Gas Risk Assessment has been updated further to include ground gas monitoring data captured following the recent Mobuoy ICT (Integrated Consultancy Team) site investigations and monitoring works (November 2021 to June 2022).
Additional Ground Gas Monitoring Data (NIEA Data)	Tetra Tech have reviewed the NIEA ground gas monitoring data as presented at Annex D11 of the provided tender documentation. This included varying frequencies of spot monitoring data collated at various boreholes across the site for the period from early 2019 to mid-2021. Gas monitoring was undertaken within monitoring wells where the response zone was targeting waste, within natural or superficial deposits and in monitoring wells where the response zone targeted waste and superficial deposits.
Additional Ground Gas Monitoring (Mobuoy ICT))	Causeway Geotech Ltd (CGL) the ICT appointed site investigation contractor undertook an additional 4 no. rounds of ground gas monitoring over the period January to June 2022.
Summary of Review	Following a review of the additional NIEA monitoring data provided it was concluded that the ground gas conditions are consistent with those observed previously following the 2016 assessment. The inclusion and consideration of the monitoring data collated following the recent ICT monitoring works (2022) has not resulted in a significant change to the hazard levels applied following the March 2022 issue with the conclusions of this report remaining extant.
Conclusions Recommendations	The perceived low risk via potential offsite lateral migration of ground gas is reduced due to the distance from the site however the potential pathway should remain a consideration with respect to future remedial design and possible implementation of sentinel monitoring apparatus. It is evident that the site's ground gas regime has the potential to be significantly altered dependant on the scope of future remediation effort and ground gas management will and should form an integral consideration in future remediation design and future site maintenance.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 INSTRUCTION & BRIEF

As part of Mobuoy Road Waste Site Remediation Project Integrated Consultant Team Services brief, project no. no: 692187ATC, Stage Order 1, Section 1.18 Tetra Tech have updated the Ground Gas Risk Assessment (Annex D02, WYG May 2016).

1.2 PROJECT BACKGROUND

The Mobuoy Remedial Project herein referred to as the 'site' is located on the outskirts of city of Derry/Londonderry on the Mobuoy Road, refer to Figure 1. It encompasses an area of approximately 46ha and currently consists of two distinct parcels of land identified as City Industrial Waste (CIW) and Campsie Sand and Gravels (CS&G). The site is located within an area of agricultural fields and is bound to the western boundary by the River Faughan.

The City Industrial Waste site is located to the east of the Mobuoy Road and covers an area of approximately

14Ha. It comprises of a former waste processing facility, closed landfill and an area of former sand and gravels extraction located approximately 100m east of the River Faughan. A closed landfill is located on this site characterised by a rectangular shaped plateau elevated approximately 4 m above the level of the former CIW waste processing facility. Wastes in the area were proven to be up to 14m in thickness.

It is understood (Mills Report[1]) a landfill site [redacted] was present from 1980. In 1996, CIW was granted a waste disposal license to operate on the site. By 2004, a Materials Recycling Facility (MRF) had been created. A Closure Notice for the landfill site was issued in 2008. The Mills Report indicated that the necessary requirements were not met at the time of writing of the report.

The Campsie Sand and Gravel site is irregularly shaped elongated north to south and covers an area of approximately 33Ha. The western boundary of the site is bound directly by the River Faughan, and an earth embankment runs along the majority of the boundary although is locally absent. The southern portion of the site is transected by an unnamed tributary of the River Faughan and is accessed by an earth bridge to the south of the disused processing area. The southern area of is characterised by undulating scrub land with various engineered surface water channels and areas of ponded water.

Current estimates of waste volumes deposited provided by the NIEA[2] suggest the site contains approximately 1,165,000m3 of infill which includes construction and demolition waste, domestic wastes, metallic wastes and a mixture of all of these.

A series of environmental risk assessments have been completed following a number of site investigation, surveys and subsequent monitoring works with surveys generally appointed post 2015. The premise of these assessments has been generally to characterise the risk posed to the environment from the illegal waste depositions and to inform the design of future remediation. A Ground Gas Risk Assessment (WYG, May 2016) formed part of these assessments and is summarised at section 2.1 below.

[1] A review of waste disposal at the Mobuoy site and the lessons learnt for the future regulation of the waste industry in Northern Ireland, Christopher Mills, December 2013
[2] FAQs – Mobuoy Remediation Project September 2021 *(http://www.daera-ni.gov.uk/publications/mobuoy-road-waste-project-documents)*

2.0 SUMMARY OF PREVIOUS GROUND GAS RISK ASSESSMENT

2.1 WYG REPORT NO. A089594, GAS RISK ASSESSMENT – FINAL V3, CITY INDUSTRIAL WASTE/CAMPSIE SAND & GRAVEL SITES, DATED MAY 2016.

A detailed review of this report is included at Section 2.2. of the Tetra Tech Report, 'Risk Assessment Review & Site Investigation Scope Design, Project No. MOBUOY-TTE-XX-XX-RP-I-0001, September 2021. A brief summary of the relevant information to inform the updated risk assessment is presented below.

2.1.1 Ground Gas Conceptual Model

WYG used information from the completed phases of fieldwork to characterise and parameterise the sources, pathways and receptors that form a Conceptual Site Model (CSM).

Table 1 - Relevant Complete CSM Pollutant Linkages WYG Gas Risk Assessment 2016

CSM Source	CSM Pathways	CSM Receptors
Landfill Gas (Methane, Carbon Dioxide, Volatile Organic Compounds and Hydrogen Sulphide) from mixed waste and construction and Demolition Waste	• Migration Via subsurface and/or preferential pathways followed by accumulation and/or explosion/inhalation	• Site Users, Neighbouring Site Users, Trespassers

2.1.2 Generic Risk Assessment

2.1.2.1 Characterisation & Assessment

Bulk and Trace Gases

A total of 6 no. rounds of ground gas monitoring were undertaken in wells installed in waste and superficial deposits between 29th April and 28th May 2015. Gas concentrations were assessed as 5no. separate zones, based upon each zone being a distinctly separate infilled waste area (an annotated site plan is included at Figure 2):

- **Campsie Sand & Gravel North**: Wells screened in predominantly construction and demolition waste with some domestic waste .
- **Campsie Sand & Gravel Central**: Wells screened in predominantly construction and demolition waste with some domestic waste.
- **Campsie Sand & Gravel South**: Wells screened in construction and demolition waste and domestic waste.
- **CIW North**: Wells screened in predominantly municipal and domestic waste with minor construction and demolition waste; and,
- **CIW South**: Wells screened in municipal and tarry wastes.

A summary of worst-case conditions per zone summarised in Table 2 below. The worst-case assessment of boreholes screened in waste is considered to characterise the source zones while the worst-case assessment of boreholes screened in natural deposits is considered to characterise the pathway to receptors.

Table 2 - Gas Risk Assessment Summary Table of Worst-Case Scenarios for Each Waste Zone (2016)

Zone	STRATA	Max Flow (l/hr)	Max Steady CH_4 (%v/v)	Max CO_2 (%v/v)	Max O_2 (%v/v)	Max Peak CH_4 (%v/v)	Max Peak CO2 (%v/v)	Max H_2S (ppm)	GSV - Steady CH_4 (L/hr)	GSV - Steady CO_2 (L/hr)	GSV - Peak CH_4 (L/hr)	GSV - Peak CO2 (L/hr)	CIRA LEVEL
Campsie S & G North	Natural	0.3	0.1	0.8	21.4	2	1.8	1	0.0003	0.0024	0.006	0.0054	CS2
	Waste	-5.3	75.5	34.7	20.8	87	34.7	1	4.0015	1.8391	4.611	1.8391	CS4
Campsie S & G Central	Natural	-9	28.2	15.6	21.6	79.4	21.6	0	2.538	1.404	7.146	1.944	CS3
	Waste	0.5	62.4	45	21.3	64.3	46	3	0.312	0.225	0.3215	0.23	CS3
Campsie S & G South	Natural	-6.2	54.1	23.5	22	67.8	29.1	0	3.3542	1.457	4.2036	1.8042	CS4
	Waste	-16.7	69.9	43.1	20.8	69.9	43.1	45	11.6733	7.1977	11.6733	7.1977	CS4
CIW North	Natural	-0.2	6.8	3.5	21.2	12.3	6.9	1	0.0136	0.007	0.0246	0.0138	CS2
	Waste	300	65.4	44.4	5.7	65.2	63.3	33	196.2	133.2	195.6	189.9	CS6
CIW South	Natural	4.2	0.2	6.1	21.6	3.5	6.1	1	0.0084	0.2562	0.147	0.2562	CS2
	Waste	10.7	72.3	55.8	1.6	72.8	55.6	71	7.7361	5.9706	7.7896	5.9492	CS4

The report carried out an assessment of the gas monitoring data and the 3no. zones assessed with the Campsie Sand and Gravels site showed a worst-case CS range from CS2 (low risk) to CS4 (moderate to high risk) in the natural superficial deposits and CS3 (moderate risk) to CS4 (moderate to high risk) in the waste deposits. Hydrogen Sulphide concentrations were assessed against the long-term exposure limit (LTEL) of 5ppm, relating to an 8-hour exposure duration, published but the Health and Safety Executive in 2005 in "Guidance Note EH40: Occupational Exposure". The only exceedance of the LTEL with the Campsie Sand and Gravel site was recorded in the southern section.

The 2no. zones assessed within the City Industrial Waste site showed a worst case of CS2 in the natural soils. Within the waste deposits, the worst-case CS ranged from CS4 (moderate to high risk) to CS6 (very high risk). Within the northern section of the City Industrial Waste site where a CS6 was calculated, a single very high flow rate of 300L/hr was recorded during the first monitoring round in BH211. It was noted that if this was discounted a CS of 4 (moderate to high risk) was calculated for the waste. The CS for the superficial deposits in this zone, was only based upon readings from 1 No. well installation and the reported noted that this may not represent worst case conditions.

Hydrogen sulphide maximum levels recorded in both zones with the City Industrial Waste site, were in exceedance of the LTELs.

2.1.3 Detailed Gas Risk Assessment Modelling

WYG undertook a risk assessment using GasSim V2.5. A total of 4no. scenarios were used taking into account areas of the site with mixed inert and illegal waste and areas with only illegal waste and two waste degradation scenarios due to waste composition at the site being highly varied. The GasSim model was also used to determine the environmental (global) impact of the landfill emissions and the suitability of gas emissions for running flare stacks and engines on site.

2.1.3.1 Predicted Gas Generation Over Time

The model estimated that gas would be generated at site up to 2140, predicting a long-lasting potential risk to identified receptors. It was noted that the estimates were considered conservative due to the limitations of the model and conservative assumptions.

The model showed that gas generation peaks were earlier and higher in the scenario which consider only illegal waste. The model also predicted that the higher levels of gas generation over a shorter time period would occur in 'wet' moisture conditions.

The model estimated that gas would be generated at site up to 2140, predicting a long-lasting potential risk to identified receptors. It was noted that the estimates were considered conservative due to the limitations of the model and conservative assumptions.

2.1.3.2 Lateral Migration

The GasSim Model v2.5 was used to assess whether nearby receptors were likely to be affected by lateral migration of ground gas. The model was used for 2no. scenarios, area with mixed inert and illegal waste (Campsie 1) and area with only illegal waste (Campsie 2).

Table 6.1 of the report describes Campsie 1 as 'Former licensed area, assumes inert waste input initially and then illegal Household, Industrial and Commercial waste deposits. The model uses a two-meter leachate head and "Wet" moisture content. This is intended to simulate "unusual" waste conditions at Campsie and accelerated degradation.'

The migration of gas was assessed over a total distance of 100m for the month of January 2016, where for both Campsie 1 and Campsie 2 gas generation rates were near their highest. The 95th percentile concentrations of gas identified at the landfill boundary by the GasSim model are presented in Table 3 below.

Table 3 - Model Estimated 95th Percentile Gas Concentration at the Edge of the Landfill WYG 2016

Scenario	Bulk Gas (mg/m³)	Methane (mg/m³)	Methane (% vol/vol)	Carbon Dioxide (mg/m³)	Carbon Dioxide (% vol/vol)
Campsie 1	240,000	60,000	91.5	165,000	91.7
Campsie 2	200,000	75,000	>100	130,000	72.2

Table 3 shows that very high 95th percentile gas concentrations of up to 100% vol/vol methane and up to 91.7% vol/vol carbon dioxide were predicted at the edge of the landfill by the GasSim model. Maximum peak methane concentrations of 87% vol/vol and maximum peak carbon concentrations of 63.3% vol/vol were recorded in waste areas on-site. Therefore, the GasSim model was considered conservative as it is overestimating gas concentrations at the site.

The model showed that bulk gas concentrations were estimated to reach 0mg/m^3 12m away from the boundary of the landfill. One building was located with the south of the City Industrial Waste site, within 20m of waste. Site users of this building were conservatively considered to be potentially at risk from gas migration. As all other buildings on and off site were further than 20m away from the landfill boundary, the model suggests that the users of these buildings are not at risk from ground gas. However as high levels of methane and carbon dioxide were identified in the south and central areas of the Campsie Sand & Gravel site in wells screened in natural deposits below the landfill and outside of the boundaries of the landfill and it was considered that a higher potential for ground gas migration away from the boundaries of the landfill at this location.

2.1.3.3 Tier 1 Assessment

An exposure assessment was carried out for the 4no. scenarios to assess the risk to identified receptors from trace landfill gases as detailed in Environment Agency H1 guidance. The GasSim Tier 1 screening assessment suggested hydrogen sulphide concentrations of between 0.13 to 2.98Sg/m3 at 20m from the landfill boundary. This equates to a maximum concentration of 0.00214ppm which significantly below the LTEL of 5ppm and therefore WYG did not consider there to be a risk to human health receptors from hydrogen sulphide.
This assessment was considered to verify the results of gas monitoring undertaken at the site which identified a maximum hydrogen sulphide concentration of 1ppm outside of waste areas. The results indicated that no further issues in relation to trace landfill gases were expected at the site with estimated trace gas concentrations significantly below environmental assessment limits. It was advised that further assessment was carried out once site specific data had been obtained.

2.1.4 Conclusions and Recommendations

2.1.4.1 Risk Assessment

A risk assessment was undertaken to determine the risk to current site users (site owners and visitors), trespassers and neighbouring site users via gas and vapour migration, accumulation and inhalation or explosion.
The generic quantitative risk assessment identified high concentrations carbon dioxide, methane and hydrogen sulphide and recommended further assessment was undertaken.

A DQRA was undertaken, and modelling identified that bulk gas generation may continue at levels which could cause a potential risk to human health until 2140 and that gas had the potential to migrate at significant concentrations up to 12m laterally away from the edge of the landfill. There was considered to remain a potentially significant risk to site users (owners and visitors) and trespassers from carbon dioxide and methane generated by the landfill when accessing the most south-eastern building in the south of the CIW site.

The report noted that a number of limitations and assumptions were made during the modelling. In addition, the following site-specific limitations and assumptions are present:

- The GasSim models assume similar conditions across the landfill generating waste. Significant heterogeneity in waste constituents was observed across the site. This variability is taken into account in part by running more than one GasSim model.
- Gas migration outside of the landfill is considered to be homogenous. There is the potential for preferential pathways to exist in the superficial zone and within fractures in the bedrock.
- Waste thickness has not been specified in the GasSim model. This is known to be variable across the site, however, is understood not to be a sensitive parameter in the GasSim model.
- No trace gas data (with the exception of hydrogen sulphide) has been taken at the site to verify the results of the GasSim Tier 1 assessment.
- Areas of waste at the site are known to be flooded and producing gas. This is at odds with the GasSim model which does not model migration of gas in the saturated zone.
- Gas generation has not been individually generated for each individual infilled waste area at the site. However, this can be estimated assuming 600m3/hr of gas generation from each tonne of waste.
- It is unknown which waste degradation model ran in GasSim is more representative of on-site conditions.
- No sensitivity analysis has been undertaken at this moment of time; and,
- No detailed calibration of the model has been undertaken, although it is noted that model estimated gas production rates are similar to those observed on site.

2.1.4.2 Further Recommendations

Due to limited information on the deposition of waste at the site, model input parameters were in part based upon knowledge of similar landfills in the UK and where site specific data was not available GasSim defaults were used for the parameters. It was recommended that gas pumping trials take place, and the detailed gas risk assessment be updated using site specific parameters and that model calibration and sensitivity analysis be undertaken.

It was considered that the access to the most south-eastern building within the City Industrial Waste Site be prohibited until further action takes place and demolition was recommended to prevent unauthorised access. For persons entering the building, it was recommended that gas alarms were worn. Prior to any future development at the site, it was recommended that a full gas risk assessment was undertaken, up to 2140.
It was recommended that to prevent gas migrating away from the landfill via preferential pathways not covered by the model, that control measures are implemented.

It was recommended following the result of this risk assessment that future construction and building on the site is prevented until gas control and mitigation measures have been emplaced and gas production rates reassessed.

3.0 UPDATED GROUND GAS RISK ASSESSMENT 2022

Tetra Tech was initially presented with additional ground gas monitoring data as presented at Annex D11 'Gas Monitoring Database' within the tender information pack. The data pertains to spot monitoring for the period c. April 2019 to May 2021 for selected monitoring wells across the site. A copy of the monitoring data is provided at Appendix 2.

In addition to this the NIEA's MRPT have provided Tetra Tech with two reports for consideration, 'Mobuoy Road Waste Site Gas Monitoring Report, 'Review of ground gas concentration for monitoring carried out at the site during 2020' [redacted] and 'Mobuoy Road Waste Site Gas Monitoring Report, 'Review of ground gas concentration for monitoring carried out at the site during 2019' October 2020.This information was used to inform the initial update of the ground gas risk assessment where applicable (refer to report MOBUOY-TTE-XX-XX-RP-I-0008, dated March 2022).

The Ground Gas Risk Assessment (March 2022) has been updated further to include monitoring data collated following completion of the recent investigation works and subsequent ground gas monitoring which took place from January to June 2022. Ground gas monitoring data is included at Appendix 3.

3.1 COMPARISON OF 2016 TO CURRENT NIEA DATA

To provide continuity and facilitate comparison with the 2016 report the data has been summarised in a similar format. The site has been considered as 5no. separate zones, based upon each zone being a distinctly separate infilled waste area. This was based on site investigations and supporting survey information available at the time of writing. A borehole location plan is included at Figure 3.

- **Campsie Sand & Gravel North**: Wells screened in predominantly construction and demolition waste (inert) with some domestic waste
- **Campsie Sand & Gravel Central**: Wells screened in predominantly construction and demolition waste (inert) with some domestic waste
- **Campsie Sand & Gravel South**: Wells screened in construction and demolition waste (inert) and domestic waste
- **CIW North**: Wells screened in predominantly municipal and domestic waste with minor construction and demolition waste (inert); and,
- **CIW South**: Wells screened in municipal and tarry wastes

A summary of worst-case conditions per zone summarised in Table 4 below.

Table 4 - Gas Risk Assessment Summary Table of Worst-Case Scenarios for Each Waste Zone (NIEA Data, 2019-2021)

Zone	Strata	Max Steady Flow (l/hr)	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Max O_2 (%v/v)	Max H_2S (ppm)	GSV CH_4 *(worst case)	GSV CO_2 *(worst case)	CIRIA Classification
Campsie S & G North	Natural	11.3	77.4	55.8	21.6	103	8.74	6.30	CS4
	Waste	1.6	87.1	36.4	21.7	19	1.39	0.58	CS3
Campsie S & G Central	Natural	2.5	96.6	98	22	5	2.415	2.45	CS3
	Waste	0.3	13.3	1.3	21.6	0	0.0399	0.0039	CS1
Campsie S & G South	Natural	21.2	79	43.1	22	45	16.74	9.13	CS4
	Waste	ND	ND	ND	ND	ND	ND	ND	ND
CIW North	Natural	1.2	82.5	44.4	22.1	677	0.990	0.532	CS3
	Waste	3.6	71.6	38	21.5	30	2.57	1.368	CS3
CIW South	Natural	2.1	84.9	34.71	21.8	16	1.78	0.728	CS3
	Waste	10.2	80.3	32	19.6	60	8.16	3.264	CS4

ND – No data (monitoring data not presented for installations within waste deposits)
** - Worst case CH_4/CO_2 concentration and maximum flow recorded across each zone*

The derived CS (characteristic situation) for the designated source areas has been compared with that derived following the 2016 assessment below at Table 5.

Table 5 - Characteristic Situation Comparison of 2016 & 2021 Monitoring Data

Zone	Strata	CS (2016)	CS (2021)
Campsie S & G North	Natural	CS2	CS4
	Waste	CS4	CS3
Campsie S & G Central	Natural	CS3	CS3
	Waste	CS3	CS1
Campsie S & G South	Natural	CS4	CS4
	Waste	CS4	ND
CIW North	Natural	CS2	CS3
	Waste	CS6	CS3
CIW South	Natural	CS2	CS3
	Waste	CS4	CS4

3.1.1 Campsie S & G North

The characteristic situation for wells installed into natural deposits zone appears to have increased from CS2 to CS4 following a review of the quarterly monitoring data. The CS4 designation is resulting primarily from the flow rate (11.3 l/h) measured at BH206 (02/11/2020). This flow rate is not considered typical of the flow rate measured at this location which ranged from 0 to 0.4 l/h across 13 no. monitoring events. When adopting the maximum flow rate of 0.4 l/h and recorded methane (77.4%) and carbon dioxide concentrations (35.5%) the calculated GSVs are 0.30 (CH_4) and 0.142 (CO_2) respectively resulting in a classification of CS2.

The maximum reported methane and carbon dioxide concentrations were reported at BH207 (28/11/2019) and BH207 (05/08/2019). A review of water levels would suggest the response zone is fully submerged therefore ground gas data is unlikely to be fully representative of ground gas conditions present.

The CS assessed for wells progressed within waste deposits has resulted in a reduction in the CS from CS4 to CS3. The maximum methane concentration (87.1%) was reported at BH217 (10/06/2020) where approximately 0.85m of the response zone was not submerged. The maximum recorded value for carbon dioxide was reported at BH218 (03/11/2020) in a waste/clay where the response zone was wholly submerged during monitoring. The maximum recorded carbon dioxide at a non-submerged waste well was 27.6% recorded at monitoring well BH220 (05/12/2019). A peak flow of 1.9 l/h was recorded at this well following nine visits. Adopting this flow rate, a GSV for carbon dioxide would be 0.52 or a designation of CS2.

3.1.2 Campsie S & G Central

The characteristic situation for wells installed into natural deposits has not changed following a review of the additional NIEA data. The maximum methane concentration (96%) was reported at BH221 (04/05/2021) which is installed in a material described as gravel/peat. The response zone is fully saturated during the 18 no. monitoring visits for this location. The maximum methane concentration observed at wells where their respective response zones were not fully submerged was at BH205 (06/12/2019) (17.6%). A maximum flow of 0.3l/h was observed 06/12/2019 at this location resulting in a GSV of 0.00929 which would represent a classification of CS1.

The CS assessed for wells progressed within waste deposits has resulted in a reduction in the assigned characteristic situation from CS3 to CS1. The maximum methane concentration (13.3%) and carbon dioxide concentration (1.3%) was reported at BH212 (16/12/2019) with a response zone in a lithology described as a

waste/gravel. The response zone for BH212 was wholly submerged during this visit and on 4 occasions during the eight visits reported in the data provided. The maximum concentrations recorded when the response zone was not fully submerged were 8.8% (CH4) and 1.3 % (CO2) with a maximum reported flow rate of 0.3 l/h resulting in GSVs of 0.0264 and 0.0039 respectively (CS1).

3.1.3 Campsie S & G South

The updated data present is pertaining to monitoring wells installed into natural deposits almost exclusively characterised as sand. The characteristic situation is unchanged (CS4) following a review of additional monitoring data. The maximum methane concentration was reported at BH203 (08/12/2020) (79%) and carbon dioxide at the same location (30.5%) on 28/11/2019.

Generally, seven of the nine wells response zones were submerged during the monitoring works with only boreholes BH202 and BH203 not wholly but partially submerged on most occasions.

3.1.4 CIW North

The characteristic situation for wells installed into natural deposits zone appears to have increased from CS2 to CS3 following initial review of the monitoring data. On further interrogation of the data the maximum methane concentration (82.5%) has been reported at BH01 (03/11/2020) and the maximum flow is reported at 1.2l/h at BH113 (18/12/2019). The response zone at BH113 was wholly submerged during monitoring and is therefore likely the recorded flow rates are not representative. The maximum reported flow rate indicative of non-submerged wells (0.4l/h) was recorded at BH117 (06/12/2019). Adopting this flow rate, a worst case GSV for methane is 0.33 or a CS2 designation. This data set included monitoring data from monitoring wells BH301 to BH303 (progressed March 2019) which were not part of the 2016 data set.

The characteristic situation for wells installed into waste deposits have reduced from CS6 to CS3 following a review of the monitoring data. The maximum methane concentration (71.6%) was reported at BH214 (09/04/2020) and carbon dioxide (38%) BH211 (12/10/2020). The reduction in the CS (CS6 to CS3) observed is attributable to flow rate applied in the calculation in 2016 (300 l/h). This is considered non-typical and flow rates of near comparable magnitudes were not observed following the most recent monitoring events.

3.1.5 CIW South

The characteristic situation for wells installed into natural deposits zone appears to have increased from CS2 to CS3 following a review of the NIEA's quarterly monitoring data. The ground gas monitoring data suggested BH209 as being installed into a sand. A review of the borehole log for this location indicates the response zone is within materials indicative of waste deposits. This data has therefore been removed from the data set indicative of wells installed into natural deposits for the purposes of risk assessment.

The designation of CS3 is informed by a flow rate of 2.1 l/h recorded at BH114 (12/10/2020). The response zone at BH114 was noted to be submerged during the entirety of the monitoring period, and as such the flow rate is unlikely to be representative. The maximum positive flow rate recorded for non-submerged wells (BH122, 06/08/2019) was 0.7 l/h resulting in a worst case GSV of 0.26 for methane and 0.242 for carbon dioxide or CS2.

The characteristic situation for wells installed into waste deposits is informed by monitoring data from BH208 and BH209 which were generally not wholly submerged during the monitoring visits. The flow rate of 10.2 l/h adopted in the GSV calculation was observed during one visit (07/12/2020) at BH209, with a similar flow rate (10.1l/h)

recorded, date 12/10/2020. Flow rates recorded during the fifteen rounds at wells where response zones were not submerged ranged from 0 to 4.3 l/h, with an average of 1.5l/h, suggesting a designation of CS4 as conservative.

3.2 GROUND GAS MONITORING 2022

The previous risk Gas Risk Assessment (March,2022) has been reviewed and updated to include the monitoring data collected as part of the recent ground investigation (January to June 2022). Ground gas monitoring undertaken in 2022 comprised two principal monitoring rounds, round one where 88 no. wells were monitored and round two where ninety-five wells were monitored which were inclusive of existing and installed wells progressed as part of recent ICT works. A further two monitoring rounds were undertaken to include further delineation wells progressed as part of the ICT works, which included round three monitoring of 10 no. wells and round four which comprised monitoring of 15 no. wells.

Again, to provide continuity and facilitate comparison with historical data it the data sets have been considered in a similar area for each of the 5no. site areas.

3.2.1 Campsie S & G North 2022

A review of water levels would suggest the response zone is fully submerged for those monitoring wells installed into natural soils and are therefore unlikely to be fully representative of ground gas conditions present.

Recorded maximum ground gas concentrations did not exceed those recorded following review the NIEA quarterly monitoring data and the CS designation of CS2 is considered reasonable. Recorded concentrations are broadly similar for those wells monitored across both monitoring event (NIEA and ICT). An erroneous reading of 100% methane was recorded at BH403, 27/01/2022 which is not possible and is likely a result of volatile interference with the gas analyser sensors, a common issue where volatiles are present in soils and/or groundwater. A later reading on 04/03/2022 reported methane at 59.4%. Again, the response zone was submerged on both occasions so minimal reliance can be placed on the recorded data.

Maximum recorded gas concentrations have not been exceeded from those recorded following the NIEA quarterly monitoring for those wells screened within waste or made ground deposits. Again, a number of well response zones were submerged with limited reliance being able to be placed on monitoring data as a result. BH217 was monitored (the maximum methane concentration (87.1%) was reported at BH217 (10/06/2020) following NIEA monitoring) and recorded reduced methane concentrations of 37.1% and 0% (well screen submerged). BH218 (well screen submerged) did see a significant methane concentration recorded 25/01/2022 at 84.4% but was later recorded at 0.7% on 7th March 2022.

The GSV calculated following a review of the NIEA data (CS2) remains reasonable for in waste boreholes following review of the 2022 ICT data.

3.2.2 Campsie S & G Central

Following a review of NIEA quarterly data the maximum methane concentration observed at wells screened into natural deposits where their respective response zones were not fully submerged was at BH205 (06/12/2019) (17.6%). A maximum flow of 0.3l/h was observed 06/12/2019 at this location resulting in a GSV of 0.00929 which would represent a classification of CS1. BH205 was monitored on two occasions in 2022 with a maximum methane concentration recorded of 17.7% and a flow of 0.3 l/h which is similar to that previously recorded.

As stated in the review of the NIEA's quarterly monitoring data, the CS3 designation for natural deposits was based on a maximum methane concentration (96%) reported at BH221 (04/05/2021) which is installed in a material described as gravel/peat. The response zone was fully saturated during the 18 no. monitoring visits for this location pre 2022 and during the two monitoring events in 2022. Elevated methane concentrations however continue to persist, and it is therefore recommended the initial CS3 designation remain.

Following the NIEA quarterly monitoring of wells screened into waste/made ground the maximum methane concentration (13.3%) and carbon dioxide concentration (1.3%) was reported at BH212 (16/12/2019) with a response zone in a lithology described as a waste/gravel. The response zone for BH212 was wholly submerged during this visit and on four occasions of the eight rounds in the data presented. The maximum concentrations recorded when the response zone was not fully submerged were 8.8% (CH_4) and 1.3 % (CO_2) with a maximum reported flow rate of 0.3 l/h resulting in GSVs of 0.0264 and 0.0039 respectively (CS1).

BH618 and BH619 progressed in this area were monitored in 2022 with a maximum CH_4 concentration of 31.1% and CO_2 of 6.4% recorded at BH618. Flow rates were similar to those recorded historically, typically <1 l/h. A worst case GSV where a positive flow rate was recorded following 2022 monitoring was 0.062, which would continue to support a CS1 classification.

3.2.3 Campsie S & G South

The NIEA quarterly monitoring data present was pertaining to monitoring wells installed into natural deposits almost exclusively characterised as sand. The characteristic situation assigned was CS4 where the maximum methane concentration was reported at BH203 (08/12/2020) (79%) and carbon dioxide at the same location (30.5%) on 28/11/2019.

Recent 2022 monitoring continues to support this CS with broadly similar concentrations reported for those wells monitored which formed part of the previous data sets. The maximum methane concentration was again recorded at BH203, 80.3% on 08/03/2022, resulting in a CS4 determination.

Four additional wells progressed in 2022 which were screened into waste/made ground were monitored in the area. Generally low CH_4 and CO_2 concentrations were reported (<1% CH_4 & <5% CO_2) which when considered in conjunction with recorded flow rates resulted in a CS1 determination.

3.2.4 CIW North

Following a review of NIEA quarterly monitoring data for those wells installed into natural deposits the worst case GSV was calculated at 0.33 resulting in a CS2 designation. The previously recorded maximum methane concentration (82.5%) was reported at BH01 (03/11/2020) which was not exceeded following 2022 monitoring. The maximum methane concentration reported was at BH611A at 74.6% (CO_2 at 22%) on 26/01/2022 which when considered with a flow rate of 0.3 l/h resulted in a calculated GSV of 0.22 or CS2. It is considered likely that the elevated gas concentrations recorded are partially attributable to the interference associated with the presence of tarry waste in the area. Later gas monitoring at this location (03/02/2022) employed a hydrogen sulphide filter to reduce volatile interference to gas analyser sensors and reported much reduced methane and carbon dioxide concentrations at 15.9% CH_4 and 11.4% CO_2. The designated CS2 remains unchanged following consideration of the 2022 monitoring data.

Following a review of NIEA quarterly monitoring data for those wells installed into waste deposits a CS3 determination was made. The maximum methane concentration reported following 2022 monitoring was at BHW1 (77.2%) (03/03/2022) with a flow rate of 0.1 l/h resulting in a GSV of 0.0772 or CS2. The maximum flow recorded

at this location was 3.8 l/h resulting in a GSV of 2.93 or a CS3 classification. Gas concentrations recorded in existing wells monitored in 2022 are comparable to those monitored historically. The characteristic situation (CS3) for in waste installations therefore remains unchanged following the inclusion and review of 2022 monitoring data.

3.2.5 CIW South

The characteristic situation for wells installed into natural deposits zone following review of NIEA quarterly monitoring data was CS2. As stated, the designation of CS2 was informed by a flow rate of 2.1 l/h recorded at BH114 (12/10/2020). The response zone at BH114 was noted to be submerged during the entirety of the monitoring period, and as such the flow rate is unlikely to be representative. Reduced flow rates were recorded of 0.3 and 0.1 l/h following 2022 monitoring although measured groundwater levels again indicate that the response zone remains fully submerged. The maximum methane and carbon dioxide concentrations were recorded at BH617 at 51% and 17.2% respectively on 26/01/2022 although measured groundwater levels indicate the response zone to be fully submerged during both 2022 monitoring events.

The maximum recorded methane for non-submerged wells installed into natural deposits was historically at BH122 (84.9%, 13/10/2020). Recent 2022 monitoring reported negligible methane (0.2 and 0.0%) which is comparable to the previous three monitoring rounds completed by the NIEA from 03/11/2020 to 05/05/2021. A maximum flow rate of 0.4 l/h was recorded at this well resulting in GSVs of 0.166 and 0.0652 respectively or a CS2 classification. On the basis of the consistently low flow rates recorded at BH114 and recorded maximum concentrations following the most recent round of monitoring the classification of CS2 is considered reasonable.

The characteristic situation for wells installed into waste deposits following NIEA quarterly monitoring was CS4 as informed by monitoring data from BH208 and BH209. The flow rate of 10.2 l/h (BH209) adopted in the GSV calculation was observed during one visit (07/12/2020) at BH209, with a similar flow rate (10.1l/h) recorded, date 12/10/2020. Recorded flow rates in 2022 at BH209 were -1.6 l/h and 0.1 l/h which supports the conservatism of the CS applied. Recent monitoring did however continue to record significantly elevated methane concentrations at BH209. An erroneous reading of 100% methane was recorded at 26/01/2022 which is likely a result of volatile interference with the gas analyser sensors. A later reading on 04/03/2022 reported methane at 65.2% which represents the maximum recorded methane and carbon dioxide (16.3%) for non-submerged wells in the area following the 2022 monitoring rounds. The CS4 designation remains unchanged on the basis of flow rates recorded at BH209 on two occasions, 12/10/2020 (10.1 l/h), 07/12/2020 (10.2/h) but remains conservative in the context of the monitoring data for the area.

3.2.6 Summary of 2022 Monitoring Data

The derived CS (characteristic situation) for the designated source areas has been compared with that derived following a review of the 2016 and 2021 ground gas monitoring data at the table below.

Table 6 - Characteristic Situation Comparison of 2016, 2021 & 2022 Monitoring Data

Zone	Strata	CS (2016)	CS (2021)	CS (2022)
Campsie S & G North	Natural	CS2	CS2	CS2
	Waste	CS4	CS2	CS2
Campsie S & G Central	Natural	CS3	CS3	CS3
	Waste	CS3	CS1	CS1
Campsie S & G South	Natural	CS4	CS4	CS4
	Waste	CS4	ND	CS1
CIW North	Natural	CS2	CS2	CS2
	Waste	CS6	CS3	CS3

Zone	Strata	CS (2016)	CS (2021)	CS (2022)
CIW South	Natural	CS2	CS2	CS2
	Waste	CS4	CS4	CS4

The CS assigned for each source area following consideration of the 2022 monitoring data are generally consistent with those assigned following consideration of the NIEA's quarterly monitoring data. The CS assigned for in waste boreholes at CS&G south has been assigned a very low risk (CS1), although this is based on a limited data set of 4 no. monitoring wells.

3.3 GROUND GAS ANALYSIS – EXEA ASSOCIATES

Tetra Tech previously provided gas monitoring data to Kieron Finney at Exea Associates for interpretation. Findings are summarised as follows.

It is the opinion of Exea Associates Limited that there are a number of wells that demonstrate air ingress. This is based on the Nitrogen to Oxygen ratios, with anything having a ratio close to 4:1 being considered as having air entry. Air in boreholes may be a product of air entry into the borehole due to poor sealing of borehole headworks or because air is entering the site. In either case it is impossible to consider level of risk where wastes will be excavated, redeposited and compacted. In that instance the wastes would probably become anaerobic and gas conditions and associated risk would change. As it stands the risks are as predicted considering the gsv (gas screening values) levels generated.

The presence of saturated response zones in boreholes and an elevated water table suggest that the wastes are also saturated generally. Gas generation will be severely reduced in saturated conditions and therefore we would not expect to see significant gas. Further to this the head space above water in the borehole will be evacuated very quickly by the gas analyser, it is suspected that this has happened because air is seen in many of these boreholes. This is possibly due to air being drawn in from around the borehole annulus. Again, the GSVs values already derived have to be used and represent current risks, but it should be noted that this could change if wastes are excavated in the future.

Areas of the site where wells are not flooded and where waste and gas are present will have the same risk rating (gsv) as stated and previous understanding is considered accurate. Again, in circumstances where wastes are excavated there is still a possibility that wastes could be reactivated and gas generation could increase, this is something experienced by Exea Associates at numerous sites.

3.4 GAS CHARACTERISATION – TERNARY PLOTS

Tetra Tech developed a number of ternary plots for each of the zonal areas as described as Tables 4 & 5 previously based on the quarterly monitoring data provided. The plots present a useful visual illustration of gas characteristics and have been developed and interpreted in line with current Guidance3. The ternary plots have been updated to include the 2022 ICT monitoring data and where applicable the interpretation.
Ternary plots for each of the considered zones is presented at Appendix 4 and a brief interpretation presented below. Plots have been developed using data from monitoring wells where response zones were not submerged during monitoring as evidenced by corresponding groundwater levels recorded during the monitoring event. Plots are presented for monitoring wells within wastes or made ground and for wells where response zones are targeting natural deposits, where data permits.

3.4.1 Campsie S & G North

3.4.1.1 Made Ground

The data as plotted indicates a variable gas composition with some evidence of landfill gas presence and CO_2 and CH_4 concentrations within a range to suggest landfill gas migration, although the data set is limited within this compositional range. Composition analysis would support the presence of ambient air at number of locations and low-level CO_2 indicative of microbial respiration of organic materials.

[3] *Ground Gas Information Sheet No. 1. 'Using ternary plots for interpretation of ground gas monitoring results', Wilson S. et. Al, 2018.*

3.4.1.1 Natural

Gas composition is not conclusively within the range of values indicative of landfill gas migration but are potentially representative or landfill gas mixing with background concentrations. A number of monitoring data points are indicative of ambient air and/or are indicative of microbial respiration of organic materials.

3.4.2 Campsie S & G Central

3.4.2.1 Made Ground

Data from a number of monitoring wells would suggest the presence of ambient air at a number of locations. The data set is somewhat limited, with a number of points remaining marginally outside the range indicative of landfill gas migration but which are potentially attributable to low level migration.

3.4.2.1 Natural

Gas composition indicates the presence of ambient air and concentrations indicative of microbial respiration of organic materials. Whilst composition data is again not definitively within the range postulated for landfill gas migration a number of data points are approaching the suggested composition ranges, suggesting the possible presence of low levels of migratory landfill gas.

3.4.3 Campsie S & G South

3.4.3.1 Made Ground

The data set is limited to three data sets for made ground in this area. Compositional analysis would suggest ground gas as indicative of ambient air and/or are indicative of microbial respiration of organic materials.

3.4.3.2 Natural

Gas composition sees a reasonable variability with a high frequency of data points indicative of a geogenic gas with limited landfill gas composition. A number of data points are indicative of ambient air and/or are indicative of microbial respiration of organic materials.

3.4.4 CIW North

3.4.4.1 Made Ground

The gas composition plot would indicate a presence of landfill gas with a significant proportion of the data points plotted within this compositional range, with a number of locations suggesting some evidence of migration. A small number of data sets are indicative of ambient air and/or of microbial respiration of organic materials.

3.4.4.1 Natural

The gas composition plot for wells installed into natural deposits indicates a reduced landfill composition with a significant number of data points indicative of ambient air and/or indicative of microbial respiration of organic materials. Composition analysis suggests evidence of some mixing with background concentrations indicative of landfill gas migration.

3.4.5 CIW South

3.4.5.1 Made Ground

The gas composition plot would indicate a presence of landfill gas and there is evidence of some mixing with background concentrations. There is evidence of gas from a geogenic source although this may be attributable to mixing or dilution of landfill gas with background concentrations. A small number of data sets are indicative of ambient air and/or of microbial respiration of organic materials.

3.4.5.2 Natural

Gas composition is predominantly characterised as indicative of ambient air, although two monitoring data points generated following two rounds at BH122 did suggest the presence of landfill gas migration and potential influence of geogenic ground gas sources. Again, this is likely to attributable to mixing of landfill gas present with background ground gas.

3.5 DISSOLVED GROUND GAS

The recent site characterisation works as detailed in the Tetra Tech DQRA report, Project No. MOBUOY-TTE-XX-XX-RP-I-0011, August 2022 included the retrieval of c. 140 groundwater samples, 97 of which included dissolved methane and carbon dioxide analysis. Laboratory test data has been segregated into similar areas as ground gas monitoring data and is presented at Appendix 5 for reference.

Methane generally has a low solubility in water and a saturation of c. 29 mg/gl at 1 atmosphere and at a temperature of 10^{o}C[4]. Goody and Darling[5] stated, '*Methane becomes an explosion hazard at concentrations of 5 – 15 % by volume in air (Hooker and Bannon, 1993[6]). Since confined spaces vary both in their size and degree of ventilation, no universal rules can be applied to what may constitute a hazardous dissolved concentration in individual cases. However, if CH_4 exceeds 5% by volume of the gases dissolved in a groundwater, and the sum of these gas partial pressures is greater than atmospheric, there is a potential for CH_4 to outgas and reach or exceed the lower explosive limit. To put this in terms of concentration, a minimum CH_4 partial pressure in excess of 0.05 bars would be required, equivalent to a value of approximately 1600 µg/l.*'

In terms or current and future receptors no specific development is proposed for the Mobuoy site and therefore the potential for creation of confined spaced associated with future development is considered low. However future remediation works have the potential to alter groundwater and dissolved gas concentrations e.g., where wastes are compacted or surcharged potentially introducing varying pressures and to have the potential to create void spaces. Groundwater flow direction has been modelled to the adjacent river Faughan therefore risk of migration of ground gas via dissolution in groundwater potentially affecting offsite residential receptors is considered very low.

Table 7 overleaf presents the range of reported dissolved phase methane concentrations across each of the assessment areas following both groundwater sampling rounds.

[4] Dissolved methane monitoring for ground gas risk assessment, Ground Gas Information Sheet No 2, Paper 2.0, Haines and Wilson, 31/08/2018
[5] The Potential for Methane Emissions from Groundwaters of the UK, D C Gooddy* and W G Darling, British Geological Survey
[6] Hooker PJ, Bannon MP. Methane: its occurrence and hazards in construction. CIRIA Publication R130, 140 pp. 1993

Table 7 – Dissolved methane ranges – Monitoring Rounds 1 & 2

Area	CH_4 Range Sampling Round 1 (mg/l)	No. of GW samples tested	No. samples >1.6 mg/l	CH_4 Range Sampling Round 2 (mg/l)	No. of GW samples tested	No. samples >1.6 mg/l
CS&G North	< 0.050- 3.2	19	3	< 0.050- 1.7	12	2
CS&G Central	< 0.050- 0.11	3	0	< 0.050	1	0
CS&G South	< 0.050- 2.6	17	2	< 0.050-3.1	11	1
CIW North	< 0.050- 2.9	5	1	< 0.050-1.9	17	1
CIW South	< 0.050- 0.36	7	0	< 0.050- 0.77	5	0

A total of 31 no. groundwater samples were analysed for dissolved methane in the area described as CS&G North with five samples exceeding 1.6 mg/l. These were for samples retrieved from BH634 (1.7 mg/l), BH402S (1.9 mg/l) and BH635D (3.2 mg/l) following sampling round one and BH656 (1.7 mg/l) and BH657 (1.6 mg/l) following sampling round 2).

A total of 4 no. groundwater samples were analysed for dissolved methane in the area described as CS&G Central. None were reported in excess of 1.6 mg/l.

A total of 37 no. groundwater samples were analysed for dissolved methane in the area described as CS&G South, three of which reported concentrations above 1.6 mg/l, BH07 (2.3 mg/l) and BH201 (2.6 mg/l) following the initial sampling round and BH201 (3.1 mg/l) following the second monitoring round.

A total of 27 no. groundwater samples were analysed for dissolved methane in the area described as CIW North, two of which reported concentrations above 1.6 mg/l. These were for samples retrieved from BH649B (2.9 mg/l),) following sampling round one and BH656 (1.7 mg/l) and BH657 (1.6 mg/l) following sampling round 2).

A total of 12 no. groundwater samples were analysed for dissolved methane in the area described as CIW South, none of which reported concentrations above 1.6 mg/l.

A series of data plots are presented at Appendix 6 for monitoring wells where dissolved gas was analysed following recent (2022) groundwater sampling events. Plots are typically presented where >10 samples were obtained within the survey area.

Analysis of dissolved methane concentrations in groundwater has generally not identified concentrations across the site which are likely to pose a risk via dissolution from groundwater subject to relevant atmospheric variations. It is however recommended that these concentrations be considered further during remedial design to mitigate potential risk(s) associated with changes to existing hydrological conditions. As stated no significant development is anticipated limiting risk to onsite users and groundwater flow direction has been modelled principally to the west toward to the River Faughan reducing perceived risk to offsite property.

3.6 SURFACE GAS EMISSIONS SURVEY NIEA (MARCH 2019)

The most recent Gas Monitoring Report completed by the NIEA (Review of ground gas concentration for monitoring carried out at the site during 2020) included a surface gas emissions survey (FID Survey) which was carried out at the site in March 2019. The report states that the survey was carried out in accordance with the methodology presented in the EA guidance document LFTGN07 v2 2010 as far as practicably possible. It was limited to the northern portion of the City Industrial Waste site (Zones 1-3), as this was the area identified as posing the greatest risk to air quality due to the large volume of domestic waste present. Atmospheric and ground conditions were not recorded; therefore, the results of the survey are indicative of surface gas emissions only.

Landfill gas was detected, and gas could be heard 'hissing' through fissures in the ground and was observed to be bubbling through standing water. The results of the survey are summarised as follows.

Zones 2 and 3, generally displayed low surface gas emissions during the survey – typically <10ppm CH_4. The ground surface in these areas is generally densely vegetated with grasses and shrub willow. Where CH_4 was detected at higher concentrations, 10-40ppm CH_4, this was assumed to correlate with borehole locations and monitoring wells considered to be a potential source due to assumed reduced well headworks integrity. The report states that the NIEA have sought to secure headworks.

In Zone 1, located in the northern half of the study area, some locations displayed elevated surface gas emissions during the survey – in the range of 15-40ppm CH_4. The most significant concentration 70 ppm were detected at T8-3 located in the southwest of Zone 1. Relatively elevated concentrations were detected along the T8 transect T8-2 (40ppm), 3 (70 ppm), 4 (17 ppm), and 5 (20 ppm) (refer to Figure 4). The report concluded that on the basis of the FID *survey results, combined with olfactory and visual observations and sparse vegetation cover, indicate that the thickness of cover material in these areas is limited*.

The report concluded by recommending bi-annual survey of surface gas emissions with a recommendation to increase the survey area to Campsis S&G where visual and olfactory evidence of ground gas emissions were present.

Tetra Tech would concur with the recommendations with regard to the extension of the surface gas emission survey across the site to include lands to the south of CIW and the Campsie S&G area also. This data will in conjunction with ground gas monitoring and sampling will inform a Detailed Gas Assessment and future management strategy for the site.

3.7 SUMMARY

Following a detailed review of the additional monitoring data provided it is concluded that the ground gas conditions are consistent with those observed previously following the 2016/2021 assessment.

The interpretation of the monitoring data presented is influenced by the often partial or whole submergence of the monitoring well response zone which significantly effects the efficiency of the monitoring well in the provision of a representative assessment of sub surface ground gas conditions. As described in the British Standard BS8576 – "*Dissolved gas in groundwater can influence gas concentrations in monitoring wells. Where practicable and reasonable, the response zone for permanent gas monitoring wells should be located in an unsaturated zone*."

As discussed, a number of the monitoring wells are wholly submerged and, in some cases, significantly submerged. As a result, the measured concentrations at the well will be a consequence of the quantity of gas coming out of solution as measured in the well head space often confined potentially resulting in unrepresentative gas and flow conditions. The adoption of data collected under such conditions should be treated with caution in the derivation of GSVs. It is recommended that further detailed ground gas assessment be considered, the scope of which should

be informed by the remediation options appraisal and design. As stated, there is potential for remedial works to alter site conditions including ground gas generation and migration which should be further considered in the context remediation design and implementation

CIW north and south continue to exhibit moderate to moderate to high risk (CS3/4) for waste depositions with CS&G generally classified as lower risk (CS2/1) for waste deposition although localised ground gas elevations were evident in wells installed within natural deposits suggesting evidence of potential lateral migration.

The level of hazard has been assessed applying the Modified Wilson and Card assessment method as described in the CIRIA 665 Guidance Document. The risk rating system applied as advocated in CIRIA C665 is developed to assess risk with respect to future potential development by informing a level of hazard and subsequent mitigation or ground gas protection measures which would be required to address the risk or hazard level identified.

On the basis of the information currently available to Tetra Tech, it is assumed that the Mobuoy site will not be subject to development however the screening process does provide an indication on ground gas risk with respect to gas concentrations present and generation potential (flow rate), subject to the limitations as highlighted with regard to elevated groundwater levels and consequent reduced efficacy in response zone monitoring.
Gas conditions detected at present could be considered comparable to a landfill in a phase of post closure exhibiting ongoing gas generation in a stable environment, however the site does present an ongoing source of future emissions. The extent of future emissions should be quantified, and the significance thereof be a consideration of future remediation design.

Future ground gas risk and management should be considered in the context of the site remediation as such activities have the potential to significantly alter the current gas regime. Remediation will also inform the appropriate assessment and future management of gas at the site. For example, should it be accepted that no development (considered here as permanent or semi-permanent building construction) will be carried out and the site will ostensibly be considered as a 'closed landfill' then landfill specific guidance such as Environment Agency, Guidance on the management of landfill gas' LFTGN03, September 2004 may be a more appropriate vehicle for the future assessment of ground gas in this context. Or alternately a hybrid approach may be more appropriate should limited permanent or semi- permanent development be proposed.

The GasSim modelling (2016) has not been updated as there has been no substantial change to site conditions and therefore the parameters adopted previously.

In regard to offsite receptors a number of residential properties are located in close proximity to the site. A residential property and Church/meeting hall are located to the immediate east of Campsie S&G c.60m from the site on the opposite side of the Mobuoy Road. Ground gas readings at BH218 in this area of Campsie S&G recorded maximum methane concentrations of 54.4% and carbon dioxide concentrations of 31.6% (05/08/2019) although flow rates were typically low (maximum 0.5 l/h), resulting in a worst case GSV of 0.272 or CS2 (low risk). Recent 2022 monitoring reported a maximum methane concentration at 84.4% (25/01/2022) however this is likely to have been subject to interference as carbon dioxide was reported at 21.8% and oxygen at 1.5%. Later monitoring (07/03/2022) reported methane at 0.7% and carbon dioxide at 0.8%. The response zone at BH218 has been submerged during all monitoring events reducing reliance of recorded data.

It is anticipated that significant waste removal will be required in this area to accommodate the A6 works which should result in a longer-term reduction of risk with significant source removal, although any further risk assessment is recommended where significant enabling works are proposed to assess potential impacts to the current ground gas regime and inform appropriate mitigation. As a precautionary measure it is recommended that future site

remediation consider the introduction of sentinel wells to effectively assess potential offsite migration during and post remediation.

Two other residential properties are located to the southeast of the CIW site (c. 100m) and to the southwest of C S&G South, c. 200m. The perceived risk via potential offsite lateral migration of ground gas is reduced due to the distance from the site however the potential pathway should remain a consideration with respect to future remedial design and possible implementation of sentinel monitoring apparatus. The scope of future monitoring measures should be informed by the overall remediation strategy.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Following a review of the quarterly ground gas monitoring data and recent ICT data it is considered that the site's ground gas regime remains stable following a comparison with the data as presented in the WYG 2016 report. Tetra Tech understand that limited or no significant development is proposed at the Mobuoy site and where it is gas protection measures applicable to the hazard level identified would be required to mitigate risk. These recommendations would also apply to temporary buildings proposed to accommodate site remediation or support longer term site maintenance.

As stated, the future risk assessment and management of gas will be informed by the Remediation Design, and it is recommended that gas management design form an integral part of the Remedial Options Appraisal) process to assess future impacts to the current gas regime as a consequence of remediation and to inform management. The extent of alteration and subsequent management of ground gas should be assessed likely via a combination of modelling potential remedial scenarios impacts supported by additional site characterisation and monitoring where applicable. The scope of any future gas assessment will be informed by the Remedial Options Appraisal and final remediation strategy design.

FIGURES

Figure 1- Site Location Plan

N

Figure 1. Site Location Plan

Legend

City Industrial Waste

Campsie Sand Gravel

Notes:

Drawn by: [redacted]

Checked by: [redacted]

Drawing number:

Office: Belfast

Revision No.001

Client: CPD

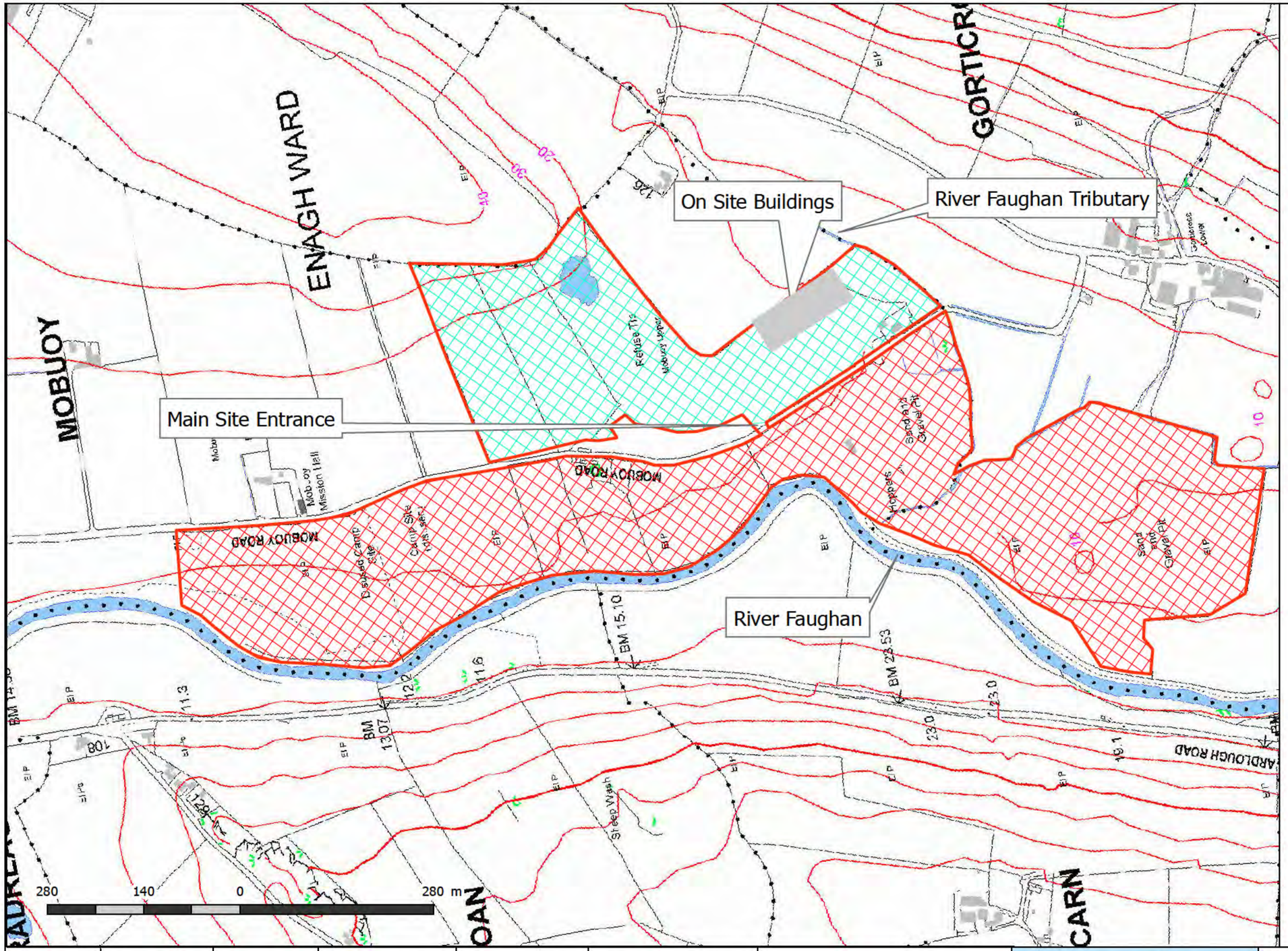
Project: B030252 - Mobuoy Remediation

0 600 1,200 2,400 Meters

Date: 17/09/2021

Locksley Business Park
Montgomery Road
Belfast
BT6 9UP
Tel: 028 9070 6000
Email: ireland@tetratech.com

Figure 2 – Annotated Site Plan



Key

- Campsie Sand & Gravels Site
- City Industrial Waste Site

Project: A089594	Date: 02 July 2015	Drawn by:	Checked by:	Verified by	Absolute Scale @A3 1:6,000

Figure 2

City Waste - Site Boundary

Drawn using ESRI ArcMap 10

WYG
Locksley Business Park
Montgomery Road
BELFAST
BT6 9UP

Telephone: +44 (0)28 90706000
Email: belfast@wyg.com
Web: www.wyg.com

Figure 3 - Borehole Location Plan

Figure 3. Site Investigation Location Plan

N

Legend

- Waste Wells
- Groundwater Wells
- BHs (400 Series)
- BHs (2021 - 2022)
- TPs (2021 - 2022)
- City Industrial Waste
- Campsie Sand Gravel

Note:

Drawn by: [redacted]

Checked by: [redacted]

Office: Belfast Revision: No.1

Client: NIEA Project: B030252 - Mobuoy Road Remediation

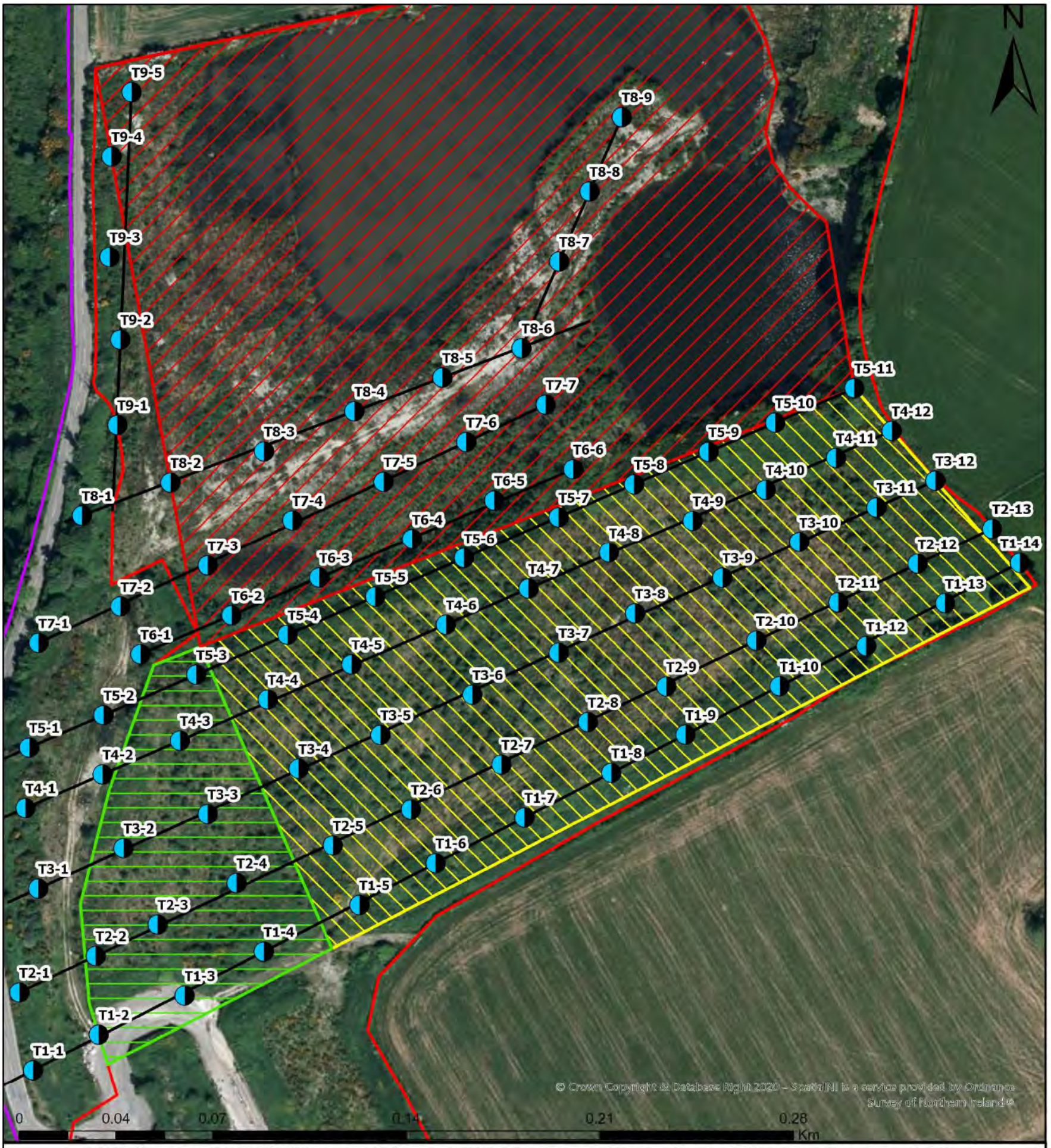
0 75 150 300 Meters

Date: 05/08/2022

Locksley Business Park
Montgomery Road
Belfast
BT6 9UP
Tel: 028 9070 6000
Email: ireland@tetratech.com

Figure 4 - NIEA Ground Gas Monitoring Report 2020 (FID Survey Results Summary)

Annex 3 FID Survey Results



Mobuoy Road Waste Site - FID Survey Results - Waste Zones 1-3

Location	PPM	Location	PPM	Location	PPM	Location	PPM	Location	PPM	Location	PPM
T1-1	1	T2-3	4	T3-5	10	T4-8	9	T5-11	15	T8-2	40
T1-2	1	T2-4	6	T3-6	30	T4-9	7	T6-1	7	T8-3	70
T1-3	1	T2-5	7	T3-7	6	T4-10	40	T6-2	7	T8-4	17
T1-4	1	T2-6	6	T3-8	6	T4-11	12	T6-3	6	T8-5	20
T1-5	1	T2-7	6	T3-9	7	T4-12	7	T6-4	6	T8-6	15
T1-6	2	T2-9	6	T3-10	6	T5-1	1	T6-5	9	T8-7	13
T1-7	3	T2-8	6	T3-11	6	T5-3	6	T6-6	6	T8-8	17
T1-8	3	T2-10	7	T3-12	7	T5-2	7	T7-1	2	T8-9	25
T1-9	3	T2-11	12	T4-1	1	T5-4	6	T7-2	7	T9-1	20
T1-10	0	T2-12	8	T4-2	6	T5-5	6	T7-3	0	T9-2	6
T1-12	4	T2-13	0	T4-3	6	T5-6	7	T7-4	6	T9-3	7
T1-13	2	T3-1	1	T4-4	7	T5-7	7	T7-5	2	T9-4	6
T1-14	3	T3-2	6	T4-5	9	T5-8	12	T7-6	8	T9-5	0
T2-1	1	T3-3	7	T4-6	15	T5-9	6	T7-7	7		
T2-2	1	T3-4	9	T4-7	11	T5-10	8	T8-1	10		

Mobuoy Site Boundary

- Campsie Sand & Gravel
- City Industrial Waste

Waste Zones

- Zone 1
- Zone 2
- Zone 3

FID Survey

- FID Survey Locations
- FID Survey Transects

N.B. PPM (Parts Per Million)

An Agency within the Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

NIEA Northern Ireland Environment Agency
www.daera-ni.gov.uk

APPENDIX 1 – REPORT CONDITIONS

REPORT CONDITIONS

Mobuoy Updated Ground Gas Risk Assessment

This report is produced solely for the benefit of ***NIEA,*** and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Tetra Tech. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of Tetra Tech using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary, and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted, and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to Tetra Tech by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted, or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accepts no liability for issues with performance arising from such factors.

APPENDIX 2- NIEA GROUND GAS MONITORING DATA

Waste/Made Ground

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH05	CSG North & BH206	NIEA ADD	10/06/2020	0.1	0.1	21.5	0	0	0	0	1013	Campsie N	YES	2.8	0.29	2.51	-	Waste/Gravel	0	0	1
BH05	CSG North & BH206	NIEA R1	07/04/2020	0.9	1.4	19.5	0	1	0	0	1023	Campsie N	YES	2.18	0.29	1.89	-	Waste/Gravel	0	0	1
BH05	CSG North & BH206	NIEA R5	04/05/2021	0.1	0.6	20.7	0	0	0	0	1020	Campsie N	YES	2.5	0.29	2.21	-	Waste/Gravel	0	0	1
BH105	CSG North & BH206	Causeway R1	09/04/2019	0.2	0.2	21	0	0	0.4	0.4	1019	Campsie C	YES	-	0.41	-	1.0-8.0	Waste	0.0008	0.0008	1
BH105	CSG North & BH206	Causeway R2	16/04/2019	0	0.1	21.2	0	0	-0.1	-0.1	1017	Campsie C	YES	4.87	0.41	4.46	1.0-8.0	Waste	0	-0.0001	1
BH105	CSG North & BH206	Causeway R3	06/08/2019	17.7	17.7	0.2	5	0	0.2	0.2	1000	Campsie C	YES	4.75	0.41	4.34	1.0-8.0	Waste	0.0354	0.0354	1
BH105	CSG North & BH206	Causeway R4	28/11/2019	25.3	20.2	0	2	9	0.3	0.3	1000	Campsie C	YES	4.89	0.41	4.48	1.0-8.0	Waste	0.0759	0.0606	2
BH105	CSG North & BH206	Causeway R5	06/12/2019	25.1	19	0	1	11	0.4	0.4	995	Campsie C	YES	4.58	0.41	4.17	1.0-8.0	Waste	0.1004	0.076	2
BH105	CSG North & BH206	Causeway R6	16/12/2019	25.9	20	0	1	13	0.3	0.3	990	Campsie C	YES	5.18	0.41	4.77	1.0-8.0	Waste	0.0777	0.06	2
BH105	CSG North & BH206	NIEA	26/06/2019	15.8	16.9	2.7	2	0	0	0	1033	Campsie C	YES	4.59	0.41	4.18	1.0-8.0	Waste	0	0	1
BH105	CSG North & BH206	NIEA R1	17/04/2020	31.6	18	0.2	1	0	0	0	1016	Campsie C	YES	5.44	0.41	5.03	1.0-8.0	Waste	0	0	1
BH105	CSG North & BH206	NIEA R2	12/10/2020	24.1	18.1	0.2	1	4	0.1	0.1	1016	Campsie C	YES	4.42	0.41	4.01	1.0-8.0	Waste	0.0241	0.0181	1
BH105	CSG North & BH206	NIEA R3	03/11/2020	23.1	13.9	3.1	1	0	0	0	1012	Campsie C	YES	4.32	0.41	3.91	1.0-8.0	Waste	0	0	1
BH105	CSG North & BH206	NIEA R4	07/12/2020	31.9	19.7	0.3	0	0	0.2	0.2	1001	Campsie C	YES	4.32	0.41	3.91	1.0-8.0	Waste	0.0638	0.0394	1
BH105	CSG North & BH206	NIEA R5	04/05/2021	29.4	16.7	0.1	0	0	0	0	1020	Campsie C	YES	4.96	0.41	4.55	1.0-8.0	Waste	0	0	1
BH219	CSG North & BH206	Causeway R1	09/04/2019	1.6	1.3	20.6	0	0	0.4	0.4	1019	Campsie C	YES	-	0.44	-	1-5.4	Waste	0.0064	0.0052	1
BH219	CSG North & BH206	Causeway R2	16/04/2019	0.8	1.1	19.5	0	0	0.3	0.3	1017	Campsie C	YES	-	0.44	-	1-5.4	Waste	0.0024	0.0033	1
BH219	CSG North & BH206	Causeway R3	05/08/2019	0	0.8	19.9	2	0	0.4	0.4	1003	Campsie C	YES	2.8	0.44	2.36	1-5.4	Waste	0	0.0032	1
BH219	CSG North & BH206	Causeway R4	28/11/2019	8.7	8.5	14	1	0	-4.2	-4.2	1000	Campsie C	YES	2.55	0.44	2.11	1-5.4	Waste	-0.3654	-0.357	2
BH219	CSG North & BH206	Causeway R5	05/12/2019	8.8	10	11.3	0	0	0.4	0.4	995	Campsie C	YES	2.4	0.44	1.96	1-5.4	Waste	0.0352	0.04	1
BH219	CSG North & BH206	Causeway R6	16/12/2019	14	24.2	0.1	0	9	0.3	0.3	990	Campsie C	YES	2.33	0.44	1.89	1-5.4	Waste	0.042	0.0726	2
BH219	CSG North & BH206	NIEA R1	07/04/2020	12	13.3	9.6	0	0	-0.9	-0.9	1023	Campsie C	YES	2.34	0.44	1.9	1-5.4	Waste	-0.108	-0.1197	2
BH219	CSG North & BH206	NIEA ADD	17/04/2020	7.3	9.1	12.9	0	0	-0.3	-0.3	1016	Campsie C	YES	2.45	0.44	2.01	1-5.4	Waste	-0.0219	-0.0273	2
BH219	CSG North & BH206	NIEA ADD	24/04/2020	2.9	6.1	6.1	1	1	0	0	1015	Campsie C	YES	-	0.44	-	1-5.4	Waste	0	0	1
BH219	CSG North & BH206	NIEA ADD	01/05/2020	2	6.9	15.5	0	0	0	0	995	Campsie C	YES	2.21	0.44	1.77	1-5.4	Waste	0	0	1
BH219	CSG North & BH206	NIEA ADD	07/05/2020	0.4	3.9	17.9	0	0	0	0	1018	Campsie C	YES	2.34	0.44	1.9	1-5.4	Waste	0	0	1
BH219	CSG North & BH206	NIEA ADD	14/05/2020	0.1	3.9	18	0	0	0	0	1024	Campsie C	YES	2.49	0.44	2.05	1-5.4	Waste	0	0	1
BH219	CSG North & BH206	NIEA R5	04/05/2021	0.4	0.8	19.8	0	0	0	0	1020	Campsie C	YES	2.51	0.44	2.07	1-5.4	Waste	0	0	1
BH220	CSG North & BH206	Causeway R1	09/04/2019	2.1	2.1	19.2	0	0	0.4	0.4	1019	Campsie C	YES	-	0.49	-	1.0-4.5	C&D Waste	0.0084	0.0084	1
BH220	CSG North & BH206	Causeway R2	16/04/2019	1	2.1	17.4	0	0	-0.2	-0.2	1017	Campsie C	YES	-	0.49	-	1.0-4.5	C&D Waste	-0.002	-0.0042	1
BH220	CSG North & BH206	Causeway R3	06/08/2019	-	-	-	-	-	-	-	1003	Campsie C	YES	3.28	0.49	2.79	1.0-4.5	C&D Waste			
BH220	CSG North & BH206	Causeway R4	28/11/2019	38.7	16.9	9	1	0	1.9	1.6	1000	Campsie C	YES	3.1	0.49	2.61	1.0-4.5	C&D Waste	0.6192	0.2704	2
BH220	CSG North & BH206	Causeway R5	05/12/2019	72.2	27.6	0.1	0	6	0.4	0.4	995	Campsie C	YES	2.99	0.49	2.5	1.0-4.5	C&D Waste	0.2888	0.1104	2
BH220	CSG North & BH206	Causeway R6	16/12/2019	76.3	24.2	0.1	0	9	0.3	0.3	990	Campsie C	YES	2.7	0.49	2.21	1.0-4.5	C&D Waste	0.2289	0.0726	2
BH220	CSG North & BH206	NIEA R1	07/04/2020	39.6	7.8	9.4	0	0	0.9	0.9	1023	Campsie C	YES	2.1	0.49	1.61	1.0-4.5	C&D Waste	0.3564	0.0702	2
BH220	CSG North & BH206	NIEA R2	12/10/2020	50.2	15.2	7.3	1	19	0.2	0.2	1016	Campsie C	YES	2.82	0.49	2.33	1.0-4.5	C&D Waste	0.1004	0.0304	2
BH220	CSG North & BH206	NIEA R3	02/11/2020	65.2	16.5	4.1	0	0	0.1	0.1	993	Campsie C	YES	2.42	0.49	1.93	1.0-4.5	C&D Waste	0.0652	0.0165	1
BH220	CSG North & BH206	NIEA R4	07/12/2020	0.4	0.1	21.7	0	0	0.1	0.1	1001	Campsie C	YES	2.07	0.49	1.58	1.0-4.5	C&D Waste	0.0004	0.0001	1
BH220	CSG North & BH206	NIEA R5	04/05/2021	63.7	15	4.2	0	0	0	0	1020	Campsie C	YES	2.36	0.49	1.87	1.0-4.5	C&D Waste	0	0	
BH216	Zone 7	Causeway R1	09/04/2019	0.5	0.3	20.6	0	0	0.4	0.4	1019	Campsie N	YES	-	0.33	-	5.0 - 6.0	Waste	0.002	0.0012	1
BH216	Zone 7	Causeway R2	16/04/2019	0.3	0.5	19.9	1	0	0.1	0.1	1017	Campsie N	YES	-	0.33	-	5.0 - 6.0	Waste	0.0003	0.0005	1
BH216	Zone 7	Causeway R3	05/08/2019	29.2	8.8	0.1	2	0	0.3	0.3	1003	Campsie N	YES	1.5	0.33	1.17	5.0 - 6.0	Waste	0.0876	0.0264	2
BH216	Zone 7	Causeway R4	28/11/2019	3.7	4.7	15.8	1	0	0.3	0.3	1000	Campsie N	YES	0.95	0.33	0.62	5.0 - 6.0	Waste	0.0111	0.0141	1
BH216	Zone 7	Causeway R5	05/12/2019	0	3.1	19.7	0	0	0.1	0.1	995	Campsie N	YES	1.08	0.33	0.75	5.0 - 6.0	Waste	0	0.0031	1
BH216	Zone 7	Causeway R6	16/12/2019	0	2.2	19.8	0	0	0	0	990	Campsie N	YES	0.87	0.33	0.54	5.0 - 6.0	Waste	0	0	1
BH216	Zone 7	NIEA	26/06/2019	11.9	8.7	0.9	1	1	0	0	1033	Campsie N	YES	1.68	0.33	1.35	5.0 - 6.0	Waste	0	0	1
BH216	Zone 7	NIEA ADD	10/06/2020	0	7.3	10.2	0	0	0	0	1013	Campsie N	YES	1.86	0.33	1.53	5.0 - 6.0	Waste	0	0	1
BH216	Zone 7	NIEA R1	07/04/2020	0	0	21	0	0	0	0	1023	Campsie N	YES	0.88	0.33	0.55	5.0 - 6.0	Waste	0	0	1
BH216	Zone 7	NIEA R2	12/10/2020	0	0	21.1	0	0	0	0	1016	Campsie N	YES	0.96	0.33	0.63	5.0 - 6.0	Waste	0	0	1
BH216	Zone 7	NIEA R3	02/11/2020	0.2	3.5	19.6	0	0	0.1	0.1	993	Campsie N	YES	0.73	0.33	0.4	5.0 - 6.0	Waste	0.0002	0.0035	1
BH216	Zone 7	NIEA R4	08/12/2020	0.4	3	17.1	0	0	0.2	0.2	1001	Campsie N	YES	0.58	0.33	0.25	5.0 - 6.0	Waste	0.0008	0.006	1
BH217	Zone 7	Causeway R1	09/04/2019	0.9	1.1	20.6	0	0	-0.3	-0.3	1019	Campsie N	YES	-	0.34	-	1.0 - 6.0	Waste	-0.0027	-0.0033	1
BH217	Zone 7	Causeway R2	16/04/2019	0.5	0.8	20.4	0	0	0.2	0.2	1017	Campsie N	YES	-	0.34	-	1.0 - 6.0	Waste	0.001	0.0016	1
BH217	Zone 7	Causeway R3	05/08/2019	75.6	4.6	0.4	1	0	0.2	0.2	1003	Campsie N	YES	1.78	0.34	1.44	1.0 - 6.0	Waste	0.1512	0.0092	2
BH217	Zone 7	Causeway R4	28/11/2019	-	-	-	-	-	-	-	1000	Campsie N	YES	1.4	0.34	1.06	1.0 - 6.0	Waste			
BH217	Zone 7	Causeway R5	05/12/2019	22.4	4.1	10.4	0	0	0.4	0.4	995	Campsie N	YES	1.5	0.34	1.16	1.0 - 6.0	Waste	0.0896	0.0164	2
BH217	Zone 7	Causeway R6	16/12/2019	35.7	3.2	10.2	0	0	0	0	990	Campsie N	YES	1.3	0.34	0.96	1.0 - 6.0	Waste	0	0	1
BH217	Zone 7	NIEA	26/06/2019	64.9	4.8	0.8	0	1	0.2	0.2	1033	Campsie N	YES	2.55	0.34	2.21	1.0 - 6.0	Waste	0.1298	0.0096	2

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH217	Zone 7	NIEA ADD	10/06/2020	87.1	1.3	0.1	0	0	0	0	1013	Campsie N	YES	2.18	0.34	1.84	1.0 - 6.0	Waste	0	0	1
BH217	Zone 7	NIEA R1	07/04/2020	67.4	3.1	0.1	0	3	-3.7	-3.7	1023	Campsie N	YES	1.38	0.34	1.04	1.0 - 6.0	Waste	-2.4938	-0.1147	2
BH217	Zone 7	NIEA R2	12/10/2020	0	0	21.1	0	0	0	0	1016	Campsie N	YES	1.38	0.34	1.04	1.0 - 6.0	Waste	0	0	1
BH217	Zone 7	NIEA R4	08/12/2020	1	1.5	20.2	0	0	0.1	0.1	1001	Campsie N	YES	1.05	0.34	0.71	1.0 - 6.0	Waste	0.001	0.0015	1
BH217	Zone 7	NIEA R5	04/05/2021	60.8	3.7	0.1	0	0	0	0	1020	Campsie N	YES	1.71	0.34	1.37	1.0 - 6.0	Waste	0	0	1
BH218	Zone 7	Causeway R1	09/04/2019	2.1	1.7	20.3	0	0	0.4	0.4	1019	Campsie N	YES	-	0.32	-	2- 3.5	Waste/ Clay	0.0084	0.0068	1
BH218	Zone 7	Causeway R3	05/08/2019	54.4	31.6	0	2	0	0.2	0.2	1003	Campsie N	YES	1.82	0.32	1.5	2- 3.5	Waste/ Clay	0.1088	0.0632	2
BH218	Zone 7	Causeway R4	28/11/2019	-	-	-	-	-	-	-	1000	Campsie N	YES	1.86	0.32	1.54	2- 3.5	Waste/ Clay			
BH218	Zone 7	Causeway R5	05/12/2019	28.9	14.1	11	0	3	0.5	0.5	995	Campsie N	YES	1.82	0.32	1.5	2- 3.5	Waste/ Clay	0.1445	0.0705	2
BH218	Zone 7	Causeway R6	16/12/2019	21.8	16	9.8	0	0	0.4	0.4	990	Campsie N	YES	1.74	0.32	1.42	2- 3.5	Waste/ Clay	0.0872	0.064	2
BH218	Zone 7	NIEA	24/06/2019	42.2	24.1	2.8	3	1	0	0	1033	Campsie N	YES	2.19	0.32	1.87	2- 3.5	Waste/ Clay	0	0	1
BH218	Zone 7	NIEA ADD	10/06/2020	9	5.5	17.2	0	0	0	0	1013	Campsie N	YES	2.11	0.32	1.79	2- 3.5	Waste/ Clay	0	0	1
BH218	Zone 7	NIEA R1	07/04/2020	43.1	17.3	4.4	1	1	-0.1	-0.1	1023	Campsie N	YES	1.92	0.32	1.6	2- 3.5	Waste/ Clay	-0.0431	-0.0173	1
BH218	Zone 7	NIEA R2	12/10/2020	28	21.9	6.5	0	1	0.2	0.2	1016	Campsie N	YES	2.02	0.32	1.7	2- 3.5	Waste/ Clay	0.056	0.0438	1
BH218	Zone 7	NIEA R3	03/11/2020	32.8	36.4	0.2	0	0	-0.1	-0.1	1012	Campsie N	YES	1.74	0.32	1.42	2- 3.5	Waste/ Clay	-0.0328	-0.0364	1
BH218	Zone 7	NIEA R4	08/12/2020	19.4	20	4	0	0	-5	-5	1001	Campsie N	YES	1.73	0.32	1.41	2- 3.5	Waste/ Clay	-0.97	-1	2
BH218	Zone 7	NIEA R5	04/05/2021	10.2	12.5	9.8	0	0	0	0	1020	Campsie N	YES	1.92	0.32	1.6	2- 3.5	Waste/ Clay	0	0	1

Natural

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH04	CSG North & BH206	NIEA R1	07/04/2020	0	0	21.6	0	0	0	0	1023	Campsie N	NO	4.5	0.34	4.16	4.8-7.5	Sand	0	0	1
BH04	CSG North & BH206	NIEA R2	12/10/2020	0.1	1.1	21.2	0	0	0.3	0.3	1016	Campsie N	NO	4.14	0.34	3.8	4.8-7.5	Sand	0.0003	0.0033	1
BH04	CSG North & BH206	NIEA R3	02/11/2020	0.2	3.2	19.2	0	0	0.3	0.3	993	Campsie N	NO	3.62	0.34	3.28	4.8-7.5	Sand	0.0006	0.0096	1
BH04	CSG North & BH206	NIEA R4	07/12/2020	0.3	2.3	19.8	0	0	0.1	0.1	1001	Campsie N	NO	4.16	0.34	3.82	4.8-7.5	Sand	0.0003	0.0023	1
BH04	CSG North & BH206	NIEA R5	04/05/2021	0	0.7	20.7	0	0	0	0	1020	Campsie N	NO	4.39	0.34	4.05	4.8-7.5	Sand	0	0	1
BH06	CSG North & BH206	Causeway R3	06/08/2019	1.5	6.4	13.8	1	0	0.2	0.2	1000	Campsie N	NO	13.77	0.27	13.5	4.0-7.0	CLay	0.003	0.0128	1
BH06	CSG North & BH206	NIEA R1	07/04/2020	40.9	11.2	9.1	1	0	0.3	0.3	1023	Campsie N	NO	4.66	0.27	4.39	4.0-7.0	Clay	0.1227	0.0336	2
BH106B	CSG North & BH206	Causeway R1	09/04/2019	0.9	0.7	20.1	0	0	0.4	0.4	1019	Campsie C	NO	-	0.36	-	6.0-7.0	Sand	0.0036	0.0028	1
BH106B	CSG North & BH206	Causeway R2	16/04/2019	0.2	0.2	19.8	0	0	0.1	0.1	1017	Campsie C	NO	4.67	0.36	4.31	6.0-7.0	Sand	0.0002	0.0002	1
BH106B	CSG North & BH206	Causeway R3	05/08/2019	0.1	1.9	18.3	3	0	0.2	0.2	1003	Campsie C	NO	4.67	0.36	4.31	6.0-7.0	Sand	0.0002	0.0038	1
BH106B	CSG North & BH206	Causeway R4	28/11/2019	0	0.9	21.2	0	0	0	0	1000	Campsie C	NO	4.72	0.36	4.36	6.0-7.0	Sand	0	0	1
BH106B	CSG North & BH206	Causeway R5	05/12/2019	0	1	20.9	0	0	0.3	0.3	995	Campsie C	NO	4.53	0.36	4.17	6.0-7.0	Sand	0	0.003	1
BH106B	CSG North & BH206	Causeway R6	16/12/2019	0	0.6	21.5	0	0	0.3	0.3	990	Campsie C	NO	4.99	0.36	4.63	6.0-7.0	Sand	0	0.0018	1
BH106B	CSG North & BH206	NIEA	26/06/2019	0	0.2	20.3	0	0	0	0	1033	Campsie C	NO	-	0.36	-	6.0-7.0	Sand	0	0	1
BH106B	CSG North & BH206	NIEA R1	07/04/2020	0	1.5	21.1	0	0	0	0	1023	Campsie C	NO	4.65	0.36	4.29	6.0-7.0	Sand	0	0	1
BH106B	CSG North & BH206	NIEA R2	12/10/2020	0.1	1.3	19.7	0	0	0.3	0.3	1016	Campsie C	NO	4.45	0.36	4.09	6.0-7.0	Sand	0.0003	0.0039	1
BH106B	CSG North & BH206	NIEA R3	02/11/2020	0.2	1.5	20.8	0	0	0.2	0.2	993	Campsie C	NO	4.03	0.36	3.67	6.0-7.0	Sand	0.0004	0.003	1
BH106B	CSG North & BH206	NIEA R4	07/12/2020	0.3	2	17.4	0	0	0.2	0.2	1001	Campsie C	NO	4.37	0.36	-	6.0-7.0	Sand	0.0006	0.004	1
BH106B	CSG North & BH206	NIEA R5	04/05/2021	0	0.5	21	0	0	0	0	1020	Campsie C	NO	4.96	0.36	4.6	6.0-7.0	Sand	0	0	1
BH107	CSG North & BH206	NIEA R1	07/04/2020	9.4	20.4	11.7	1	0	0	0	1023	Campsie C	NO	-	0.37	-	6.5-8	Sand	0	0	1
BH107	CSG North & BH206	NIEA R5	04/05/2021	2.5	7.7	17.2	0	0	0	0	1020	Campsie C	NO	4.94	0.37	4.57	6.5-8	Sand	0	0	1
BH108	CSG North & BH206	Causeway R1	09/04/2019	4.3	3.7	18.9	1	0	0.4	0.4	1019	Campsie C	NO	-	0.4	-	1.0-4.0	Sand	0.0172	0.0148	1
BH108	CSG North & BH206	Causeway R2	16/04/2019	0	0.1	21.2	1	0	-0.1	-0.1	1017	Campsie C	NO	1.8	0.4	1.4	1.0-4.0	Sand	0	-0.0001	1
BH108	CSG North & BH206	Causeway R3	05/08/2019	-	-	-	-	-	-	-	1003	Campsie C	NO	1.38	0.4	0.98	1.0-4.0	Sand			
BH108	CSG North & BH206	Causeway R4	28/11/2019	0	0.1	21.6	0	0	0.5	0.5	1000	Campsie C	NO	1.43	0.4	1.03	1.0-4.0	Sand	0	0.0005	1
BH108	CSG North & BH206	Causeway R5	05/12/2019	0.2	1.2	19.2	0	0	0.2	0.2	995	Campsie C	NO	1.13	0.4	0.73	1.0-4.0	Sand	0.0004	0.0024	1
BH108	CSG North & BH206	Causeway R6	16/12/2019	0	0.9	20.5	0	0	0	0	990	Campsie C	NO	1.57	0.4	1.17	1.0-4.0	Sand	0	0	1
BH108	CSG North & BH206	NIEA	26/06/2019	1.8	1.7	17.9	0	0	-15.2	-15.2	1033	Campsie C	NO	1.45	0.4	1.05	1.0-4.0	Sand	-0.2736	-0.2584	2
BH108	CSG North & BH206	NIEA R1	07/04/2020	0	0.9	17.6	0	0	0	0	1023	Campsie C	NO	1.2	0.4	0.8	1.0-4.0	Sand	0	0	1
BH108	CSG North & BH206	NIEA R2	12/10/2020	0	1	20.4	0	0	0	0	1016	Campsie C	NO	0.72	0.4	0.32	1.0-4.0	Sand	0	0	1
BH108	CSG North & BH206	NIEA R3	03/11/2020	0.3	1.5	19.5	0	0	0	0	1012	Campsie C	NO	1.22	0.4	0.82	1.0-4.0	Sand	0	0	1
BH108	CSG North & BH206	NIEA R4	07/12/2020	0.3	1	20.4	0	0	-3.3	-3.3	1001	Campsie C	NO	-	0.4	-	1.0-4.0	Sand	-0.0099	-0.033	1
BH108	CSG North & BH206	NIEA R5	04/05/2021	0	0.5	20.5	0	0	0	0	1020	Campsie C	NO	1.46	0.4	1.06	1.0-4.0	Sand	0	0	1
BH206	CSG North & BH206	Causeway R1	09/04/2019	0.2	0.2	21	0	0	0.4	0.4	1019	Campsie C	NO	-	0.5	-	4.0-7.0	Sand	0.0008	0.0008	1
BH206	CSG North & BH206	Causeway R2	16/04/2019	20.2	7.2	7.6	2	0	-0.4	0.2	1017	Campsie C	NO	-	0.5	-	4.0-7.0	Sand	0.0404	0.0144	1
BH206	CSG North & BH206	Causeway R3	-	-	-	-	-	-	-	-	1003	Campsie C	NO	-	0.5	-	4.0-7.0	Sand			
BH206	CSG North & BH206	Causeway R4	28/11/2019	56.2	8.9	0.7	0	0	0.3	0.1	1000	Campsie C	NO	5.13	0.5	4.63	4.0-7.0	Sand	0.0562	0.0089	1
BH206	CSG North & BH206	Causeway R5	05/12/2019	34.1	6.8	7.3	0	0	0.4	0.4	995	Campsie C	NO	5.13	0.5	4.63	4.0-7.0	Sand	0.1364	0.0272	2
BH206	CSG North & BH206	Causeway R6	16/12/2019	22.6	7.6	6.2	2	0	0.2	0.2	990	Campsie C	NO	4.84	0.5	4.34	4.0-7.0	Sand	0.0452	0.0152	1

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH206	CSG North & BH206	NIEA ADD	14/05/2020	49.2	17.3	3.1	1	0	0	0	1024	Campsie C	NO	5.29	0.5	4.79	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA ADD	07/05/2020	55.2	12	1.6	1	0	0	0	1018	Campsie C	NO	4.9	0.5	4.4	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA ADD	01/05/2020	47.9	9.9	3.8	0	0	0	0	995	Campsie C	NO	5.2	0.5	4.7	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA ADD	24/04/2020	40.1	12.1	4.4	1	0	0	0	1015	Campsie C	NO	5.1	0.5	4.6	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA ADD	17/04/2020	34.1	11.2	6.8	1	0	0	0	1016	Campsie C	NO	5.01	0.5	4.51	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA R1	07/04/2020	21.9	6.9	12	1	0	0	0	1023	Campsie C	NO	4.9	0.5	4.4	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA R2	12/10/2020	47.8	17.7	3.1	1	0	0	0	1016	Campsie C	NO	5.02	0.5	4.52	4.0-7.0	Sand	0	0	1
BH206	CSG North & BH206	NIEA R3	02/11/2020	47.1	14.8	3.6	0	0	11.3	11.3	993	Campsie C	NO	4.8	0.5	4.3	4.0-7.0	Sand	5.3223	1.6724	4
BH206	CSG North & BH206	NIEA R4	07/12/2020	39.2	17	5.5	0	0	0.1	0.1	1001	Campsie C	NO	4.73	0.5	4.23	4.0-7.0	Sand	0.0392	0.017	1
BH206	CSG North & BH206	NIEA R5	04/05/2021	48	10.9	4.7	0	0	0	0	1020	Campsie C	NO	4.87	0.5	4.37	4.0-7.0	Sand	0	0	1
BH207	CSG North & BH206	Causeway R1	09/04/2019	1.8	1.1	19.9	0	0	0.4	0.4	1019	Campsie C	YES	-	0.7	-	5.0-9.0	Sand	0.0072	0.0044	1
BH207	CSG North & BH206	Causeway R2	16/04/2019	0.3	0.9	19	0	0	0.3	0.3	1017	Campsie C	YES	3.2	0.7	2.5	5.0-9.0	Sand	0.0009	0.0027	1
BH207	CSG North & BH206	Causeway R3	05/08/2019	60.2	35.5	0.1	6	0	0.3	0.3	1003	Campsie C	YES	2.67	0.7	1.97	5.0-9.0	Sand	0.1806	0.1065	2
BH207	CSG North & BH206	Causeway R4	28/11/2019	77.4	22.6	0.1	1	103	0.1	0.1	1000	Campsie C	YES	2.82	0.7	2.12	5.0-9.0	Sand	0.0774	0.0226	2
BH207	CSG North & BH206	Causeway R5	05/12/2019	65.8	22.7	0	0	38	0.4	0.4	995	Campsie C	YES	2.48	0.7	1.78	5.0-9.0	Sand	0.2632	0.0908	2
BH207	CSG North & BH206	Causeway R6	16/12/2019	77.3	17.5	0	0	29	0.6	0.6	990	Campsie C	YES	-	0.7	-	5.0-9.0	Sand	0.4638	0.105	2
BH207	CSG North & BH206	NIEA R1	07/04/2020	77.1	15.7	0.2	1	0	0.1	0.1	1023	Campsie C	YES	2.2	0.7	1.5	5.0-9.0	Sand	0.0771	0.0157	1
BH207	CSG North & BH206	NIEA R5	04/05/2021	2.7	2	19.7	0	0	0	0	1020	Campsie C	YES	2.6	0.7	1.9	5.0-9.0	Sand	0	0	1
BH111	Zone 7	NIEA R1	07/04/2020	0	1	17.8	0	1	0.1	0.1	1023	Campsie N	NO	4.47	0.5	3.97	6-10.5	Sand	0	0.001	1
BH111	Zone 7	NIEA ADD	10/06/2020	0	0.9	19.4	0	0	0	0	1013	Campsie N	NO	5.28	0.5	4.78	6-10.5	Sand	0	0	1
BH111	Zone 7	NIEA R2	12/10/2020	0	3	14.1	0	0	0	0	1016	Campsie N	NO	4.62	0.5	4.12	6-10.5	Sand	0	0	1
BH111	Zone 7	NIEA R3	03/11/2020	0.2	3.1	13.6	0	0	0	0	1012	Campsie N	NO	4.25	0.5	3.75	6-10.5	Sand	0	0	1
BH111	Zone 7	NIEA R4	08/12/2020	0.3	3	13	0	0	0.2	0.2	1001	Campsie N	NO	4.15	0.5	3.65	6-10.5	Sand	0.0006	0.006	1
BH111	Zone 7	NIEA R5	04/05/2021	0.2	2.9	12.6	0	0	0	0	1020	Campsie N	NO	4.96	0.5	3.65	6-10.5	Sand	0	0	1
BH112	Zone 7	Causeway R1	09/04/2019	1.1	0.7	20.9	0	0	0.4	0.4	1019	Campsie N	NO	-	0.26	-	2.5-5.6	Sand	0.0044	0.0028	1
BH112	Zone 7	Causeway R2	16/04/2019	0.1	0.2	20.4	1	0	0	0	1017	Campsie N	NO	0.45	0.26	0.19	2.5-5.6	Sand	0	0	1
BH112	Zone 7	Causeway R3	05/08/2019	0.1	0.8	19.4	2	0	0	0	1003	Campsie N	NO	-	0.26	-	2.5-5.6	Sand	0	0	1
BH112	Zone 7	Causeway R4	28/11/2019	-	-	-	-	-	-	-	1000	Campsie N	NO	0.43	0.26	0.17	2.5-5.6	Sand			
BH112	Zone 7	Causeway R5	05/12/2019	0	3.1	19	0	0	0.1	0.1	995	Campsie N	NO	0.42	0.26	0.16	2.5-5.6	Sand	0	0.0031	1
BH112	Zone 7	Causeway R6	16/12/2019	0	3.3	19.4	0	0	0	0	990	Campsie N	NO	-	0.26	-	2.5-5.6	Sand	0	0	1
BH112	Zone 7	NIEA	-	-	-	-	-	-	-	-	1033	Campsie N	NO	0.67	0.26	0.41	2.5-5.6	Sand			
BH112	Zone 7	NIEA ADD	10/06/2020	0	0.5	20.3	0	0	0	0	1013	Campsie N	NO	0.38	0.26	0.12	2.5-5.6	Sand	0	0	1
BH112	Zone 7	NIEA R1	07/04/2020	0	2.4	19	0	0	0	0	1023	Campsie N	NO	0.48	0.26	0.22	2.5-5.6	Sand	0	0	1
BH112	Zone 7	NIEA R2	12/10/2020	0	0.5	20.3	0	0	0	0	1016	Campsie N	NO	0.29	0.26	0.03	2.5-5.6	Sand	0	0	1
BH112	Zone 7	NIEA R4	08/12/2020	0.3	3.1	17.1	0	0	3.7	3.7	1001	Campsie N	NO	-	0.26	-	2.5-5.6	Sand	0.0111	0.1147	2

Waste/Made Ground

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH212	CSG Central	Causeway R1	08/04/2019	0.3	0.2	20.8	0	0	0.3	0.3	1019	City N	YES	-	0.45	-	1.0 - 4.0	Waste/Gravel	0.0009	0.0006	1
BH212	CSG Central	Causeway R2	16/04/2019	0.2	0.4	19.6	1	0	0.1	0.1	1017	City N	YES	-	0.45	-	1.0 - 4.0	Waste/Gravel	0.0002	0.0004	1
BH212	CSG Central	Causeway R3	06/08/2019	-	-	-	-	-	-	-	1003	City N	YES	3.34	0.45	2.89	1.0 - 4.0	Waste/Gravel			
BH212	CSG Central	Causeway R4	28/11/2019	0.8	0.4	20.3	0	0	0.3	0.3	1000	City N	YES	3.45	0.45	3	1.0 - 4.0	Waste/Gravel	0.0024	0.0012	1
BH212	CSG Central	Causeway R5	05/12/2019	8.8	1.3	17.2	0	0	0.3	0.3	995	City N	YES	3.2	0.45	2.75	1.0 - 4.0	Waste/Gravel	0.0264	0.0039	1
BH212	CSG Central	Causeway R6	16/12/2019	13.3	1.3	14.6	0	0	0	0	990	City N	YES	-	0.45	-	1.0 - 4.0	Waste/Gravel	0	0	1
BH212	CSG Central	NIEA	-	-	-	-	-	-	-	-	1033	City N	YES	3.35	0.45	2.9	1.0 - 4.0	Waste/Gravel			
BH212	CSG Central	NIEA R1	07/04/2020	0	0	21.6	0	0	0	0	1023	City N	YES	-	0.45	-	1.0 - 4.0	Waste/Gravel	0	0	

Natural

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH103	CSG Central	Causeway R1	08/04/2019	2.4	1	18.9	0	0	0.4	0.4	1019	Campsie S	NO	-	-	-	4-7.5	Sand	0.0096	0.004	1
BH103	CSG Central	Causeway R2	16/04/2019	-	-	-	-	-	-	-	1017	Campsie S	NO	-	-	-	4-7.5	Sand			
BH103	CSG Central	Causeway R3	-	0	0.2	21.8	0	0		-	1003	Campsie S	NO	2.55	-	-	4-7.5	Sand			
BH103	CSG Central	Causeway R4	28/11/2019	0	0.2	21.8	0	0	-	-	1000	Campsie S	NO	2.83	-	-	4-7.5	Sand			
BH103	CSG Central	Causeway R5	05/12/2019	0	5.4	8.5	0	0	0.3	0.3	995	Campsie S	NO	2.35	-	-	4-7.5	Sand	0	0.0162	1
BH103	CSG Central	Causeway R6	18/12/2019	0	2.1	15.2	0	0	0.4	0.4	990	Campsie S	NO	-	-	-	4-7.5	Sand	0	0.0084	1
BH103	CSG Central	NIEA	-	-	-	-	-	-	-	-	-	Campsie S	NO	2.7	-	-	4-7.5	Sand			
BH103	CSG Central	NIEA R1	07/04/2020	0	6.8	9.4	0	0	0	0	1023	Campsie S	NO	-	-	-	4-7.5	Sand	0	0	1
BH104	CSG Central	Causeway R1	08/04/2019	1.8	1	18.3	0	0	0.3	0.3	1019	Campsie S	NO	-	0.38	-	3 - 6.3	Sand	0.0054	0.003	1
BH104	CSG Central	Causeway R2	16/04/2019	0	3.1	18.3	0	0	0.1	0.1	1017	Campsie S	NO	3.06	0.38	2.68	3 - 6.3	Sand	0	0.0031	1
BH104	CSG Central	Causeway R3	05/08/2019	0	14.4	2.3	2	0	0.2	0.2	1003	Campsie S	NO	3.18	0.38	2.8	3 - 6.3	Sand	0	0.0288	1
BH104	CSG Central	Causeway R4	28/11/2019	0	0.4	22	0	0	0	0	1000	Campsie S	NO	3.28	0.38	2.9	3 - 6.3	Sand	0	0	1
BH104	CSG Central	Causeway R5	05/12/2019	0	14.9	1.1	0	0	0.8	0.8	995	Campsie S	NO	3	0.38	2.62	3 - 6.3	Sand	0	0.1192	2
BH104	CSG Central	Causeway R6	18/12/2019	0	7.8	5.1	0	0	1	1	990	Campsie S	NO	3.45	0.38	3.07	3 - 6.3	Sand	0	0.078	2
BH104	CSG Central	NIEA	27/06/2019	0	13.3	2.7	1	0	0	0	1033	Campsie S	NO	3.3	0.38	2.92	3 - 6.3	Sand	0	0	1
BH104	CSG Central	NIEA R1	07/04/2020	0	98	6.6	0	0	0	0	1023	Campsie S	NO	2.94	0.38	2.56	3 - 6.3	Sand	0	0	1
BH104	CSG Central	NIEA R2	13/10/2020	0.1	5.2	13.9	0	0	0.1	0.1	1016	Campsie S	NO	2.56	0.38	2.18	3 - 6.3	Sand	0.0001	0.0052	1
BH104	CSG Central	NIEA R3	02/11/2020	0.2	4.7	15	0	0	0	0	993	Campsie S	NO	3.01	0.38	2.63	3 - 6.3	Sand	0	0	1
BH104	CSG Central	NIEA R4	08/12/2020	0.3	0.8	21	0	0	0.8	0.8	1001	Campsie S	NO	-	0.38	-	3 - 6.3	Sand	0.0024	0.0064	1
BH205	CSG Central	Causeway R1	08/04/2019	0.2	0.1	19.9	0	0	0.2	0.2	1019	Campsie C	YES	-	0.38	-	4.5-7.6	Sand	0.0004	0.0002	1
BH205	CSG Central	Causeway R2	16/04/2019	11.6	17.2	1.3	2	0	0.1	0.1	1017	Campsie C	YES	5.4	0.38	5.02	4.5-7.6	Sand	0.0116	0.0172	1
BH205	CSG Central	Causeway R3	05/08/2019	10.7	13.1	5	1	0	0.3	0.3	1003	Campsie C	YES	-	0.38	-	4.5-7.6	Sand	0.0321	0.0393	1
BH205	CSG Central	Causeway R4	28/11/2019	-	-	-	-	-	-	-	1000	Campsie C	YES	5.49	0.38	5.11	4.5-7.6	Sand			
BH205	CSG Central	Causeway R5	06/12/2019	17.6	18.5	0	3	0	0.3	0.3	995	Campsie C	YES	5.26	0.38	4.88	4.5-7.6	Sand	0.0528	0.0555	1
BH205	CSG Central	Causeway R6	16/12/2019	16.8	18.5	0.2	0	0	0.2	0.2	990	Campsie C	YES	-	0.38	-	4.5-7.6	Sand	0.0336	0.037	1
BH205	CSG Central	NIEA	-	-	-	-	-	-	-	-	1033	Campsie C	YES	5.57	0.38	5.19	4.5-7.6	Sand			
BH205	CSG Central	NIEA ADD	14/05/2020	8.4	14.1	2	1	0	0	0	1024	Campsie C	YES	5.5	0.38	5.12	4.5-7.6	Sand	0	0	1
BH205	CSG Central	NIEA ADD	07/05/2020	6.2	13	3.3	1	0	0	0	1018	Campsie C	YES	5.44	0.38	5.06	4.5-7.6	Sand	0	0	1
BH205	CSG Central	NIEA ADD	01/05/2020	4.6	12.4	4.9	0	0	0	0	995	Campsie C	YES	5.37	0.38	4.99	4.5-7.6	Sand	0	0	1
BH205	CSG Central	NIEA ADD	24/04/2020	1.7	10.2	8.4	0	0	0	0	1015	Campsie C	YES	5.36	0.38	4.98	4.5-7.6	Sand	0	0	1
BH205	CSG Central	NIEA R1	09/04/2020	0	0.3	21.3	0	0	0	0	1022	Campsie C	YES	5.44	0.38	5.06	4.5-7.6	Sand	0	0	1
BH205	CSG Central	NIEA R2	13/10/2020	9.1	10	9	1	0	0	0	1016	Campsie C	YES	5.22	0.38	4.84	4.5-7.6	Sand	0	0	1
BH205	CSG Central	NIEA R3	03/11/2020	1.4	1.4	20	0	0	0.1	0.1	1012	Campsie C	YES	5.03	0.38	4.65	4.5-7.6	Sand	0.0014	0.0014	1
BH205	CSG Central	NIEA R4	07/12/2020	9.6	13.6	4.4	0	0	-4.8	-4.8	1001	Campsie C	YES	-	0.38	-	4.5-7.6	Sand	-0.4608	-0.6528	2
BH221	CSG Central	Causeway R1	09/04/2019	1	1	20.4	0	0	0.4	0.4	1019	Campsie C	NO	-	0.29	-	3.6-6.6	Gravel/Peat	0.004	0.004	1
BH221	CSG Central	Causeway R2	16/04/2019	60.3	1.6	6.2	2	0	-23	-7.4	1017	Campsie C	NO	-	0.29	-	3.6-6.6	Gravel/Peat	-4.4622	-0.1184	3
BH221	CSG Central	Causeway R3	05/08/2019	45	5.6	5.5	2	3.1	3.1	2.5	1003	Campsie C	NO	2.72	0.29	2.43	3.6-6.6	Gravel/Peat	1.125	0.14	3
BH221	CSG Central	Causeway R4	28/11/2019	15	1	17.8	0	0	0.4	0.2	1000	Campsie C	NO	2.17	0.29	1.88	3.6-6.6	Gravel/Peat	0.03	0.002	2
BH221	CSG Central	Causeway R5	06/12/2019	26.8	1.7	14.4	0	0	0.3	0.3	995	Campsie C	NO	1.79	0.29	1.5	3.6-6.6	Gravel/Peat	0.0804	0.0051	2
BH221	CSG Central	Causeway R6	16/12/2019	39.2	3.2	6.9	0	0	0.8	0.8	990	Campsie C	NO	2	0.29	1.71	3.6-6.6	Gravel/Peat	0.3136	0.0256	2

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH221	CSG Central	NIEA	26/06/2019	2.7	16.2	8.2	1	0	0	0	1033	Campsie C	NO	2.33	0.29	2.04	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA ADD	14/05/2020	0	1.5	19.1	0	0	0	0	1024	Campsie C	NO	2.25	0.29	1.96	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA R1	07/04/2020	0	0	21.9	0	0	0	0	1023	Campsie C	NO	-	0.29	-	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA R1	09/04/2020	0.2	0.1	21.6	0	0	0	0	1022	Campsie C	NO	-	0.29	-	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA ADD	17/04/2020	0.1	0.7	20.3	0	0	0	0	1016	Campsie C	NO	2.04	0.29	1.75	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA ADD	24/04/2020	0.2	1.2	19.1	0	0	0	0	1015	Campsie C	NO	2.11	0.29	1.82	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA ADD	01/05/2020	0.2	1.4	18.6	0	0	0	0	995	Campsie C	NO	2.21	0.29	1.92	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA ADD	07/05/2020	0.1	1.3	19.4	0	0	0	0	1018	Campsie C	NO	2.2	0.29	1.91	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA R2	13/10/2020	84.9	6.9	0.4	0	0	-5.1	-5.1	1016	Campsie C	NO	2.14	0.29	1.85	3.6-6.6	Gravel/Peat	-4.3299	-0.3519	2
BH221	CSG Central	NIEA R3	03/11/2020	0.2	0.2	21.7	0	0	0	0	1012	Campsie C	NO	1.9	0.29	1.61	3.6-6.6	Gravel/Peat	0	0	1
BH221	CSG Central	NIEA R4	07/12/2020	85.9	3	0.1	0	5	>>>	>>>	1001	Campsie C	NO	2.08	0.29	1.79	3.6-6.6	Gravel/Peat			
BH221	CSG Central	NIEA R5	04/05/2021	96.6	0.9	0.1	0	0	0	0	1020	Campsie C	NO	2.74	0.29	2.45	3.6-6.6	Gravel/Peat	0	0	1

Natural

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH07	CSG South & Zone 6	NIEA R2	13/10/2020	28.8	7.1	11.8	0	0	1.8	1.8	1016	Campsie N	NO	3.49	0.33	3.16	4.0-7.5	Sand	0.5184	0.1278	2
BH07	CSG South & Zone 6	NIEA R3	02/11/2020	28.7	9.1	9.1	0	0	1.1	1.1	993	Campsie N	NO	3.02	0.33	2.69	4.0-7.5	Sand	0.3157	0.1001	2
BH07	CSG South & Zone 6	NIEA R4	08/12/2020	34.6	7.3	4.8	0	0	6.9	6.9	1001	Campsie N	NO	3.4	0.33	3.07	4.0-7.5	Sand	2.3874	0.5037	3
BH07	CSG South & Zone 6	NIEA R5	04/05/2021	57.4	13.8	0.1	0	0	0	0	1020	Campsie N	NO	3.92	0.33	3.59	4.0-7.5	Sand	0	0	1
BH101	CSG South & Zone 6	Causeway R1	08/04/2019	0.2	0.2	20.7	0	0	0.4	0.4	1019	Campsie S	NO	-	0.38	-	5.0-8.5	Sand	0.0008	0.0008	1
BH101	CSG South & Zone 6	Causeway R2	16/04/2019	0	0.2	21.4	0	0	0.1	0.1	1017	Campsie S	NO	2.15	0.38	1.77	5.0-8.5	Sand	0	0.0002	1
BH101	CSG South & Zone 6	Causeway R3	05/08/2019	0	0	20.1	2	0	0.3	0.3	1003	Campsie S	NO	2.27	0.38	1.89	5.0-8.5	Sand	0	0	1
BH101	CSG South & Zone 6	Causeway R4	28/11/2019	0	0.5	21.6	0	0	0.3	0.3	1000	Campsie S	NO	2.33	0.38	1.95	5.0-8.5	Sand	0	0.0015	1
BH101	CSG South & Zone 6	Causeway R5	05/12/2019	0	1.9	1.7	0	0	0.1	0.1	995	Campsie S	NO	2.08	0.38	1.7	5.0-8.5	Sand	0	0.0019	1
BH101	CSG South & Zone 6	Causeway R6	18/12/2019	0	3.5	20	0	0	0	0	990	Campsie S	NO	2.5	0.38	2.12	5.0-8.5	Sand	0	0	1
BH101	CSG South & Zone 6	NIEA	17/06/2019	0	0.3	19.9	0	0	0	0	1033	Campsie S	NO	2.32	0.38	1.94	5.0-8.5	Gravel	0	0	1
BH101	CSG South & Zone 6	NIEA R1	07/04/2020	0	4.7	17.9	0	0	0	0	1023	Campsie S	NO	-	0.38	-	5.0-8.5	Gravel	0	0	1
BH102	CSG South & Zone 6	Causeway R1	08/04/2019	0.2	0.3	20.3	0	0	0.4	0.4	1019	Campsie S	NO	-	0.51	-	4-7.5	Sand	0.0008	0.0012	1
BH102	CSG South & Zone 6	Causeway R2	16/04/2019	0	0.1	21.4	0	0	5	5	1017	Campsie S	NO	2.26	0.51	1.75	4-7.5	Sand	0	0.005	1
BH102	CSG South & Zone 6	Causeway R3	05/08/2019	0	1	19.9	3	0	0.3	0.3	1003	Campsie S	NO	2.4	0.51	1.89	4-7.5	Sand	0	0.003	1
BH102	CSG South & Zone 6	Causeway R4	28/11/2019	0	2.1	20.8	0	0	0.1	0.1	1000	Campsie S	NO	2.49	0.51	1.98	4-7.5	Sand	0	0.0021	1
BH102	CSG South & Zone 6	Causeway R5	05/12/2019	0	2.8	20.2	0	0	0.7	0.7	995	Campsie S	NO	2.14	0.51	1.63	4-7.5	Sand	0	0.0196	1
BH102	CSG South & Zone 6	Causeway R6	18/12/2019	0	4.1	19.8	0	0	0.1	0.1	990	Campsie S	NO	-	0.51	-	4-7.5	Sand	0	0.0041	1
BH102	CSG South & Zone 6	NIEA	-	-	-	-	-	-	-	-	-	Campsie S	NO	2.11	0.51	1.6	4-7.5	Sand			
BH102	CSG South & Zone 6	NIEA R1	07/04/2020	0	4.3	17.5	1	0	0	0	1023	Campsie S	NO	2.13	0.51	1.62	4-7.5	Sand	0	0	1
BH102	CSG South & Zone 6	NIEA R2	13/10/2020	0.1	0.5	21	0	0	0.1	0.1	1016	Campsie S	NO	1.64	0.51	1.13	4-7.5	Sand	0.0001	0.0005	1
BH102	CSG South & Zone 6	NIEA R3	02/11/2020	0.2	0.7	20.9	0	0	0	0	993	Campsie S	NO	2.2	0.51	1.69	4-7.5	Sand	0	0	1
BH102	CSG South & Zone 6	NIEA R4	08/12/2020	0.3	1.3	20.6	0	0	0.2	0.2	1001	Campsie S	NO	-	0.51	-	4-7.5	Sand	0.0006	0.0026	1
BH118	CSG South & Zone 6	Causeway R1	09/04/2019	0.8	0.7	20.6	0	0	0.4	0.4	1019	Campsie S	NO	-	0.4	-	8.8-9.8	Sand	0.0032	0.0028	1
BH118	CSG South & Zone 6	Causeway R2	16/04/2019	0	2.3	19.8	1	0	-8	-1.1	1017	Campsie S	NO	-	0.4	-	8.8-9.8	Sand	0	-0.0253	1
BH118	CSG South & Zone 6	Causeway R3	-	-	-	-	-	-	-	-	1000	Campsie S	NO	-	0.4	-	8.8-9.8	Sand			
BH118	CSG South & Zone 6	Causeway R4	-	-	-	-	-	-	-	-	1000	Campsie S	NO	-	0.4	-	8.8-9.8	Sand			
BH118	CSG South & Zone 6	Causeway R5	-	-	-	-	-	-	-	-	995	Campsie S	NO	-	0.4	-	8.8-9.8	Sand			
BH118	CSG South & Zone 6	Causeway R6	-	-	-	-	-	-	-	-	990	Campsie S	NO	-	0.4	-	8.8-9.8	Sand			
BH118	CSG South & Zone 6	NIEA	-	-	-	-	-	-	-	-	1033	Campsie S	NO	-	0.4	-	8.8-9.8	Sand			
BH119	CSG South & Zone 6	Causeway R1	08/04/2019	0.2	0.3	20.6	0	0	0.4	0.4	1019	Campsie S	NO	-	0.37	-	4.5-7.9	Sand	0.0008	0.0012	1
BH119	CSG South & Zone 6	Causeway R2	16/04/2019	0	0.8	20.8	0	0	-5	-2	1017	Campsie S	NO	1.61	0.37	1.24	4.5-7.9	Sand	0	-0.016	
BH119	CSG South & Zone 6	Causeway R3	05/08/2019	0	6.9	13.3	2	0	0.4	0.3	1003	Campsie S	NO	1.83	0.37	1.46	4.5-7.9	Sand	0	0.0207	
BH119	CSG South & Zone 6	Causeway R4	28/11/2019	0	0.1	21.9	0	0	0.1	0.1	1000	Campsie S	NO	1.87	0.37	1.5	4.5-7.9	Sand	0	0.0001	
BH119	CSG South & Zone 6	Causeway R5	05/12/2019	0	8.4	18.3	0	0	8.2	8.2	995	Campsie S	NO	1.51	0.37	1.14	4.5-7.9	Sand	0	0.6888	2
BH119	CSG South & Zone 6	Causeway R6	18/12/2019	0	7.2	18.8	0	0	12.1	12.1	990	Campsie S	NO	-	0.37	-	4.5-7.9	Sand	0	0.8712	3
BH119	CSG South & Zone 6	NIEA	-	-	-	-	-	-	-	-	1033	Campsie S	NO	1.32	0.37	0.95	4.5-7.9	Sand			
BH119	CSG South & Zone 6	NIEA R1	07/04/2020	0	6.7	19.2	1	0	0	0	1023	Campsie S	NO	1.55	0.37	1.18	4.5-7.9	Sand	0	0	1
BH119	CSG South & Zone 6	NIEA R2	13/10/2020	0.1	2	20.7	0	0	0.1	0.1	1016	Campsie S	NO	1.12	0.37	0.75	4.5-7.9	Sand	0.0001	0.002	1
BH119	CSG South & Zone 6	NIEA R3	02/11/2020	0.2	4.1	20.3	0	0	0.1	0.1	993	Campsie S	NO	1.56	0.37	1.19	4.5-7.9	Sand	0.0002	0.0041	1
BH119	CSG South & Zone 6	NIEA R4	08/12/2020	0.2	5.1	20	0	0	0.2	0.2	1001	Campsie S	NO	-	0.37	-	4.5-7.9	Sand	0.0004	0.0102	1
BH120	CSG South & Zone 6	Causeway R1	09/04/2019	0.3	0.2	20.9	0	0	0.4	0.4	1019	Campsie S	NO	-	0.28	-	4.0-5.0	Sand	0.0012	0.0008	1
BH120	CSG South & Zone 6	Causeway R2	16/04/2019	-	-	-	-	-	-	-	1017	Campsie S	NO	1.74	0.28	1.46	4.0-5.0	Sand			
BH120	CSG South & Zone 6	Causeway R3	05/08/2019	0	0.5	20.7	1	0	0.3	0.3	1003	Campsie S	NO	1.69	0.28	1.41	4.0-5.0	Sand	0	0.0015	1
BH120	CSG South & Zone 6	Causeway R4	28/11/2019	0	3.6	18.9	0	0	0.1	0.1	1000	Campsie S	NO	1.66	0.28	1.38	4.0-5.0	Sand	0	0.0036	1
BH120	CSG South & Zone 6	Causeway R5	05/12/2019	0	2.9	19.3	0	0	0.3	0.3	995	Campsie S	NO	1.27	0.28	0.99	4.0-5.0	Sand	0	0.0087	1
BH120	CSG South & Zone 6	Causeway R6	18/12/2019	0	3.6	19	0	0	0	0	990	Campsie S	NO	1.99	0.28	1.71	4.0-5.0	Sand	0	0	1
BH120	CSG South & Zone 6	NIEA	17/06/2019	0	0.1	20	0	0	0	0	1033	Campsie S	NO	1.7	0.28	1.42	4.0-5.0	Sand	0	0	1
BH120	CSG South & Zone 6	NIEA R1	07/04/2020	0	2.9	19.2	0	0	0	0	1023	Campsie S	NO	1.46	0.28	1.18	4.0-5.0	Sand	0	0	1
BH120	CSG South & Zone 6	NIEA R2	13/10/2020	0.1	0.1	21.4	0	0	0.1	0.1	1016	Campsie S	NO	1.18	0.28	0.9	4.0-5.0	Sand	0.0001	0.0001	1
BH120	CSG South & Zone 6	NIEA R3	02/11/2020	0.2	1.3	21	0	0	-8.9	-8.9	993	Campsie S	NO	1.3	0.28	1.02	4.0-5.0	Sand	-0.0178	-0.1157	2
BH120	CSG South & Zone 6	NIEA R4	08/12/2020	0.3	2.5	20	0	0	-10	-10	1001	Campsie S	NO	-	0.28	-	4.0-5.0	Sand	-0.03	-0.25	2
BH201	CSG South & Zone 6	Causeway R1	08/04/2019	0.7	0.4	19.9	0	0	0.4	0.4	1019	Campsie S	NO	-	0.41	-	6.5-7.5	Sand	0.0028	0.0016	1
BH201	CSG South & Zone 6	Causeway R2	16/04/2019	0.3	0.4	20.6	1	0	0.1	0.1	1017	Campsie S	NO	3.06	0.41	2.65	6.5-7.5	Sand	0.0003	0.0004	1
BH201	CSG South & Zone 6	Causeway R3	05/08/2019	1.5	2.2	16	1	0	0.4	0.4	1003	Campsie S	NO	3.2	0.41	2.79	6.5-7.5	Sand	0.006	0.0088	1

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH201	CSG South & Zone 6	Causeway R4	28/11/2019	0	5.1	9.6	0	0	0	0	1000	Campsie S	NO	3.25	0.41	2.84	6.5-7.5	Sand	0	0	1
BH201	CSG South & Zone 6	Causeway R5	06/12/2019	0	3.9	12.1	0	0	0.5	0.5	995	Campsie S	NO	2.85	0.41	2.44	6.5-7.5	Sand	0	0.0195	1
BH201	CSG South & Zone 6	Causeway R6	18/12/2019	0	3.5	14.2	0	0	0	0	990	Campsie S	NO	3.47	0.41	3.06	6.5-7.5	Sand	0	0	1
BH201	CSG South & Zone 6	NIEA	27/06/2019	0	0.3	19.7	1	1	0	0	1033	Campsie S	NO	3.22	0.41	2.81	6.5-7.5	Sand	0	0	1
BH201	CSG South & Zone 6	NIEA R1	07/04/2020	0	2.9	17.5	2	0	0	0	1023	Campsie S	NO	3	0.41	2.59	6.5-7.5	Sand	0	0	1
BH201	CSG South & Zone 6	NIEA R2	13/10/2020	0.1	1.3	19.8	0	0	2.9	2.9	1016	Campsie S	NO	2.6	0.41	2.19	6.5-7.5	Sand	0.0029	0.0377	1
BH201	CSG South & Zone 6	NIEA R3	02/11/2020	0.2	1.7	19.5	0	0	11.3	11.3	993	Campsie S	NO	2.9	0.41	2.49	6.5-7.5	Sand	0.0226	0.1921	2
BH201	CSG South & Zone 6	NIEA R4	08/12/2020	0.3	1.3	20.3	0	0	-3.1	-3.1	1001	Campsie S	NO	-	0.41	-	6.5-7.5	Sand	-0.0093	-0.0403	1
BH202	CSG South & Zone 6	Causeway R1	09/04/2019	1.4	1	20.8	0	0	0.4	0.4	1019	Campsie S	YES	-	0.5	-	1.0-4.0	Sand	0.0056	0.004	1
BH202	CSG South & Zone 6	Causeway R2	16/04/2019	0.6	1.2	19.1	1	0	-5.9	-0.9	1017	Campsie S	YES	-	0.5	-	1.0-4.0	Sand	-0.0054	-0.0108	1
BH202	CSG South & Zone 6	Causeway R3	05/08/2019	0.1	12.3	4.7	2	0	0.3	0.3	1003	Campsie S	YES	3.48	0.5	2.98	1.0-4.0	Sand	0.0003	0.0369	1
BH202	CSG South & Zone 6	Causeway R4	28/11/2019	11.9	17.5	0.2	0	4	0.3	0.3	1000	Campsie S	YES	4.72	0.5	4.22	1.0-4.0	Sand	0.0357	0.0525	1
BH202	CSG South & Zone 6	Causeway R5	06/12/2019	11.6	18.2	0.1	0	0	2.1	2.1	995	Campsie S	YES	4.68	0.5	4.18	1.0-4.0	Sand	0.2436	0.3822	2
BH202	CSG South & Zone 6	Causeway R6	18/12/2019	14.5	16.9	0	0	0	0	0	990	Campsie S	YES	4.4	0.5	3.9	1.0-4.0	Sand	0	0	1
BH202	CSG South & Zone 6	NIEA	27/06/2019	0	0.7	19.8	0	1	0	0	1033	Campsie S	YES	4.97	0.5	4.47	1.0-4.0	Sand	0	0	1
BH202	CSG South & Zone 6	NIEA R1	07/04/2020	0	0.6	20.5	0	0	0	0	1023	Campsie S	YES	3.92	0.5	3.42	1.0-4.0	Sand	0	0	1
BH202	CSG South & Zone 6	NIEA R2	13/10/2020	12.4	8.5	10.4	0	0	0.1	0.1	1016	Campsie S	YES	4.65	0.5	4.15	1.0-4.0	Sand	0.0124	0.0085	1
BH202	CSG South & Zone 6	NIEA R3	02/11/2020	13.9	17.5	0.2	0	0	-0.1	-0.1	993	Campsie S	YES	4.12	0.5	3.62	1.0-4.0	Sand	-0.0139	-0.0175	1
BH202	CSG South & Zone 6	NIEA R4	08/12/2020	17.2	11.8	0.1	0	0	1.9	1.9	1001	Campsie S	YES	4.35	0.5	3.85	1.0-4.0	Sand	0.3268	0.2242	2
BH202	CSG South & Zone 6	NIEA R5	04/05/2021	15.1	11.3	0.6	0	0	0	0	1020	Campsie S	YES	4.84	0.5	4.34	1.0-4.0	Sand	0	0	1
BH203	CSG South & Zone 6	Causeway R1	08/04/2019	2.6	1.5	20.7	0	0	0.3	0.3	1019	Campsie S	YES	-	0.46	-	1.0-4.0	Sand	0.0078	0.0045	1
BH204	CSG South & Zone 6	Causeway R2	16/04/2019	66.9	25.7	1.3	2	0	0.2	0.2	1017	Campsie S	YES	-	0.46	-	1.0-4.0	Sand	0.1338	0.0514	2
BH205	CSG South & Zone 6	Causeway R3	06/08/2019	-	-	-	-	-	-	-	1000	Campsie S	YES	3.4	0.46	2.94	1.0-4.0	Sand			
BH206	CSG South & Zone 6	Causeway R4	28/11/2019	69.8	30.4	0	1	14	8	8	1000	Campsie S	YES	2.73	0.46	2.27	1.0-4.0	Sand	5.584	2.432	4
BH207	CSG South & Zone 6	Causeway R5	05/12/2019	72.8	17.6	0	0	0	3.1	3.1	995	Campsie S	YES	3.64	0.46	3.18	1.0-4.0	Sand	2.2568	0.5456	2
BH208	CSG South & Zone 6	Causeway R6	18/12/2019	77.2	24.7	0	0	0	4.7	4.7	990	Campsie S	YES	3.66	0.46	3.2	1.0-4.0	Sand	3.6284	1.1609	4
BH203	CSG South & Zone 6	NIEA	-	-	-	-	-	-	-	-	1033	Campsie S	YES	-	0.46	-	1.0-4.0	Sand			
BH203	CSG South & Zone 6	NIEA R1	07/04/2020	78.5	25.3	0.3	1	0	0.2	0.2	1023	Campsie S	YES	3.64	0.46	3.18	1.0-4.0	Sand	0.157	0.0506	2
BH203	CSG South & Zone 6	NIEA R2	13/10/2020	74.1	27.3	0.1	0	16	17.1	17.1	1016	Campsie S	YES	3.67	0.46	3.21	1.0-4.0	Sand	12.6711	4.6683	4
BH203	CSG South & Zone 6	NIEA R3	02/11/2020	75.5	26.4	0.1	0	0	21.2	21.2	993	Campsie S	YES	3.58	0.46	3.12	1.0-4.0	Sand	16.006	5.5968	5
BH203	CSG South & Zone 6	NIEA R4	08/12/2020	79	24.1	0	0	0	16.9	16.9	1001	Campsie S	YES	3.65	0.46	3.19	1.0-4.0	Sand	13.351	4.0729	4
BH203	CSG South & Zone 6	NIEA R5	04/05/2021	73.5	27.1	0.4	0	1	0	0	1020	Campsie S	YES	3.8	0.46	3.34	1.0-4.0	Sand	0	0	

Waste/Made Ground

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH117	Zones 1-3	NIEA	27/06/2019	0	0.1	20.6	0	0	0.1	0.1	1033	City N	YES	5.96	0.3	5.66	3.5-5.7	Waste/Gravel	0	0.0001	1
BH117	Zones 1-3	NIEA R1	09/04/2020	20.2	24	0.7	0	0	0	0	1022	City N	YES	5.9	0.3	5.6	3.5-5.7	Waste/Gravel	0	0	1
BH117	Zones 1-3	NIEA R2	13/10/2020	9.5	17.7	7.2	0	0	-0.1	-0.1	1016	City N	YES	6.92	0.3	6.62	3.5-5.7	Waste/Gravel	-0.0095	-0.0177	1
BH117	Zones 1-3	NIEA R3	03/11/2020	15.4	23.1	0.5	0	0	0	0	1012	City N	YES	5.93	0.3	5.63	3.5-5.7	Waste/Gravel	0	0	1
BH117	Zones 1-3	NIEA R4	07/12/2020	0.3	0.1	21.5	0	0	0.2	0.2	1001	City N	YES	-	0.3	-	3.5-5.7	Waste/Gravel	0.0006	0.0002	1
BH211	Zones 1-3	Causeway R6	01/11/2019	64.8	35.7	0	0	1.9	1.8	1.8	990	Campsie C	YES	14.12	0.33	13.79	1.5 - 14.5	Waste	1.1664	0.6426	2
BH211	Zones 1-3	NIEA R1	09/04/2020	70.8	36.1	0.1	1	17	0.1	0.1	1022	Campsie C	YES	14.4	0.33	14.07	1.5 - 14.5	Waste	0.0708	0.0361	1
BH211	Zones 1-3	NIEA R2	12/10/2020	64	38	0	0	16	1.7	1.7	1016	Campsie C	YES	14.1	0.33	13.77	1.5 - 14.5	Waste	1.088	0.646	2
BH211	Zones 1-3	NIEA R3	03/11/2020	66.3	36.6	0	0	13	0	0	1012	Campsie C	YES	14.1	0.33	13.77	1.5 - 14.5	Waste	0	0	1
BH211	Zones 1-3	NIEA R4	07/12/2020	68	36.6	0	0	21	1.1	1.1	1001	Campsie C	YES	14.12	0.33	13.79	1.5 - 14.5	Waste	0.748	0.4026	3
BH211	Zones 1-3	NIEA R5	05/05/2021	69.3	35.1	0	0	7	0.5	0.5	1008	Campsie C	YES	14.15	0.33	13.82	1.5 - 14.5	Waste	0.3465	0.1755	2
BH213	Zones 1-3	NIEA R1	09/04/2020	39.1	20.8	8.8	1	1	0.7	0.7	1022	City N	YES	2.13	0.48	1.65	1.0 - 5.75	Waste	0.2737	0.1456	2
BH213	Zones 1-3	NIEA R2	13/10/2020	65	37.3	0	2	6	-4.7	-4.7	1016	City N	YES	2.57	0.48	2.09	1.0 - 5.76	Waste	-3.055	-1.7531	3
BH213	Zones 1-3	NIEA R3	03/11/2020	66.7	37	0	3	30	3.6	3.6	1012	City N	YES	2.4	0.48	1.92	1.0 - 5.77	Waste	2.4012	1.332	3
BH213	Zones 1-3	NIEA R4	07/12/2020	67.8	37	0	3	3	1.3	1.3	1001	City N	YES	2.21	0.48	1.73	1.0 - 5.75	Waste	0.8814	0.481	2
BH213	Zones 1-3	NIEA R5	04/05/2021	68.3	35.7	0.4	0	0	0	0	1020	City N	YES	2.35	0.48	1.87	1.0 - 5.75	Waste	0	0	1
BH214	Zones 1-3	NIEA R1	09/04/2020	71.6	35.1	0.1	2	17	>>>	>>>	1022	City N	YES	7.5	0.41	7.09	1.0 - 9.0	Waste			
BH214	Zones 1-3	NIEA R2	13/10/2020	68.4	33.5	0.1	1	4	>>>	>>>	1016	City N	YES	7.2	0.41	6.79	1.0 - 9.0	Waste			
BH214	Zones 1-3	NIEA R3	03/11/2020	67.9	34.3	0	2	12	>>>	>>>	1012	City N	YES	6.86	0.41	6.45	1.0 - 9.0	Waste			
BH214	Zones 1-3	NIEA R4	07/12/2020	70.2	34.9	0	2	11	>>>	>>>	1001	City N	YES	6.55	0.41	6.14	1.0 - 9.0	Waste			
BH6	Zones 1-3	NIEA R1	09/04/2020	5.6	18.9	3.8	1	0	0	0	1022	City N	NO	13.1	-	-	10.0-21.0	Waste/Sand	0	0	1
BH402 Waste	Zones 1-3	NIEA R5	04/05/2021	10.4	2.1	17	0	0	0	0	1020	City N	YES	3.31	-	-	2.5-4.4	Waste/Sand	0	0	1
BH402 GW	Zones 1-3	NIEA R5	04/05/2021	0.1	0.1	21	0	0	0	0	1020	City N	YES	4.52	-	-	2.5-4.4	Waste/Sand	0	0	1

Natural

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH01	Zones 1-3	NIEA R1	09/04/2020	73.8	32.4	0.1	0	68	0.2	0.2	1022	City N	YES	9.45	0.38	9.07	1.0-10.2	Sand	0.1476	0.0648	2
BH01	Zones 1-3	NIEA R2	12/10/2020	67.7	34.1	0	1	69	0.2	0.2	1016	City N	YES	9.4	0.38	9.02	1.0-10.2	Sand	0.1354	0.0682	2
BH01	Zones 1-3	NIEA R3	03/11/2020	82.5	18	0.2	0	0	0	0	1012	City N	YES	9.41	0.38	9.03	1.0-10.2	Sand	0	0	1
BH01	Zones 1-3	NIEA R4	07/12/2020	75.3	29.5	0	0	22	0.2	0.2	1001	City N	YES	9.41	0.38	9.03	1.0-10.2	Sand	0.1506	0.059	2
BH01	Zones 1-3	NIEA R5	05/05/2021	76.1	26	0.3	0	22	0.1	0.1	1008	City N	YES	9.44	0.38	9.06	1.0-10.2	Sand	0.0761	0.026	2
BH02	Zones 1-3	NIEA R1	09/04/2020	0	0	20.3	0	0	0	0	1022	City N	NO	10.95	0.37	10.58	12.0-14.0	Sand	0	0	1
BH02	Zones 1-3	NIEA R2	13/10/2020	0.3	0.6	20.9	0	0	-0.2	-0.2	1016	City N	NO	11.6	0.37	11.23	12.0-14.0	Sand	-0.0006	-0.0012	1
BH02	Zones 1-3	NIEA R3	03/11/2020	8	16.8	4	0	0	-0.3	-0.3	1012	City N	NO	11.37	0.37	11	12.0-14.0	Sand	-0.024	-0.0504	1
BH02	Zones 1-3	NIEA R4	07/12/2020	6.3	19.1	1.2	0	0	0.1	0.1	1001	City N	NO	11	0.37	10.63	12.0-14.0	Sand	0.0063	0.0191	1
BH03	Zones 1-3	NIEA R1	09/04/2020	67	36.8	0.7	2	677	0.1	0.1	1022	City N	YES	3.68	0.29	3.39	2.0-14.0	Sand	0.067	0.0368	1
BH113	Zones 1-3	Causeway R1	09/04/2019	1.3	1	20.8	0	0	0.4	0.4	1019	City N	YES	-	0.41	-	14.0-16.0	Sand	0.0052	0.004	1
BH113	Zones 1-3	Causeway R2	16/04/2019	0	0.8	20.6	0	0	-0.1	-0.1	1017	City N	YES	-	0.41	-	14.0-16.0	Sand	0	-0.0008	1
BH113	Zones 1-3	Causeway R3	-	-	-	-	-	-	-	-	1003	City N	YES	12.88	0.41	12.47	14.0-16.0	Sand			
BH113	Zones 1-3	Causeway R4	29/11/2019	0	0.3	22.1	0	0	0.3	0.3	1000	City N	YES	12.58	0.41	12.17	14.0-16.0	Sand	0	0.0009	1
BH113	Zones 1-3	Causeway R5	06/12/2019	0	2.6	20.4	0	0	0.3	0.3	995	City N	YES	12.5	0.41	12.09	14.0-16.0	Sand	0	0.0078	1
BH113	Zones 1-3	Causeway R6	18/12/2019	0	2.3	20.1	0	0	1.2	1.2	990	City N	YES	-	0.41	-	14.0-16.0	Sand	0	0.0276	1
BH113	Zones 1-3	NIEA R1	09/04/2020	0	5.3	18	0	0	0	0	1022	City N	YES	12	0.41	11.59	14.0-16.0	Sand	0	0	1
BH113	Zones 1-3	NIEA R3	03/11/2020	0.9	14.9	10.1	0	0	-0.5	-0.5	1012	City N	YES	12.41	0.41	12	14.0-16.0	Sand	-0.0045	-0.0745	2
BH113	Zones 1-3	NIEA R4	07/12/2020	0.3	6.4	17.3	0	0	0.2	0.2	1001	City N	YES	12.04	0.41	11.63	14.0-16.0	Sand	0.0006	0.0128	1
BH113	Zones 1-3	NIEA R5	05/05/2021	0.3	2.2	19.1	0	0	-0.9	-0.9	1008	City N	YES	12.6	0.41	12.19	14.0-16.0	Sand	-0.0027	-0.0198	1
BH117	Zones 1-3	Causeway R2	16/04/2019	17.9	23.3	1.5	1	0	0.2	0.2	1017	City N	YES	5.7	0.3	5.4	3.5-5.7	Sand	0.0358	0.0466	1
BH117	Zones 1-3	Causeway R3	06/08/2019	16.3	22.6	1.6	1	0	0.3	0.3	1000	City N	YES	5.7	0.3	5.4	3.5-5.7	Sand	0.0489	0.0678	1
BH117	Zones 1-3	Causeway R4	29/11/2019	-	-	-	-	-	-	-	1000	City N	YES	5.7	0.3	5.4	3.5-5.7	Sand			

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH117	Zones 1-3	Causeway R5	06/12/2019	8.8	1.3	17.2	0	0	0.4	0.4	995	City N	YES	5.7	0.3	5.4	3.5-5.7	Sand	0.0352	0.0052	1
BH117	Zones 1-3	Causeway R6	18/12/2019	-	-	-	-	-	-	-	990	City N	YES	5.7	0.3	5.4	3.5-5.7	Sand			
BH211	Zones 1-3	Causeway R1	08/04/2019	-	-	-	-	-	-	-	1019	Campsie C	YES	-	0.33	-	1.5 - 14.5	Sand			
BH211	Zones 1-3	Causeway R2	16/04/2019	-	-	-	-	-	-	-	1017	Campsie C	YES	-	0.33	-	1.5 - 14.5	Sand			
BH211	Zones 1-3	Causeway R3	06/08/2019	-	-	-	-	-	-	-	1000	Campsie C	YES	13.79	0.33	13.46	1.5 - 14.5	Sand			
BH211	Zones 1-3	Causeway R4	28/11/2019	64.9	35.9	0.1	0	18	0.1	0.1	1000	Campsie C	YES	-	0.33	-	1.5 - 14.5	Sand	0.0649	0.0359	1
BH211	Zones 1-3	Causeway R5	05/12/2019	64.5	36.1	0.2	0	17	0.4	0.4	995	Campsie C	YES	-	0.33	-	1.5 - 14.5	Sand	0.258	0.1444	2
BH301	Zones 1-3	NIEA R1	09/04/2020	0.2	1.9	16.7	0	1	0	0	1022	City N	NO	7.4	0.55	6.85	3.0-12.0	S and G	0	0	1
BH301	Zones 1-3	NIEA R2	12/10/2020	6.5	7.2	0.4	0	0	0	0	1016	City N	NO	8.11	0.55	7.56	3.0-12.0	S and G	0	0	1
BH301	Zones 1-3	NIEA R3	03/11/2020	0.2	0.8	20.2	0	0	0	0	1012	City N	NO	7.8	0.55	7.25	3.0-12.0	S and G	0	0	1
BH301	Zones 1-3	NIEA R4	07/12/2020	5	5.5	4.9	0	0	0.2	0.2	1001	City N	NO	7.48	0.55	6.93	3.0-12.0	S and G	0.01	0.011	1
BH301	Zones 1-3	NIEA R5	05/05/2021	0.4	0.2	19.6	0	0	-0.2	-0.2	1008	City N	NO	8.02	0.55	7.47	3.0-12.0	S and G	-0.0008	-0.0004	1
BH302	Zones 1-3	NIEA R1	09/04/2020	67.8	32.3	0.4	1	0	0	0	1022	City N	NO	9.8	0.47	9.33	6.0-16.0	S and G	0	0	1
BH302	Zones 1-3	NIEA R2	13/10/2020	12.3	8.3	16.3	0	0	-0.1	-0.1	1016	City N	NO	12.32	0.47	11.85	6.0-16.0	S and G	-0.0123	-0.0083	1
BH302	Zones 1-3	NIEA R3	03/11/2020	57.7	30.6	0.6	0	0	0	0	1012	City N	NO	9.84	0.47	9.37	6.0-16.0	S and G	0	0	1
BH302	Zones 1-3	NIEA R4	07/12/2020	56.8	30.5	1.5	0	0	0.2	0.2	1001	City N	NO	9.58	0.47	9.11	6.0-16.0	S and G	0.1136	0.061	2
BH303	Zones 1-3	NIEA R1	09/04/2020	17.7	27.2	0.2	1	0	0	0	1022	City N	NO	11.2	0.39	10.81	9.0-14.0	S and G	0	0	1
BH303	Zones 1-3	NIEA R2	13/10/2020	13.7	24.7	0.1	0	0	-0.2	-0.2	1016	City N	NO	11.9	0.39	11.51	9.0-14.0	S and G	-0.0274	-0.0494	1
BH303	Zones 1-3	NIEA R3	03/11/2020	9.9	20.8	1.5	0	0	-0.1	-0.1	1012	City N	NO	11.65	0.39	11.26	9.0-14.0	S and G	-0.0099	-0.0208	1
BH303	Zones 1-3	NIEA R4	07/12/2020	9.7	19.9	2.8	0	0	0.1	0.1	1001	City N	NO	11.3	0.39	10.91	9.0-14.0	S and G	0.0097	0.0199	1

Waste/Made Ground

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH209	CIW Yard & Zone 4	Causeway R1	09/04/2019	2.4	1.9	19.6	0	0	0.4	0.4	1019	City S	YES	-	0.46	-	1.0 - 3.9	waste	0.0096	0.0076	1
BH209	CIW Yard & Zone 4	Causeway R2	16/04/2019	1.5	1.7	17.8	1	0	0.2	0.2	1017	City S	YES	-	0.46	-	1.0 - 3.9	waste	0.003	0.0034	1
BH209	CIW Yard & Zone 4	Causeway R3	06/08/2019	67.7	27.7	0.5	1	0	0.7	0.7	997	City S	YES	1.97	0.46	1.51	1.0 - 3.9	waste	0.4739	0.1939	2
BH209	CIW Yard & Zone 4	Causeway R4	29/11/2019	80.3	13.2	0	1	60	0.3	0.3	1000	City S	YES	2.54	0.46	2.08	1.0 - 3.9	waste	0.2409	0.0396	2
BH209	CIW Yard & Zone 4	Causeway R5	06/12/2019	64.7	16.3	0.1	1	31	1.7	1.7	995	City S	YES	2.15	0.46	1.69	1.0 - 3.9	waste	1.0999	0.2771	3
BH209	CIW Yard & Zone 4	Causeway R6	16/12/2018	67.6	12.4	0	0	0	4.3	4	990	City S	YES	2.1	0.46	1.64	1.0 - 3.9	waste	2.704	0.496	3
BH209	CIW Yard & Zone 4	NIEA	27/06/2019	39.2	19	4.4	2	0	0	0	1033	City S	YES	2.74	0.46	2.28	1.0 - 3.9	waste	0	0	1
BH209	CIW Yard & Zone 4	NIEA R1	17/04/2020	53.7	21	0.1	0	1	0	0	1016	City S	YES	2.24	0.46	1.78	1.0 - 3.9	waste	0	0	1
BH209	CIW Yard & Zone 4	NIEA R2	12/10/2020	79.3	15.6	0.1	0	0	10.1	10.1	1016	City S	YES	1.98	0.46	1.52	1.0 - 3.9	waste	8.0093	1.5756	4
BH209	CIW Yard & Zone 4	NIEA R3	03/11/2020	43.1	7	9.1	0	0	0	0	1012	City S	YES	1.82	0.46	1.36	1.0 - 3.9	waste	0	0	1
BH209	CIW Yard & Zone 4	NIEA R4	07/12/2020	59.6	13.7	0	0	31	10.2	10.2	1001	City S	YES	2.19	0.46	1.73	1.0 - 3.9	waste	6.0792	1.3974	4
BH209	CIW Yard & Zone 4	NIEA R5	05/05/2021	55.2	15.4	6.1	0	10	-0.4	-0.4	1008	City S	YES	2.36	0.46	1.9	1.0 - 3.9	waste	-0.2208	-0.0616	2
BH208	CIW Yard & Zone 4	NIEA R1	17/04/2020	0.8	32	17.3	0	1	0	0	1016	City S	YES	1.87	0.51	1.36	0.6-2.6	waste	0	0	1
BH208	CIW Yard & Zone 4	NIEA R2	12/10/2020	12.3	16.6	8.5	0	0	0	0	1016	City S	YES	1.98	0.51	1.47	0.6-2.6	waste	0	0	1
BH208	CIW Yard & Zone 4	NIEA R3	03/11/2020	8.4	10.7	11.8	0	0	0	0	1012	City S	YES	1.74	0.51	1.23	0.6-2.6	waste	0	0	1
BH208	CIW Yard & Zone 4	NIEA R4	07/12/2020	0.7	4.1	19.2	0	31	0.1	0.1	1001	City S	YES	1.76	0.51	1.25	0.6-2.6	waste	0.0007	0.0041	1
BH208	CIW Yard & Zone 4	NIEA R5	05/05/2021	2.8	4.6	15.5	0	0	-0.2	-0.2	1008	City S	YES	2.06	0.51	1.55	0.6-2.6	waste	-0.0056	-0.0092	1

Natural

BH	Loation	Monitoring Round	Date	Max Steady CH_4 (%v/v)	Max Steady CO_2 (%v/v)	Min Steady O_2 (%v/v)	Max CO (ppm)	Max H_2S (ppm)	Max Peak Flow Rate Magnitude (l/hr)	Max Steady Flow (l/hr)	Baro	Area	Waste Present	Water Level (mbdat)	Height of Cover (m)	WL (mbgl)	Screening Depth (mbgl)	Strata	GSV (CH4)	GSV (CO2)	CS (Ciria C665)
BH114	CIW Yard & Zone 4	Causeway R1	09/04/2019	3.1	1.9	19.3	0	0	0.4	0.4	1019	City S	YES	-	0.32	-	4.0.5.0	Sand	0.0124	0.0076	1
BH114	CIW Yard & Zone 4	Causeway R2	16/04/2019	0	0.4	20.5	0	0	0.1	0.1	1017	City S	YES	2.5	0.32	2.18	4.0.5.0	Sand	0	0.0004	1
BH114	CIW Yard & Zone 4	Causeway R3	06/08/2019	0	0.1	20.9	0	1	0.3	0.3	1003	City S	YES	2.36	0.32	2.04	4.0.5.0	Sand	0	0.0003	1
BH114	CIW Yard & Zone 4	Causeway R4	29/11/2019	0	2	19.8	0	0	0.3	0.3	1000	City S	YES	2.37	0.32	2.05	4.0.5.0	Sand	0	0.006	1
BH114	CIW Yard & Zone 4	Causeway R5	06/12/2019	0	1.3	20	0	0	0.3	0.3	995	City S	YES	-	0.32	-	4.0.5.0	Sand	0	0.0039	1
BH114	CIW Yard & Zone 4	Causeway R6	18/12/2019	-	-	-	-	-	-	-	990	City S	YES	-	0.32	-	4.0.5.0	Sand			
BH114	CIW Yard & Zone 4	NIEA	-	-	-	-	-	-	-	-	1033	City S	YES	-	0.32	-	4.0.5.0	Sand			
BH114	CIW Yard & Zone 4	NIEA R1	17/04/2020	0	0.3	19.9	0	1	0	0	1016	City S	YES	2.25	0.32	1.93	4.0.5.0	Sand	0	0	1
BH114	CIW Yard & Zone 4	NIEA R2	12/10/2020	0	1.3	19.3	0	0	2.1	2.1	1016	City S	YES	2.48	0.32	2.16	4.0.5.0	Sand	0	0.0273	1
BH114	CIW Yard & Zone 4	NIEA R3	03/11/2020	0.2	0.1	21.8	0	0	0	0	1012	City S	YES	2.08	0.32	1.76	4.0.5.0	Sand	0	0	1
BH114	CIW Yard & Zone 4	NIEA R4	07/12/2020	0.3	2.1	16.8	0	0	0	0	1001	City S	YES	2.07	0.32	1.75	4.0.5.0	Sand	0	0	1
BH114	CIW Yard & Zone 4	NIEA R5	05/05/2021	0.3	0.3	20.7	0	0	-0.1	-0.1	1008	City S	YES	2.5	0.32	2.18	4.0.5.0	Sand	-0.0003	-0.0003	1
BH117	Zones 1-3	Causeway R1	09/04/2019	1.6	1.3	19.7	0	0	0.4	0.4	1019	City N	YES	-	0.3	-	3.5-5.7	Sand	0.0064	0.0052	1
BH121	CIW Yard & Zone 4	Causeway R1	09/04/2019	1	0.9	20.7	0	0	0.4	0.4	1019	City S	NO	-	0.31	-	3.0-5.0	Sand	0.004	0.0036	1
BH121	CIW Yard & Zone 4	Causeway R2	16/04/2019	0.1	0.1	21.2	1	0	0.3	0.3	1017	City S	NO	-	0.31	-	3.0-5.0	Sand	0.0003	0.0003	1
BH121	CIW Yard & Zone 4	Causeway R3	06/08/2019	0.1	1.3	18.5	0	0	0.5	0.5	997	City S	NO	2.15	0.31	1.84	3.0-5.0	Sand	0.0005	0.0065	1
BH121	CIW Yard & Zone 4	Causeway R4	29/11/2019	0	4.7	18.9	0	0	0.3	0.3	1000	City S	NO	2.08	0.31	1.77	3.0-5.0	Sand	0	0.0141	1
BH121	CIW Yard & Zone 4	Causeway R5	06/12/2019	0	2	20.4	0	0	0.5	0.5	995	City S	NO	2.06	0.31	1.75	3.0-5.0	Sand	0	0.01	1
BH121	CIW Yard & Zone 4	Causeway R6	18/12/2019	0	5.1	19.6	0	0	0	0	990	City S	NO	1.92	0.31	1.61	3.0-5.0	Sand	0	0	1
BH121	CIW Yard & Zone 4	NIEA	26/06/2019	0	0.2	20.5	0	0	0	0	1033	City S	NO	-	0.31	-	3.0-5.0	Sand	0	0	1
BH121	CIW Yard & Zone 4	NIEA R1	17/04/2020	0.2	5.2	16	0	1	0	0	1016	City S	NO	2.04	0.31	1.73	3.0-5.0	Sand	0	0	1
BH121	CIW Yard & Zone 4	NIEA R2	12/10/2020	0.1	2.3	19.3	0	0	0	0	1016	City S	NO	2.11	0.31	1.8	3.0-5.0	Sand	0	0	1
BH121	CIW Yard & Zone 4	NIEA R3	03/11/2020	0.2	1.1	21.6	0	0	0	0	1012	City S	NO	1.78	0.31	1.47	3.0-5.0	Sand	0	0	1
BH121	CIW Yard & Zone 4	NIEA R4	07/12/2020	0.4	4.5	19.7	0	0	-1.1	-1.1	1001	City S	NO	1.81	0.31	1.5	3.0-5.0	Sand	-0.0044	-0.0495	1
BH121	CIW Yard & Zone 4	NIEA R5	05/05/2021	0.3	3.4	16.7	0	0	-2.8	-2.8	1008	City S	NO	2.19	0.31	1.88	3.0-5.0	Sand	-0.0084	-0.0952	1
BH122	CIW Yard & Zone 4	Causeway R1	09/04/2019	1.6	1.2	20.1	0	0	0.4	0.4	1019	City S	NO	-	0.25	-	3.0-11.0	Sand	0.0064	0.0048	1
BH122	CIW Yard & Zone 4	Causeway R2	16/04/2019	0.2	1.4	20	0	0	0.2	0.2	1017	City S	NO	-	0.25	-	3.0-11.0	Sand	0.0004	0.0028	1
BH122	CIW Yard & Zone 4	Causeway R3	06/08/2019	37.4	34.71	0	1	1	0.7	0.7	997	City S	NO	3.72	0.25	3.47	3.0-11.0	Sand	0.2618	0.24297	2
BH122	CIW Yard & Zone 4	Causeway R4	01/11/2019	0	1.9	20.3	0	0	0.3	0.3	1000	City S	NO	3.73	0.25	3.48	3.0-11.0	Sand	0	0.0057	1
BH122	CIW Yard & Zone 4	Causeway R5	06/12/2019	0	4.1	17	0	0	0.4	0.4	995	City S	NO	3.71	0.25	3.46	3.0-11.0	Sand	0	0.0164	1
BH122	CIW Yard & Zone 4	Causeway R6	18/12/2019	2.3	8.1	17.1	0	0	0	0	990	City S	NO	-	0.25	-	3.0-11.0	Sand	0	0	1
BH122	CIW Yard & Zone 4	NIEA	-	-	-	-	-	-	-	-	1033	City S	NO	3.65	0.25	3.4	3.0-11.0	Sand			
BH122	CIW Yard & Zone 4	NIEA R1	17/04/2020	0	2.3	19	0	1	0	0	1016	City S	NO	2.14	0.25	1.89	3.0-11.0	Sand	0	0	1
BH122	CIW Yard & Zone 4	NIEA R2	13/10/2020	84.9	6.9	0.4	0	16	-5.1	-5.1	1016	City S	NO	3.4	0.25	3.15	3.0-11.0	Sand	-4.3299	-0.3519	
BH122	CIW Yard & Zone 4	NIEA R3	03/11/2020	0.4	3.8	17.6	0	16	0	0	1012	City S	NO	3.45	0.25	3.2	3.0-11.0	Sand	0	0	1
BH122	CIW Yard & Zone 4	NIEA R4	07/12/2020	0.3	3.7	18.7	0	0	-1.6	-1.6	1001	City S	NO	3.65	0.25	3.4	3.0-11.0	Sand	-0.0048	-0.0592	1
BH122	CIW Yard & Zone 4	NIEA R5	05/05/2021	0.4	2.5	18.3	0	0	-0.2	-0.2	1008	City S	NO	3.85	0.25	3.6	3.0-11.0	Sand	-0.0008	-0.005	1
BH210	CIW Yard & Zone 4	Causeway R1	09/04/2019	0.3	0.3	20.9	0	0	0.4	0.4	1019	City S	NO	-	0.4	-	1.0 - 4.0	Sand	0.0012	0.0012	1
BH210	CIW Yard & Zone 4	Causeway R2	16/04/2019	0.2	2	18.2	0	0	0.1	0.1	1017	City S	NO	-	0.4	-	1.0 - 4.0	Sand	0.0002	0.002	2
BH210	CIW Yard & Zone 4	Causeway R3	06/08/2019	-	-	-	-	-	-	-	997	City S	NO	2.54	0.4	2.14	1.0 - 4.0	Sand			
BH210	CIW Yard & Zone 4	Causeway R4	29/11/2019	0	2.5	16.9	0	0	0.3	0.3	1000	City S	NO	2.5	0.4	2.1	1.0 - 4.0	Sand	0	0.0075	1
BH210	CIW Yard & Zone 4	Causeway R5	06/12/2019	0	2.9	14.9	0	0	0.4	0.4	995	City S	NO	2.45	0.4	2.05	1.0 - 4.0	Sand	0	0.0116	1
BH210	CIW Yard & Zone 4	Causeway R6	18/12/2019	0	2.5	14.9	0	0	0.2	0.2	990	City S	NO	2.3	0.4	1.9	1.0 - 4.0	Sand	0	0.005	1
BH210	CIW Yard & Zone 4	NIEA R1	17/04/2020	0	3.5	15.2	0	0	0	0	1016	City S	NO	2.32	0.4	1.92	1.0 - 4.0	Sand	0	0	1
BH210	CIW Yard & Zone 4	NIEA R2	12/10/2020	0	3.5	15.2	0	0	0	0	1016	City S	NO	4.4	0.4	4	1.0 - 4.0	Sand	0	0	1
BH210	CIW Yard & Zone 4	NIEA R3	03/11/2020	0.3	3	14.4	0	0	-0.1	-0.1	1012	City S	NO	2.22	0.4	1.82	1.0 - 4.0	Sand	-0.0003	-0.003	1
BH210	CIW Yard & Zone 4	NIEA R4	07/12/2020	0.3	2.7	15.5	0	0	0.2	0.2	1001	City S	NO	2.14	0.4	1.74	1.0 - 4.0	Sand	0.0006	0.0054	1
BH210	CIW Yard & Zone 4	NIEA R5	05/05/2021	0.4	2.9	15.8	0	0	-0.1	-0.1	1008	City S	NO	2.6	0.4	2.2	1.0 - 4.0	Sand	-0.0004	-0.0029	1

APPENDIX 3- ICT GROUND GAS MONITORING DATA, 2022

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	25/01/2022
Weather:	Dry, overcast
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1032	0.1	0.2	21.7	0	0
After:	1032	0.1	0.2	21.7	0	0

BH651	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	6.8	3.3	19.7	2	0
60	7.2	3.2	19.7	1	0
90	7.3	3.2	19.7	1	0
120	7.2	3.2	19.7	1	0
150	7.2	3.2	19.7	1	0
180	7.2	3.2	19.7	1	0
240	7.2	3.2	19.7	1	0
300	7.2	3.2	19.7	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14.5
60	-13.5
90	-11.7
120	-11.4
150	-11.0
180	-10.3
240	-9.8
300	-9.1

Groundwater monitoring	mbgl
Depth to top of water	4.52
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH108	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.1	21.3	0	0
60	0.0	0.1	21.3	0	0
90	0.0	0.1	21.3	0	0
120	0.0	0.1	21.3	0	0
150	0.0	0.1	21.3	0	0
180	0.0	0.1	21.3	0	0
240	0.0	0.2	21.3	0	0
300	0.0	0.2	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.44
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH637	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	76.6	13.3	0.4	0	0
60	77.0	13.4	0.3	0	0
90	77.1	13.4	0.3	0	0
120	77.1	13.4	0.2	0	0
150	77.1	13.4	0.2	0	0
180	77.1	13.4	0.2	0	0
240	77.1	13.4	0.2	0	0
300	77.1	13.4	0.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.17
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH219	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	6.1	17.0	0	0
60	0.1	6.1	17.2	0	0
90	0.1	6.1	17.2	0	0
120	0.0	6.1	17.3	0	0
150	0.0	6.1	17.3	0	0
180	0.0	6.1	17.3	0	0
240	0.0	6.1	17.3	0	0
300	0.0	6.1	17.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-9.7
60	-6.6
90	-4.6
120	-4.0
150	-3.7
180	-3.2
240	-2.7
300	-2.7

Groundwater monitoring	mbgl
Depth to top of water	2.28
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH635D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.5	19.9	1	0
60	0.1	0.5	19.9	1	0
90	0.1	0.5	20.0	1	0
120	0.1	0.4	20.2	1	0
150	0.1	0.4	20.3	1	0
180	0.1	0.3	20.6	1	0
240	0.1	0.3	20.6	1	0
300	0.1	0.3	20.6	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	-8.5
60	-7.0
90	-5.5
120	-4.0
150	-3.0
180	-2.4
240	-2.1
300	-2.0

Groundwater monitoring	mbgl
Depth to top of water	3.52
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	25/01/2022
Weather:	Dry, overcast
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1032	0.1	0.2	21.7	0	0
After:	1032	0.1	0.2	21.7	0	0

BH635S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.8	4.9	18.2	1	0
60	1.8	4.9	18.2	1	0
90	1.9	4.9	18.2	1	0
120	1.8	4.8	18.1	1	0
150	1.9	4.8	18.2	1	0
180	1.8	4.8	18.2	1	0
240	1.8	4.8	18.2	1	0
300	1.8	4.8	18.2	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	-16.3
60	-14.4
90	-13.7
120	-12.0
150	-9.7
180	-8.5
240	-8.1
300	-7.8

Groundwater monitoring	mbgl
Depth to top of water	1.63
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH111	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	1.6	17.5	0	0
60	0.1	1.6	17.5	0	0
90	0.1	1.6	17.5	0	0
120	0.1	1.6	17.5	0	0
150	0.1	1.6	17.4	0	0
180	0.1	1.6	17.4	0	0
240	0.1	1.5	17.4	0	0
300	0.1	1.5	17.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	4.36
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH216	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	2.6	19.8	0	0
60	0.0	2.6	19.8	0	0
90	0.1	2.6	19.8	0	0
120	0.0	2.6	19.8	0	0
150	0.0	2.6	19.8	0	0
180	0.0	2.6	19.8	0	0
240	0.0	2.6	19.8	0	0
300	0.0	2.6	19.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	0.87
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH217	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.3	2.0	18.9	0	0
60	1.3	2.0	18.9	0	0
90	1.3	2.0	18.9	0	0
120	1.3	2.0	18.9	0	0
150	2.9	2.0	18.5	0	0
180	9.1	2.0	17.1	0	0
240	37.1	2.0	10.6	0	0
300	Pump failed due to water				

Flow rates	
Time (sec)	Flow (l/h)
30	
60	
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	1.32
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH218	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.1	5.8	18.3	0	0
60	1.1	5.8	18.3	0	0
90	1.1	5.8	18.3	0	0
120	1.1	5.8	18.3	0	0
150	4.7	6.9	17.2	0	0
180	12.7	8.7	15.6	0	0
240	27.3	12.5	11.5	0	0
300	45.1	15.7	7.8	0	9
330	53.5	17.0	6.4	0	11
360	59.9	17.9	5.6	0	12
390	63.0	18.4	5.0	0	12

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	1.83
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	25/01/2022
Weather:	Dry, overcast
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1032	0.1	0.2	21.7	0	0
After:	1032	0.1	0.2	21.7	0	0

420	68.2	19.3	4.1	0	14
450	70.9	19.7	3.6	0	14
480	74.8	20.4	2.9	0	15
510	78.1	20.8	2.4	0	15
560	80.0	21.1	2.0	0	14
600	82.3	21.4	1.6	0	12
660	83.6	21.7	1.4	0	11
700	84.4	21.8	1.4	0	10

BH112	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	2.8	19.4	0	0
60					
90	Pump failed due to water				
120					
150					
180					
240					
300					

Flow rates	
Time (sec)	Flow (l/h)
30	
60	
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	0.37
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH638	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.4	20.7	0	0
60	0.2	0.4	20.6	0	0
90	0.2	0.5	20.6	0	0
120	0.2	0.5	20.6	0	0
150	0.2	0.5	20.6	0	0
180	0.2	0.5	20.6	0	0
240	0.2	0.5	20.6	0	0
300	0.2	0.5	20.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	0.65
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH05	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.3	20.8	0	0
60	0.1	0.3	20.9	0	0
90	0.1	0.2	20.9	0	0
120	0.0	0.2	21.0	0	0
150	0.1	0.2	21.0	0	0
180	0.0	0.2	21.0	0	0
240	0.0	0.2	21.0	0	0
300	0.0	0.2	21.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.42
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH220	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30					
60	Larger diameter install, gas tap also blocked				
90					
120					
150					
180					
240					
300					

Flow rates	
Time (sec)	Flow (l/h)
30	
60	
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	2.30
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy Road
Project No.:	21-1339
Date:	26/01/2022
Weather:	Dry/Cold
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1022	0.2	0.3	21.5	0	0

BH214	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	26.1	0.0	0	13
60	>>>>	26.1	0.0	0	14
90	>>>>	26.1	0.0	0	14
120	>>>>	26.0	0.0	0	14
150	>>>>	26.0	0.0	0	14
180	>>>>	26.0	0.0	0	14
240	>>>>	26.0	0.0	0	14
300	>>>>	26.0	0.0	0	14

Flow rates	
Time (sec)	Flow (l/h)
30	24.0
60	24.0
90	24.0
120	24.0
150	24.0
180	24.0
240	24.0
300	24.0

Groundwater monitoring	mbgl
Depth to top of water	4.05*
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

*lots of bubbles putting off dip meter

BH215	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	27.3	0.0	1	3
60	>>>>	27.4	0.0	1	8
90	>>>>	27.4	0.0	2	9
120	>>>>	27.4	0.0	2	10
150	>>>>	27.3	0.0	2	10
180	>>>>	27.3	0.0	2	10
240	>>>>	27.3	0.0	2	10
300	>>>>	27.3	0.0	2	10

Flow rates	
Time (sec)	Flow (l/h)
30	0.9
60	1.0
90	1.0
120	1.0
150	1.0
180	1.0
240	1.0
300	1.0

Groundwater monitoring	mbgl
Depth to top of water	2.76
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH612	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.4	10.3	3.0	0	0
60	1.4	10.7	2.6	0	0
90	1.6	11.1	1.8	0	0
120	1.9	11.7	0.8	0	0
150	2.0	11.8	0.6	0	0
180	2.0	11.8	0.6	0	0
240	2.1	11.9	0.4	0	0
300	2.1	11.9	0.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH646	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	26.7	0.0	1	6
60	>>>>	26.7	0.0	1	11
90	>>>>	26.7	0.0	1	18
120	>>>>	26.7	0.0	1	27
150	>>>>	26.6	0.0	1	28
180	>>>>	26.7	0.0	1	29
240	>>>>	26.6	0.0	1	30
300	>>>>	26.6	0.0	1	30

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	3.97
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BHW1	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	17.9	0.4	0	0
60	>>>>	18.1	0.1	0	0
90	>>>>	18.1	0.1	0	12
120	>>>>	18.1	0.1	0	12
150	>>>>	18.1	0.1	0	12
180	>>>>	18.1	0.1	0	12
240	>>>>	18.1	0.1	0	12
300	>>>>	18.1	0.1	0	12

Flow rates	
Time (sec)	Flow (l/h)
30	3.5
60	3.6
90	3.7
120	3.7
150	3.8
180	3.8
240	3.8
300	3.8

Groundwater monitoring	mbgl
Depth to top of water	4.56
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy Road
Project No.:	21-1339
Date:	26/01/2022
Weather:	Dry/Cold
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1022	0.2	0.3	21.5	0	0

BH645	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	89.5	22.8	3.4	0	0
60	94.9	23.6	2.7	0	0
90	100.0	24.5	1.9	0	0
120	100.0	24.9	1.5	0	0
150	100.0	25.3	1.2	1	1
180	>>>>	25.4	1.1	1	1
240	>>>>	25.8	0.8	1	4
300	>>>>	26.9	0.0	1	14
360	>>>>	26.9	0.0	1	17

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	4.29
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH209	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	91.0	15.5	1.2	5	0
60	91.1	15.2	1.1	6	0
90	91.2	15.2	1.1	6	0
120	91.8	15.1	1.0	5	1
150	92.8	15.1	0.9	5	3
180	94.1	15.1	0.9	5	5
240	97.1	14.9	0.7	4	15
300	100.0	14.8	0.5	3	28

Flow rates	
Time (sec)	Flow (l/h)
30	-8.5
60	-6.9
90	-5.4
120	-4.1
150	-3.7
180	-3.0
240	-2.2
300	-1.6

Groundwater monitoring	mbgl
Depth to top of water	2.15
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH611A	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	75.6	22.1	0.1	0	0
60	74.3	22.0	0.1	0	0
90	74.4	22.0	0.0	0	0
120	74.4	22.1	0.0	0	0
150	74.5	22.0	0.0	0	0
180	74.6	22.0	0.0	0	0
240	74.6	22.0	0.0	0	0
300	74.6	22.0	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.4
60	0.4
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH117	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	18.8	18.6	0.1	0	0
60	18.7	18.6	0.1	0	0
90	18.7	18.6	0.1	0	0
120	18.7	18.7	0.1	0	0
150	18.7	18.6	0.1	0	0
180	18.7	18.6	0.1	0	0
240	18.7	18.6	0.1	0	0
300	18.7	18.6	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH302	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	68.0	24.6	0.3	0	0
60	68.4	24.7	0.2	0	0
90	68.7	24.7	0.1	0	0
120	68.9	24.7	0.1	0	0
150	69.1	24.7	0.0	0	0
180	69.3	24.7	0.0	0	0
240	69.4	24.7	0.0	0	0
300	69.4	24.7	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	9.74
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy Road
Project No.:	21-1339
Date:	26/01/2022
Weather:	Dry/Cold
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1022	0.2	0.3	21.5	0	0

BH213	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	28.9	0.0	1	0
60	>>>>	29.0	0.0	2	0
90	>>>>	28.9	0.0	2	4
120	>>>>	29.1	0.0	2	4
150	>>>>	29.0	0.0	2	5
180	>>>>	29.0	0.0	2	6
240	>>>>	29.0	0.0	1	8
300	>>>>	29.0	0.0	2	8

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.7
90	0.7
120	0.7
150	0.8
180	0.8
240	0.8
300	0.8

Groundwater monitoring	mbgl
Depth to top of water	2.43
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH113	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	3.0	19.8	0	0
60	0.2	2.4	20.2	0	0
90	0.2	1.7	20.6	0	0
120	0.2	1.4	20.8	0	0
150	0.2	1.2	20.9	0	0
180	0.2	1.0	21.0	0	0
240	0.2	0.7	21.2	0	0
300	0.2	0.7	21.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-0.2
60	0.1
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	12.56
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH02	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	27.4	11.8	10.3	0	0
60	25.5	11.1	10.9	0	0
90	24.2	10.7	11.3	0	0
120	22.2	9.7	12.9	0	0
150	21.2	9.3	13.3	0	0
180	19.7	8.7	14.0	0	0
240	15.1	7.0	15.7	0	0
300	12.9	6.1	16.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-8.9
60	-7.7
90	-6.8
120	-6.1
150	-5.5
180	-5.0
240	-4.0
300	-2.9

Groundwater monitoring	mbgl
Depth to top of water	11.50
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH210	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	2.4	16.9	0	0
60	0.2	2.4	17.1	0	0
90	0.2	2.4	17.1	0	0
120	0.2	2.4	17.1	0	0
150	0.2	2.4	17.1	0	0
180	0.2	2.4	17.1	0	0
240	0.2	2.4	17.1	0	0
300	0.2	2.4	17.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.52
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH614	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	3.6	2.5	0	0
60	0.2	3.6	2.3	0	0
90	0.2	3.6	2.2	0	0
120	0.2	3.6	2.2	0	0
150	0.2	3.6	2.2	0	0
180	0.2	3.6	2.2	0	0
240	0.2	3.6	2.2	0	0
300	0.2	3.6	2.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-5.4
60	-4.6
90	-3.6
120	-3.0
150	-2.6
180	-2.3
240	-2.0
300	-1.8

Groundwater monitoring	mbgl
Depth to top of water	2.23
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy Road
Project No.:	21-1339
Date:	26/01/2022
Weather:	Dry/Cold
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1022	0.2	0.3	21.5	0	0

BH616	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	59.0	16.0	9.4	0	0
60	55.0	15.1	9.9	0	0
90	45.3	13.1	11.5	0	0
120	38.0	11.3	13.7	0	0
150	37.0	10.8	13.3	0	0
180	34.2	10.4	14.4	0	0
240	32.8	10.0	14.6	0	0
300	27.0	8.5	15.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.17
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH121	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	1.7	20.5	0	0
60	0.1	2.7	19.9	0	0
90	0.1	2.8	19.9	0	0
120	0.1	2.8	19.9	0	0
150	0.1	2.8	19.9	0	0
180	0.1	2.8	19.9	0	0
240	0.1	2.8	19.9	0	0
300	0.1	2.8	19.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-19.6
60	-18.6
90	-17.5
120	-16.4
150	-15.4
180	-14.6
240	-12.6
300	-10.7

Groundwater monitoring	mbgl
Depth to top of water	2.10
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH208	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.9	21.2	0	0
60	0.1	0.7	21.3	0	0
90	0.1	0.5	21.4	0	0
120	0.1	0.4	21.4	0	0
150	0.1	0.4	21.4	0	0
180	0.1	0.3	21.5	0	0
240	0.1	0.3	21.5	0	0
300	0.1	0.3	21.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.98
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH617	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	28.3	10.4	11.2	0	0
60	28.8	10.6	11.0	0	0
90	29.4	10.8	10.8	0	0
120	30.4	11.1	10.5	0	0
150	30.7	11.1	10.4	0	0
180	31.1	11.3	10.2	0	0
240	32.0	11.5	9.9	0	0
300	35.3	12.7	8.5	0	0
360	37.0	13.1	8.3	0	0
410	38.4	13.5	7.8	0	0
470	40.9	14.2	7.0	0	0
530	42.6	14.6	6.5	0	0
590	43.3	14.8	6.3	0	0
650	44.5	15.2	5.9	0	0
710	47.4	16.2	4.8	0	0
770	49.0	16.8	4.2	0	0
900	51.0	17.2	3.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.83
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy Road
Project No.:	21-1339
Date:	26/01/2022
Weather:	Dry/Cold
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1022	0.2	0.3	21.5	0	0

BH301

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.7	4.6	6.0	0	0
60	1.8	4.7	5.9	0	0
90	1.9	4.8	5.5	0	0
120	2.1	5.1	4.8	0	0
150	2.5	5.5	3.9	0	0
180	3.0	6.0	2.8	0	0
240	4.0	6.8	1.0	0	0
300	4.6	7.1	0.3	0	0
400	4.6	7.2	0.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	8.01
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH211

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	27.9	0.1	0	9
60	>>>>	28.5	0.0	0	10
90	>>>>	28.4	0.0	0	10
120	>>>>	28.4	0.0	0	10
150	>>>>	28.4	0.0	0	11
180	>>>>	28.4	0.0	0	11
240	>>>>	28.4	0.0	0	11
300	>>>>	28.4	0.0	0	11

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH303

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	5.7	8.8	11.7	0	0
60	5.5	9.1	11.4	0	0
90	5.6	9.4	11.2	0	0
120	5.8	9.8	11.1	0	0
150	6.2	10.5	10.6	0	0
180	6.2	10.5	9.7	0	0
240	6.3	10.6	8.9	0	0
300	6.3	10.6	8.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	11.72
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	27/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.0	0	0
After:						

BH648	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	9.7	2.9	19.5	0	0
60	9.3	2.8	19.5	0	0
90	7.9	2.4	19.8	0	0
120	6.7	2.1	20.0	0	0
150	7.3	2.3	19.9	0	0
180	7.1	2.2	19.9	0	0
240	7.3	2.3	19.9	0	0
300	6.8	2.1	20.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH652	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	27.0	18.8	0.9	0	0
60	27.5	18.9	0.2	0	0
90	28.1	19.0	0.2	0	0
120	28.9	18.9	0.1	0	0
150	29.2	18.9	0.1	0	0
180	29.2	18.9	0.1	0	0
240	30.2	18.9	0.1	0	0
300	30.4	18.9	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.5
60	0.5
90	0.5
120	0.5
150	0.5
180	0.5
240	0.5
300	0.5

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH206	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	36.9	12.9	7.5	0	0
60	35.9	13.1	7.7	0	0
90	36.0	13.4	7.5	0	0
120	38.7	13.5	7.4	0	0
150	39.0	14.0	7.5	0	0
180	38.4	13.6	7.7	0	0
240	37.1	13.5	7.8	0	0
300	37.8	13.3	8.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.4
60	0.4
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	5.17
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH404	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.5	13.6	5.0	0	0
60	0.5	13.5	4.9	0	0
90	0.5	13.5	4.9	0	0
120	0.5	13.5	4.9	0	0
150	0.5	13.5	4.9	0	0
180	0.5	13.5	4.9	0	0
240	0.5	13.5	4.9	0	0
300	0.5	13.5	4.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-12.8
60	-12.1
90	-11.4
120	-10.7
150	-10.4
180	-9.9
240	-8.7
300	-8.0

Groundwater monitoring	mbgl
Depth to top of water	6.58
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH633	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.3	0.4	20.8	0	0
60	0.3	0.4	20.8	0	0
90	0.3	0.4	20.7	0	0
120	0.4	0.5	20.7	0	0
150	0.4	0.5	20.6	0	0
180	0.4	0.5	20.6	0	0
240	0.4	0.5	20.6	0	0
300	0.4	0.5	20.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	4.10
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	27/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.0	0	0
After:						

BH221	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	3.1	0.3	0	0
60	>>>>	3.1	0.4	0	0
90	>>>>	3.0	0.7	0	0
120	>>>>	3.0	0.9	0	0
150	>>>>	3.0	1.1	0	0
180	>>>>	2.9	1.8	0	0
240	>>>>	2.8	1.9	0	0
300	>>>>	2.8	2.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.08
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH618S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	30.9	6.4	0.5	0	0
60	31.0	6.4	0.2	0	0
90	31.0	6.4	0.1	0	0
120	31.0	6.4	0.1	0	0
150	31.1	6.4	0.1	0	0
180	31.1	6.4	0.1	0	0
240	31.1	6.4	0.1	0	0
300	31.1	6.4	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH619S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	16.5	3.5	0.3	0	0
60	16.4	3.4	0.2	0	0
90	16.5	3.4	0.1	0	0
120	16.5	3.4	0.1	0	0
150	16.6	3.4	0.1	0	0
180	16.7	3.4	0.1	0	0
240	17.0	3.4	0.1	0	0
300	17.0	3.4	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-0.8
60	-0.8
90	-0.8
120	-0.8
150	-0.8
180	-0.8
240	-0.8
300	-0.8

Groundwater monitoring	mbgl
Depth to top of water	2.85
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH619D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	5.6	1.2	14.2	0	0
60	6.5	1.3	13.6	0	0
90	7.1	1.4	13.2	0	0
120	9.1	1.6	11.0	0	0
150	11.3	1.9	9.6	0	0
180	12.8	2.1	8.6	0	0
240	15.3	2.4	6.7	0	0
300	15.8	2.5	6.2	0	0
360	17.0	2.7	5.1	0	0
420	17.1	2.7	5.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-2.0
60	-1.2
90	-0.8
120	-0.6
150	-0.6
180	-0.6
240	-0.6
300	-0.9

Groundwater monitoring	mbgl
Depth to top of water	2.85
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH207	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	24.1	1.1	0	0
60	>>>>	24.2	1.0	0	0
90	>>>>	24.3	0.9	0	0
120	>>>>	24.2	0.8	0	0
150	>>>>	24.3	0.7	0	0
180	>>>>	24.0	0.6	0	0
240	>>>>	23.9	0.5	0	0
300	>>>>	23.8	0.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.51
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	27/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.0	0	0
After:						

BH04	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.3	1.7	20.0	0	0
60	0.2	1.6	20.3	0	0
90	0.2	1.6	20.3	0	0
120	0.2	1.6	20.4	0	0
150	0.2	1.6	20.4	0	0
180	0.2	1.6	20.4	0	0
240	0.2	1.6	20.4	0	0
300	0.2	1.6	20.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14.1
60	-13.3
90	-12.8
120	-12.2
150	-11.6
180	-10.9
240	-9.3
300	-8.4

Groundwater monitoring	mbgl
Depth to top of water	4.47
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH107	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	9.8	15.5	11.4	0	0
60	9.8	15.5	11.3	0	0
90	9.8	15.5	11.3	0	0
120	9.8	15.5	11.3	0	0
150	9.8	15.6	11.2	0	0
180	9.8	15.6	11.2	0	0
240	9.8	15.5	11.3	0	0
300	9.8	15.5	11.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-19.5
60	-17.5
90	-15.8
120	-14.4
150	-12.7
180	-11.2
240	-8.5
300	-6.4

Groundwater monitoring	mbgl
Depth to top of water	5.10
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH403	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	100.0	15.5	11.4	0	0
60	100.0	15.5	11.3	0	0
90	100.0	15.5	11.3	0	0
120	100.0	15.5	11.3	0	0
150	100.0	15.6	11.2	0	0
180	100.0	15.6	11.2	0	0
240	100.0	15.5	11.3	0	0
300	100.0	15.5	11.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-12.5
60	-11.7
90	-11.0
120	-10.2
150	-9.7
180	-8.8
240	-7.7
300	-6.8

Groundwater monitoring	mbgl
Depth to top of water	3.84
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH634	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.0	2.1	20.1	0	0
60	1.0	1.9	20.2	0	0
90	0.9	1.7	20.3	0	0
120	0.7	1.4	20.5	0	0
150	0.6	1.2	20.7	0	0
180	0.5	1.1	20.8	0	0
240	0.5	1.1	20.8	0	0
300	0.5	1.1	20.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-8.0
60	-6.6
90	-5.1
120	-4.2
150	-3.1
180	-2.4
240	-0.9
300	-0.2

Groundwater monitoring	mbgl
Depth to top of water	5.07
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH122	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	3.4	19.0	0	0
60	0.2	3.4	18.9	0	0
90	0.2	3.4	18.9	0	0
120	0.2	3.4	18.9	0	0
150	0.2	3.4	18.9	0	0
180	0.2	3.4	18.9	0	0
240	0.2	3.4	18.9	0	0
300	0.2	3.4	18.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.4
60	0.4
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	3.77
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	27/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.0	0	0
After:						

BH114

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	0.4	20.9	0	0
60	0.2	0.4	20.9	0	0
90	0.2	0.4	20.9	0	0
120	0.2	0.4	20.9	0	0
150	0.2	0.4	20.9	0	0
180	0.2	0.4	20.9	0	0
240	0.2	0.4	20.9	0	0
300	0.2	0.4	20.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-2.6
60	-1.6
90	-0.7
120	-0.2
150	0.0
180	0.2
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.40
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH205

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	17.3	13.0	3.1	0	0
60	17.3	13.0	2.7	0	0
90	17.4	13.0	2.7	0	0
120	17.5	13.1	2.6	0	0
150	17.5	13.1	2.5	0	0
180	17.6	13.2	2.4	0	0
240	17.7	13.2	2.3	0	0
300	17.7	13.2	2.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	5.48
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH620

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	19.9	7.0	5.6	0	0
60	21.5	7.5	4.7	0	0
90	23.7	7.4	4.0	0	0
120	22.0	7.5	3.5	0	0
150	21.8	8.1	3.3	0	0
180	24.8	8.1	3.2	0	0
240	24.1	7.7	2.8	0	0
300	24.6	7.8	2.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	4.11
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH106D

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.4	21.2	0	0
60	0.1	0.4	21.2	0	0
90	0.1	0.2	21.4	0	0
120	0.1	0.2	21.4	0	0
150	0.1	0.2	21.4	0	0
180	0.1	0.2	21.4	0	0
240	0.1	0.2	21.4	0	0
300	0.1	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	5.10
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH106S

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	1.4	19.4	0	0
60	0.2	1.2	19.7	0	0
90	0.2	1.1	19.9	0	0
120	0.2	1.0	20.1	0	0
150	0.2	1.0	20.1	0	0
180	0.2	1.0	20.1	0	0
240	0.2	1.0	20.1	0	0
300	0.2	1.0	20.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	27/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.0	0	0
After:						

BH06	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	23.5	4.6	16.3	0	0
60	23.5	4.6	16.2	0	0
90	23.5	4.6	16.2	0	0
120	23.5	4.6	16.1	0	0
150	28.1	5.6	15.1	0	0
180	33.6	6.4	14.1	0	0
240	46.7	8.0	11.3	0	0
300	64.0	9.8	8.9	0	0
360	75.7	10.8	7.4	0	0
420	86.2	12.0	5.9	0	0
480	95.0	12.7	4.8	0	0
540	100.0	13.5	3.8	0	0
600	>>>>	14.1	3.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-0.5
60	0.1
90	0.1
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	4.55
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	31/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1028	0.1	0.2	21.0	0	0

BH102	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	2.5	20.1	0	0
60	0.1	2.5	20.1	0	0
90	0.1	2.5	20.1	0	0
120	0.1	2.5	20.1	0	0
150	0.1	2.5	20.1	0	0
180	0.1	2.5	20.1	0	0
240	0.1	2.5	20.1	0	0
300	0.1	2.5	20.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-13.9
60	-13.0
90	-12.2
120	-11.3
150	-10.0
180	-9.2
240	-7.9
300	-6.9

Groundwater monitoring	mbgl
Depth to top of water	2.46
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH104	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	9.8	6.4	0	0
60	0.1	9.3	6.9	0	0
90	0.1	9.0	7.3	0	0
120	0.1	8.8	7.6	0	0
150	0.1	8.5	8.1	0	0
180	0.1	8.5	8.4	0	0
240	0.1	9.7	9.0	0	0
300	0.1	7.7	9.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-10.7
60	-9.6
90	-7.7
120	-5.8
150	-4.1
180	-3.5
240	-2.7
300	-1.9

Groundwater monitoring	mbgl
Depth to top of water	3.24
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH621	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	3.9	19.1	0	0
60	0.1	3.7	19.2	0	0
90	0.1	3.7	19.2	0	0
120	0.1	3.7	19.2	0	0
150	0.1	3.7	19.2	0	0
180	0.1	3.7	19.2	0	0
240	0.1	3.7	19.2	0	0
300	0.1	3.7	19.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-16.1
60	-15.2
90	-14.2
120	-13.5
150	-12.5
180	-11.6
240	-10.3
300	-9.7

Groundwater monitoring	mbgl
Depth to top of water	3.23
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH203	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	19.0	1.1	0	0
60	>>>>	19.2	0.4	0	0
90	>>>>	19.7	0.4	0	0
120	>>>>	18.8	0.4	0	0
150	>>>>	18.8	0.3	0	0
180	>>>>	18.8	0.3	0	0
240	>>>>	18.8	0.3	0	0
300	>>>>	18.8	0.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.5
60	0.6
90	0.6
120	0.6
150	0.6
180	0.6
240	0.6
300	0.6

Groundwater monitoring	mbgl
Depth to top of water	3.67
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH119	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.4	20.6	0	0
60	0.0	1.1	20.8	0	0
90	0.0	1.0	20.9	0	0
120	0.0	0.8	21.0	0	0
150	0.0	0.7	21.0	0	0
180	0.0	0.6	21.1	0	0
240	0.0	0.6	21.1	0	0
300	0.0	0.6	21.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-1.1
60	-1.1
90	0.0
120	0.1
150	0.2
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.88
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	31/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1028	0.1	0.2	21.0	0	0

BH101	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	4.0	19.7	0	0
60	0.0	4.0	19.7	0	0
90	0.0	4.0	19.7	0	0
120	0.0	4.0	19.7	0	0
150	0.0	4.0	19.7	0	0
180	0.0	4.0	19.7	0	0
240	0.0	4.0	19.7	0	0
300	0.0	4.0	19.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14.7
60	-14.1
90	-13.2
120	-12.7
150	-11.8
180	-10.7
240	-9.8
300	-8.9

Groundwater monitoring	mbgl
Depth to top of water	2.0*
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

*FROM GROUND LEVEL

BH653	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.3	21.2	0	0
60	0.0	0.3	21.2	0	0
90	0.0	0.3	21.3	0	0
120	0.0	0.2	21.3	0	0
150	0.0	0.2	21.3	0	0
180	0.0	0.2	21.3	0	0
240	0.0	0.2	21.3	0	0
300	0.0	0.2	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.08
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH622	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.4	21.0	0	0
60	0.0	0.3	21.1	0	0
90	0.0	0.2	21.1	0	0
120	0.0	0.2	21.1	0	0
150	0.0	0.2	21.1	0	0
180	0.0	0.2	21.1	0	0
240	0.0	0.2	21.1	0	0
300	0.0	0.2	21.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.47
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH618D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.7	3.0	16.9	1	0
60	0.8	3.3	16.4	0	0
90	0.8	3.4	16.3	0	0
120	0.8	3.5	16.2	0	0
150	0.8	3.7	15.9	0	0
180	0.8	3.7	15.9	0	0
240	0.8	3.8	15.9	0	0
300	0.8	3.8	15.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14.1
60	-13.1
90	-12.6
120	-11.8
150	-11.1
180	-9.9
240	-8.7
300	-7.6

Groundwater monitoring	mbgl
Depth to top of water	3.53
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH105	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	38.5	15.4	0.7	0	0
60	38.6	15.4	0.3	0	0
90	38.7	15.5	0.2	0	0
120	38.7	15.4	0.2	0	0
150	38.6	15.4	0.2	0	0
180	38.7	15.5	0.2	0	0
240	38.7	15.5	0.2	0	0
300	38.7	15.5	0.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	4.95
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	31/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1028	0.1	0.2	21.0	0	0

BH401	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.6	1.8	19.7	0	0
60	1.1	1.3	20.4	0	0
90	0.9	1.0	20.6	0	0
120	0.5	0.7	20.8	0	0
150	0.5	0.6	20.9	0	0
180	0.3	0.5	21.0	0	0
240	0.3	0.4	21.0	0	0
300	0.3	0.4	21.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.4
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	5.08
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH03	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	>>>>	30.2	0.5	1	21
60	>>>>	29.7	0.2	1	20
90	>>>>	29.6	0.2	1	17
120	>>>>	29.6	0.2	1	17
150	>>>>	29.6	0.2	1	16
180	>>>>	29.6	0.2	1	15
240	>>>>	29.6	0.1	1	14
300	>>>>	29.6	0.1	1	13

Flow rates	
Time (sec)	Flow (l/h)
30	0.4
60	0.4
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	*
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

*WELL VERY CONTAMINATED DID NOT WANT TO DAMAGE DIP METRE

BH613	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	40.0	16.2	1.2	0	0
60	40.5	16.3	0.9	0	0
90	41.2	16.4	0.6	0	0
120	41.3	16.4	0.6	0	0
150	41.2	16.4	0.5	0	0
180	41.3	16.4	0.4	0	0
240	41.5	16.4	0.3	0	0
300	41.6	16.3	0.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.4
60	0.4
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH627	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.4	21.3	0	0
60	0.0	0.3	21.3	0	0
90	0.0	0.3	21.3	0	0
120	0.0	0.3	21.3	0	0
150	0.0	0.2	21.3	0	0
180	0.0	0.2	21.4	0	0
240	0.0	0.2	21.4	0	0
300	0.0	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-5.1
60	-3.0
90	-1.4
120	-0.3
150	0.2
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.55
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH654S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.3	20.9	0	0
60	0.0	0.2	21.1	0	0
90	0.0	0.2	21.2	0	0
120	0.0	0.2	21.2	0	0
150	0.0	0.2	21.2	0	0
180	0.0	0.2	21.2	0	0
240	0.0	0.2	21.2	0	0
300	0.0	0.2	21.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	3.48
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	31/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1028	0.1	0.2	21.0	0	0

BH654D

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.2	21.4	0	0
60	0.0	0.2	21.4	0	0
90	0.0	0.2	21.4	0	0
120	0.0	0.2	21.4	0	0
150	0.0	0.2	21.4	0	0
180	0.0	0.2	21.4	0	0
240	0.0	0.2	21.4	0	0
300	0.0	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-6.0
60	-4.2
90	-3.8
120	-3.4
150	-2.9
180	-2.5
240	-1.8
300	-0.8

Groundwater monitoring	mbgl
Depth to top of water	3.48
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH201

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	1.3	19.5	0	0
60	0.2	1.3	19.5	0	0
90	0.2	1.3	19.6	0	0
120	0.2	1.2	19.7	0	0
150	0.2	1.2	19.7	0	0
180	0.2	1.2	19.7	0	0
240	0.2	1.2	19.7	0	0
300	0.2	1.2	19.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-15.6
60	-14.4
90	-12.9
120	-11.4
150	-10.5
180	-9.4
240	-7.3
300	-5.5

Groundwater monitoring	mbgl
Depth to top of water	3.00
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH625

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.4	21.3	1	0
60	0.0	0.3	21.4	0	0
90	0.0	0.2	21.4	0	0
120	0.0	0.2	21.4	0	0
150	0.0	0.2	21.4	0	0
180	0.0	0.2	21.4	0	0
240	0.0	0.2	21.4	0	0
300	0.0	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.30
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH07

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	10.8	4.3	15.8	0	0
60	10.8	4.3	15.9	0	0
90	10.8	4.3	16.0	0	0
120	10.8	4.3	16.0	0	0
150	10.8	4.3	16.0	0	0
180	10.9	4.4	15.9	0	0
240	10.9	4.4	15.9	0	0
300	10.9	4.4	15.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-19.3
60	-18.5
90	-17.0
120	-16.4
150	-15.4
180	-14.8
240	-12.4
300	-11.4

Groundwater monitoring	mbgl
Depth to top of water	3.76
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH628

Gas readings					
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.2	21.1	0	0
60	0.1	0.2	21.3	0	0
90	0.1	0.2	21.4	0	0
120	0.1	0.2	21.4	0	0
150	0.1	0.2	21.4	0	0
180	0.1	0.2	21.4	0	0
240	0.1	0.2	21.4	0	0
300	0.1	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.53
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	31/01/2022
Weather:	Showers
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1028	0.1	0.2	21.3	0	0
After:	1028	0.1	0.2	21.0	0	0

BH630	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.3	21.4	0	0
60	0.0	0.2	21.4	0	0
90	0.0	0.2	21.4	0	0
120	0.0	0.2	21.4	0	0
150	0.0	0.2	21.4	0	0
180	0.0	0.2	21.4	0	0
240	0.0	0.2	21.4	0	0
300	0.0	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.02
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH629	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.2	21.4	0	0
60	0.0	0.2	21.4	0	0
90	0.0	0.2	21.4	0	0
120	0.0	0.2	21.4	0	0
150	0.0	0.2	21.4	0	0
180	0.0	0.2	21.4	0	0
240	0.0	0.2	21.4	0	0
300	0.0	0.2	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.92
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH626	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.4	5.1	19.7	0	0
60	0.3	3.1	20.4	0	0
90	0.2	2.8	20.5	0	0
120	0.2	2.1	20.7	0	0
150	0.1	1.0	21.1	0	0
180	0.1	1.0	21.1	0	0
240	0.1	0.9	21.1	0	0
300	0.1	0.8	21.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-5.0
60	-2.5
90	-2.0
120	-0.9
150	-0.1
180	0.2
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.41
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	01/02/2022
Weather:	Windy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1022	0.1	0.2	21.0	0	0
After:	1022	0.1	0.2	21.0	0	0

BH623D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	0.3	20.9	0	0
60	0.1	0.3	20.9	0	0
90	0.1	0.2	20.9	0	0
120	0.1	0.2	20.9	0	0
150	0.1	0.2	20.9	0	0
180	0.1	0.2	20.9	0	0
240	0.1	0.2	20.9	0	0
300	0.1	0.2	20.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.4
60	0.4
90	0.4
120	0.4
150	0.4
180	0.4
240	0.4
300	0.4

Groundwater monitoring	mbgl
Depth to top of water	4.50
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH623S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.2	20.9	0	0
60	0.1	0.2	20.9	0	0
90	0.1	0.2	20.9	0	0
120	0.1	0.2	20.9	0	0
150	0.1	0.2	20.9	0	0
180	0.1	0.2	20.9	0	0
240	0.1	0.2	20.9	0	0
300	0.1	0.2	20.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	DRY
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH632	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	22.4	2.3	17.6	0	0
60	16.9	1.8	18.3	0	0
90	13.9	1.5	18.8	0	0
120	12.5	1.3	19.0	0	0
150	10.8	1.2	19.2	0	0
180	9.4	1.1	19.5	0	0
240	7.0	0.9	19.8	0	0
300	5.0	0.7	20.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	0.98
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH624S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.2	20.9	0	0
60	0.1	0.2	21.0	0	0
90	0.1	0.2	21.0	0	0
120	0.1	0.2	21.0	0	0
150	0.1	0.2	21.0	0	0
180	0.1	0.2	21.0	0	0
240	0.1	0.2	21.0	0	0
300	0.1	0.2	21.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	3.67
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH624D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	59.7	14.1	9.4	0	0
60	49.1	12.5	10.7	0	0
90	48.0	12.2	10.9	0	0
120	43.4	11.3	11.7	0	0
150	41.5	10.9	12.7	0	0
180	37.9	10.0	13.5	0	0
240	32.2	8.7	14.6	0	0
300	29.5	8.0	15.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.0
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.17
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	01/02/2022
Weather:	Windy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1022	0.1	0.2	21.0	0	0
After:	1022	0.1	0.2	21.0	0	0

BH402S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.9	0.7	20.7	0	0
60	1.6	0.6	20.7	0	0
90	1.4	0.6	20.8	0	0
120	1.4	0.6	20.8	0	0
150	1.5	0.6	20.8	0	0
180	1.4	0.6	20.8	0	0
240	1.0	0.5	20.9	0	0
300	0.9	0.4	20.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	3.17
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH402D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	0.5	21.0	0	0
60	0.1	0.5	21.0	0	0
90	0.1	0.7	20.9	0	0
120	0.1	0.8	20.9	0	0
150	0.1	0.8	20.9	0	0
180	0.1	0.9	20.8	0	0
240	0.1	1.2	20.8	0	0
300	0.1	1.4	20.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-19.3
60	-18.7
90	-17.8
120	-17.0
150	-16.2
180	-15.4
240	-13.9
300	-12.7

Groundwater monitoring	mbgl
Depth to top of water	4.32
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

BH202	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	5.9	13.8	0	0
60	0.1	6.1	13.5	0	0
90	0.1	6.3	13.2	0	0
120	0.1	6.5	13.0	0	0
150	0.1	6.7	12.8	0	0
180	0.1	6.9	12.5	0	0
240	0.1	7.2	11.4	0	0
300	0.1	7.6	11.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-9.8
60	-7.9
90	-6.6
120	-5.5
150	-5.1
180	-4.6
240	-3.7
300	-3.1

Groundwater monitoring	mbgl
Depth to top of water	4.73
Depth to bottom of BH	-
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	03/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1012	0.0	0.1	20.4	0	0
After:	1015	0.0	0.1	20.8	0	0

BH122	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.4	3.9	17.8	0	0
60	0.0	3.4	18.6	0	0
90	0.0	3.3	18.6	0	0
120	0.0	3.2	18.6	0	0
150	0.0	3.1	18.7	0	0
180	0.0	3.1	18.7	0	0
240	0.0	3.1	18.7	0	0
300	0.0	3.1	18.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14.7
60	-14.0
90	
120	
150	
180	
240	0.0
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	3.46
Depth to bottom of BH	11.43
Sample collected (Y/N)	N
Sample depth	-

BH616	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	31.5	11.7	11.0	0	0
60	27.9	13.1	11.6	0	0
90	24.7	13.1	12.5	0	0
120	23.4	12.9	12.7	0	0
150	22.0	12.5	13.1	0	0
180	22.2	12.5	13.1	0	0
240	18.7	10.9	14.4	0	0
300	18.6	10.9	14.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.70
Depth to bottom of BH	5.00
Sample collected (Y/N)	N
Sample depth	-

BH617	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	4.3	2.2	17.4	0	0
60	6.6	2.7	16.8	0	0
90	5.6	2.7	17.4	0	0
120	4.1	2.4	18.1	0	0
150	3.5	2.3	18.4	0	0
180	3.1	2.1	18.6	0	0
240	2.2	1.7	19.1	0	0
300	1.7	1.4	19.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-3.2
60	-2.1
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.51
Depth to bottom of BH	8.59
Sample collected (Y/N)	N
Sample depth	-

BH114	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	1.9	19.3	0	0
60	0.0	1.8	19.7	0	0
90	0.0	1.6	19.8	0	0
120	0.0	1.6	19.8	0	0
150	0.0	1.6	19.8	0	0
180	0.0	1.5	19.8	0	0
240	0.0	1.4	19.8	0	0
300	0.0	1.4	19.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-6.9
60	-5.3
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.05
Depth to bottom of BH	5.53
Sample collected (Y/N)	N
Sample depth	-

BH615D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.3	20.3	0	0
60	0.0	1.1	20.3	0	0
90	0.0	0.9	20.3	0	0
120	0.0	0.7	20.3	0	0
150	0.0	0.6	20.3	0	0
180	0.0	0.5	20.3	0	0
240	0.0	0.5	20.3	0	0
300	0.0	0.5	20.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.14
Depth to bottom of BH	14.79
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	03/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1012	0.0	0.1	20.4	0	0
After:	1015	0.0	0.1	20.8	0	0

BH615S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	3.6	1.5	16.1	0	0
60	10.7	4.2	12.6	0	0
90	10.6	5.5	12.4	0	0
120	10.3	6.2	12.2	0	0
150	10.0	6.2	12.2	0	0
180	9.8	6.2	12.2	0	0
240	9.5	6.2	12.2	0	0
300	9.4	6.2	12.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.12
Depth to bottom of BH	5.89
Sample collected (Y/N)	N
Sample depth	-

BH647A	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.4	6.9	16.6	0	0
60	0.4	3.6	18.3	11	0
90	0.5	2.6	18.6	11	0
120	0.5	1.6	18.8	11	0
150	0.5	1.2	18.9	12	0
180	0.5	0.9	19.0	12	0
240	0.5	0.6	19.1	12	0
300	0.5	0.5	19.1	12	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	11.14
Depth to bottom of BH	17.75
Sample collected (Y/N)	N
Sample depth	-

BH301	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.9	4.5	13.6	0	0
60	1.0	3.5	13.3	0	0
90	1.0	3.5	13.7	0	0
120	0.9	3.0	13.9	0	0
150	0.8	2.7	14.5	0	0
180	0.7	2.4	15.5	0	0
240	0.4	2.0	17.2	0	0
300	0.4	1.9	17.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	7.67
Depth to bottom of BH	12.60
Sample collected (Y/N)	N
Sample depth	-

BH612	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.3	4.3	11.2	0	0
60	0.3	4.3	11.2	0	0
90	0.3	4.9	10.1	0	0
120	0.3	5.9	9.5	0	0
150	0.4	6.2	9.1	0	0
180	0.4	6.7	8.3	0	0
240	0.4	8.2	6.2	0	0
300	0.4	10.0	3.9	0	0
360	0.3	11.7	1.8	0	0
420	0.3	12.6	0.7	0	0
480	0.3	13.1	0.2	0	0
540	0.3	13.0	0.2	0	0
600	0.3	13.0	0.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	5.61
Sample collected (Y/N)	N
Sample depth	-

BH648	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	7.2	2.3	17.7	0	0
60	8.8	2.8	17.5	0	0
90	8.5	3.1	17.5	0	0
120	7.6	3.1	17.8	0	0
150	7.9	3.3	17.6	0	0
180	7.5	3.3	17.8	0	0
240	6.4	3.1	18.1	0	0
300	6.3	3.0	18.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	11.07
Depth to bottom of BH	11.52
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	03/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1012	0.0	0.1	20.4	0	0
After:	1015	0.0	0.1	20.8	0	0

BHW1	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	80.4	14.0	0.7	0	0
60	79.1	18.3	0.2	0	0
90	77.6	19.8	0.1	0	0
120	77.2	20.1	0.1	0	0
150	77.1	20.2	0.1	0	0
180	77.2	20.3	0.1	0	0
240	77.2	20.2	0.1	0	0
300	77.2	20.2	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	6.10
Depth to bottom of BH	10.19
Sample collected (Y/N)	N
Sample depth	-

BH211	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	66.6	31.8	0.0	0	0
60	65.0	33.1	0.0	0	0
90	63.8	34.3	0.0	0	0
120	63.5	34.5	0.0	0	0
150	63.5	34.5	0.0	0	0
180	63.5	34.6	0.0	0	0
240	63.4	34.6	0.0	0	0
300	63.5	34.6	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	14.16
Depth to bottom of BH	15.14
Sample collected (Y/N)	N
Sample depth	-

BH611A	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	14.7	16.5	13.3	0	0
60	9.1	10.5	14.9	0	0
90	9.7	8.1	15.1	0	0
120	10.9	7.8	14.6	0	0
150	12.2	8.3	13.9	0	0
180	13.7	9.3	13.0	0	0
240	15.2	10.8	12.1	0	0
300	15.7	11.3	11.8	0	0
360	15.9	11.4	11.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	13.14
Depth to bottom of BH	13.32
Sample collected (Y/N)	N
Sample depth	-

BH03	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	66.0	29.4	0.3	0	0
60	38.6	24.4	7.2	0	0
90	31.4	20.9	9.2	0	0
120	39.2	21.7	6.5	0	0
150	14.4	11.9	15.0	0	0
180	16.3	13.6	14.7	0	0
240	16.6	13.9	14.5	0	0
300	16.5	13.8	14.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	*
Depth to bottom of BH	
Sample collected (Y/N)	N
Sample depth	-

*did not dip as did not want to damage meter

BH649B	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.9	2.3	18.2	0	0
60	1.1	2.3	18.2	2	0
90	1.1	2.4	18.1	2	0
120	1.1	2.5	18.1	1	0
150	1.1	2.5	18.1	1	0
180	1.1	2.5	18.1	1	0
240	1.1	2.6	18.0	1	0
300	1.1	2.6	18.0	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	-2.0
60	-1.9
90	
120	
150	
180	
240	0.0
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	14.60
Depth to bottom of BH	18.78
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	03/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1012	0.0	0.1	20.4	0	0
After:	1015	0.0	0.1	20.8	0	0

BH02	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	7.5	5.5	10.5	0	0
60	10.7	8.7	9.5	0	0
90	10.6	10.2	9.3	0	0
120	10.6	11.0	9.2	0	0
150	10.5	11.3	9.2	0	0
180	10.6	11.5	9.2	0	0
240	10.6	11.6	9.2	0	0
300	10.6	11.6	9.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-12.7
60	-12.4
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	11.09
Depth to bottom of BH	14.91
Sample collected (Y/N)	N
Sample depth	-

BH113	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	4.6	18.1	0	0
60	0.0	4.2	18.7	0	0
90	0.0	3.6	19.0	0	0
120	0.0	2.7	19.7	0	0
150	0.0	2.1	19.8	0	0
180	0.0	1.6	19.9	0	0
240	0.0	1.1	20.1	0	0
300	0.0	0.9	20.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-0.2
60	-0.1
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	12.20
Depth to bottom of BH	16.43
Sample collected (Y/N)	N
Sample depth	-

BH302	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	40.5	16.3	2.0	0	0
60	40.1	21.8	1.7	0	0
90	38.3	26.1	1.5	0	0
120	38.1	26.6	1.4	0	0
150	38.1	26.9	1.4	0	0
180	38.2	27.0	1.3	0	0
240	38.3	27.1	1.2	0	0
300	38.4	27.2	1.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.0
60	0.0
90	0.0
120	0.0
150	0.0
180	0.0
240	0.0
300	0.0

Groundwater monitoring	mbgl
Depth to top of water	9.55
Depth to bottom of BH	16.43
Sample collected (Y/N)	N
Sample depth	-

BH117	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	14.6	19.7	2.2	0	0
60	10.5	18.0	2.3	0	0
90	10.4	17.6	2.3	0	0
120	10.4	17.4	2.3	0	0
150	10.4	17.4	2.3	0	0
180	10.4	17.4	2.3	0	0
240	10.4	17.4	2.3	0	0
300	10.4	17.4	2.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	5.96
Sample collected (Y/N)	N
Sample depth	-

BH645	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	73.4	22.3	0.1	0	0
60	75.8	22.3	0.0	0	0
90	75.9	22.4	0.0	0	0
120	75.9	22.6	0.0	0	0
150	75.9	22.6	0.0	0	0
180	75.5	22.6	0.0	0	0
240	75.5	23.7	0.0	0	0
300	75.3	23.5	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.23
Depth to bottom of BH	7.37
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	03/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1012	0.0	0.1	20.4	0	0
After:	1015	0.0	0.1	20.8	0	0

BH214	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	69.3	29.0	0.0	0	0
60	68.5	30.2	0.0	0	0
90	68.3	30.4	0.0	0	0
120	68.4	30.5	0.0	0	0
150	68.4	30.5	0.0	0	0
180	68.4	30.4	0.0	0	0
240	68.4	30.4	0.0	0	0
300	68.5	30.4	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	6.10
Depth to bottom of BH	9.23
Sample collected (Y/N)	N
Sample depth	-

BH613	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.3	0.5	18.9	0	0
60	1.9	0.9	18.8	0	0
90	1.8	1.0	18.8	0	0
120	1.4	1.0	19.2	0	0
150	1.2	0.9	19.4	0	0
180	0.8	0.9	19.7	0	0
240	0.2	0.6	20.2	0	0
300	0.0	0.5	20.4	0	0
360	0.0	0.5	20.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.70
Depth to bottom of BH	2.70
Sample collected (Y/N)	N
Sample depth	-

BH614	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.9	2.5	0.8	0	0
60	2.4	2.8	0.2	0	0
90	2.5	3.0	0.2	0	0
120	2.5	3.2	0.1	0	0
150	2.5	3.3	0.1	0	0
180	2.5	3.3	0.1	0	0
240	2.5	3.4	0.1	0	0
300	2.5	3.5	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-7.6
60	-6.0
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.79
Depth to bottom of BH	3.49
Sample collected (Y/N)	N
Sample depth	-

BH210	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.7	18.1	0	0
60	0.0	0.9	18.0	0	0
90	0.0	1.2	17.9	0	0
120	0.0	1.4	17.9	0	0
150	0.0	1.5	17.9	0	0
180	0.0	1.7	17.9	0	0
240	0.0	1.8	17.9	0	0
300	0.0	1.9	17.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.14
Depth to bottom of BH	4.50
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	04/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	2.2	20.2	0	0
After:	1024	0.0	1.2	21.5	0	0

BH410	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.3	19.9	1	0
60	0.0	1.9	20.0	0	0
90	0.0	2.3	19.9	0	0
120	0.0	2.5	19.8	0	0
150	0.0	2.7	19.8	0	0
180	0.0	2.8	19.8	0	0
240	0.0	2.8	19.8	0	0
300	0.0	2.8	19.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-20.6
60	-16.3
90	
120	
150	
180	
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	5.00
Depth to bottom of BH	10.36
Sample collected (Y/N)	N
Sample depth	-

BH06	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	24.9	3.6	13.2	0	0
60	26.5	4.4	12.8	0	0
90	26.5	4.9	12.7	0	0
120	27.3	5.3	12.4	0	0
150	29.6	5.8	11.7	0	0
180	32.0	6.2	11.1	0	0
240	37.7	7.2	9.6	0	0
300	44.8	8.4	7.8	0	0
360	49.8	9.3	6.6	0	0
420	55.3	10.2	5.4	0	0
480	58.9	10.8	4.7	0	0
540	64.1	11.7	3.7	0	0
600	66.7	12.1	3.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-2.7
60	-1.4
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.31
Depth to bottom of BH	7.47
Sample collected (Y/N)	N
Sample depth	-

BH106S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.3	20.2	0	0
60	0.0	0.3	20.2	0	0
90	0.0	0.3	20.2	0	0
120	0.0	0.3	20.2	0	0
150	0.0	0.3	20.2	0	0
180	0.0	0.3	20.2	0	0
240	0.0	0.3	20.2	0	0
300	0.0	0.3	20.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	0.30
Sample collected (Y/N)	N
Sample depth	-

BH106D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.2	20.3	0	0
60	0.0	0.2	20.3	0	0
90	0.0	0.2	20.3	0	0
120	0.0	0.2	20.3	0	0
150	0.0	0.2	20.3	0	0
180	0.0	0.2	20.3	0	0
240	0.0	0.2	20.3	0	0
300	0.0	0.2	20.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	7.45
Sample collected (Y/N)	N
Sample depth	-

BH409	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.4	0.9	15.8	0	0
60	0.4	0.9	15.8	0	0
90	0.4	1.4	16.6	0	0
120	0.3	1.4	17.6	0	0
150	0.2	1.2	18.4	0	0
180	0.1	1.1	18.7	0	0
240	0.1	1.0	18.9	0	0
300	0.1	0.9	19.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	5.07
Depth to bottom of BH	8.90
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	04/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	2.2	20.2	0	0
After:	1024	0.0	1.2	21.5	0	0

BH610S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	47.2	26.3	4.4	0	0
60	50.9	25.6	3.8	0	0
90	53.3	25.8	3.4	0	0
120	53.3	25.8	3.4	0	0
150	54.0	25.7	3.2	0	0
180	55.5	26.4	2.8	0	0
240	56.9	26.7	2.5	0	0
300	58.8	27.4	2.1	0	0
360	60.2	28.2	1.7	0	0
420	61.5	28.7	1.3	0	0
480	62.5	29.2	1.1	0	0
540	64.0	29.3	0.8	0	0
600	64.8	29.8	0.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.24
Depth to bottom of BH	5.78
Sample collected (Y/N)	N
Sample depth	-

BH610D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.1	20.8	0	0
60	0.0	0.1	20.8	0	0
90	0.0	0.1	20.9	0	0
120	0.0	0.1	21.0	0	0
150	0.0	0.1	21.1	0	0
180	0.0	0.1	21.2	0	0
240	0.0	0.1	21.3	0	0
300	0.0	0.1	21.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.18
Depth to bottom of BH	9.71
Sample collected (Y/N)	N
Sample depth	-

BH04	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	3.2	19.1	11	0
60	0.0	3.8	19.0	3	0
90	0.0	4.3	18.8	0	0
120	0.0	4.6	18.8	0	0
150	0.0	4.8	18.8	0	0
180	0.0	4.9	18.7	0	0
240	0.0	4.9	18.7	0	0
300	0.0	4.9	18.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-18.2
60	-16.6
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.31
Depth to bottom of BH	7.03
Sample collected (Y/N)	N
Sample depth	-

BH207	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	75.6	10.4	0.3	0	0
60	75.4	11.9	0.1	0	0
90	75.4	11.9	0.1	0	0
120	75.2	12.2	0.1	0	0
150	75.3	12.2	0.1	0	0
180	75.3	12.3	0.1	0	0
240	75.6	12.3	0.0	0	0
300	75.8	12.3	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.14
Depth to bottom of BH	6.42
Sample collected (Y/N)	N
Sample depth	-

BH651	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	8.2	6.4	17.4	0	0
60	4.5	11.9	18.5	0	0
90	4.4	11.9	18.6	0	0
120	4.4	12.2	18.8	0	0
150	4.4	12.2	18.8	0	0
180	4.4	12.3	18.8	0	0
240	4.4	12.3	18.9	0	0
300	4.4	12.3	19.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-11.9
60	-11.2
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.12
Depth to bottom of BH	8.13
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	04/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	2.2	20.2	0	0
After:	1024	0.0	1.2	21.5	0	0

BH403	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	55.7	26.2	0.0	0	0
60	59.7	27.4	0.0	0	0
90	59.7	28.2	0.0	0	0
120	59.4	28.2	0.0	0	0
150	59.4	28.2	0.0	0	0
180	59.4	28.2	0.0	0	0
240	59.4	28.2	0.0	0	0
300	59.4	28.2	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-7.5
60	-7.1
90	
120	
150	
180	
240	0.1
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.59
Depth to bottom of BH	11.17
Sample collected (Y/N)	N
Sample depth	-

BH107	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	2.8	13.4	12.2	0	0
60	2.8	13.7	12.1	0	0
90	2.8	13.9	12.1	0	0
120	2.8	13.9	12.1	0	0
150	2.8	13.9	12.1	0	0
180	2.9	14.0	12.1	0	0
240	2.9	14.0	12.1	0	0
300	2.9	14.1	12.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-15.3
60	-12.6
90	
120	
150	
180	
240	0.0
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.38
Depth to bottom of BH	8.23
Sample collected (Y/N)	N
Sample depth	-

BH411	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.1	5.5	18.9	0	0
60	0.0	3.5	18.3	0	0
90	0.0	3.1	18.3	0	0
120	0.0	2.7	18.4	0	0
150	0.0	2.6	18.4	0	0
180	0.0	2.5	18.5	0	0
240	0.0	2.4	18.6	0	0
300	0.0	2.4	18.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.0
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.98
Depth to bottom of BH	7.06
Sample collected (Y/N)	N
Sample depth	-

BH206	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	37.0	10.6	4.6	0	0
60	39.6	13.6	3.9	0	0
90	38.8	14.8	4.0	0	0
120	38.2	15.0	4.1	0	0
150	38.0	15.0	4.2	0	0
180	37.7	15.0	4.3	0	0
240	37.6	15.0	4.3	0	0
300	37.7	15.0	4.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.0
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.83
Depth to bottom of BH	7.24
Sample collected (Y/N)	N
Sample depth	-

BH404	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	4.0	13.7	7.4	0	0
60	0.0	14.2	7.7	0	0
90	0.0	14.3	7.7	0	0
120	0.0	14.2	7.7	0	0
150	0.0	14.2	7.7	0	0
180	0.0	14.2	7.7	0	0
240	0.0	14.2	7.6	0	0
300	0.0	14.2	7.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14.2
60	-13.1
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	6.12
Depth to bottom of BH	15.38
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	04/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	2.2	20.2	0	0
After:	1024	0.0	1.2	21.5	0	0

BH652	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	25.9	14.9	0.2	0	0
60	25.9	14.9	0.1	0	0
90	25.7	18.4	0.1	0	0
120	25.7	18.6	0.0	0	0
150	25.6	18.7	0.0	0	0
180	26.0	18.8	0.0	0	0
240	26.7	18.9	0.0	0	0
300	27.1	18.9	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	6.25
Depth to bottom of BH	6.80
Sample collected (Y/N)	N
Sample depth	-

BH634	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	2.7	5.9	18.1	0	0
60	0.2	4.5	19.2	0	0
90	0.1	4.1	19.4	0	0
120	0.1	3.8	19.5	0	0
150	0.1	3.7	19.5	0	0
180	0.1	3.6	19.6	0	0
240	0.0	3.5	19.6	0	0
300	0.0	3.5	19.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-12.9
60	-12.3
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	5.00
Depth to bottom of BH	8.76
Sample collected (Y/N)	N
Sample depth	-

BH402S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.4	1.3	20.2	0	0
60	1.4	1.3	20.2	0	0
90	1.4	0.9	20.3	0	0
120	1.4	0.9	20.3	0	0
150	1.4	0.9	20.3	0	0
180	1.4	0.8	20.4	0	0
240	1.3	0.8	20.4	0	0
300	1.3	0.8	20.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.12
Depth to bottom of BH	4.63
Sample collected (Y/N)	N
Sample depth	-

BH402D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.6	20.7	0	0
60	0.0	0.7	20.7	0	0
90	0.0	0.7	20.7	0	0
120	0.0	0.8	20.7	0	0
150	0.0	1.0	20.6	0	0
180	0.0	1.3	20.5	0	0
240	0.0	2.2	20.2	0	0
300	0.0	3.1	20.0	0	0
360	0.1	4.0	19.7	0	0
420	0.1	5.1	19.4	0	0
480	0.1	5.0	19.1	0	0
540	0.1	5.2	18.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-19.4
60	-16.1
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.20
Depth to bottom of BH	10.49
Sample collected (Y/N)	N
Sample depth	-

BH401	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.3	6.4	19.1	0	0
60	0.1	3.6	19.8	0	0
90	0.1	2.4	20.1	0	0
120	0.1	1.9	20.3	0	0
150	0.0	1.5	20.3	0	0
180	0.0	1.3	20.4	0	0
240	0.0	1.0	20.5	0	0
300	0.0	0.9	20.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-4.8
60	-3.9
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.85
Depth to bottom of BH	9.67
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	04/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	2.2	20.2	0	0
After:	1024	0.0	1.2	21.5	0	0

BH105	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.9	20.4	0	0
60	0.0	0.7	20.5	0	0
90	0.0	0.5	20.5	0	0
120	0.0	0.4	20.5	0	0
150	0.0	0.4	20.5	0	0
180	0.0	0.3	20.6	0	0
240	0.0	0.3	20.6	0	0
300	0.0	0.2	20.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	4.35
Depth to bottom of BH	9.39
Sample collected (Y/N)	N
Sample depth	-

BH633	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.4	0.4	19.9	0	0
60	0.4	0.4	20.0	0	0
90	0.3	0.4	20.1	0	0
120	0.2	0.4	20.2	0	0
150	0.1	0.4	20.3	0	0
180	0.1	0.4	20.3	0	0
240	0.0	0.3	20.3	0	0
300	0.0	0.3	20.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.87
Depth to bottom of BH	9.58
Sample collected (Y/N)	N
Sample depth	-

BH215	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	67.0	31.3	0.0	0	0
60	66.1	32.8	0.0	0	0
90	65.8	33.2	0.0	0	0
120	65.8	33.3	0.0	0	0
150	65.8	33.3	0.0	0	0
180	65.8	33.3	0.0	0	0
240	65.8	33.3	0.0	0	0
300	65.8	33.3	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	1.3
60	1.3
90	1.3
120	1.3
150	1.3
180	1.3
240	1.3
300	1.3

Groundwater monitoring	mbgl
Depth to top of water	2.68
Depth to bottom of BH	4.71
Sample collected (Y/N)	N
Sample depth	-

BH213	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	41.1	26.5	6.3	0	0
60	44.8	26.8	5.1	0	0
90	44.6	27.1	5.2	0	0
120	46.3	27.8	4.7	0	0
150	46.5	27.8	4.7	0	0
180	43.1	26.6	5.7	0	0
240	43.0	26.2	5.7	0	0
300	43.2	26.4	5.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.5
60	0.6
90	0.6
120	0.6
150	0.6
180	0.6
240	0.6
300	0.6

Groundwater monitoring	mbgl
Depth to top of water	2.40
Depth to bottom of BH	6.45
Sample collected (Y/N)	N
Sample depth	-

BH303	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.2	3.1	17.0	0	0
60	1.8	4.1	16.4	0	0
90	1.9	4.6	16.2	0	0
120	1.9	5.0	16.1	0	0
150	2.0	5.2	16.0	0	0
180	2.0	5.4	15.9	0	0
240	2.2	5.9	15.3	0	0
300	2.6	7.0	14.4	0	0
360	2.9	8.0	13.6	0	0
420	3.4	9.5	12.4	0	0
480	3.6	10.2	12.1	0	0
540	3.6	10.4	11.9	0	0
600	3.6	10.5	11.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	11.37
Depth to bottom of BH	12.89
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	04/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	2.2	20.2	0	0
After:	1024	0.0	1.2	21.5	0	0

BH646	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	60.8	21.1	0.5	0	0
60	60.1	23.7	0.1	0	0
90	59.1	24.6	0.1	0	0
120	59.0	24.8	0.1	0	0
150	58.9	24.8	0.1	0	0
180	58.9	24.9	0.1	0	0
240	58.7	24.8	0.0	0	0
300	58.7	24.8	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.75
Depth to bottom of BH	4.12
Sample collected (Y/N)	N
Sample depth	-

BH209	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	61.8	11.3	0.5	0	0
60	62.1	13.6	0.3	0	0
90	60.9	15.2	0.2	0	0
120	60.6	15.8	0.1	0	0
150	61.1	16.0	0.1	0	0
180	62.5	16.1	0.1	0	0
240	65.4	16.3	0.1	0	0
300	65.1	16.3	0.1	0	0
360	65.2	16.3	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-4.0
60	-3.3
90	
120	
150	
180	
240	
	0.0
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.16
Depth to bottom of BH	4.95
Sample collected (Y/N)	N
Sample depth	-

BH121	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.9	19.3	0	0
60	0.0	3.0	18.9	0	0
90	0.0	3.6	18.8	0	0
120	0.0	3.8	18.8	0	0
150	0.0	4.0	18.7	0	0
180	0.0	4.1	18.7	0	0
240	0.0	4.2	18.7	0	0
300	0.0	4.3	18.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-16.2
60	-15.4
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.84
Depth to bottom of BH	5.48
Sample collected (Y/N)	N
Sample depth	-

BH208	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.9	5.9	18.9	0	0
60	0.1	3.7	20.0	0	0
90	0.0	2.2	20.4	0	0
120	0.0	1.9	20.5	0	0
150	0.0	1.5	20.7	0	0
180	0.0	1.2	20.7	0	0
240	0.0	0.9	20.8	0	0
300	0.0	0.7	20.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.75
Depth to bottom of BH	3.32
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	07/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	0.8	19.7	0	0
After:	1021	0.0	0.1	21.1	0	0

BH05	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.6	20.9	0	0
60	0.0	0.5	21.0	0	0
90	0.0	0.5	21.0	0	0
120	0.0	0.4	21.0	0	0
150	0.0	0.4	21.0	0	0
180	0.0	0.4	21.1	0	0
240	0.0	0.3	21.1	0	0
300	0.0	0.3	21.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.29
Depth to bottom of BH	6.12
Sample collected (Y/N)	N
Sample depth	-

BH219	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	2.4	1.7	15.0	0	0
60	3.3	2.9	14.2	0	0
90	3.3	3.6	14.1	0	0
120	3.2	4.3	13.9	0	0
150	3.2	4.5	13.9	0	0
180	3.2	4.7	13.9	0	0
240	3.2	4.8	13.8	0	0
300	3.2	4.9	13.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-7.3
60	-6.1
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.25
Depth to bottom of BH	5.78
Sample collected (Y/N)	N
Sample depth	-

BH102	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.7	20.1	0	0
60	0.0	0.6	20.1	0	0
90	0.0	0.6	20.1	0	0
120	0.0	1.1	19.2	0	0
150	0.0	1.6	18.4	0	0
180	0.0	2.5	17.6	0	0
240	0.0	3.3	17.3	0	0
300	0.0	3.2	17.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-16.9
60	-14.3
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.33
Depth to bottom of BH	8.06
Sample collected (Y/N)	N
Sample depth	-

BH104	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.8	20.4	0	0
60	0.0	0.8	20.4	0	0
90	0.0	0.6	20.5	0	0
120	0.0	0.6	20.5	0	0
150	0.0	0.5	20.6	0	0
180	0.0	0.4	20.6	0	0
240	0.0	0.3	20.6	0	0
300	0.0	0.3	20.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-2.0
60	-1.5
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	3.19
Depth to bottom of BH	6.65
Sample collected (Y/N)	N
Sample depth	-

BH621	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.0	19.5	0	0
60	0.0	1.4	19.2	0	0
90	0.0	1.7	19.2	0	0
120	0.0	1.9	19.1	0	0
150	0.0	2.0	19.1	0	0
180	0.0	2.1	19.1	0	0
240	0.0	2.2	19.0	0	0
300	0.0	2.3	18.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-17.9
60	-17.1
90	
120	
150	
180	
240	0.0
300	0.0

Groundwater monitoring	mbgl
Depth to top of water	3.14
Depth to bottom of BH	8.18
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	07/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	0.8	19.7	0	0
After:	1021	0.0	0.1	21.1	0	0

BH635D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.4	0.9	20.0	0	0
60	0.4	0.9	20.0	0	0
90	0.5	1.0	20.0	0	0
120	0.5	1.0	19.9	0	0
150	0.5	0.9	19.9	0	0
180	0.4	0.9	19.9	0	0
240	0.4	0.8	20.1	0	0
300	0.3	0.8	20.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-7.4
60	-5.9
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	3.40
Depth to bottom of BH	8.70
Sample collected (Y/N)	N
Sample depth	-

BH635S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.4	1.2	20.5	0	0
60	0.6	1.3	20.2	0	0
90	0.8	1.6	19.7	0	0
120	0.9	1.8	19.4	0	0
150	1.0	2.0	19.2	0	0
180	1.0	2.1	19.0	0	0
240	0.9	2.0	19.0	0	0
300	0.8	1.9	19.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-13.9
60	-12.3
90	
120	
150	
180	
240	0.0
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.26
Depth to bottom of BH	7.31
Sample collected (Y/N)	N
Sample depth	-

BH636S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	27.4	12.5	4.9	2	0
60	28.4	17.4	3.9	2	0
90	27.9	19.4	3.8	2	0
120	27.6	20.1	3.7	1	0
150	27.6	20.3	3.7	1	0
180	27.6	20.4	3.6	1	0
240	27.5	20.5	3.6	1	0
300	27.8	20.6	3.6	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	4.34
Depth to bottom of BH	5.89
Sample collected (Y/N)	N
Sample depth	-

BH636D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1.6	6.7	17.8	42	0
60	0.7	4.0	18.7	41	0
90	0.5	2.9	19.1	41	0
120	0.3	2.1	19.3	40	0
150	0.2	1.6	19.4	39	0
180	0.2	1.3	19.6	39	0
240	0.1	1.0	19.6	39	0
300	0.0	0.9	19.6	39	0

Flow rates	
Time (sec)	Flow (l/h)
30	-15.8
60	-14.9
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	3.96
Depth to bottom of BH	12.44
Sample collected (Y/N)	N
Sample depth	-

BH216	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.0	21.0	0	0
60	drawing water up during gas readings				
90					
120					
150					
180					
240					
300					

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	0.20
Depth to bottom of BH	5.85
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	07/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	0.8	19.7	0	0
After:	1021	0.0	0.1	21.1	0	0

BH217	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.8	19.7	0	0
60	0.0	0.6	19.9	0	0
90	0.0	0.5	20.0	0	0
120	0.0	0.4	20.2	0	0
150	0.0	0.4	21.2	0	0
180	0.0	0.3	21.2	0	0
240	0.0	0.3	21.5	0	0
300	0.0	0.3	21.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	0.98
Depth to bottom of BH	6.00
Sample collected (Y/N)	N
Sample depth	-

BH111	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.4	20.7	0	0
60	0.0	0.5	20.6	0	0
90	0.0	0.5	20.5	0	0
120	0.0	0.6	20.5	0	0
150	0.0	0.6	20.5	0	0
180	0.0	0.6	20.5	0	0
240	0.0	0.6	20.5	0	0
300	0.0	0.6	20.5	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.95
Depth to bottom of BH	9.66
Sample collected (Y/N)	N
Sample depth	-

BH218	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.7	1.0	20.5	0	0
60	0.7	1.2	20.8	0	0
90	0.6	1.2	21.1	0	0
120	0.4	1.1	21.2	0	0
150	0.5	1.0	21.1	0	0
180	0.5	0.9	21.2	0	0
240	0.6	0.8	21.3	0	0
300	0.7	0.8	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	1.85
Depth to bottom of BH	3.54
Sample collected (Y/N)	N
Sample depth	-

BH112	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.7	0.8	21.1	0	0
60	Drawing water up during gas readings				
90					
120					
150					
180					
240					
300					

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	0.30
Depth to bottom of BH	5.36
Sample collected (Y/N)	N
Sample depth	-

BH638	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.2	0.8	20.0	0	0
60	0.2	0.7	19.4	0	0
90	0.2	0.6	18.4	0	0
120	0.2	0.6	17.9	0	0
150	Drawing water up during gas readings				
180					
240					
300					

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	0.68
Depth to bottom of BH	5.74
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	07/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	0.8	19.7	0	0
After:	1021	0.0	0.1	21.1	0	0

BH637	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	38.8	9.4	1.6	0	0
60	40.9	12.7	0.4	0	0
90	40.9	13.6	0.2	0	0
120	40.5	14.1	0.3	0	0
150	40.6	14.1	0.2	0	0
180	40.7	14.3	0.1	0	0
240	40.6	14.4	0.2	0	0
300	40.9	14.4	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	3.08
Depth to bottom of BH	6.31
Sample collected (Y/N)	N
Sample depth	-

BH108	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	2.1	6.1	17.9	0	0
60	0.0	3.4	19.6	0	0
90	0.0	2.8	19.8	0	0
120	0.0	2.1	20.1	0	0
150	0.0	1.6	20.2	0	0
180	0.0	1.3	20.3	0	0
240	0.0	1.2	20.3	0	0
300	Drawing water up during gas readings				

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	1.37
Depth to bottom of BH	4.17
Sample collected (Y/N)	N
Sample depth	-

BH618D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	6.2	3.2	15.3	0	0
60	0.4	2.9	14.2	0	0
90	0.5	3.5	11.3	0	0
120	0.6	4.1	9.5	0	0
150	0.6	4.5	8.4	0	0
180	0.7	5.0	7.5	0	0
240	0.7	5.5	6.9	0	0
300	0.7	5.7	6.7	0	0
360	0.7	5.7	6.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-19.6
60	-18.9
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	3.31
Depth to bottom of BH	8.19
Sample collected (Y/N)	N
Sample depth	-

BH618S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	22.7	3.2	2.4	0	0
60	23.0	3.4	2.2	0	0
90	24.1	3.9	1.3	0	0
120	24.1	3.9	1.3	0	0
150	24.2	3.9	1.2	0	0
180	24.4	4.0	1.1	0	0
240	24.7	4.1	0.8	0	0
300	24.9	4.1	0.7	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.0
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	2.83
Sample collected (Y/N)	N
Sample depth	-

BH221	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	59.3	3.3	0.1	0	0
60	66.5	2.7	0.0	0	0
90	66.7	2.5	0.0	0	0
120	66.6	2.4	0.0	0	0
150	66.3	2.4	0.0	0	0
180	66.2	2.4	0.0	0	0
240	65.8	2.3	0.0	0	0
300	65.5	2.3	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-8.9
60	-8.3
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.02
Depth to bottom of BH	6.31
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	07/03/2022
Weather:	Clear
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1024	0.0	0.8	19.7	0	0
After:	1021	0.0	0.1	21.1	0	0

BH619S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	23.8	2.8	1.1	0	0
60	26.0	3.7	0.2	0	0
90	26.1	4.1	0.2	0	0
120	26.0	4.5	0.1	0	0
150	26.0	4.7	0.1	0	0
180	25.9	4.8	0.1	0	0
240	26.0	4.8	0.1	0	0
300	26.0	4.8	0.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.55
Depth to bottom of BH	5.62
Sample collected (Y/N)	N
Sample depth	-

BH619D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	11.1	3.3	12.5	0	0
60	10.2	2.9	12.8	0	0
90	10.2	2.6	12.9	0	0
120	10.3	2.7	11.3	0	0
150	15.2	2.9	9.6	0	0
180	18.9	3.4	7.8	0	0
240	20.8	3.6	6.7	0	0
300	23.9	4.1	5.1	0	0
360	26.1	4.4	4.0	0	0
420	27.7	4.6	3.2	0	0
480	28.9	4.8	2.5	0	0
540	30.0	5.0	2.0	0	0
600	30.9	5.1	1.6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.58
Depth to bottom of BH	7.97
Sample collected (Y/N)	N
Sample depth	-

BH620	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	14.1	4.3	2.4	0	0
60	17.6	6.3	1.6	0	0
90	17.6	7.1	1.5	0	0
120	17.6	7.4	1.4	0	0
150	17.7	7.6	1.3	0	0
180	17.8	7.7	1.3	0	0
240	17.8	7.8	1.2	0	0
300	17.9	7.9	1.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.86
Depth to bottom of BH	7.92
Sample collected (Y/N)	N
Sample depth	-

BH205	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	13.0	11.9	0.3	0	0
60	11.7	14.8	0.2	0	0
90	11.6	15.5	0.2	0	0
120	11.6	15.7	0.2	0	0
150	11.6	15.9	0.2	0	0
180	11.6	15.9	0.2	0	0
240	11.6	16.0	0.2	0	0
300	11.6	16.0	0.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-6.6
60	-6.3
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	5.15
Depth to bottom of BH	7.83
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	08/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1002	0.0	0.1	20.5	0	0
After:	998	0.0	0.1	21.0	0	0

BH654S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.3	21.0	0	0
60	0.0	0.3	21.1	0	0
90	0.0	0.3	21.1	0	0
120	0.0	0.3	21.1	0	0
150	0.0	0.2	21.1	0	0
180	0.0	0.2	21.1	0	0
240	0.0	0.2	21.1	0	0
300	0.0	0.2	21.1	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.23
Depth to bottom of BH	4.40
Sample collected (Y/N)	N
Sample depth	-

BH654D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.2	21.2	0	0
60	0.0	0.2	21.2	0	0
90	0.0	0.2	21.2	0	0
120	0.0	0.2	21.2	0	0
150	0.0	0.2	21.2	0	0
180	0.0	0.2	21.2	0	0
240	0.0	0.2	21.2	0	0
300	0.0	0.2	21.2	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	3.21
Depth to bottom of BH	7.90
Sample collected (Y/N)	N
Sample depth	-

BH624S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.2	21.2	0	0
60	0.0	0.2	21.2	0	0
90	0.0	0.2	21.3	0	0
120	0.1	0.2	21.3	0	0
150	0.0	0.2	21.3	0	0
180	0.0	0.2	21.3	0	0
240	0.0	0.2	21.3	0	0
300	0.0	0.2	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.15
Depth to bottom of BH	5.37
Sample collected (Y/N)	N
Sample depth	-

BH653	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	2.1	20.0	0	0
60	0.0	2.1	21.0	0	0
90	0.0	1.8	21.2	0	0
120	0.0	1.4	21.2	0	0
150	0.0	1.3	21.3	0	0
180	0.0	1.1	21.3	0	0
240	0.0	0.8	21.3	0	0
300	0.0	0.7	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	0.77
Depth to bottom of BH	8.28
Sample collected (Y/N)	N
Sample depth	-

BH625	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.7	21.2	0	0
60	0.0	0.7	21.2	0	0
90	0.0	0.6	21.3	0	0
120	0.0	0.4	21.3	0	0
150	0.0	0.4	21.3	0	0
180	0.0	0.4	21.3	0	0
240	0.0	0.3	21.3	0	0
300	0.0	0.3	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.2
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.13
Depth to bottom of BH	8.12
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	08/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1002	0.0	0.1	20.5	0	0
After:	998	0.0	0.1	21.0	0	0

BH201	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.5	21.2	0	0
60	0.0	0.4	21.2	0	0
90	0.0	0.4	21.2	0	0
120	0.0	0.4	21.2	0	0
150	0.0	0.3	21.2	0	0
180	0.0	0.3	21.2	0	0
240	0.0	0.3	21.3	0	0
300	0.0	0.3	21.3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	3.05
Depth to bottom of BH	8.51
Sample collected (Y/N)	N
Sample depth	-

BH101	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	1.0	20.9	0	0
60	0.0	1.0	20.9	0	0
90	0.0	1.0	21.0	0	0
120	0.0	1.0	21.0	0	0
150	0.0	1.0	21.0	0	0
180	0.0	1.1	21.0	0	0
240	0.0	1.1	21.0	0	0
300	0.0	1.2	21.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-20.3
60	-19.5
90	
120	
150	
180	
240	0.1
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	2.45
Depth to bottom of BH	8.59
Sample collected (Y/N)	N
Sample depth	-

BH119	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	3.0	20.0	0	0
60	0.0	5.3	19.4	0	0
90	0.0	6.3	19.2	0	0
120	0.0	6.4	19.2	0	0
150	0.0	6.8	19.1	0	0
180	0.0	7.0	19.1	0	0
240	0.0	7.1	19.0	0	0
300	0.0	7.1	19.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-20.8
60	-19.4
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.63
Depth to bottom of BH	8.60
Sample collected (Y/N)	N
Sample depth	-

BH120	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	2.8	20.6	0	0
60	0.0	2.4	20.7	0	0
90	0.0	2.2	20.7	0	0
120	0.0	2.1	20.8	0	0
150	0.0	2.0	20.8	0	0
180	0.0	2.0	20.8	0	0
240	0.0	2.0	20.8	0	0
300	0.0	2.0	20.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-18.8
60	-17.6
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.27
Depth to bottom of BH	5.05
Sample collected (Y/N)	N
Sample depth	-

BH622	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.3	20.8	0	0
60	0.0	0.4	20.8	0	0
90	0.0	0.4	20.9	0	0
120	0.0	0.3	20.9	0	0
150	0.0	0.3	20.9	0	0
180	0.0	0.3	20.9	0	0
240	0.0	0.3	20.9	0	0
300	0.0	0.2	20.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.3
60	0.3
90	0.3
120	0.3
150	0.3
180	0.3
240	0.3
300	0.3

Groundwater monitoring	mbgl
Depth to top of water	2.38
Depth to bottom of BH	10.65
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	08/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1002	0.0	0.1	20.5	0	0
After:	998	0.0	0.1	21.0	0	0

BH07	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	27.4	11.2	8.2	0	0
60	21.2	8.1	9.2	0	0
90	21.2	7.6	9.3	0	0
120	21.4	7.2	9.3	0	0
150	21.4	7.0	9.3	0	0
180	21.4	6.9	9.4	0	0
240	21.5	6.8	9.4	0	0
300	21.5	6.7	9.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-21.3
60	-20.7
90	
120	
150	
180	
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	3.51
Depth to bottom of BH	6.49
Sample collected (Y/N)	N
Sample depth	-

BH628	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.6	20.5	0	0
60	0.0	0.8	20.4	0	0
90	0.0	0.9	20.4	0	0
120	0.0	1.0	20.4	0	0
150	0.0	1.1	20.4	0	0
180	0.0	1.1	20.4	0	0
240	0.0	1.2	20.4	0	0
300	0.0	1.2	20.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-16.5
60	-15.5
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	2.23
Depth to bottom of BH	7.73
Sample collected (Y/N)	N
Sample depth	-

BH627	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.6	20.6	0	0
60	0.0	0.6	20.7	0	0
90	0.0	0.5	20.7	0	0
120	0.0	0.4	20.8	0	0
150	0.0	0.4	20.8	0	0
180	0.0	0.4	20.8	0	0
240	0.0	0.3	20.8	0	0
300	0.0	0.3	20.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.0
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.48
Depth to bottom of BH	7.24
Sample collected (Y/N)	N
Sample depth	-

BH626	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.0	0.3	20.8	0	0
60	0.0	0.3	20.8	0	0
90	0.0	0.3	20.8	0	0
120	0.0	0.2	20.8	0	0
150	0.0	0.2	20.8	0	0
180	0.0	0.2	20.8	0	0
240	0.0	0.2	20.8	0	0
300	0.0	0.2	20.9	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	-6.1
60	-4.4
90	
120	
150	
180	
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	1.23
Depth to bottom of BH	7.95
Sample collected (Y/N)	N
Sample depth	-

BH623S	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	4.3	9.8	5.4	0	0
60	4.6	10.1	5.1	0	0
90	4.4	10.7	6.5	0	0
120	3.2	9.6	10.5	0	0
150	4.3	11.5	5.1	0	0
180	4.1	11.3	6.9	0	0
240	4.5	11.8	5.5	0	0
300	4.2	12.5	6.8	0	0
360	3.7	10.8	7.3	0	0
420	4.8	12.6	4.2	0	0
480	3.3	10.1	8.5	0	0
540	4.2	11.7	6.6	0	0
600	5.5	13.7	1.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.24
Depth to bottom of BH	4.31
Sample collected (Y/N)	N
Sample depth	-

Groundwater Ground Gas Monitoring

Site:	Mobuoy
Project No.:	21-1339
Date:	08/03/2022
Weather:	Cloudy
Engineer:	[redacted]

Equipment:		Geotechnical Instruments GA5000				
Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1002	0.0	0.1	20.5	0	0
After:	998	0.0	0.1	21.0	0	0

BH203	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	78.8	17.9	0.2	0	0
60	80.2	18.3	0.0	0	0
90	80.3	18.4	0.0	0	0
120	80.2	18.5	0.0	0	0
150	80.2	18.5	0.0	0	0
180	80.2	18.5	0.0	0	0
240	80.3	18.5	0.0	0	0
300	80.3	18.5	0.0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	10.6
60	10.6
90	10.6
120	10.6
150	10.6
180	10.6
240	10.6
300	10.6

Groundwater monitoring	mbgl
Depth to top of water	3.76
Depth to bottom of BH	4.38
Sample collected (Y/N)	N
Sample depth	-

BH632	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	32.5	4.6	12.6	0	0
60	28.1	4.9	13.5	0	0
90	22.9	4.6	14.8	0	0
120	18.7	4.0	16.0	0	0
150	14.1	3.3	17.2	0	0
180	11.3	2.8	17.9	0	0
240	6.6	1.9	19.1	0	0
300	3.7	1.4	19.8	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.2
90	0.2
120	0.2
150	0.2
180	0.2
240	0.2
300	0.2

Groundwater monitoring	mbgl
Depth to top of water	0.76
Depth to bottom of BH	10.24
Sample collected (Y/N)	N
Sample depth	-

BH623D	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0.6	1.2	18.7	0	0
60	0.4	1.2	19.3	0	0
90	0.3	1.1	19.8	0	0
120	33.0	1.1	19.9	0	0
150	0.2	0.9	20.1	0	0
180	0.2	0.8	20.2	0	0
240	0.1	0.8	20.3	0	0
300	0.1	0.7	20.4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0.1
60	0.1
90	0.1
120	0.1
150	0.1
180	0.1
240	0.1
300	0.1

Groundwater monitoring	mbgl
Depth to top of water	4.40
Depth to bottom of BH	11.75
Sample collected (Y/N)	N
Sample depth	-

GROUNDWATER AND GROUND GAS MONITORING

Site:	Mobuoy Phase 2
Project No.:	22-0242
Date:	11/05/2022
Weather:	Cloudy
Gas analyser:	[redacted]

Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1004	0 0	0 1	20 0	0	0
After:	1005	0 0	0 1	20 0	0	0

BH601R	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0 1	4 5	19 2	0	0
60	Drawing water up during readings, pump flooding				
90					
120					
150					
180					
240					
300					

Flow rates	
Time (sec)	Flow (l/h)
30	0 3
60	0 3
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	0 30
Depth to bottom of BH	5 00
Sample collected (Y/N)	N
Sample depth	N/A

BH602R	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	66 5	30 0	0 6	4	0
60	62 5	36 1	0 2	4	0
90	61 0	37 6	0 2	4	0
120	60 8	37 9	0 1	4	0
150	60 7	38 0	0 1	3	0
180	60 8	37 9	0 1	3	0
240	60 7	38 0	0 1	2	0
300	60 6	37 9	0 1	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	1 1
60	1 3
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	1 17
Depth to bottom of BH	4 03
Sample collected (Y/N)	N
Sample depth	N/A

BH603R	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	28 0	25 7	0 2	0	0
60	25 4	23 8	0 1	0	0
90	25 4	23 3	0 1	0	0
120	25 5	23 3	0 1	0	0
150	25 4	23 3	0 0	0	0
180	25 4	23 4	0 0	0	0
240	25 3	23 7	0 0	0	0
300	25 1	23 7	0 0	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 3
60	0 3
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	1 74
Depth to bottom of BH	6 06
Sample collected (Y/N)	N
Sample depth	N/A

BH667	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	40 3	20 2	6 9	0	0
60	38 1	21 2	7 0	0	0
90	34 2	20 5	8 1	0	0
120	27 4	17 4	10 3	0	0
150	29 3	17 1	9 9	0	0
180	27 3	16 7	10 4	0	0
240	24 0	14 9	11 8	0	0
300	22 1	13 3	12 4	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 2
60	0 2
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	Dry
Depth to bottom of BH	11 38
Sample collected (Y/N)	N
Sample depth	N/A

BH668	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	7 9	4 6	17 4	4	0
60	9 4	5 0	17 3	4	0
90	9 5	5 2	17 3	4	0
120	9 4	5 3	17 3	3	0
150	9 4	5 3	17 3	3	0
180	9 4	5 3	17 3	3	0
240	9 4	5 5	17 3	3	0
300	9 3	5 5	17 3	3	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 2
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	13 38
Depth to bottom of BH	16 92
Sample collected (Y/N)	N
Sample depth	N/A

BH670	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	3 1	11 6	5 5	2	0
60	1 1	12 6	5 2	2	0
90	1 0	12 8	5 2	2	0
120	1 0	12 8	5 2	2	1
150	1 0	12 9	5 2	2	1
180	1 0	12 8	5 2	2	1
240	1 0	12 9	5 1	2	1
300	1 1	13 0	5 1	2	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 2
60	0 3
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	11 75
Depth to bottom of BH	15 15
Sample collected (Y/N)	N
Sample depth	N/A

BH671	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0 3	3 8	14 7	3	0
60	0 4	3 7	14 9	3	0
90	0 4	3 6	14 9	2	0
120	0 4	3 6	14 9	3	0
150	0 4	3 6	15 0	3	0
180	0 4	3 6	14 9	2	0
240	0 4	3 6	14 9	2	0
300	0 4	3 6	15 1	2	0

Flow rates	
Time (sec)	Flow (l/h)
30	-1 1
60	-0 4
90	
120	
150	
180	
240	0 1
300	0 2

Groundwater monitoring	mbgl
Depth to top of water	5 61
Depth to bottom of BH	10 68
Sample collected (Y/N)	N
Sample depth	N/A

BH672	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0 3	3 1	16 8	0	0
60	0 3	2 5	17 2	0	0
90	0 3	2 4	17 2	0	0
120	0 3	2 2	17 3	0	0
150	0 3	2 1	17 3	0	0
180	0 3	2 0	17 3	0	0
240	0 3	2 0	17 3	0	0
300	0 3	2 0	17 3	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 0
60	0 1
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	4 66
Depth to bottom of BH	10 27
Sample collected (Y/N)	N
Sample depth	N/A

BH673	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0 0	1 6	15 8	3	1
60	0 0	2 3	14 7	2	1
90	0 0	3 0	14 6	1	1
120	0 0	3 4	14 5	0	1
150	0 0	3 8	14 5	0	1
180	0 0	4 1	14 4	0	1
240	0 0	4 5	14 4	0	1
300	0 0	4 8	14 4	0	1

Flow rates	
Time (sec)	Flow (l/h)
30	-1 7
60	-0 7
90	
120	
150	
180	
240	0 2
300	0 3

Groundwater monitoring	mbgl
Depth to top of water	5 85
Depth to bottom of BH	11 12
Sample collected (Y/N)	N
Sample depth	N/A

BH674	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	10 6	5 8	3 1	4	0
60	14 5	9 7	2 3	7	0
90	14 1	11 3	2 6	9	0
120	13 8	11 7	2 8	10	0
150	13 5	11 8	3 1	11	0
180	13 3	11 7	3 5	12	0
240	13 3	11 7	3 5	12	0
300	12 9	11 5	4 1	13	0

Flow rates	
Time (sec)	Flow (l/h)
30	-14 5
60	-13 7
90	
120	
150	
180	
240	0 1
300	0 1

Groundwater monitoring	mbgl
Depth to top of water	6 96
Depth to bottom of BH	9 18
Sample collected (Y/N)	N
Sample depth	N/A

GROUNDWATER AND GROUND GAS MONITORING

Site:	Mobuoy Phase 2
Project No.:	22-0242
Date:	26/05/2022
Weather:	sunny
Gas analyser:	[redacted]

Ambient Conditions	Barometric Pressure	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
Before:	1010	0 5	0 2	20 4	0	0
After:	1010	0 5	0 2	20 4	0	0

BH601R	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1 7	3 3	20 1	1	2
60	0 6	2 4	20 4	1	2
90	0 4	1 3	20 8	1	2
120	0 4	0 9	20 9	1	2
150	0 4	0 7	20 9	1	2
180	0 4	0 6	20 9	1	2
240	0 4	0 6	20 9	1	2
300	0 4	0 5	20 9	1	2

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 1
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	0 00
Depth to bottom of BH	4 49
Sample collected (Y/N)	N
Sample depth	N/A

BH602R	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	73 9	29 1	0 7	4	0
60	67 1	39 6	0 3	4	0
90	65 1	41 3	0 2	3	0
120	65 1	41 3	0 2	3	0
150	65 1	41 4	0 2	3	0
180	65 0	41 3	0 1	3	0
240	65 1	41 5	0 1	3	0
300	65 1	41 4	0 1	3	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 1
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	0 66
Depth to bottom of BH	3 36
Sample collected (Y/N)	N
Sample depth	N/A

BH603R	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	13 9	22 2	2 9	1	0
60	11 7	20 0	2 8	1	0
90	12 1	19 6	1 5	1	0
120	12 3	19 9	1 2	1	0
150	12 6	20 5	0 5	1	0
180	12 7	21 3	0 1	1	0
240	12 9	21 2	0 1	1	0
300	12 9	21 2	0 1	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 1
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	1 14
Depth to bottom of BH	5 36
Sample collected (Y/N)	N
Sample depth	N/A

BH667	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	18 2	10 9	15 0	1	0
60	11 5	8 2	17 1	1	0
90	10 2	7 1	17 6	1	0
120	12 2	7 2	17 0	1	0
150	10 0	6 4	17 8	1	0
180	9 2	6 0	18 1	1	0
240	8 1	5 3	18 3	1	0
300	7 6	4 7	18 5	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 1
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	14 36
Depth to bottom of BH	15 66
Sample collected (Y/N)	N
Sample depth	N/A

BH668	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	20 1	8 7	15 7	4	0
60	21 1	9 5	14 5	4	0
90	20 9	10 5	14 3	4	0
120	20 8	10 9	14 3	4	0
150	21 1	11 5	14 0	4	0
180	22 1	12 1	13 7	4	0
240	22 8	12 6	13 5	4	0
300	23 2	12 8	13 3	4	0

Flow rates	
Time (sec)	Flow (l/h)
30	1 7
60	2 2
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	12 89
Depth to bottom of BH	16 30
Sample collected (Y/N)	N
Sample depth	N/A

BH670	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	2 9	11 7	5 4	1	0
60	2 1	11 8	5 4	1	0
90	1 6	12 5	5 3	1	0
120	1 5	12 6	5 4	2	0
150	1 3	12 7	5 3	2	0
180	1 1	12 6	5 3	1	0
240	1 1	12 8	5 2	2	0
300	1 1	12 9	5 1	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 2
60	0 2
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	11 78
Depth to bottom of BH	15 15
Sample collected (Y/N)	N
Sample depth	N/A

BH671	Gas readings

Flow rates

Groundwater monitoring	mbgl

Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0 6	2 3	15 7	4	0
60	0 8	3 7	12 5	6	0
90	0 9	4 6	11 8	6	0
120	0 9	5 1	11 6	6	0
150	0 9	5 6	11 6	6	0
180	0 9	5 9	11 6	6	0
240	0 9	6 0	11 5	6	0
300	0 9	6 1	11 6	6	0

Time (sec)	Flow (l/h)
30	1 4
60	1 4
90	1 4
120	1 4
150	1 4
180	1 4
240	1 4
300	1 4

Groundwater monitoring	mbgl
Depth to top of water	5 00
Depth to bottom of BH	9 89
Sample collected (Y/N)	N
Sample depth	N/A

BH672	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	3 2	4 3	15 0	3	0
60	3 6	4 0	15 0	3	0
90	3 7	3 7	15 0	3	0
120	3 7	3 6	15 0	3	0
150	3 7	3 5	15 0	3	0
180	3 7	3 5	15 0	3	0
240	3 7	3 5	15 0	3	0
300	3 8	3 4	15 0	3	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 0
60	0 1
90	0 1
120	0 1
150	0 1
180	0 1
240	0 1
300	0 1

Groundwater monitoring	mbgl
Depth to top of water	4 26
Depth to bottom of BH	9 60
Sample collected (Y/N)	N
Sample depth	N/A

BH673	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1 4	8 6	14 9	5	0
60	0 5	5 8	16 3	5	0
90	0 4	3 7	17 1	4	0
120	0 4	2 8	17 6	4	0
150	0 4	2 5	17 8	3	0
180	0 4	2 2	18 0	3	0
240	0 4	2 0	18 2	3	0
300	0 4	1 8	18 3	3	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 1
90	0 1
120	0 1
150	0 1
180	0 1
240	0 1
300	0 1

Groundwater monitoring	mbgl
Depth to top of water	5 43
Depth to bottom of BH	10 56
Sample collected (Y/N)	N
Sample depth	N/A

BH674	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	13 6	6 7	10 1	3	0
60	13 2	7 9	11 3	4	0
90	12 4	8 1	11 6	5	0
120	11 7	8 0	12 2	6	0
150	11 0	7 6	12 8	7	0
180	10 1	7 0	13 3	7	0
240	8 7	6 4	14 7	7	0
300	8 5	6 1	14 8	7	0

Flow rates	
Time (sec)	Flow (l/h)
30	2 7
60	2 7
90	3 0
120	3 6
150	3 6
180	3 7
240	3 7
300	3 7

Groundwater monitoring	mbgl
Depth to top of water	6 42
Depth to bottom of BH	8 31
Sample collected (Y/N)	N
Sample depth	N/A

BH675	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	1 8	3 1	19 3	13	0
60	1 6	2 4	19 4	12	0
90	1 6	1 9	19 5	12	0
120	1 6	1 8	19 5	12	0
150	1 6	1 7	19 5	11	0
180	1 6	1 6	19 6	11	0
240	1 6	1 5	19 6	11	0
300	1 6	1 5	19 6	11	0

Flow rates	
Time (sec)	Flow (l/h)
30	5 4
60	8 0
90	
120	
150	
180	
240	
300	

Groundwater monitoring	mbgl
Depth to top of water	7 84
Depth to bottom of BH	12 26
Sample collected (Y/N)	N
Sample depth	N/A

BH676	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	7 3	6 7	1 4	1	0
60	8 2	12 9	0 3	1	0
90	8 2	14 7	0 3	1	0
120	8 0	15 9	0 3	1	0
150	8 0	16 3	0 2	1	0
180	8 0	16 4	0 1	1	0
240	7 9	16 4	0 1	1	0
300	7 9	16 4	0 1	1	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 0
60	0 1
90	0 1
120	0 1
150	0 1
180	0 1
240	0 1
300	0 1

Groundwater monitoring	mbgl
Depth to top of water	6 35
Depth to bottom of BH	11 57
Sample collected (Y/N)	N
Sample depth	N/A

BH677	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)
30	0 7	1 6	18 0	1	0
60	0 5	1 4	18 6	1	0
90	0 5	1 3	18 7	0	0
120	0 4	1 1	19 0	0	0
150	0 4	0 9	19 3	0	0
180	0 4	0 7	19 5	0	0
240	0 4	0 7	16 6	0	0
300	0 4	0 6	19 6	0	0

Flow rates	
Time (sec)	Flow (l/h)
30	0 1
60	0 1
90	0 1
120	0 1
150	0 1
180	0 1
240	0 1
300	0 1

Groundwater monitoring	mbgl
Depth to top of water	6 43
Depth to bottom of BH	11 56
Sample collected (Y/N)	N
Sample depth	N/A

BH678	Gas readings				
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)

Flow rates	
Time (sec)	Flow (l/h)

Groundwater monitoring	mbgl

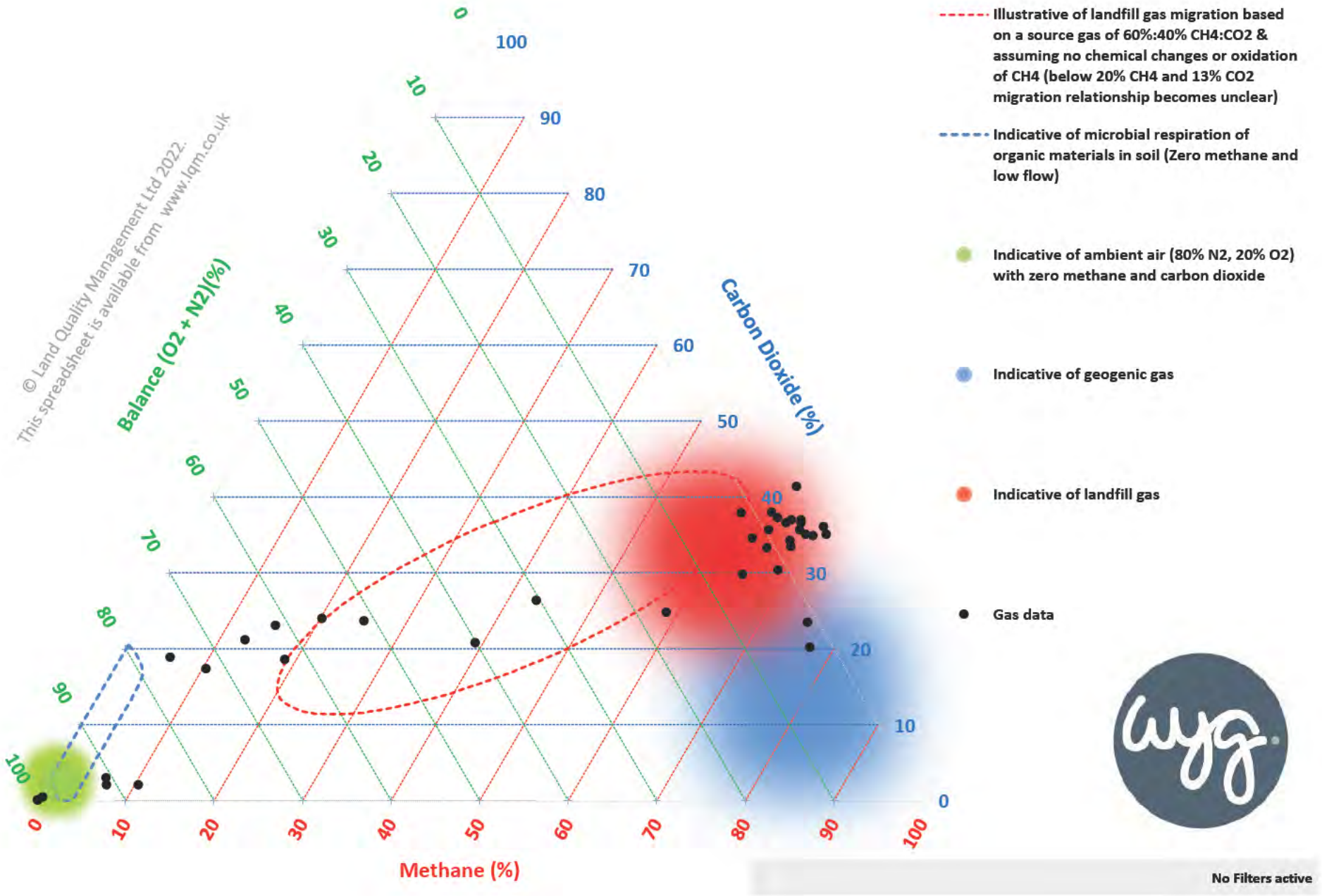
30	2 7	3 6	14 1	4	0	30	0 1
60	2 8	4 2	13 6	3	0	60	0 1
90	2 9	4 9	12 5	3	0	90	0 1
120	3 2	5 8	11 4	3	0	120	0 1
150	3 4	6 4	10 7	3	0	150	0 1
180	3 5	7 4	9 9	2	0	180	0 1
240	3 6	8 6	9 2	2	0	240	0 1
300	3 7	9 1	8 6	2	0	300	0 1

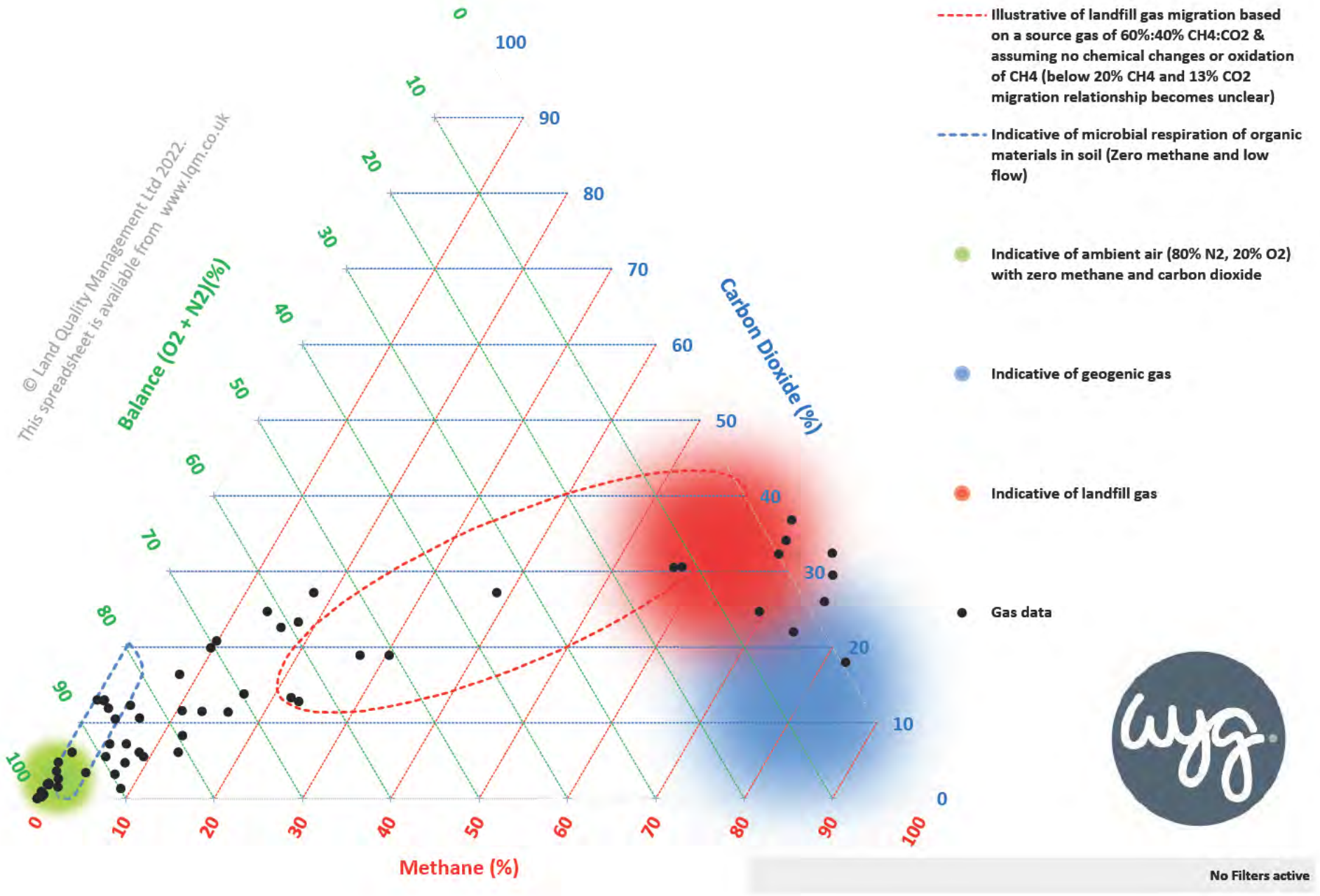
Depth to top of water	7 58
Depth to bottom of BH	11 85
Sample collected (Y/N)	N
Sample depth	N/A

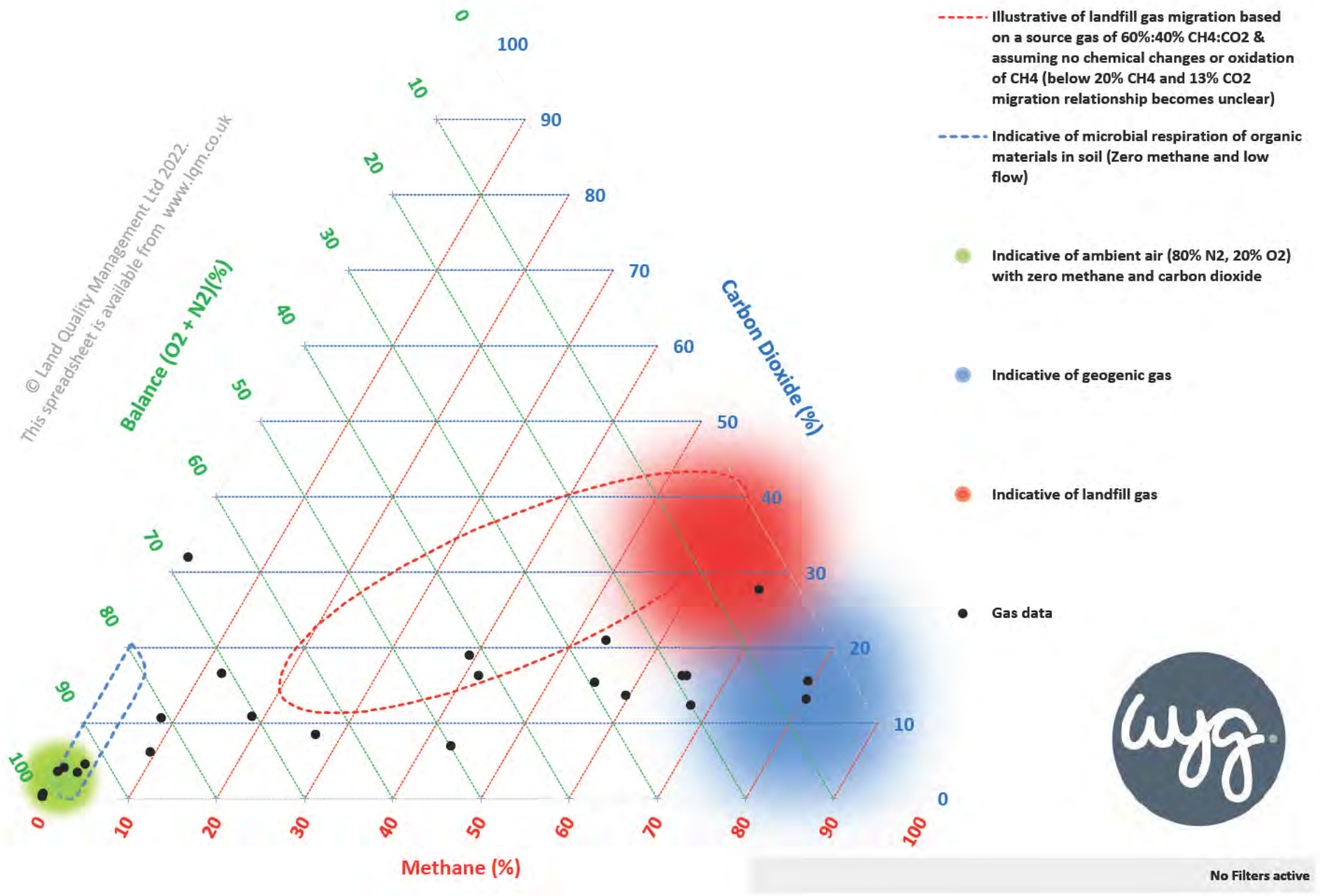
BH679	Gas readings					Flow rates	
Time (sec)	CH_4 (%)	CO_2 (%)	O_2 (%)	CO (ppm)	H_2S (ppm)	Time (sec)	Flow (l/h)
30	5 2	6 9	14 5	12	0	30	0 0
60	6 1	6 0	14 7	11	0	60	0 0
90	5 5	5 2	15 4	9	0	90	0 0
120	4 5	4 4	16 2	6	0	120	0 0
150	3 1	3 4	17 2	3	0	150	0 0
180	2 6	3 0	17 7	2	0	180	0 0
240	1 4	1 9	18 6	1	0	240	0 0
300	1 1	1 6	18 8	1	0	300	0 0

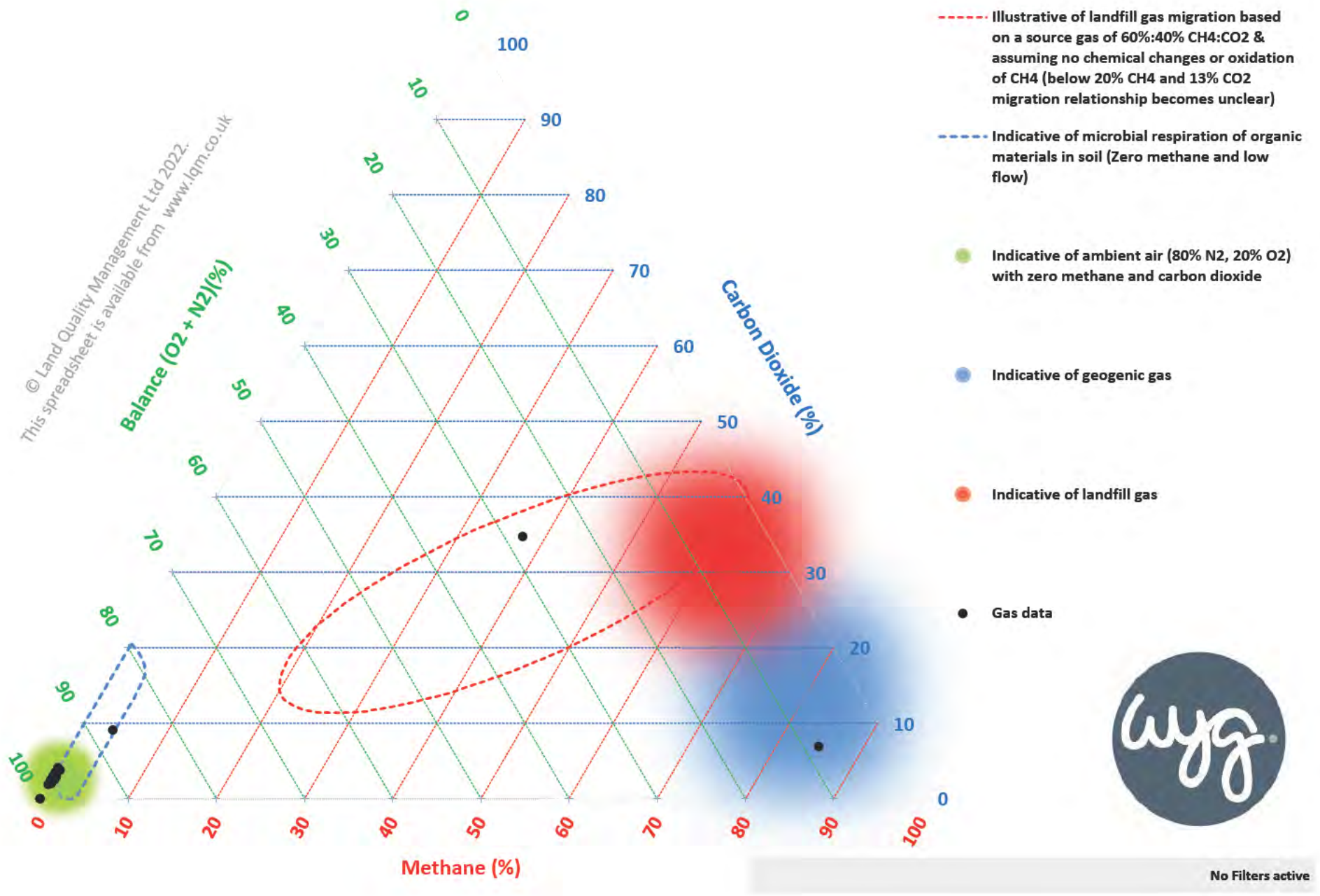
Groundwater monitoring	mbgl
Depth to top of water	7 40
Depth to bottom of BH	12 90
Sample collected (Y/N)	N
Sample depth	N/A

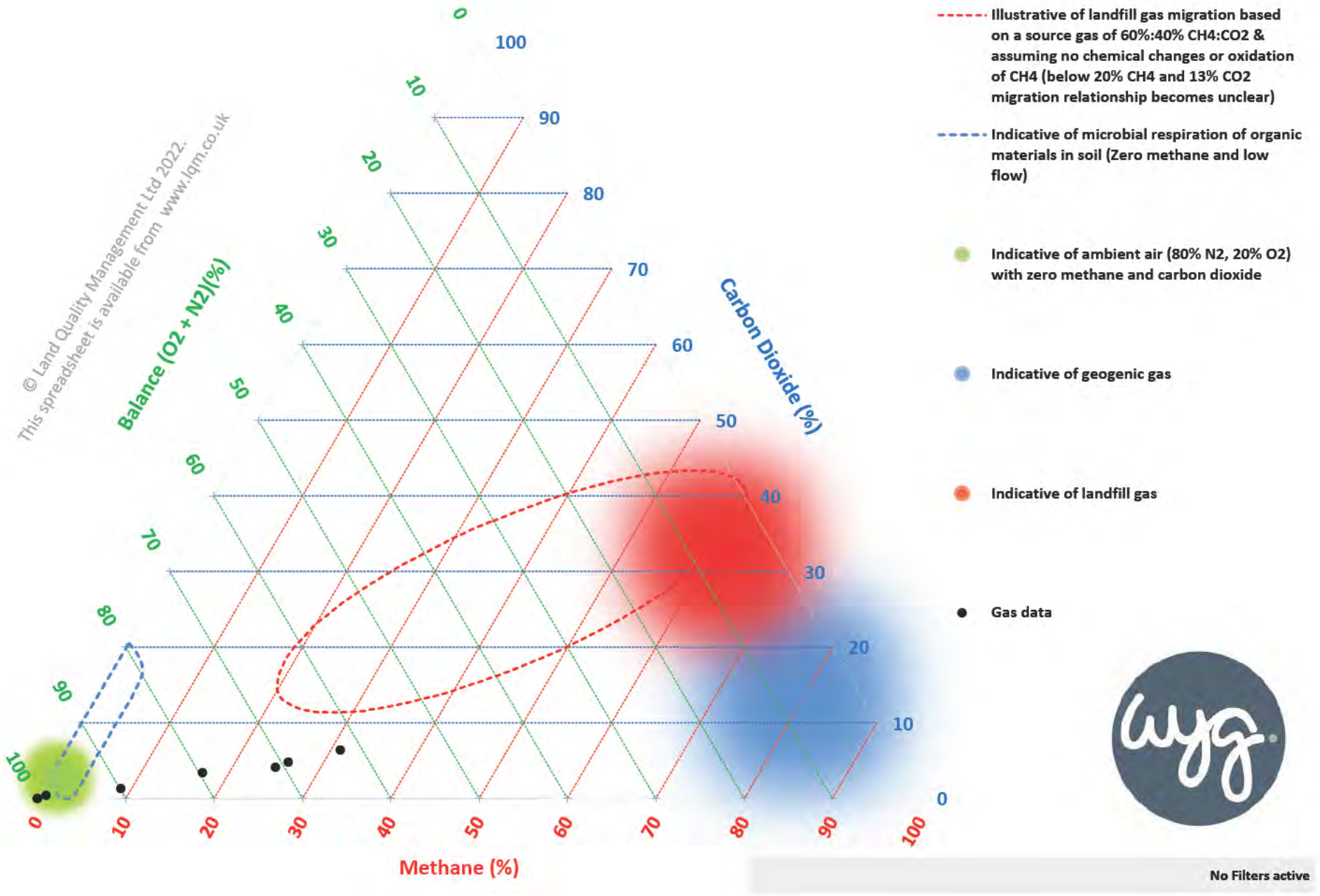
APPENDIX 4- TERNARY GAS COMPOSTION PLOTS

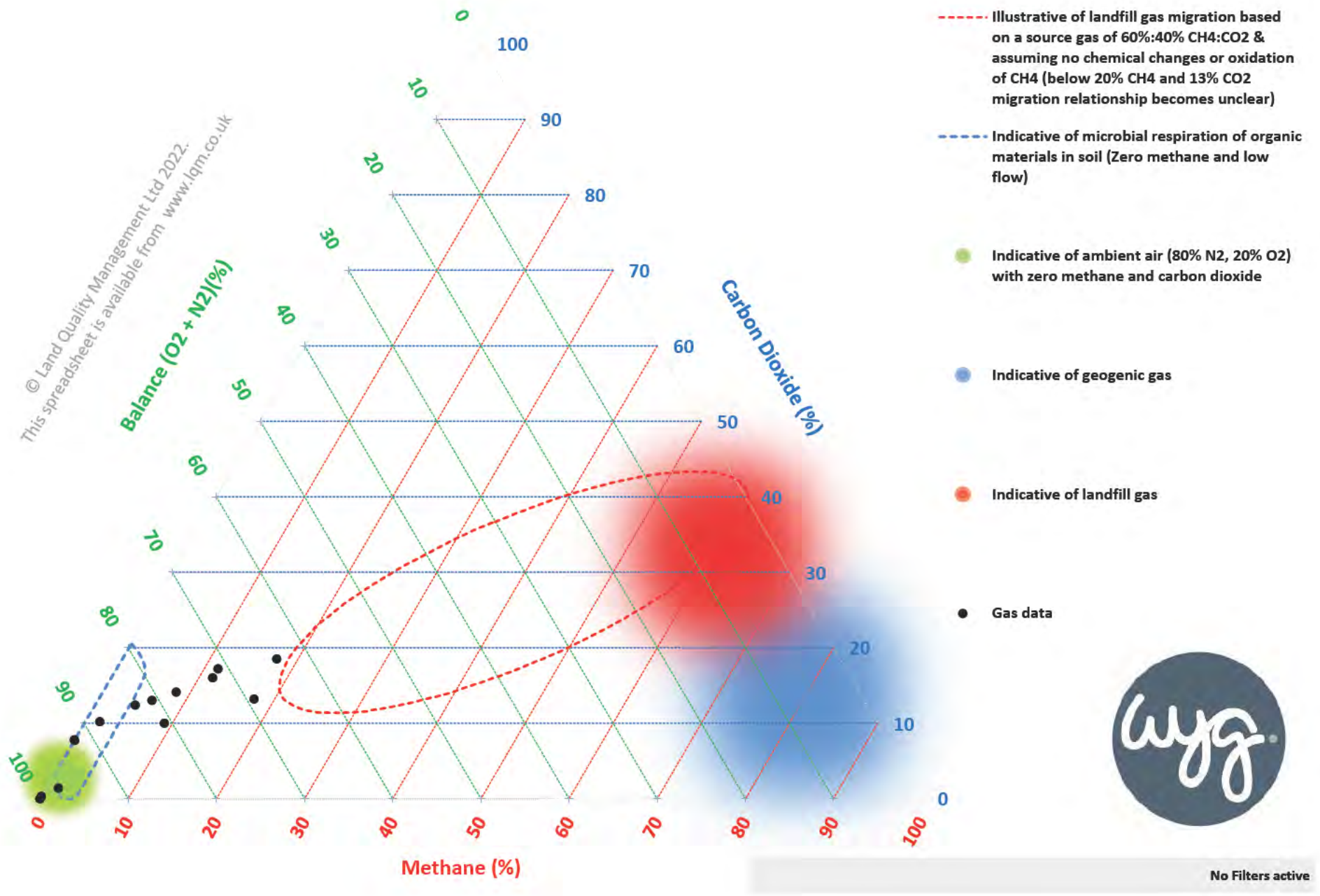


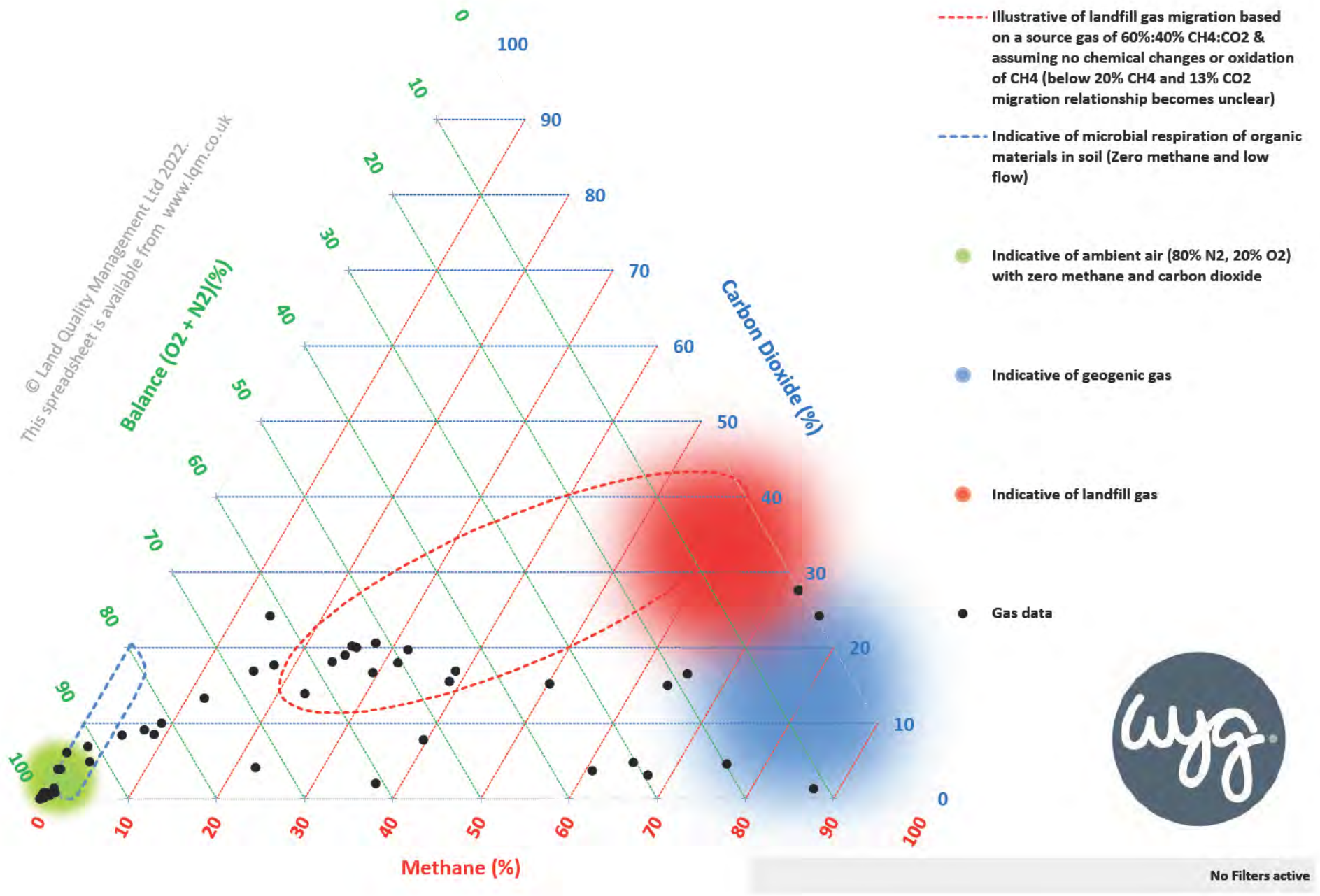


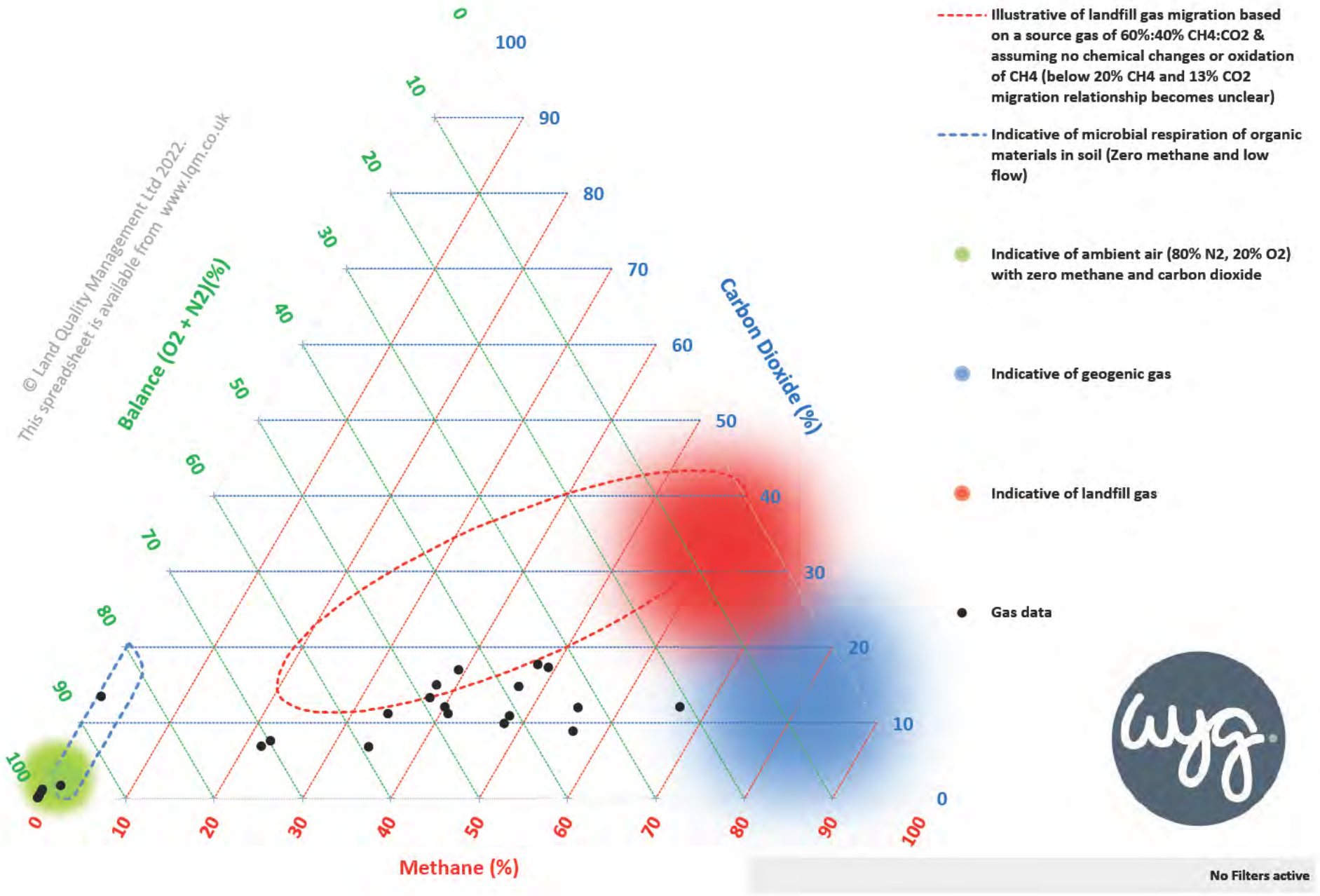


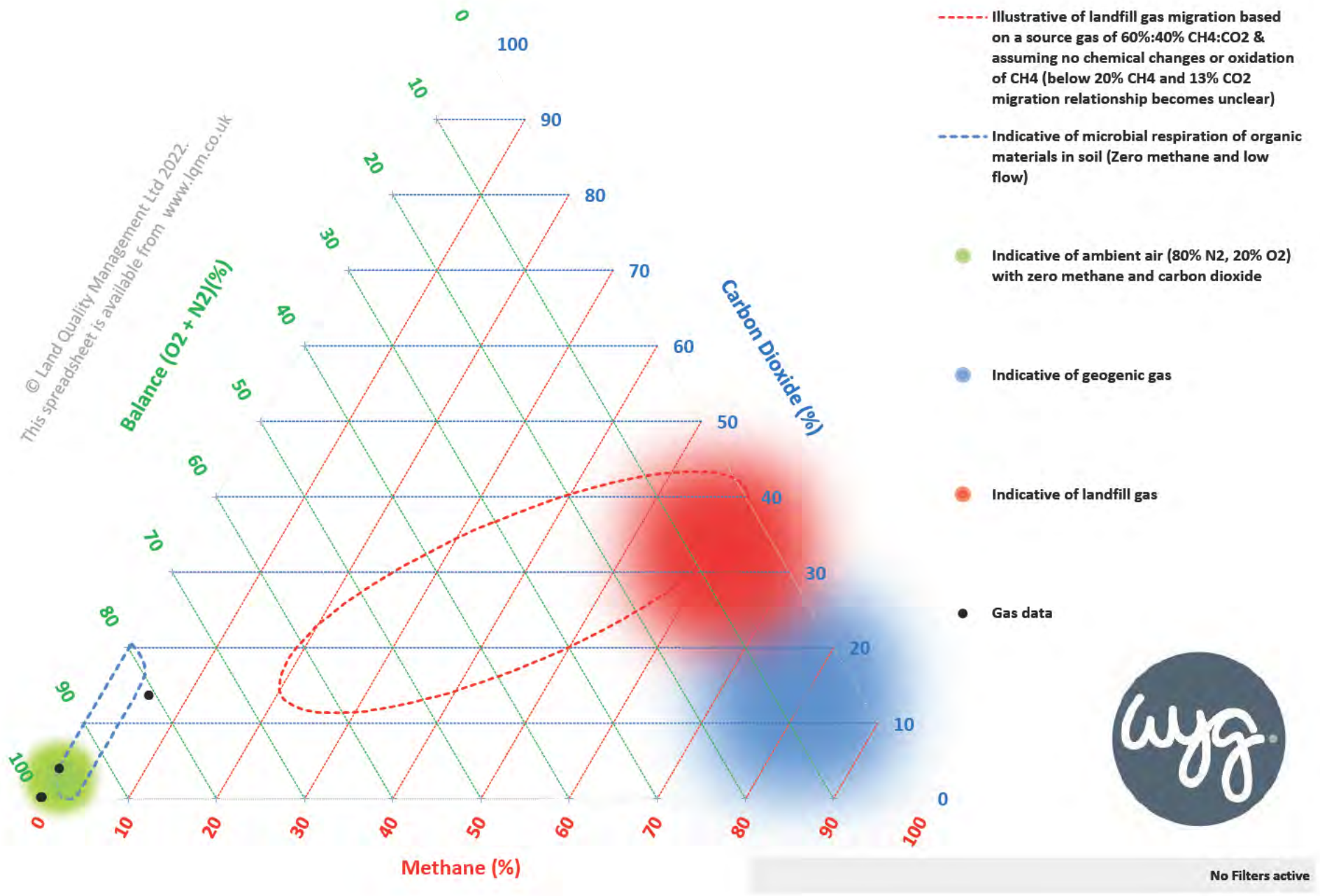


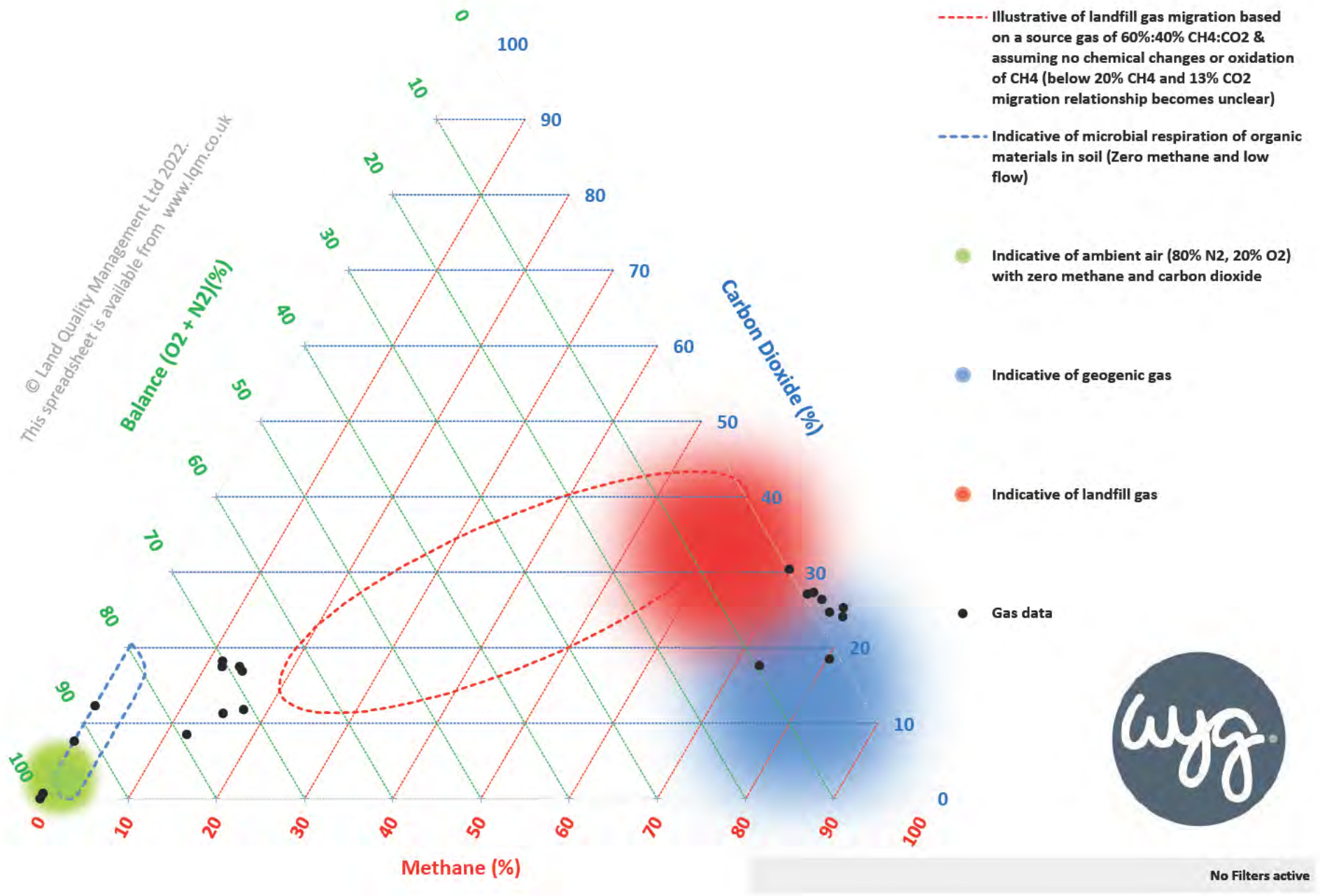







© Land Quality Management Ltd 2022.
This spreadsheet is available from www.lqm.co.uk
Balance (O2 + N2)(%)
Carbon Dioxide (%)
Methane (%)
0
10
20
30
40
50
60
70
80
90
100
Illustrative of landfill gas migration based on a source gas of 60%:40% CH4:CO2 & assuming no chemical changes or oxidation of CH4 (below 20% CH4 and 13% CO2 migration relationship becomes unclear)
Indicative of microbial respiration of organic materials in soil (Zero methane and low flow)
Indicative of ambient air (80% N2, 20% O2) with zero methane and carbon dioxide
Indicative of geogenic gas
Indicative of landfill gas
Gas data
No Filters active





APPENDIX 5- DISSOLVED METHANE AND CARBON DIOXIDE SUMMARY

CS&G North

Sample Point / Determinands	BH04	BH05	BH105	BH106	BH108	BH112	BH220	BH401	BH402	BH402S	BH403	BH404	BH633	BH634	BH635D	BH635S	BH636S	BH637	BH651
Date	13/01/2022	13/01/2022	11/01/2022	12/01/2022	13/01/2022	13/01/2022	13/01/2022	11/01/2022	12/01/2022	20/01/2022	13/01/2022	12/01/2022	17/01/2022	17/01/2022	18/01/2022	18/01/2022	15/02/2022	18/01/2022	17/01/2022
Dissolved Methane	< 0.050	< 0.050	< 0.050	1 5	< 0.050	0 065	0.18	0.95	< 0.050	1.9	< 0 050	< 0 050	< 0 050	1.7	3 2	1	< 0 050	1.3	< 0.050
Dissolved CO2	2100	5	-	200	-	-	-	420	700	8.1	2100	170	420	780	200	10	110	9 8	340

CS&G Central

Sample Point / Determinands	BH221	BH618D	BH621
Date	12/01/2022	17/01/2022	17/01/2022
Dissolved Methane	< 0.050	0.11	< 0.050
Dissolved CO2	85	63	84

CS&G South

Sample Point / Determinands	BH07	BH101	BH102	BH119	BH201	BH622	BH623D	BH624D	BH624S	BH626	BH627	BH629	BH630	BH631	BH632	BH653	BH654S
Date	13/01/2022	20/01/2022	13/01/2022	20/01/2022	19/01/2022	18/01/2022	19/01/2022	20/01/2022	20/01/2022	19/01/2022	19/01/2022	19/01/2022	19/01/2022	15/02/2022	19/01/2022	20/01/2022	19/01/2022
Dissolved Methane	2.3	< 0.050	< 0.050	< 0 050	2 6	0.41	0.71	< 0.050	< 0.050	0.11	< 0 050	0.4	< 0 050	< 0 050	0.86	< 0.050	< 0 050
Dissolved CO2	1600	10	4.6	43	18	13	130	340	340	110	39	15	5.1	4.9	61	96	4.8

CIW North

Sample Point / Determinands	BH407	BH408	BH408	BH610D	BH649B
Date	11/01/2022	11/01/2022	20/01/2022	15/02/2022	15/02/2022
Dissolved Methane	0 26	0.087	0 84	< 0 050	2 9
Dissolved CO2	3.6	57	6 0	350	59

CIW South

Sample Point / Determinands	BH114	BH121	BH122	BH614	BH615D	BH615S	BH616
Date	11/01/2022	11/01/2022	17/01/2022	17/01/2022	15/02/2022	15/02/2022	17/01/2022
Dissolved Methane	< 0.050	< 0.050	< 0.050	< 0 050	0 36	0.1	0.67
Dissolved CO2	1.4	12	110	22	2.4	41	470

CS&G North

Sample Point / Determinands	BH401	BH206	BH404	BH409	BH410	BH402S	BH402D	BH403	BH411	BH658	BH656	BH657
Dissolved Methane	< 0.050	0.55	0.33	0.15	< 0.050	0.35	1.3	0.38	0.68	1.50	1.70	1.60
Dissolved CO2	110	100	20	140	120	180	48	250	6	44	450	120

CS&G Central

Sample Point / Determinands	BH661
Dissolved Methane	< 0.050
Dissolved CO2	67

CS&G South

Sample Point / Determinands	BH626	BH628	BH627	BH630	BH629	BH632	BH201	BH625	BH663B	BH662	BH664
Dissolved Methane	< 0.050	0.57	< 0.050	< 0.050	< 0.050	0.15	3.1	1.1	0.84	< 0.050	0.14
Dissolved CO2	150	30	57	36	52	8.7	83	160	38	15	11

CIW North

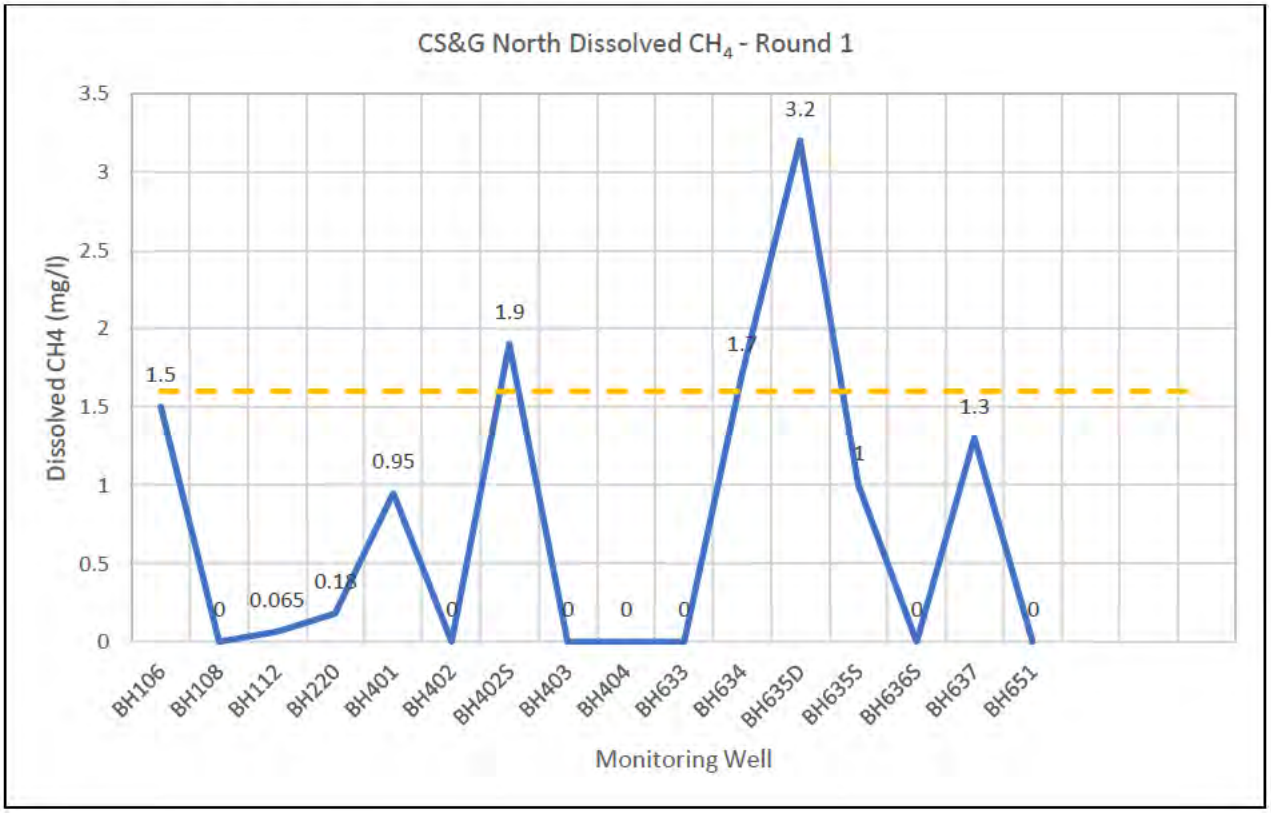
Sample Point / Determinands	BH408	BH407	BH649	BH665	BH674	BH672	BH671	BH666	BH668	BH659D	BH660A	BH667	BH669	BH670	BH673	BH675	BH676
Dissolved Methane	< 0.050	1.2	< 0.050	< 0.050	0.3	0.15	0.081	1.2	1 9	0.68	1	0.43	0.9	0.73	0.2	1	0.066
Dissolved CO2	4 3	4.5	110	300	60	110	78	430	87	560	410	170	650	330	860	16	72

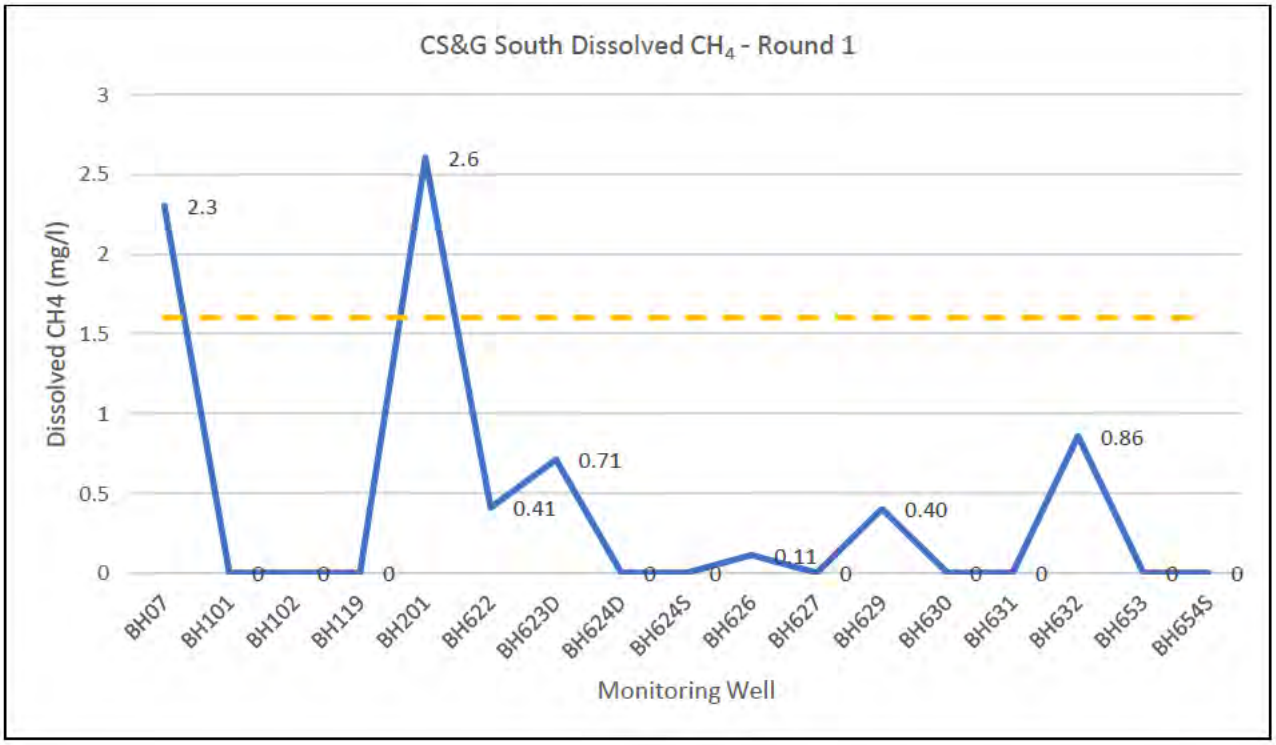
CIW South

Sample Point / Determinands	BH121	BH617	BH677	BH678	BH679
Dissolved Methane	< 0.050	< 0.050	0 62	0.77	0.14
Dissolved CO2	40	140	40	46	32

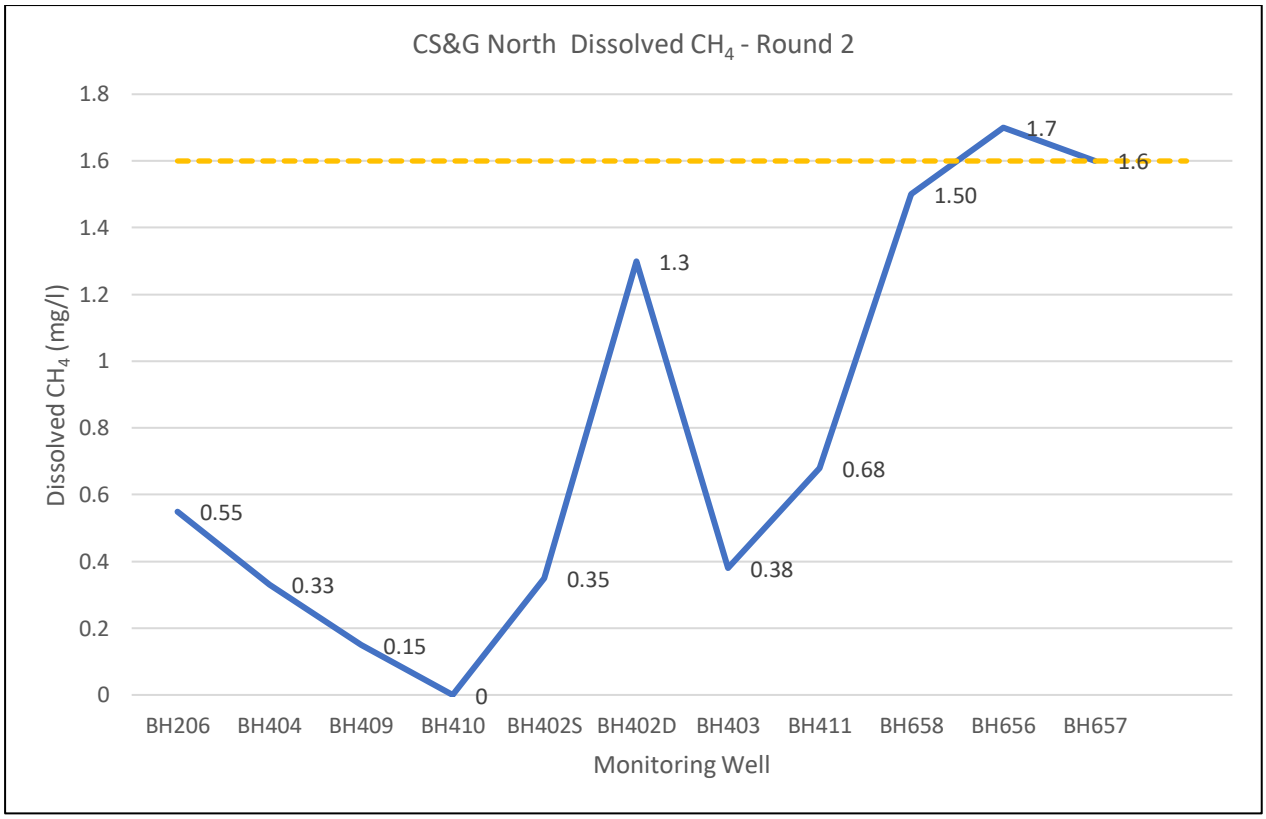
APPENDIX 6- DISSOLVED METHANE PLOTS

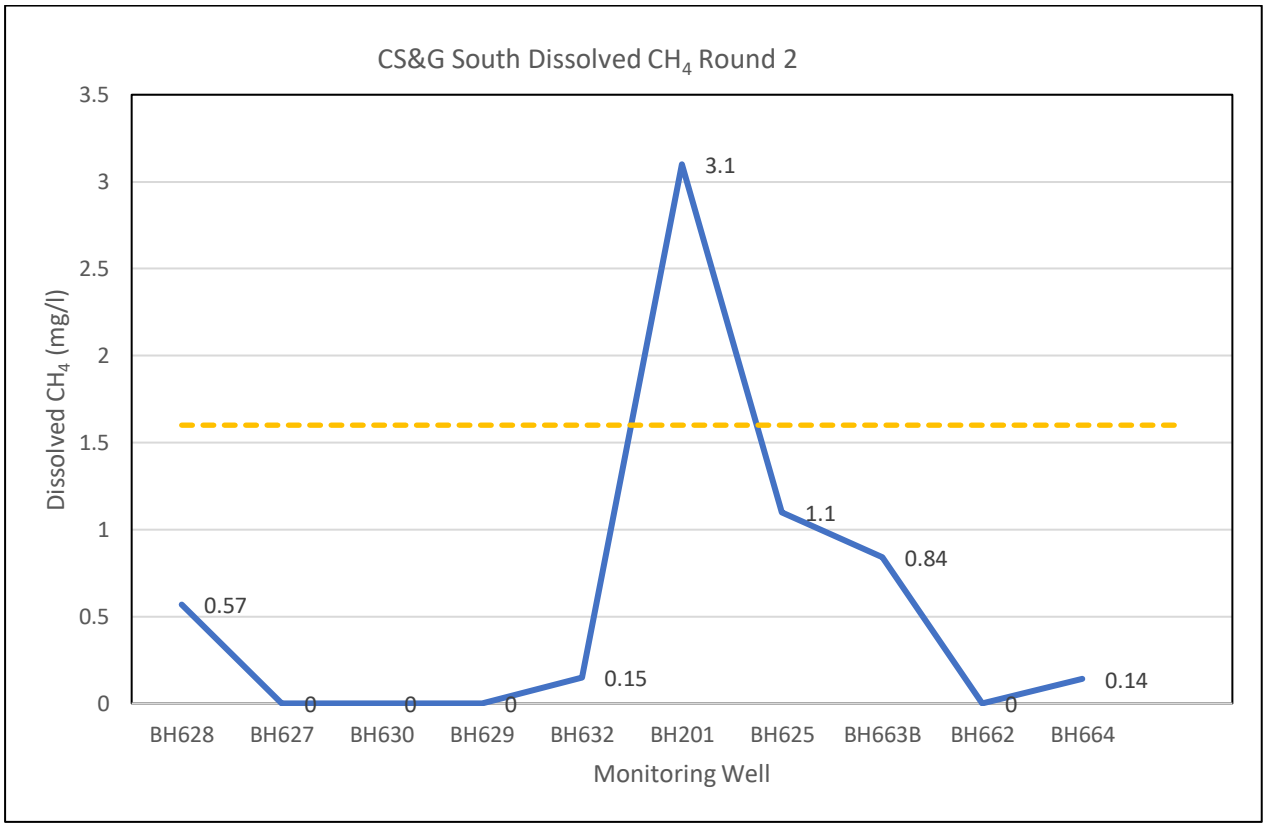
Dissolved Methane (CH_4) Plots – Groundwater Sampling Round 1

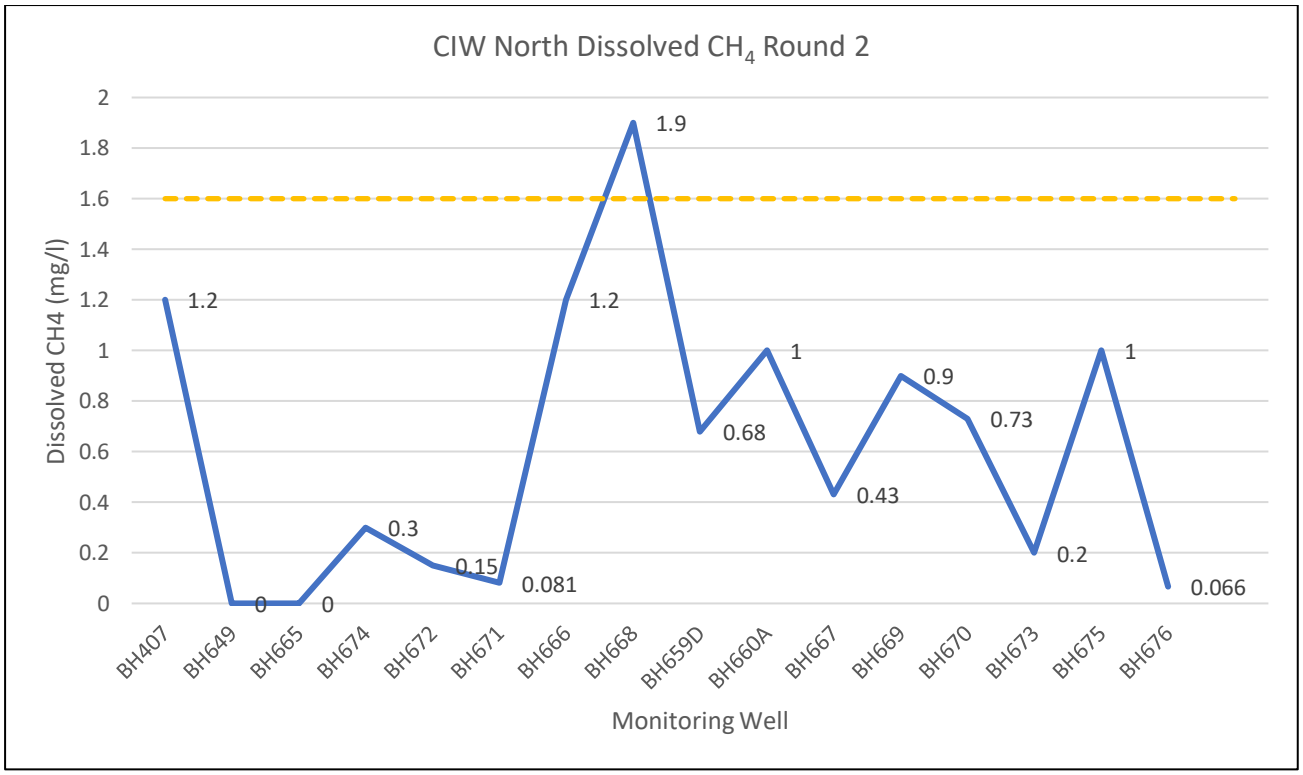




Dissolved Methane (CH_4) Plots – Groundwater Sampling Round 2






CIW North Dissolved CH_4 Round 2
Dissolved CH4 (mg/l)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1.2
0
0
0.3
0.15
0.081
1.2
1.9
0.68
1
0.43
0.9
0.73
0.2
1
0.066
BH407
BH649
BH665
BH674
BH672
BH671
BH666
BH668
BH659D
BH660A
BH667
BH669
BH670
BH673
BH675
BH676
Monitoring Well