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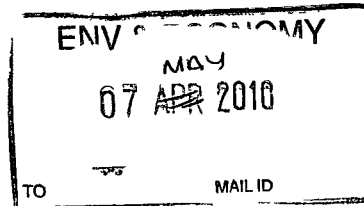
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5 May 2010

Our Ref RSK/CDF/110229/07/16 Part B



63428

Dear Stephen,

RE APPLICATION TO DISCHARGE CONDITION 16, PART (B) (SITE INVESTIGATION) OF PP 08/1257, CONSTRUCTION AND OPERATION OF NEVIS BIOMASS POWER PLANT, NEWPORT

Please find enclosed four copies of the Ground Gas Risk Assessment report hereby submitted in support of discharging Condition 16 part (B) of planning permission 08/1257

Condition 16 reads as follows

(16) No part of the development hereby permitted shall commence until,

(a) An appropriate Desk-Study of the site has been carried out to include a conceptual model and a preliminary risk assessment. If potential contamination is identified then an appropriate intrusive site investigation shall be undertaken in accordance with Condition (b)

(b) A Site Investigation Report to (BS10175/2001), containing the results of any intrusive investigation shall be submitted and approved in writing by the Local Planning Authority

I trust this information is sufficient and please do not hesitate to contact me should you have any further questions or queries

Yours Sincerely

Catherine Mackay (nee Anderson) MSc

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Ground Gas Risk
Assessment
Newport Biomass Power Plant
Newport
South Wales

10 / 0486

Nevis Power Ltd

May 2010

Safeguarding
your business
environment

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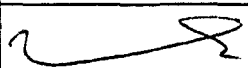

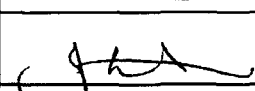
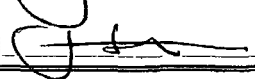
CONFIDENTIAL

GROUND GAS RISK ASSESSMENT
NEWPORT BIOMASS POWER PLANT
NEWPORT, SOUTH WALES

REPORT NO 310826 – R2 (00)

Client Nevis Power Limited
Ground Floor, Tuscan House
Beck Court,
Cardiff Gate Business Park
Cardiff,
CF23 8RP

DOCUMENT issue status

Report Issue	FINAL		
Reference Number	310826 – R2 (00)		
Title	Name	Signature	Date
Author	A Przewieslik		May 2010
Project Manager	A Przewieslik		
Technical Reviewer	S Mortimer		
Quality Reviewer	H Clarke		

This report is not to be used for contractual or engineering purposes unless the above is signed where indicated by the author the project manager and the technical reviewer of the report and the report is designated FINAL

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EXECUTIVE SUMMARY

RSK was commissioned by Nevis Power Limited (NPL) to undertake a more detailed assessment of risk from ground gas. RSK undertook the construction and installation of additional ground gas monitoring locations and an extended programme of gas monitoring between January and March 2010 utilising existing and new boreholes.

RSK consider that the source of ground gas is the underlying geology (peat deposits within the alluvium). The adjacent historic landfill and contaminants within Made Ground were discounted as sources within the refined conceptual model, which was confirmed via a combination of subsequent monitoring events and soil chemical testing respectively.

Gas monitoring has indicated elevated concentrations of methane and carbon dioxide typical of a peat source. Flow rates have typically been moderate to high (both negative and positive flows). The gas regime is considered to be influenced by tidal groundwater movements beneath the site.

CIRIA Report C665⁽³⁾ and BS8485⁽⁴⁾ have been used to assess ground gas risks at the site and permit scoping of outline gas protection requirements. Typically the results from the Modified Wilson and Card classification (suitable for a commercial/industrial end use scenario) indicate the site to be designated as CS1 to CS3 (very low to moderate risk). However, where local peat deposits are present this designation could increase to CS4 to CS5 (high risk).

Based on the ground gas risk assessment completed, the outline scope of gas protection requirements considered to be required at the site is summarised in Section 6. Typically the gas protection strategy involves a combination of robust floor slab design and detailing, together with gas membrane provision and appropriate testing/validation. In some instances passive ventilation may be required beneath the floor slab construction. It should be noted that the gas protection requirements are subject to confirmation of the floor slab construction detail for each proposed building. In this relation, the final scope of protection should be agreed via liaison with RSK when more detailed information regarding floor slab construction design is available.

In addition to the above the following recommendations have been made:

- All granular material e.g. drainage mat, pile mat etc from beneath proposed building footprints should be replaced with predominantly cohesive fill, and
- All service trenches should be sealed at the perimeter of buildings to prevent any gas collected in the granular layer remaining on site migrating through the trench backfill toward the buildings.

1 INTRODUCTION

Nevis Power Limited (NPL) intend to develop a biomass-fuelled power plant at Alexandra Docks (South Dock), Newport, South Wales (subject site) RSK STATS Geoconsult Ltd (RSK) was commissioned by NPL to undertake a risk-based assessment relating to ground gas at the proposed biomass-fuelled power plant at Alexandra Docks, Newport

Approved Document C⁽¹⁾ refers to the model procedures for the assessment of land as detailed in CLR11⁽²⁾ and directs readers to a number of guidance documents relating to ground gas, including CIRIA Report 147 and CIRIA Report 152 In 2007 two new gas assessment guidance documents were issued

- CIRIA Report C665 Assessing risks posed by hazardous ground gases to buildings⁽³⁾, and
- BS8485 2007 Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments⁽⁴⁾

Both these documents set out the Modified Wilson and Card approach for the assessment of ground gas risks on commercial/industrial sites This method uses both gas concentrations and borehole flow rates to define a Characteristic Situation for a site based on the limiting borehole gas volume flow for methane (CH₄) and carbon dioxide (CO₂) The limiting borehole gas volume flow is known as the gas screening value (GSV)

The calculation is carried out for both CH₄ and CO₂ and the worst case value adopted The Characteristic Situation is determined by comparison of GSV with the Modified Wilson and Card classification set out in the guidance

An initial round of ground gas monitoring undertaken during a preliminary geotechnical and environmental site investigation⁽⁵⁾, identified elevated concentrations of carbon dioxide and methane (ground gas) within natural alluvial strata across the site Ground gas flow rates were low Two potential sources of ground gas were identified at the site, natural peat within the underlying alluvial deposits and an adjacent historic landfill

Risks to human health and controlled waters from identified chemicals of potential concern (COPC) within Made Ground at the site have been assessed within separate reports submitted to the Local Planning Authority (LPA) A number of reports have been prepared for the site and are listed below

- Preliminary Risk Assessment, 110041 – R1 (00)⁽⁶⁾,
- Initial Geotechnical and Environmental Investigation, 110041 – R2 (00)⁽⁵⁾, and
- Groundwater Risk Assessment 310826 – R1 (00)⁽⁷⁾

This gas risk assessment report details the installation of additional ground gas monitoring locations and further ground gas monitoring visits undertaken by RSK between January and March 2010 This report has been prepared on the basis that NPL will develop the site as a biomass fuelled power plant i.e commercial/industrial end use

1 1 Objectives

The objectives of this assessment are as follows

- To assess the ground gas regime at the subject site and risks posed to human health from identified conditions and
- To provide a ground gas report with outline recommendations for gas protection measures to assist in the discharge of planning conditions pertaining to the subject site, as described in the planning consent 05/1257 Condition 16 (Contaminated land) part b

1 2 Scope

The scope of the investigation and layout of this report has been designed with CLR11 in mind and guidance on contaminated land for developers issued by the Welsh Local Government Association and Environment Agency Wales in February 2006^(2 8) A summary of relevant legislation and government policies applicable to land development is included in Appendix A

The scope of works for the ground gas assessment included

- Drilling of a further five deep monitoring wells with standpipe installations (BH101–BH105) across the site within the deeper alluvial clays/alluvial gravels,
- Drilling and installation of a further nine shallow monitoring wells (SBH1–SBH8 and BH104S) across the site within the alluvial clays,
- A programme of gas monitoring comprising 7 visits over a 3-month period spanning 18 January 2010 to 8 March 2010
- Assessment of data in accordance with CIRIA Guidance (C665)⁽³⁾ and BS8485⁽⁴⁾, and
- Production of this ground gas risk assessment report

1 3 Limitations

The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory However there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account In particular, it should be noted that there may be areas of Made Ground not detected due to the limited nature of the investigation or the thickness and quality of Made Ground across the site may be variable In addition, groundwater and ground gas levels may vary from those reported due to seasonal, or other, effects

This report is subject to the RSK STATS Geoconsult Limited service constraints given in Appendix B

2 SITE DETAILS

2.1 Site Location

The site is situated within Alexandra Docks, Newport South Wales. The site may be located by National Grid reference 331430 184140. The site is located within a commercial dock setting south-west of South Dock. A site location plan is presented as Figure 1.

2.2 Site Description

The subject site occupies approximately 5ha and currently comprises open undeveloped ground. Figure 2 denotes the pre-development site layout including the location of ground gas monitoring wells (BH101 – BH105, BH104S, SBH1 – SBH8) and original monitoring wells BH1S, BH1D, BH2S, BH2D, BH3S and BH3D).

The site is at an elevation of approximately 9m above ordnance datum (AOD) and is roughly level. The site is bounded to the west and south-west by the River Ebbw beyond which are estuarine mudflats and agricultural land. A waste electrical and electronic equipment (WEEE) recycling facility bounds the site to the north. The site is bounded to the north-east by South Dock of Alexandra Docks with a sand berth operated by Severn Sands and Aggregates located to the east of the site. Beyond the southern site boundary are estuarine mudflats and the confluence of the River Ebbw and River Usk.

2.3 Licences and Permissions

RSK understands that the site has existing planning permission for development as biomass-fuelled power plant (application No. 05/1257). A number of conditions are attached to this permission including Condition 16, which relates to the protection of human health and controlled waters and is reproduced below:

- (16) No part of the development hereby permitted shall commence until,*
- (a) An appropriate Desk-Study of the site has been carried out, to include a conceptual model and a preliminary risk assessment. If potential contamination is identified then an appropriate intrusive site investigation shall be undertaken in accordance with Condition (b)*
 - (b) A Site Investigation Report to (BS10175: 2001) containing the results of any intrusive investigation shall be submitted and approved in writing by the Local Planning Authority*
 - (c) If required a Remediation Strategy including Method statement and full Risk Assessment will be submitted to and approved in writing by the Local Planning Authority*
- No part of the development hereby permitted shall be occupied until*
- (d) Following remediation a Completion/Validation Report confirming the remediation has been carried out as agreed, has been submitted to, and approved in writing by the Local Planning Authority*
 - (e) Any additional or unforeseen contamination encountered during the development shall be notified to the Local Planning Authority as soon as is practicable. Suitable revision of the remediation strategy shall be submitted and approved by the Local Planning Authority*

Reason: The Local Planning Authority wishes to ensure that any potential risks to human health or the wider environment which may arise as a result of potential land contamination are satisfactorily addressed and in the interest of safeguarding the features of the Severn Estuary European sites and SSSI and the River Usk SAC and SSSI

2.4 Proposed Construction

A commercial/industrial scenario comprising the construction of a biomass-fuelled power plant has been proposed for the subject site. Figure 3 shows the proposed development layout.

- Due to the considerable thickness of very soft to soft compressible alluvial deposits, piled foundations are likely to be adopted. Piled foundations are likely to be founded within either the alluvial gravel or the underlying Mercia Mudstone.

To mitigate flood risks from the River Ebbw to the subject site, there is the requirement to raise site levels. It is RSK's understanding that a separate flood risk assessment will be undertaken, however that a minimum of 1m uplift is required.

2.5 Previous Reports

Brief summaries of previous investigations undertaken at the subject site are included below.

Preliminary Risk Assessment Report⁽⁶⁾

The PRA included a review of previous reports associated with the site and surrounding area, details of a site walkover, the development of an initial Conceptual Site Model (CSM) through an assessment of potential pollutant linkages (PPLs). The PRA identified a number of potentially complete relevant pollutant linkages (RPLs) in relation to ground gas. Data related to other RPLs is included in the PRA⁽⁶⁾.

- Potential risks to human-health from ground gases (carbon dioxide and methane) associated with general Made Ground and/or peat deposits via inhalation of ground gases by end users and/or potential build up of gases within voids and/or buildings, and
- Migration of leachate and/or ground gases associated with former landfill site.

The report recommended an intrusive investigation to assess the identified RPLs including the construction and installation of monitoring wells for groundwater and ground gas assessment, trial pitting to assess general Made Ground across the site, laboratory geotechnical and chemical analysis with generic quantitative risk assessment (GQRA) and detailed quantitative risk assessment (DQRA), if required.

Initial Geotechnical and Environmental Investigation⁽⁵⁾

Twenty trial pits were excavated by mechanical excavator to assess general ground conditions across the site with an additional three ground gas and groundwater monitoring wells (dual installations) constructed using a cable tool, and installed to depth of 15.40m (BH1D), 15.35m (BH2D) and 10.80m (BH3D) respectively.

The general geology identified across the site comprised Made Ground ranging between 0.20m and 2.70m thickness. Made Ground generally comprised black ash fill, gravel and clayey gravel with fragments of wood and brick. This was typically underlain by reworked cohesive material (clay).

The thickness of Made Ground was generally less within the northern area of the site, ranging between 0.2–0.6m thickness when compared with the southern area of the site (ranging up to 2.7m thickness). Made Ground in the northern area of the site typically comprised a narrow horizon of granular material with concrete, brick and wood fragments (average thickness of 0.3m with the exception of TP4 (1.1m thickness)) underlain by reworked clay. Made Ground within the southern area comprised an average of 2.4m thickness of granular fill (gravel and clayey gravel).

Underlying these deposits were silty clay, sandy clay and gravelly clay with occasional organic components (peat). In turn, the clays were underlain by gravel and cobbles at depth. Two boreholes (BH1D and BH2D) encountered the bedrock of the Mercia Mudstone Group (weathered mudstone) at approximately 15m bgl.

No obvious visual and/or olfactory evidence of contamination was encountered during the intrusive works, however Made Ground comprising black ash fill was noted in the eastern and south-eastern areas of the site. Groundwater samples from monitoring well BH3D exhibited an *apparent* slight oily surface sheen however no olfactory evidence was noted.

Soil samples were scheduled for a range of determinands. Selected soil samples were scheduled for leachate analysis which included analysis for heavy metals (suite of 12), alkalinity and pH.

Groundwater samples were scheduled for a range of determinands.

The report concluded that risks to human health from identified ground conditions were considered unlikely to be significant. Risks to controlled waters from identified ground conditions were considered unlikely to be significant, however RSK recommended additional rounds of groundwater monitoring and sampling to further assess the groundwater regime.

Two potential sources of ground gases were considered: the adjacent historic landfill, and peat deposits within the underlying alluvium. CIRIA Report C665⁽³⁾ was used to provide guidance in the assessment of ground gas. The Modified Wilson and Card system was adopted for a commercial end use.

A preliminary round of gas monitoring indicated elevated concentrations of carbon dioxide (max conc 5.4%) and methane (max conc 50.5%) with low ground gas flow rates, resulting in a low risk characteristic situation (CS 1) designation. It was noted that tidally influenced groundwater could have effects on the ground gas regime. RSK recommended further gas monitoring, the installation of additional gas monitoring locations and tidal monitoring to better assess the ground gas conditions for the site.

Groundwater Risk Assessment⁽⁷⁾

RSK undertook further intrusive investigation between January and March 2010, which comprised the installation of ten deep boreholes (BH101 – BH110) to assess groundwater conditions and determine the underlying geology (in particular peat deposits within the alluvial clays). An additional nine shallow boreholes (SBH1 – SBH8 and BH104S) were installed to assess the ground gas regime beneath the site.

The groundwater risk assessment⁽⁷⁾ concluded that the groundwater regime beneath the subject site is dynamic and influenced by the tidal River Ebbw. Groundwater flow direction and hydraulic

gradient are shown to vary over the tidal cycle (push-pull effect) affecting the groundwater regime across the site

To date no significant free-phase product has been encountered at the site. Based upon the groundwater and leachate analytical results RSK considers that the site in its pre-development state is unlikely to pose a pollution risk to controlled waters.

3 PRELIMINARY GROUND GAS RISK ASSESSMENT

3.1 Environmental Data

The summary of environmental data held within available reports is given in the following table

Table 1 Desk Study Environmental Data

History of Site	<p>The site has remained un-developed since 1883, however, the site has historically been used as a temporary car storage compound from 1992 until recently</p> <p>Historic maps dated 1883–1902 show the River Ebbw channel crossing the centre of the subject site in a south-westerly direction with the southern corner of the site comprising estuarine mudflats. Following expansion of the Alexandra Docks via the construction of the South Dock in circa 1920 the course of the River Ebbw was straightened with the former channel reclaimed and infilled.</p> <p>Further commercial development of the docks area including timber yards, engineering works, waste electrical and electronic equipment (WEEE) recycling facility, ship building works and storage sheds are indicated between the late 1920s until recently however the subject site is indicated to have comprised open un-developed ground until present.</p>
Hydrology and Flooding	<p>The majority of the subject site lies at an elevation of approximately 9m AOD with the ground relatively level, however sloping very gently down towards the south/south-west.</p> <p>The River Ebbw is located beyond the western site boundary flowing towards the south. The confluence of the River Ebbw and the River Usk lies beyond the southern site boundary.</p> <p>There is one recorded water abstraction within 1km of the site. The operator is recorded as AES East Usk Ltd, located approximately 700m east of the site. The indicated purpose is for the production of energy – non-evaporative cooling. It is not recorded whether the abstraction is from surface or groundwater. Details as to the status of the abstraction are not provided.</p>
Geology and Hydrogeology	<p>Available geological records⁽⁹⁾ and data collected during previous intrusive investigation⁽⁵⁾ at the site indicate the site to be underlain by alluvial superficial deposits comprising Marine or Estuarine Alluvium (silt, clay sand and gravel). This is underlain by bedrock of the Mercia Mudstone Group (weathered mudstone) of Triassic age. The alluvial deposits typically include peat deposits of between 0.2–0.5m thickness, generally at depth between 4m to 11m below ground level (bgl).</p> <p>The Groundwater Vulnerability Map⁽¹⁰⁾ shows the site as being underlain by a secondary B aquifer of negligible permeability.</p> <p>Groundwater monitoring undertaken at the site indicates two separate water bodies beneath the site. A shallow water body within the alluvial deposits at approximately 1 to 2m depth with a deeper water body under tidally influenced sub-artesian conditions within the alluvial sands and gravels at approximately 8m to 11m depth.</p> <p>Tidal variation within the River Ebbw can vary by as much as 11m between high and low tides.</p> <p>The site is not located within a source protection zone (SPZ), as defined by the Environment Agency (EA).</p>

Surrounding Land Use	<p>The site is located within Alexandra Docks. The surrounding land use comprises commercial and industrial operations associated with dock activities, including a sand and aggregates berth, WEEE recycling facility, storage sheds and port activities.</p> <p>The River Ebbw bounds the site to the west, beyond which is agricultural land.</p> <p>The site is located approximately 100m north of a Ramsar site associated with the Severn estuary, the Ramsar site follows the course of the River Usk, downstream. This area is also considered an Area of Special Protection. The subject site is separated from the Ramsar site boundary by the River Ebbw.</p> <p>The land adjacent to the western, south-western and southern site boundaries is classified as a site of special scientific interest (SSSI). An area of special conservation is located approximately 150m east of the site following the River Usk upstream.</p>
Pollution Incidents to Controlled Waters	<p>The Phase I desk study⁽⁶⁾ indicates that there is one recorded category 3 pollution incident (minor incident) to controlled water located approximately 200m north-east of the site. This incident occurred on 30 May 1995 with the pollutant noted as mud, clay and soil.</p>
Discharge Consents	<p>The Phase I desk study⁽⁶⁾ states that there are two active discharge consents within 250m of the site, both of which are operated by Associated British Ports (ABP). The recorded discharge type is unknown. The discharge points are located approximately 110m south-east and 230m east of the site.</p> <p>There is one identified inactive discharge consent on-site. The stated operator is recorded as ABP with the revocation date stated as 25 September 1992.</p>
Radon	<p>According to the National Radiological Protection Board, less than 1% of homes in the area are above the Action Level.</p>
Mining History	<p>The subject site is situated in an area that is not likely to be affected by coal mining activities.</p>

3.2 Adjacent Historic Landfill Site

The PRA⁽⁶⁾ identified a historic landfill adjoining the northern site boundary, presently re-developed as a waste electrical and electronic equipment (WEEE) recycling facility. Details pertaining to the landfill are limited. As stated within the PRA, the license holder is recorded as Gwent Haulage Company Limited. The first waste input date is recorded as 31 January 1976 with input having ceased on 31 December 1990. Specified deposited waste is described as inert and industrial waste.

3.3 Summary of Potential Contaminant Sources

On Site Sources

- Ground gas from peat and Made Ground and
- Ground gas arising from the breakdown of hydrocarbon COPC spilt in the ground as a result of site use for temporary car storage

Off-Site Sources

- Ground gas from historic landfill adjacent to northern site boundary

3.4 Sensitive Receptors

- Construction site workers,
- Future (commercial/industrial) site users from asphyxiation risk and
- Build up of explosive mixtures of gas within buildings and/or confined spaces

3.5 Summary of Plausible Pathways

- Migration of ground gas associated with Made Ground via breakdown of COPC and/or alluvial peat via building infrastructure (deep piled foundations) service trenches and granular soils (including service trenches) and
- Migration of ground gas associated with historic landfill via shallow granular Made Ground and/or deep granular alluvial gravel

It should be noted that tidal affects on groundwater could influence the ground gas regime at the site by causing flow rates to fluctuate

3.6 Initial Conceptual Model for Ground Gases

The information presented in Sections 2 and 3.1–3.6 has been used to compile an initial conceptual model for ground gas issues at the site. The identified potential contaminants and receptors have been considered with any possible pathways that may link them. The resulting pollutant linkages are considered in the following table.

Table 2 Initial Conceptual Site Model showing Potential Pollutant Linkages

Potential Contaminant Source	Potential Receptor	Possible Pathway	Viable Pollutant Linkage
Ground gases from soils (alluvial peat and Made Ground)	Future (commercial/industrial) site users	Preferential migration via building infrastructure such as piled foundations and/or service trenches leading to ingress and accumulation beneath buildings and/or within confined spaces	Potentially Complete – Elevated levels of CH ₄ and CO ₂ were identified during the preliminary round of ground gas monitoring undertaken by RSK in April 2008 although flow rates were low Alluvial peat deposits were identified beneath the site
	Build up of explosive mixtures of gases within buildings and/or confined spaces	Possible collection of ground gas within service trenches and other confined spaces	
	Construction workers		
Ground gases from adjacent landfill (off site)	Future (commercial/industrial) site users	Migration of ground gases via shallow granular Made Ground and/or deep granular alluvial gravel	Potentially Complete – Potential for off site generation and migration of ground gas from historic landfill located adjacent to the northern site boundary
	Build up of explosive mixtures of gases within buildings and/or voids	Possible collection of ground gas within service trenches and other confined spaces	
	Construction workers		
Ground gas from the breakdown of COPC spilt as a result of site use as temporary car storage	Future (commercial/industrial) site users	Preferential migration via building infrastructure such as piled foundations and/or service trenches leading to ingress and accumulation beneath buildings and/or within confined spaces	Incomplete – Significant concentrations of COPC were not measured within Made Ground or natural soils during the previous investigation ⁽⁵⁾
	Build up of explosive mixtures of gases within buildings and/or voids	Possible collection of ground gas within service trenches and other confined spaces	
	Construction workers		

3.7 Risks to Human Health

The information presented in Sections 3.4 and 3.6 has been used to inform an initial CSM

Ground gases associated with alluvial peat may pose a risk to construction workers and future (commercial/industrial) site users via asphyxiation and/or risk of explosion. Methane and carbon dioxide have been identified at the site during a previous ground gas monitoring event⁽⁵⁾

4 ENVIRONMENTAL SITE INVESTIGATION

4.1 Introduction

To further assess potential risks from the identified RPLs within the initial CSM, additional intrusive investigation at the subject site was undertaken. The site investigation works were carried out by RSK between 5 January 2010 and 15 March 2010. The works undertaken are described in the following section. Photographs of the site set-up during the works are presented within Appendix C. Site works included:

- Drilling and subsequent installation of five monitoring wells (BH101–BH105) for dual ground gas and groundwater monitoring purposes
- Drilling and installation of eight shallow window sample boreholes (SBH1–SBH8) and one cable tool borehole (BH104S) for ground gas monitoring purposes,
- Monitoring of groundwater levels in selected boreholes to assess tidal influence including the installation of level loggers over a 2 week period and
- A programme of gas monitoring comprising 7 visits over a period of approximately three months, monitoring the boreholes noted above plus existing boreholes BH1, BH2 and BH3

4.1.1 Health and Safety

In advance of the site works, a site-specific health and safety plan (SSHSP) was prepared, along with method statements and control of substances hazardous to health (COSHH). All site staff attended a health and safety induction presented by Associated British Ports (ABP) prior to site works commencing. Prior to commencement of intrusive works, the proposed borehole locations were discussed with an authorised representative of ABP and a permit to excavate completed.

On site, details of the SSHSP were discussed with fieldwork personnel and, on completion of the briefing, the health and safety plan was signed and dated by site personnel to confirm they had understood and fully accepted the site rules. Safety briefings were conducted throughout the duration of the fieldwork.

Fieldworks were supervised by a holder of a SPA contractor's safety passport.

4.1.2 Utility Service Clearance

Prior to commencement of excavation works, each exploratory location was 'cleared' using a cable avoidance tool (CAT). The purpose of the survey was to identify positions of buried services and infrastructure to minimise the risk of injury or damage. An authorised representative of ABP provided service plans for the site and immediate surrounding area.

4.1.3 Sampling Strategy

Borehole locations were determined based on information collected during the PRA⁽⁶⁾ and to assess the ground gas regime beneath the site. The borehole rationale and piezometric installation details are provided within Table 3.

Table 3 Borehole Rationale

Borehole Number	Borehole Screened Within	Screened Depth (m bgl)	Rationale
BH101	Alluvial gravel	13 00 – 18 30	To assess potential ground gas via the deep migration pathway along the northern site boundary (closest to historic landfill)
BH102	Alluvial gravel	13 50 – 19 00	To assess potential ground gas via the deep migration pathway within the southern area of the site
BH103	Alluvial gravel	13 00 – 19 00	To assess potential ground gas via the deep migration pathway within the northern half of the site
BH104	Alluvial gravel	13 00 – 19 00	To assess potential ground gas via the deep migration pathway along the eastern site boundary
BH104S	Deep alluvial clay	9 40 – 12 40	To assess the ground gas potential within peat rich deposits identified at depth within the alluvial clay
BH105	Alluvial gravel	13 50 – 19 00	To assess potential ground gas via the deep migration pathway within the southern corner of the site
SBH1	Shallow alluvial clay	2 00 – 5 00	To assess potential ground gas via the shallow migration pathway along the northern site boundary (closest to historic landfill)
SBH2	Shallow alluvial clay	2 00 – 5 30	To assess potential ground gas via the shallow migration pathway within the northern area of the site
SBH3	Shallow alluvial clay	3 00 – 5 10	To assess potential ground gas via the shallow migration pathway within the northern area of the site
SBH4	Shallow alluvial clay	3 00 – 4 70	To assess potential ground gas via the shallow migration pathway within the northern area of the site
SBH5	Shallow alluvial clay	3 00 – 5 40	To assess potential ground gas via the shallow migration pathway within the central area of the site
SBH6	Shallow alluvial clay	3 00 – 5 00	To assess potential ground gas via the shallow migration pathway within the central area of the site
SBH7	Shallow alluvial clay	2 00 – 5 30	To assess potential ground gas via the shallow migration pathway within the south-eastern area of the site
SBH8	Shallow alluvial clay	1 50 – 5 50	To assess potential ground gas via the shallow migration pathway within the southern area of the site

All deep boreholes (BH101 – BH105) were advanced into the underlying Mercia Mudstone to assess the weathered mudstone deposits and collect geotechnical data for foundation design detailed within a separate report. Gas monitoring was undertaken within newly installed wells and existing boreholes BH1S – BH3S and BH1D – BH3D.

4.1.4 Borehole Drilling and Installation

Borehole drilling and monitoring well installation was undertaken between 5 and 27 January 2010.

Owing to the geology beneath the site, soft alluvium underlain by sand, gravel and cobbles, in turn underlain by the Mercia Mudstone Group, no single drilling technique was appropriate. Two cable percussion rigs (Dando 2000 and Dando 3000) were used for the construction of the deep boreholes from ground level to the top of the rock head. Rotary/percussive Berretta T41 and T44 drilling rigs and a Gryphon drilling rig were used to advance the boreholes into the underlying Mercia Mudstone.

Monitoring well installations comprised 50mm-internal diameter high-density polyethylene (HDPE) casing, screened across the anticipated groundwater interface. The borehole annuli were backfilled with 5mm to 10mm grain size graded siliceous gravel with a bentonite seal placed above the filter pack to prevent any downward migration of surface/perched water.

A track mounted Terrier rig was used for the construction and installation of shallow ground gas monitoring wells (SBH1 – SBH8). Monitoring well installations comprised 40mm-internal diameter HDPE pipe.

All piezometric installations were installed to approximately 1m above ground level to allow site levels to be raised.

Details of the ground conditions encountered and the monitoring well installations are presented on the borehole logs in Appendix G. Borehole locations are presented on Figure 2.

A qualified geo-environmental engineer logged the boreholes in accordance with BS 5930⁽¹¹⁾. The descriptions of the strata encountered, samples taken, field observations of soil and groundwater, *in situ* testing and details of the monitoring well installations are included on the borehole logs presented within Appendix G.

4.1.5 Ground Gas Monitoring

Ground gas monitoring was undertaken over a period of approximately three months between January and March 2010. An infrared Gas Data LMSxi multifunction gas analyser was used to measure concentrations of methane, carbon dioxide and oxygen in percentage by volume. Initial and steady state concentrations were recorded. A built in flow meter was used to measure borehole flow rate in litres per hour (l/hr).

Ground gas monitoring data is presented within Appendix D.

4.1.6 Tidal Monitoring

To further assess the tidal influence on the groundwater regime beneath the site, tidal monitoring was undertaken using level loggers installed within three monitoring wells (BH101, BH104 and BH105) and a barometric pressure logger within monitoring well BH102.

Tidal monitoring data is presented within Appendix E.

4.2 Ground Conditions

4.2.1 Made Ground

The presence of Made Ground on site is likely to be the result of expansion works at Alexandra Docks via the construction of South Dock in circa 1920. Historic maps dated 1883–1902 show the River Ebbw channel crossing the centre of the subject site in a south-west direction with the southern corner of the site comprising estuarine mudflats. It is likely that excavated material from the expansion works on South Dock was used to reclaim and infill the former river channel and southern tip of the site.

Typically, two types of Made Ground are identified on site:

- A thin horizon of granular Made Ground at surface level with occasional fragments of concrete, brick and wood, with an average thickness of 0.3m within the northern area of the site. The thickness of granular material within the southern area of the site was generally greater (up to 1.75m thickness),

Underlain by

- Cohesive material, comprising reworked clay, up to 2.6m thickness.

It should be noted that during the intrusive work undertaken by RSK in 2008⁽⁵⁾, Made Ground deposits within the southern area were logged as comprising granular material (gravel and clayey gravel). However, more recent inspection of these deposits specifically for assessment of ground gas risks has identified the material to predominantly comprise reworked cohesive soil with no visual evidence of putrescible material such as wood.

Further, it is noted that boreholes BH103, BH107, BH108, BH109, SBH4 and SBH5 are located within the assumed course of the infilled former river channel. Observed materials comprised reworked natural alluvium similar to those elsewhere on site but which could not be clearly distinguished from natural material solely by inspection of the borehole risings.

No visual and/or olfactory evidence of contamination was noted within Made Ground deposit across the site.

4.2.2 Alluvial Clay

The alluvial clay comprised slightly silty (occasionally slightly sandy) clay, organic in places, generally soft nearer the surface and becoming very soft with depth. Some organic (peat) material was encountered within this stratum, typically comprising small pockets of pseudo-fibrous peat. The peat content was typically noted to increase with depth, notably in the position of BH104 (BH104S) where peaty clay was recorded between 11.15m and 12.50m depth and the drillers reported a rotting vegetation smell with a 'haze/shimmer' above the casing during drilling.

The noted haze/shimmer within BH104 is likely the result of egress of methane gas from the borehole and gas density differences between the ambient air and methane

The encountered slightly silty clay was generally very soft to soft through the entire stratum as shown by the recorded SPT N values that ranged from 0 to 4. The thickness of this stratum ranged from 9.5m (BH101) in the north-west of the site to 13.4m (BH108) in the centre of the site with an average of 11.5m thickness. Boreholes BH103, BH107, BH108, BH109, SBH4 and SBH5 were located within the infilled former river channel. Observed reworked borehole arisings were not clearly distinguishable from natural cohesive material.

4.2.3 Alluvial Gravel

Alluvial gravel were encountered in all deep cable tool boreholes. The stratum generally comprised medium dense becoming very dense fine to coarse sub-angular to sub-rounded gravel with occasional sub-angular to sub-rounded cobbles. The encountered depth ranged from 12.5m bgl (BH103) to 15m bgl (BH104) with thicknesses ranging from 5.8m in BH104 to 8m in BH105.

SPT/CPT values range between 30 to in excess of 50 indicating a dense to very dense, compact gravel horizon. Gravel and cobbles comprised well sorted sandstone, quartzite and conglomerate fragments.

4.2.4 Mercia Mudstone

The solid geology bedrock beneath the site comprises Mercia Mudstone described as very weak (locally weak) reddish-brown, occasionally mottled grey-green, indistinctly laminated mudstone, encountered at depths between 19.5m (BH101) and 20.8m (BH104). The base of the mudstone strata was not encountered.

4.3 Monitoring Strategy and Methodology

4.3.1 Ground Gas Monitoring

Recent ground gas monitoring has been carried out by RSK primarily on seven occasions: 18 January 2010, 25 January 2010, 1 February 2010, 8 February 2010, 15 February 2010, 22 February 2010 and 8 March 2010. Selected boreholes were monitored on 3 February 2010. The preliminary monitoring round was undertaken on 10 April 2008.

Boreholes numbered BH101 – BH105, BH104S, SBH1 – SBH8, BH1S, BH1D, BH2S, BH2D, BH3S and BH3D were monitored during 2010. Boreholes BH1S, BH1D, BH2S, BH2D, BH3S and BH3D were monitored on 10 April 2008.

Table 4 Temporal Atmospheric Conditions During RSK Ground Gas Monitoring

Date	Atmospheric pressure* during the preceding three days prior to the monitoring round			Temporal Conditions during monitoring		Locations Monitored
	3	2	1	Atmos' Pres' (mB)	Rainfall	
10 April 2008	1005.2	1004.1	1000.2	997.9	Overcast drizzle, slight wind	BH1S, BH1D, BH2S, BH2D, BH3S and BH3D
18 January 2010	1014.3	1000.3	1019.2	1025.0	Overcast drizzle/sleet -2°C	SBH1–SBH8

Date	Atmospheric pressure* during the preceding three days prior to the monitoring round			Temporal Conditions during monitoring		Locations Monitored
	3	2	1	Atmos' Pres' (mB)	Rainfall	
25 January 2010	1014.6	1022.6	1026.6	1032.8	Sunny dry 0°C	SBH1–SBH8
1 February 2010	995.7	1004.2	1006.8	1016.8	Overcast dry slight wind 7°C	SBH1–SBH8 BH104S
3 February 2010	1006.8	1016.8	1006.0	1008.5	Overcast drizzle slight wind 5.5°C	BH104S BH1S BH1D BH2S BH2D BH3S BH3D BH101–BH105 and BH104S
8 February 2010	999.3	1015.9	1024.4	1013.9	Overcast 6°C	BH101–BH105 SBH1–SBH8 BH104S BH1S BH1D BH2S BH2D BH3S and BH3D
15 February 2010	1025.1	1025.5	1025.1	1006.2	Overcast dry 7°C	BH101–BH105 SBH1–SBH8 BH104S BH1S BH1D BH2S BH2D BH3S and BH3D
22 February 2010	996.3	997.9	992	986.3	Sunny dry slight wind 7°C	BH101–BH105 SBH1–SBH8 BH104S BH1S BH1D BH2S BH2D BH3S and BH3D
8 March 2010	1031.9	1027.7	1033.6	1030.7	Sunny dry slight wind 8°C	BH104S BH1S BH1D BH2S BH2D BH3S BH3D BH101–BH105 and BH104S

*Barometric pressure as measured at RAF St Athan (20 miles west of Newport)

In line with current best practice, monitoring by RSK has been undertaken during a number of different atmospheric conditions as summarised in Table 4

Two visits (10 April 2008 and 22 February 2010) were undertaken at times of falling atmospheric pressure

It is generally anticipated that flow rates increase as atmospheric pressure falls. This is consistent with the monitoring event undertaken on 22 February 2010 which typically recorded the peak flow rates summarised in Table 5. Notwithstanding this, increased flow rates were also recorded in deeper borehole monitoring on the site during higher periods of atmospheric pressure – notably BH104S and BH103 on 8 February 2010. This suggests that an additional factor is influencing ground gas flow rates such as tidal change.

A summary of worst-case ground gas results is presented in Table 5 and further discussed in Section 5.

Table 5 Summary of Gas Monitoring Data Showing 'Worst Case' Measurements

Borehole location	Response Zone	CH ₄ (%)		CO ₂ (%)		O ₂ (%)		Flow Rate l/hr	
		Initial*	SS*	Initial*	SS	Initial*	SS	Max Flow	
								Neg ve	Pos ve
SBH1	Alluvial clay	<0.1	<0.1	0.5	<0.1	20.7	21.4	0.2	
SBH2	Alluvial clay	<0.1	<0.1	0.6	<0.1	20.7	21.3	0.6	
SBH3	Alluvial clay	<0.1	<0.1	2.2	2.5	8.3	7.3	3.1	14.0
SBH4	Alluvial clay	<0.1	<0.1	0.6	<0.1	21.1	20.6	1.9	7.6
SBH5	Alluvial clay	0.1	<0.1	0.1	<0.1	21.3	21.2		0.8
SBH6	Alluvial clay	<0.1	<0.1	0.3	<0.1	20.7	21.2	6.3	0.3

		CH ₄ (%)		CO ₂ (%)		O ₂ (%)		Flow Rate l/hr	
								Max Flow	
SBH7	Alluvial clay	<0.1	<0.1	0.3	0.3	21.0	21.1	3.9	3.5
SBH8	Alluvial clay	60.0	7.7	3.0	0.3	3.7	19.1	7.6	22.4
BH101	Alluvial gravel	1.4	0.8	3.9	1.6	19.7	20.8	9.5	0.2
BH102	Alluvial gravel	3.2	0.8	4.1	1.1	9.3	17.6	0.2	0.6
BH103	Alluvial gravel	78.0	68.0	6.6	5.8	7.5	4.1	24.9	17.5
BH104	Alluvial gravel	74.0	26.5	4.5	1.6	4.9	14.7		0.2
BH104S	Alluvial clay	65.0	44.5	5.8	3.0	1.1	10.3		28.2
BH105	Alluvial gravel	94.0	40.5	4.2	1.6	0.3	11.9	2.9	1.7
BH1S	Alluvial clay	47.5	36.5	5.4	4.5	0.5	2.2	9.5	10.0
BH1D	Alluvial gravel	39.0	38.0	6.1	5.4	1.5	2.2	9.9	8.5
BH2S	Alluvial clay	0.5	1.0	0.2	0.2	20.6	21.0	0.3	11.2
BH2D	Alluvial gravel	2.3	0.7	3.5	4.0	9.2	8.4	9.8	5.2
BH3S	Alluvial clay	11.0	4.0	4.1	4.2	7.6	9.9		
BH3D	Alluvial gravel	50.5	1.7	1.0	1.0	9.3	20.3	0.1	0.1
<p>Note</p> <p>It should be noted that during monitoring visits sucking noises could be heard at some monitoring locations as the gas tap was opened and the flow pod connected. On some occasions the flow rates exceeded the recording negative flow range of the monitor (-25.0 l/hr to +25.0 l/hr (+/-10 to 15%)). Where this occurred the last recorded negative reading was noted.</p> <p>*Initial measurement</p> <p>Steady State measurement</p>									

4.4 Tidal Monitoring

RSK undertook tidal monitoring over a two week period during February 2010. Three groundwater level loggers and one barometric pressure logger were installed in BH101, BH104 and BH105 and BH102, respectively. Monitoring wells BH101 and BH105 were located closer to the River Ebbw (approximately 35m and 50m distance respectively) with BH104 located inland in relation to BH101 and BH105. All boreholes had response zones within the granular alluvial deposits. Tidal data is summarised within Table 6.

Table 6 Summary of Tidal Monitoring Data

Date	Time /Type	Time /Type	Time /Type	Time /Type
15 February 2010	Newport tidal data	BH101	BH104	BH105
	02:30 (low tide)	03:40 (low tide)	03:40 (low tide)	03:40 (low tide)
	08:00 (high tide)	08:40 (high tide)	08:40 (high tide)	08:40 (high tide)
	14:45 (low tide)	16:10 (low tide)	15:45 (low tide)	15:45 (low tide)
	20:15 (high tide)	21:35 (high tide)	21:10 (high tide)	20:45 (high tide)

The monitoring results have been compared to tidal data obtained from Newport Tide Gauge (West Pier, Newport) supplied by the British Oceanographic Data Centre (BODC)⁽¹²⁾ as detailed within Table 6

The tidal monitoring data from all three deep boreholes indicated there to be hydraulic continuity between the alluvial gravel and the tidal estuary of the River Ebbw, with a variation in groundwater level during each tidal cycle of between approximately 1.4m (BH101 and BH105) and 1.8m (BH104). Raw tidal monitoring data uncorrected for barometric pressure, is presented on three graphs within Appendix E. The barometric log also presented in Appendix E, shows that a long-term variation of about 0.4m in the readings is attributable to changes in atmospheric pressure. The raw data has not been corrected for this variation, as the objective of the monitoring was to determine the short term variation in levels over a tidal cycle which is not significantly affected by the slow changes in atmospheric pressure. The break in readings evident on all the graphs on 17 February was caused when the loggers were temporarily removed from the boreholes to permit groundwater sampling.

Data indicates tidal variation in boreholes which have response zones partially or completely screened within the alluvial gravel. The amount of groundwater fluctuation varies between approximately 1.4m and 1.8m depth.

A lag time between high tide and peak groundwater levels beneath the site was noted ranging between 30 minutes and 90 minutes. No spatial variation in lag time was noted across the site.

The shallow groundwater within the Made Ground/shallow alluvial clay is not considered to be in hydraulic continuity with deeper groundwater or with the River Ebbw. Whilst there are no boreholes screened specifically within the Made Ground any changes in groundwater level are likely to be directly related to rainfall events and the nature of the surface cover.

5 DISCUSSION AROUND ENVIRONMENTAL CONDITIONS

5.1 Historic Landfill

The PRA⁽⁶⁾ identified a historic landfill adjoining the northern site boundary presently re-developed as a waste electrical and electronic equipment (WEEE) recycling facility. Two possible ground gas migration pathways for potential ground gases arising from the historic landfill are considered – a deep migration pathway through the alluvial gravel and shallow migration pathway through granular Made Ground.

The deep migration pathway is considered unlikely owing to the identified thickness of alluvial clay present (average on site thickness of 11.5m). Groundwater monitoring data for deep boreholes along the northern site boundary (BH101 and BH1D) did not identify dissolved-phase concentrations of chemicals of potential concern (COPC), which would be expected if the historic landfill had penetrated the alluvial gravel. Furthermore, the sub-artesian groundwater regime within the alluvial gravel would have resulted in groundwater ingress should the landfill have penetrated the granular alluvium and thus excavation into this stratum to form the landfill is considered unlikely. Identified concentrations of ground gases (methane and carbon dioxide) and ground gas flow rates within monitoring well BH101 (which targeted the alluvium gravel on the northern portion of the site) were typically low during all monitoring visits (with the exception of measured flow rates on 8 February 2010).

Shallow granular Made Ground has been identified within the northern area of the site (average of 0.3m thickness). Thicker granular material was identified within the central and southern areas of the site, at greater distance from the historic landfill during the previous investigation⁽⁵⁾. Granular materials are typically underlain by cohesive reworked alluvium (Made Ground). The area north of the site, corresponding with the historic landfill, is situated topographically level with the subject site. It is therefore considered that the minimal thickness of granular Made Ground along the northern site boundary is not sufficient to result in a significant shallow migration pathway. Further shallow ground gas monitoring wells (SBH1, SBH2 and SBH3) within the northern area of the site did not identify significant concentrations of methane, carbon dioxide and associated flow rates.

Furthermore, the stated landfill waste is recorded as inert waste, which is unlikely to comprise putrescible material.

In conclusion, it is considered that ground gas migration from the adjacent landfill via either deep migration pathways (i.e. the alluvial gravel) or shallow migration pathways (granular Made Ground) is unlikely.

5.2 Site Assessment

The proposed development for the subject site is to comprise a commercial/industrial end use. For this site, the likely foundation solution will comprise piled foundations due to the thickness of compressible alluvial deposits (approximately 11.5m thickness).

In consideration of the development proposals, gas monitoring results have been modelled using the Modified Wilson and Card classification. The results of the RSK ground gas monitoring are given in Appendix D. This data has been entered into the model to derive gas screening values.

(GSV s) and characteristic situation (CS) designations for each borehole. The modelled results are presented in Appendix F and summarised in Table 7.

As noted in Table 5, flow rates recorded on the site varied significantly between and during monitoring events, ranging from negative to positive flows at individual locations. It is considered likely that this reflects tidal influence beneath the site whereby groundwater fluctuations result in gas movement within pore spaces, known as the 'piston effect'.

For the purposes of the gas risk assessment RSK have utilised the highest recorded flow reading (negative or positive) recorded at each monitoring position.

Table 7 Summary of 'Worst Case' Gas Monitoring Data Showing Characteristic Situation Number

Borehole location	Max CH ₄ (%)	Max CO ₂ (%)	Max Flow Rate l/hr	GSV (l/hr)		CS Number ⁽⁴⁾
				CH ₄	CO ₂	
SBH1	<0.1	0.5	0.2 (ve)	0.00	0.00	CS1
SBH2	<0.1	0.6	0.6 (ve)	0.00	0.00	CS1
SBH3	<0.1	2.5	14.0 (+ve)	0.00	0.35	CS2
SBH4	<0.1	0.6	7.6 (+ve)	0.00	0.00	CS1
SBH5	0.1	0.1	0.8 (+ve)	0.00	0.00	CS1
SBH6	<0.1	0.3	6.3 (ve)	0.00	0.00	CS1
SBH7	<0.1	0.3	3.9 (ve)	0.00	0.01	CS1
SBH8	60	3.0	22.4 (+ve)	13.44	0.07	CS4
BH1S	47.5	5.4	10 (+ve)	4.52	0.43	CS4
BH1D	39	6.1	9.9 (ve)	3.90	0.54	CS4
BH2S	1.0	0.2	11.2 (+ve)	0.06	0.02	CS1
BH2D	2.3	4.0	9.8 (ve)	0.23	0.39	CS2
BH3S	11	4.2	0	0.02	0.01	CS1
BH3D	50.5	1.0	0.1	2.63	0.05	CS1
BH101	1.4	3.9	9.5 (ve)	0.13	0.15	CS2
BH102	3.2	4.1	0.6 (+ve)	0.02	0.01	CS1
BH103	78	6.6	24.9 (ve)	19.42	1.44	CS5
BH104	74	4.5	0.2 (ve)	0.07	0.00	CS2
BH104S	65	5.8	28.2 (+ve)	23.97	0.85	CS5
BH105	94	4.2	2.9 (ve)	1.10	0.02	CS3

The results show that boreholes screened within shallow alluvial clay (SBH1 – SBH7) have a very low to low risk characteristic situation CS1 and CS2 designation. A notable exception was SBH8 which had a moderate to high risk, characteristic situation CS4 designation. This correlates with visual observations of recovered core data where peat deposits (isolated lenses) were encountered at shallow depth within SBH8. No significant peat deposits were noted within SBH1–SBH7.

Typically, boreholes screened within the deeper alluvial clay/alluvial gravel had higher measured concentrations of methane, carbon dioxide and associated flow rates. The Modified Wilson and Card model for the site indicates that where these elevated concentrations of methane and

carbon dioxide were identified in the deeper geological units a typical CS designation of CS2 to CS4 was applicable (moderate to high risk), with two CS5 designations identified for BH104S and BH103

Calculated GSVs indicate the principal gas of concern to be methane Concentrations of carbon dioxide were generally low This is likely to reflect the solution of carbon dioxide into groundwater

5.3 Discussion around Conceptual Site Model

For the reasons noted in Section 5.1, it is considered that the principal source of potentially hazardous ground gas is the alluvium underlying the site and not the adjacent historic landfill The alluvial deposits contain lenses/pockets of peat which typically has the potential to give rise to elevated levels of ground gas and flow rates although typically these are generated in the relative short term as the trapped gas within the peat lenses dissipates with time As discussed in section 4.4, the variable flow rates recorded are considered likely to be affected by tidal influences, as well as atmospheric pressure

Consistent with the above boreholes BH101 – BH105, SBH8 BH104S BH1S, BH1D BH2S BH2D, BH3S and BH3D with response zones screened within peat bearing strata, have given rise to elevated levels of ground gasses These boreholes have also been installed with part of the response zone within the underlying alluvial gravel, which means that they are likely to be tidally influenced (with the exception of SBH8) Conversely, lower concentrations and flow rates were measured in those boreholes screened within the upper (approximately top 5m) alluvial clays alone (SBH1–SBH7)

During the intrusive works, isolated pockets of pseudo-fibrous peat were encountered at depth (8–11m bgl) Occasional narrow peat horizons (5–20mm thickness) were encountered within the shallow cohesive alluvium, in particular within BH104S It is likely that these thicker peat bands are localised and represent isolated peat lenses

Gas migration through the alluvial clays that overlie those deeper deposits which contain inclusions and lenses of peat is likely to be low, as typically evidenced by the boreholes installed with relatively shallow response zones in the alluvial clays alone

Consequently in the current situation, a linkage does not typically exist between the source of the hazardous ground gas and the proposed development However, as previously noted, the proposed development will be supported on piled foundations which are likely to penetrate through the alluvium to the competent alluvial gravel or underlying Mercia Mudstone Piled foundations have the potential to create migration pathways from the source of the ground gas in the peat up through the alluvium to the underside of the proposed development

It is understood that driven piles are potentially being considered to support the development at the site It is possible that ancillary buildings could be supported via ground bearing foundations depending upon ground conditions

Driven piles would displace soils in a radial fashion leading to a reduction in volume adjacent to the pile This leads to a densification of soils and a corresponding decrease in permeability The radial movements of the soil will also create a stress field in the zone of influence through which the pile has been driven which tends to make the soil close up after the pile has been driven It is therefore considered that the potential pathways created by the piles are not significant It is

considered that ground bearing foundations are unlikely to create migration pathways owing to the cohesive nature of the alluvial clay

Consolidation of the alluvium as a result of uplifting the site will result in a reduction in pore spaces within the alluvial material. The short term rate of gas emission from the peat has the potential to increase during the consolidation phase however the gas generation potential is likely to be reduced in the long term (post consolidation). The construction phase risks associated with increased gas generation in the short term can be mitigated through the use of personal protective equipment (PPE) and a site specific health and safety plan (SSHSP) and is unlikely to be significant. In the longer term, the residual gas risks should be mitigated via the adoption of suitable gas protection measures within proposed buildings.

5.4 Refined CSM

The conceptual model for the site has been refined in accordance with the additional assessment and analysis of the site conditions. This is presented as Table 8 and Figure 4.

Table 8 Revised Conceptual Site Model

Potential Contaminant Source	Potential Receptor	Possible Pathway	Viable Pollutant Linkage
Ground gases from soils (alluvial peat and Made Ground)	Future (commercial/industrial) site users	Preferential migration via building infrastructure such as piled foundations and/or service trenches leading to ingress and accumulation beneath buildings and/or within confined spaces	Potentially Complete – Characteristic situation CS1 CS2 for shallow alluvial deposits (very low to low risk). The pathway for ground gas migration is removed from the development via 11.5m of cohesive alluvium. However piled foundations could result in preferential migration pathways. Whilst considered unlikely, an actual pathway would result in very high risk .
	Build up of explosive mixtures of gases within buildings and/or confined spaces	Possible collection of ground gas within service trenches and other confined spaces	
	Construction workers		
Ground gases from adjacent landfill (off site)	Future (commercial/industrial) site users	Migration of ground gases via shallow granular Made Ground and/or deep granular alluvial gravel	Incomplete – Deposited waste within the historic landfill is described as inert, unlikely to generate significant volumes of ground gas. Ground conditions unlikely to result in shallow and/or deep migration pathways.
	Build up of explosive mixtures of gases within buildings and/or voids	Possible collection of ground gas within service trenches and other confined spaces	
	Construction workers		

6 OUTLINE GROUND GAS PROTECTION STRATEGY

CIRIA Report C665⁽³⁾ has been used to provide guidance in the assessment of ground gas at the site. The Modified Wilson and Card system has been adopted for assessment of the commercial end use with BS8485 utilised to inform the ground gas protection strategy in the following section.

Typically the results from the Modified Wilson and Card classification indicate the site would be designated as CS1 to CS3 (very low to moderate risk). However, as demonstrated in boreholes SBH8, BH104S, BH103, BH1S and BH1D, where local peat deposits are present this designation could increase to CS4 to CS5.

In due consideration of the above, the remedial strategy for the site has been designed to reflect the high methane concentrations recorded whilst recognising that the source of the gas is typically localised peat lenses at depth within the alluvial deposits, migration from which will largely be mitigated by the overlying alluvial clay which contains only thin partings and lenses of peat material, but that a viable pathway may be formed by piling.

To date no detailed information regarding floor slab construction has been provided to RSK. In this relation the gas protection recommendations are provided to reflect 3 different potential development scenarios:

- 1 Large span industrial type buildings with *in-situ* reinforced concrete suspended floor slabs,
- 2 Commercial type buildings (inc. offices, small plant buildings etc.) where *in-situ* reinforced concrete suspended floor slabs are utilised, and
- 3 Commercial type buildings (inc. offices, small plant buildings etc.) where pre-cast floor slabs are utilised.

The gas protection recommendations reflecting the above are summarised in Table 9. The gas protection requirements for any buildings which fall outside the scenarios listed above should be clarified with RSK as part of the development design.

Table 9 Summary of Outline Gas Protection Recommendations

Scenarios	Typical scope of protection measures	BS8485 Considerations	Important Notes and Requirements
Large span industrial type buildings with in-situ reinforced concrete suspended floor slabs	A 2000 gauge (minimum) gas resistant membrane should be incorporated within the floor slab construction Service penetrations should be cast into the slab All service penetrations and joints should be sealed with water bars The number of penetrations through the slab and membrane should be limited by design	The floor slab scores 1.5 points and the membrane installation 1 point = 2.5 total equivalent to CS3/CS4 protection for an industrial building	The gas membrane specification data sheet should be forwarded to RSK for approval prior to commencement of installation on site Gas membrane detailing drawings should be forwarded to RSK for approval prior to commencement of works on site The membrane should be inspected by an independent party upon installation and immediately prior to being covered
Commercial type buildings (inc offices small plant buildings etc) where in situ reinforced concrete suspended floor slabs are utilised	A 2000 gauge (minimum) gas resistant membrane should be incorporated within the floor slab construction Service penetrations should be cast into the slab All service penetrations and joints should be sealed with water bars The number of penetrations through the slab and membrane should be limited by design	The floor slab scores 1.5 points and the membrane installation 2 points = 3.5 total equivalent to CS3/CS4 protection for a commercial building	The gas membrane specification data sheet should be forwarded to RSK for approval prior to commencement of installation on site Gas membrane detailing drawings should be forwarded to RSK for approval prior to commencement of works on site The membrane should be installed by a Specialist Contractor with appropriate CQA certification provided and integrity testing completed
Commercial type buildings (inc offices small plant buildings etc) where pre cast floor slabs are utilised	A 2000 gauge (minimum) gas resistant membrane should be incorporated within the floor slab construction with all joints and penetrations sealed The floor slab should be passively ventilated ideally by a clear open void with minimum void height of 225mm Voids should be ventilated by openings providing not less than 1500mm ² per metre run of external wall or 500mm ² per m ² of floor area whichever gives the greater opening Ventilation openings should be provided on at least two opposite sides of a building The number of penetrations through the slab and membrane should be limited by design	Passive ventilation (assuming very good performance in accordance with BS8485) scores 2.5 points and the membrane installation 2 points = 4.5 total equivalent to CS4 protection for a commercial building	The gas membrane specification data sheet should be forwarded to RSK for approval prior to commencement of installation on site Gas membrane detailing drawings should be forwarded to RSK for approval prior to commencement of works on site The membrane should be installed by a Specialist Contractor with appropriate CQA certification provided and integrity testing completed

6.1.1 Additional Gas Protection Requirements

Any granular material e.g. drainage mat, pile mat etc. placed on the site to facilitate construction should be removed from beneath proposed building footprints and replaced with well compacted cohesive fill to limit the potential for gas accumulation beneath the building construction. Service trenches should be sealed at regular intervals, and notably around the periphery of buildings to prevent preferential pathways for ground gas migration from developing.

Elsewhere on site, site surfacing should be left as permeable as possible to permit natural venting of any ground gas to atmosphere.

7 CONCLUSIONS

Results from a preliminary round⁽⁵⁾ of ground gas monitoring at the site indicated elevated concentrations of methane and carbon dioxide from boreholes installed within underlying peat and gravel strata. Measured gas flow rates were generally low. Two potential sources were considered, the adjacent historic landfill and peat deposits within the underlying alluvium.

RSK were commissioned by NPL to undertake a more detailed assessment of risk from ground gas. RSK undertook the installation of additional ground gas monitoring locations and an extended programme of gas monitoring between January and March 2010 from existing and new boreholes.

RSK consider that the source of ground gas is the underlying geology (peat deposits within the cohesive alluvium). The adjacent historic landfill and contaminants within Made Ground were discounted as sources within the refined CSM.

Gas monitoring has indicated elevated concentrations of methane and carbon dioxide typical of a peat source. Flow rates have typically been moderate to high (both negative and positive flows). The gas regime is considered to be influenced by tidal groundwater movements beneath the site.

CIRIA Report C665⁽³⁾ and BS8485⁽⁴⁾ have been used in the assessment of ground gas at the site and the Modified Wilson and Card system adopted for a commercial end use.

- Typically, boreholes screened within shallow alluvial clay (SBH1–SBH7) have a very low to low risk, characteristic situation CS1 and CS2 designation.
- Typically, boreholes screened within the deeper alluvial clay/alluvial gravel had higher measured concentrations of methane, carbon dioxide and associated flow rates, a typical CS designation of CS2 to CS4 was applicable (moderate to high risk), with two CS5 designations identified for BH104S and BH103.

Typically the results from the Modified Wilson and Card classification indicate the site would be designated as CS1 to CS3 (very low to moderate risk). However, where local peat deposits are present this designation could increase to CS4 to CS5 (high risk).

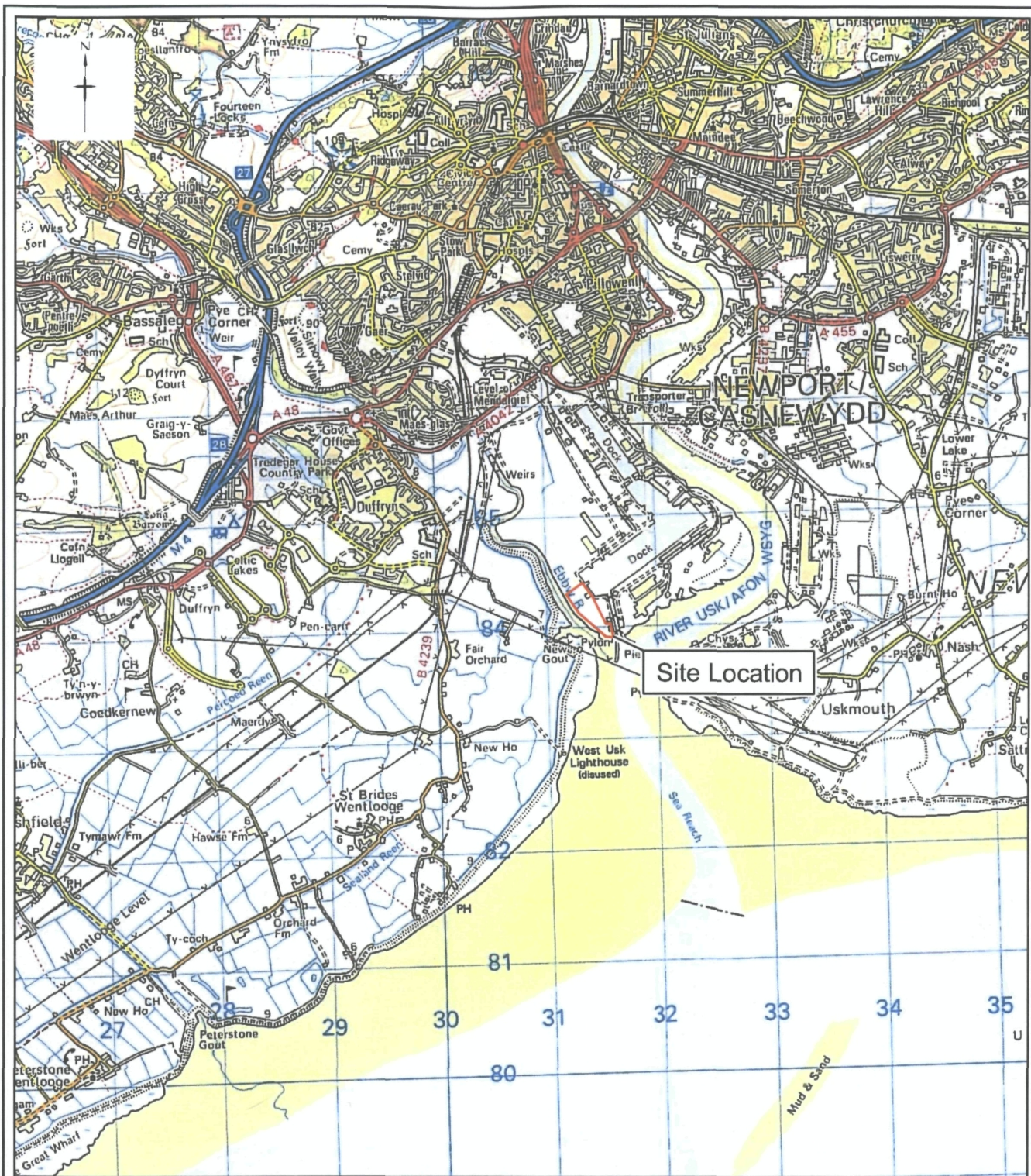
The outline remedial strategy for the site has been designed to reflect the high methane concentrations recorded whilst recognising that the source of the gas is typically localised peat lenses at depth within the alluvial deposits, migration from which will largely be mitigated by the overlying alluvial clay which contains only thin partings of peat material.

Outline recommendations for the ground gas protection strategy at the site are set out in Section 6. It should be noted that these are subject to confirmation when the floor slab construction and pile type of the proposed buildings is confirmed.

8 REFERENCES

- 1 The Building Regulations 2000 - Approved Document C (2004 edition) Office of the Deputy Prime Minister
- 2 Environment Agency Model Procedures for the Management of Contaminated Land Contaminated Land Report Number 11 (CLR11) September 2004
- 3 Wilson S et al (2007) CIRIA Report C665 Assessing Risks Posed By Hazardous Ground Gases To Buildings Construction Industry Research and Information Association
- 4 BS8485 2007 Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments
- 5 RSK Geoconsult Limited Initial Geotechnical and Environmental Investigation Newport Biomass Project Newport Wales 110041 – R2 (00), May 2008
- 6 RSK Geoconsult Limited, Preliminary Risk Assessment, Newport Biomass Project, Newport, Wales 110041 – R1 (00) December 2007
- 7 RSK STATS Geoconsult Limited Newport Biomass Power Plant, Newport, South Wales 310826 – R1 (00)
- 8 Welsh Local Government Association & Environment Agency Wales Land Contamination A Guide for Developers February 2006
- 9 British Geological Survey (BGS) Newport, Sheet 249, Solid and Drift Scale 1 50,000, 1994
- 10 Groundwater Vulnerability Map Sheet No 36 Mid Glamorgan 1 100 000, 2005
- 11 British Standards Institution, Code of Practice for Site Investigations BS 5930 1999
- 12 British Oceanographic Data Centre
https://www.bodc.ac.uk/data/online_delivery/ntslf/raw/
- 13 Williams, GJ May 1968 The Buried Channel and Superficial Deposits of the Lower Usk and their Correlation with similar features in the Lower Severn

Figures



Reproduced from the 2006 Ordnance Survey 1:50,000 Scale Landranger Map 171, OSGR - ST 314 841
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Client:

NEVIS POWER LIMITED

Project Title

NEWPORT, BIOMASS

Drawing Title

SITE LOCATION MAP

Rev	Drawn	Date	Checked	Date	Approved	Date
00	MDW	22.03.10	AP	22.03.10	AP	22.03.10

Dimensions

m

Scale

-

Original Size

A4

Project Number

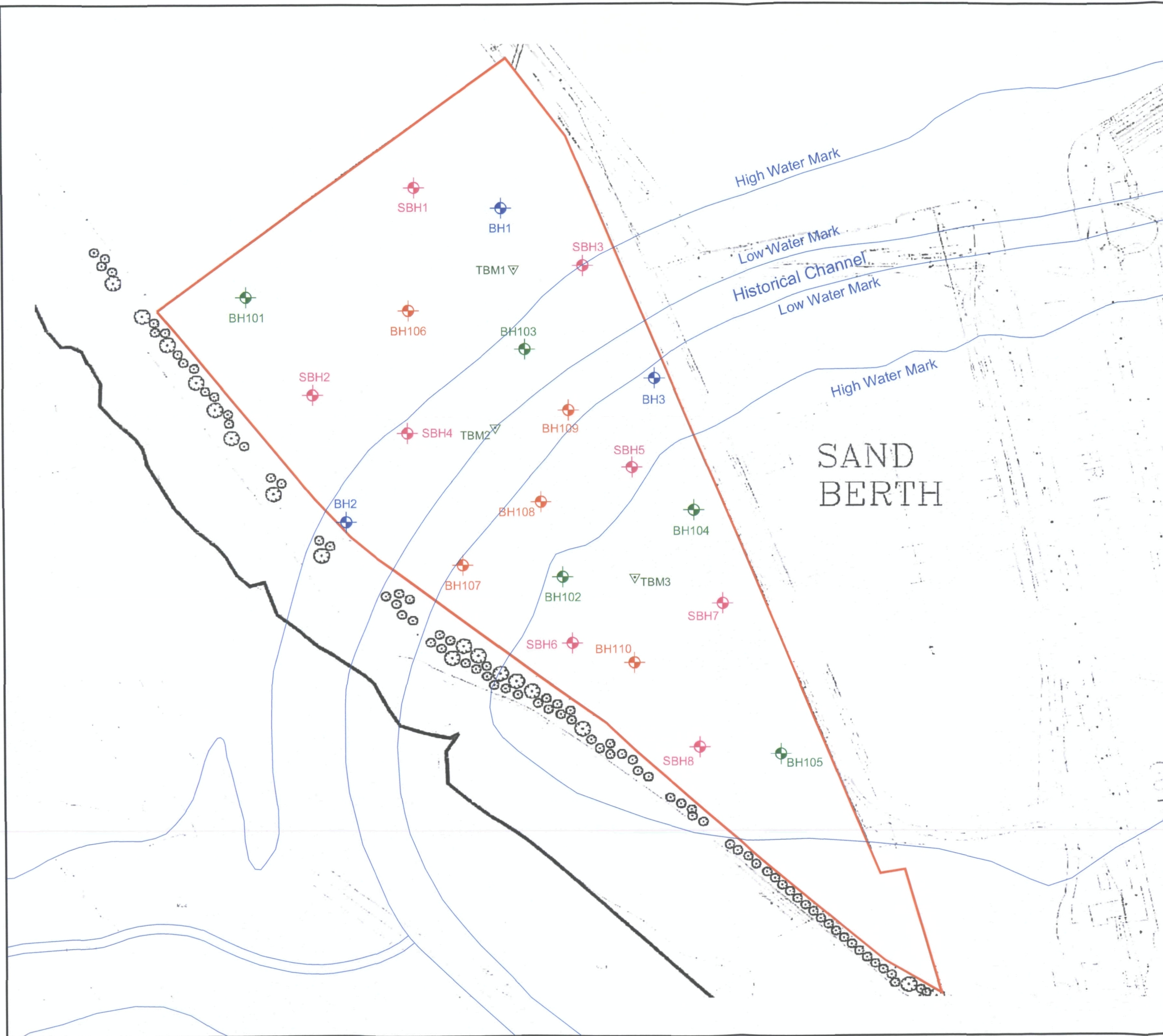
310826

Drawing File

310826 - Fig 1 SLP.dwg

Drawing Number

FIGURE 1



LEGEND

- Site Boundary
- ⊕ BH1S/D - BH3S/D (Installed 2008)
- ⊕ BH101-105 (Installed 2010)
- ⊕ BH106-110 (No installation 2010)
- ⊕ SBH1-SBH8 (Installed 2010)
- ▽ Temporary Bench Mark

Rev.	Date	Amendment	Drawn	Chkd.	Appd.
P1	09.03.10	FIRST ISSUE	MDW	AP	AP

RSK GROUP PLC

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Project Title

NEWPORT BIOMASS

Drawing Title

EXPLORATORY LOCATIONS

Drawn	Date	Checked	Date	Approved	Date
MDW	09.03.10	AP	09.03.10	AP	09.03.10

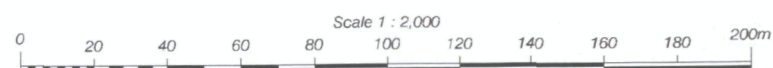
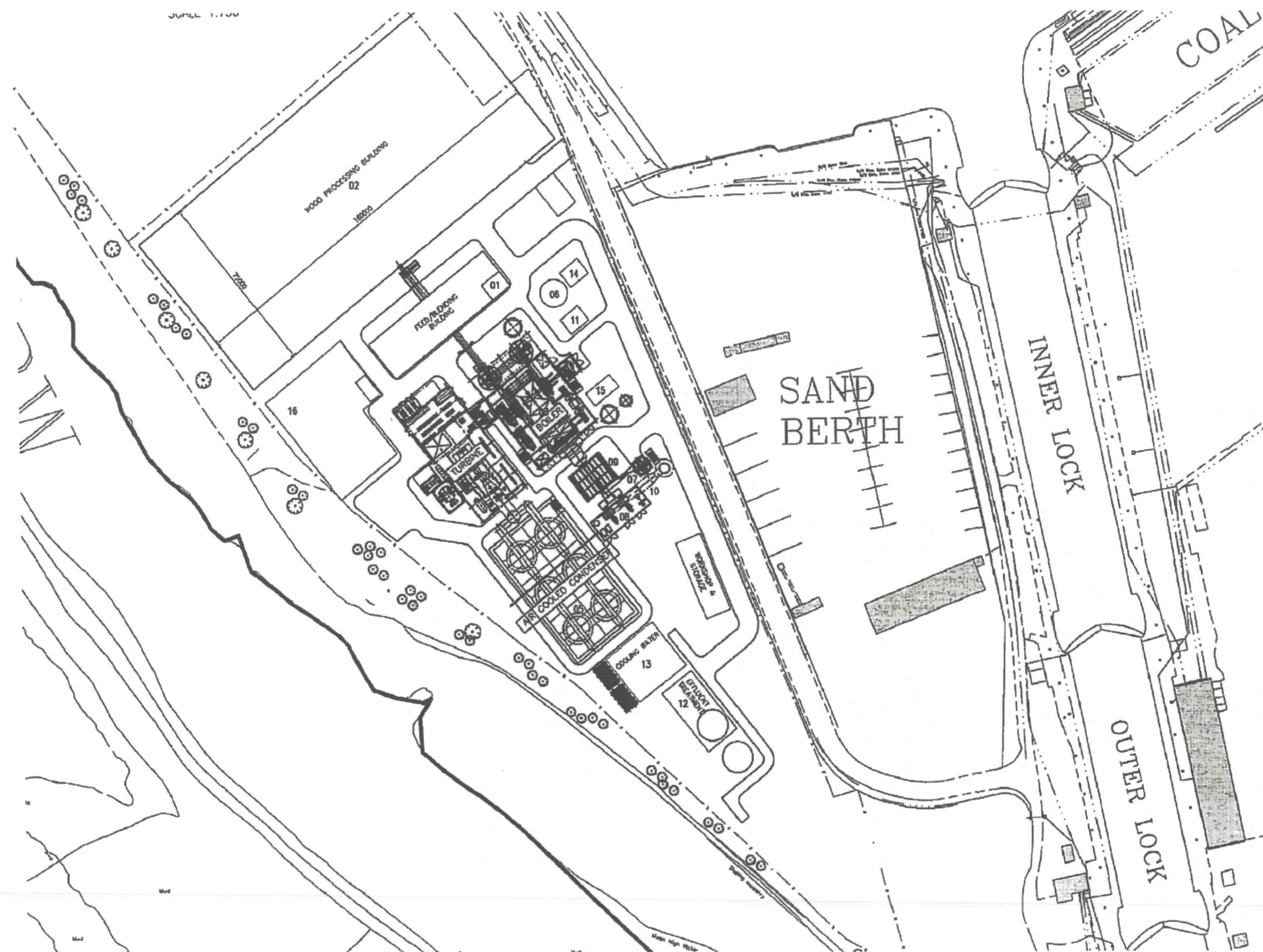
Scale	Orig Size	Dimensions
1:1500	A3	m

Project No.	Drawing File
310826	310826 (T1).dwg

Drawing No.	Rev.
FIGURE 2	P1

Scale 1 : 1,500

0 20 40 60 80 100m



LEGEND

P1	22.03.10	FIRST ISSUE	MDW	AP	AP
Rev.	Date	Amendment	Drawn	Chkd.	Appd.



Green Farm Business Park,
Latteridge Green,
Folly Road,
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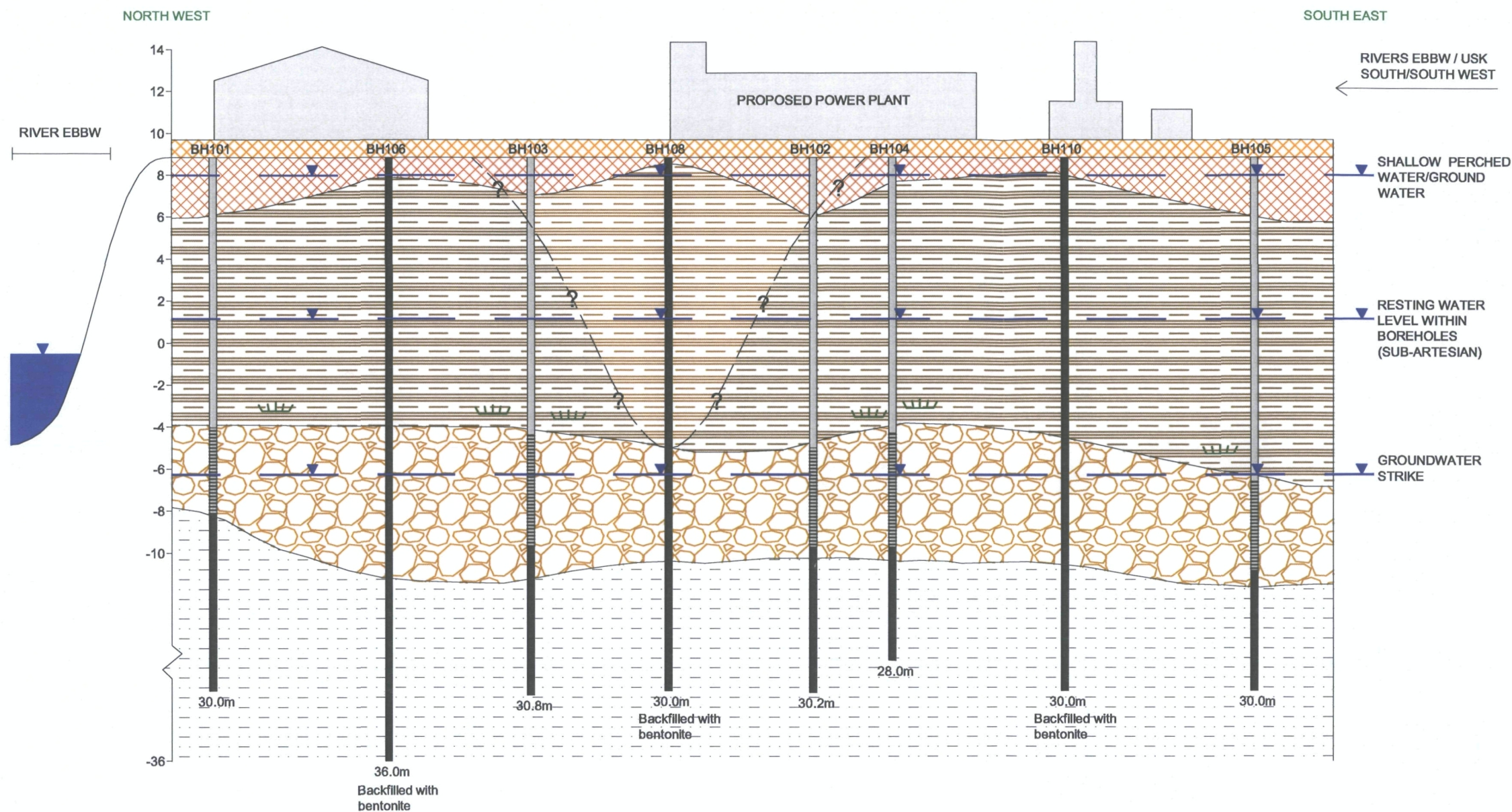
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Client
NEVIS POWER LIMITED

Project Title
NEWPORT, BIOMASS

Drawing Title
**PROPOSED DEVELOPMENT
LAYOUT PLAN**

Drawn MDW	Date 22.03.10	Checked AP	Date 22.03.10	Approved AP	Date 22.03.10
Scale 1:2000	Orig Size A3	Dimensions m	Project No. 310826	Drawing File 310826 (R02-00).dwg	Rev. P1



POTENTIAL ON-SITE SOURCES

- COPC associated with historic port activities and commercial properties within the port boundary;
- COPC associated with potential contaminated dredgings used during land reclamation; and
- COPC associated with the temporary storage of vehicles on site.

POTENTIAL OFF-SITE SOURCES

- COPC associated with the WEEE recycling facility located adjacent to the northern site boundary; and
- COPC associated with the historic land fill site to the north of the site.

RECEPTORS

- River Ebbw; and
- River Usk

PATHWAYS

- Leaching;
- Dissolution or migration of free-phase product; and
- Vertical and lateral migration.

POTENTIALLY COMPLETE POLLUTANT LINKAGES

- Potential risks to human health and building infrastructure from ground gases from soils (alluvial peat) via preferential migration along piled foundations and/or service trenches leading to ingress and accumulation beneath buildings and/or within confined spaces and risk from asphyxiation and/or explosion.

LEGEND

- MADE GROUND
- PROPOSED UPLIFT
- ALLUVIUM CLAY (WITH PEAT AT DEPTH)
- SAND, GRAVEL & COBBLES
- MERCIA MUDSTONE
- REWORKED ALLUVIAL DEPOSIT
- HISTORIC RIVER CHANNEL

P1	22.03.10	FIRST ISSUE	MDW	AP	AP
Rev.	Date	Amendment	Drawn	Chkd.	Appd.



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Client
NEVIS POWER LIMITED

Project Title
**NEWPORT, BIOMASS
POWER PLANT**

Drawing Title
**REFINED CONCEPTUAL
SITE MODEL**

Drawn	Date	Checked	Date	Approved	Date
MDW	22.03.10	AP	22.03.10	AP	22.03.10
Scale	1:2000	Orig Size	A3	Dimensions	m
Project No.	310826	Drawing File	310826 (R02-00).dwg		
Drawing No.	FIGURE 4			Rev.	P1

Appendix A
Summary of Legislation and Policy Relating to Contaminated Land

Summary of legislation and policy relating to contaminated land

Part IIA of the Environmental Protection Act (EPA) and its associated Contaminated Land Regulations 2000 (SI 2000/227), which came into force in England on 1 April 2000 are the basis for the current regulatory framework and form the statutory regime for the identification and remediation of contaminated land

Part IIA of the EPA 1990 defines contaminated land as any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in on or under the land that significant harm is being caused, or that there is significant possibility of significant harm being caused or that pollution of controlled waters is being or is likely to be caused. Controlled waters defined by the Water Resources Act, are considered all groundwater inland waters and estuaries

The intention of the EPA 1990 Part IIA is to deal with contaminated land issues that are considered to cause significant harm on land that is not undergoing development, (see circular 2-2000 for definitions of what is significant harm, website link - <http://www.defra.gov.uk/environment/land/contaminated/circ2-2000/index.htm>)

The Water Framework Directive 2000/60/EC (WFD) legislation aims to deliver long-term protection of the water environment and to improve the quality of all water bodies, including rivers, wetlands coasts, estuaries, lakes, man-made structures and groundwater

The Water Resources Act 1991 introduces an offence to cause or knowingly permit pollution of controlled waters. The Act provides the Environment Agency with powers to implement remediation necessary to protect controlled waters and recover all reasonable costs of doing so. The Groundwater Regulations, 1998 aim to complement EPA 1990. These regulations give the Environment Agency the power to *prevent* the discharge of List I substances and *restrict* the discharge of List II substances to groundwater

Contaminated land is often dealt with through planning because of land redevelopment. This approach is documented in Planning Policy Statement Planning and Pollution Control PPS23, which states that it remains the responsibility of the landowner and developer to identify land affected by contamination and carry out sufficient remediation to render the land suitable for use. The overall aim of the planning and pollution control policy is to promote the sustainable and beneficial use of land (in particular encouraging reuse of previously developed land in preference to greenfield sites). Within this aim polluting activities that are necessary for society and the economy should be so sited and planned, and subject to such planning conditions, that their adverse effects are minimised and contained to within acceptable limits

Appendix B
Service Constraints

**RSK STATS GEOCONSULT LIMITED
SERVICE CONSTRAINTS**

- 1 This report and the site investigation carried out in connection with the report (together the Services) were compiled and carried out by RSK STATS Geoconsult Limited (RSK) for Nevis Power Limited (the client) in accordance with the terms of a contract between RSK and the client dated 16 November 2009. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further and in particular the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources including financial and manpower resources agreed between RSK and the client.
- 2 Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied in relation to the Services.
- 3 Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report or otherwise details of the Services or any part of the Services be made known to any such party and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.**
- 4 It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
- 5 The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
- 6 The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK Limited. RSK is not liable for the existence of any condition the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.
- 7 The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walkover survey of the site together with RSK's interpretation of information including documentation obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information including documentation reviewed by RSK and the observations possible at the time of the walkover survey. Further, RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties including laboratories and information services during the performance of the Services. RSK is not liable for any inaccurate information or conclusions the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
- 8 The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information] and it should not be inferred that other chemical species are not present.
- 9 Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on and surrounding the site.

Appendix C
Photographs of Site Works

RSK

GROUP PLC

PHOTOGRAPHIC LOG


Client Name: NEVIS POWER LTD	Site Location: Newport Biomass Power Plant	Site Assessment
Photo No. 1		
Direction Photo Taken: West		
Description: Looking west across the site at rotary setup on borehole BH101		

Photo No. 2	
Direction Photo Taken: South	
Description: Looking south across the site. Cable percussion set up on borehole BH107 in the distance	


Client Name: NEVIS POWER LTD		Site Location: Newport Biomass	Site Assessment
Photo No. 3			
Direction Photo Taken: East			
Description: Looking east across the site at rotary drilling setup on BH109			

Photo No. 4	
Direction Photo Taken: North-east	
Description: Photograph of looking north-east rotary coring setup on borehole BH109	


Client Name: NEVIS POWER LTD	Site Location: Newport Biomass	Site Assessment
Photo No. 5		
Direction Photo Taken: N/A		
Description: Looking at rotary coring setup on borehole BH105		

Photo No. 6	
Direction Photo Taken: South	
Description: Photograph of rotary coring setup on BH109 in the foreground with cable percussion setup on BH104 in the background	

Appendix D
Ground Gas Monitoring Data

Site Newport Biomass Power Plant
 Job No 310826 - 18 01 2010



Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH1	0	-0.2	1022	0	0	0	20.8		0	0	W- 1.785m T- 5.15m GL +1.13m
	15			0	0	0	21.7		0	0	
	30			0	0	0	21.7		0	0	
	45			0	0	0	21.8		0	0	
	60 (1)			0	0	0	21.8		0	0	
	90			0	0	0	21.7		0	0	
	120 (2)			0	0	0	21.7		0	0	
	180 (3)			0	0	0	21.7		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1022		
Weather	overcast showeers		
Temperature (°C, between -10°C to +40°C only)	3C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Site Biomass Power Plant
 Job No 310826 18 01 2010



Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH2	0	0	1022	0	0	0 1	20 7		0	0	W 1 50m
	15			0	0	0 2	21 5		0	0	T- 5 57m
	30			0	0	0 1	21 7		0	0	GL
	45			0	0	0	21 7		0	0	+1 45m
	60 (1)			0	0	0	21 7		0	0	
	90			0	0	0	21 7		0	0	
	120 (2)			0	0	0	21 7		0	0	
	180 (3)			0	0	0	21 7		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1022		
Weather		overcast showeers		
Temperature' (°C, between -10°C to +40°C only)		3C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

Site
Job No

Site Biomass Power Plant
 Job No 310826 18 01 2010



Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH3	0	-0 2	1024	0	0	0	21 1		0	0	W- 3 11m
	15			0	0	0 9	9 7		0	0	T- 5 25m
	30			0	0	1 1	9 6		0	0	GL
	45			0	0	1 1	8 8		0	0	+1 15m
	60 (1)			0	0	1 1	8 7		0	0	
	90			0	0	1 1	8 6		0	0	
	120 (2)			0	0	1	8 6		0	0	
	180 (3)			0	0	0 8	9 1		0	0	
	240 (4)			0	0	0 7	9 8		0	0	
	300 (5)			0	0	0 6	10 7		0	0	
	360 (6)			0	0	0 5	11 7		0	0	
	420 (7)			0	0	0 4	12 3		0	0	
	480 (8)			0	0	0 4	12 8		0	0	
	540 (9)			0	0	0 4	13 2		0	0	
	600 (10)			0	0	0 3	13 5		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1024		
Weather	overcast showeers		
Temperature (°C, between -10°C to +40°C only)	3C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Site
 Job No

Site Biomass Power Plant
Job No 310826 - 18 01 2010



Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH4	0	-1.9	1022	0	0	0.1	20.9		0	0	W- 1.17m
	15			0	0	0.2	21.7		0	0	T- 5.00m
	30			0	0	0.1	21.7		0	0	GL
	45			0	0	0	21.7		0	0	+1.05m
	60 (1)			0	0	0	21.7		0	0	
	90			0	0	0	21.7		0	0	
	120 (2)			0	0	0	21.6		0	0	
	180 (3)			0	0	0	21.6		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1022		
Weather		overcast showeers		
Temperature (°C, between 10°C to +40°C only)		3C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH5	0	0	1022	0	0	0	21		0	0	W- 1 08m
	15			0	0	0.1	21.4		0	0	T- 5 15m
	30			0	0	0.1	21.3		0	0	GL
	45			0	0	0.1	21.3		0	0	+1 06m
	60 (1)			0	0	0.1	21.4		0	0	
	90			0	0	0	21.5		0	0	
	120 (2)			0	0	0	21.5		0	0	
	180 (3)			0	0	0	21.6		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for not less than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1022		
Weather		overcast showeers		
Temperature (°C, between -10°C to +40°C only)		3C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser			Last calibrated
	Mass Balance Transducer			Last calibrated
	MiniRAE PID			Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH6	0	0	1024	0	0	0	21.4		0	0	W- 1.82m
	15			0	0	0	21.4		0	0	T- 5.15m
	30			0	0	0	21.4		0	0	GL
	45			0	0	0	21.4		0	0	+1.30m
	60 (1)			0	0	0	21.4		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)			0	0	0	21.4		0	0	
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1024		
Weather	overcast showeers		
Temperature (°C, between 10°C to +40°C only)	3C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
SBH7	0	-3.9	1022	0	0	0	21	PID	H ₂ S	CO	W- 1 08m
	15			0	0	0.3	21.3		0	0	T- 4 23m
	30			0	0	0.5	21.2		0	0	GL
	45			0	0	0.5	21.2		0	0	+1 05m
	60 (1)			0	0	0.4	21.2		0	0	
	90			0	0	0.4	21.3		0	0	
	120 (2)			0	0	0.4	21.3		0	0	
	180 (3)			0	0	0.3	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for not less than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1022		
Weather	overcast showeers		
Temperature (°C, between -10°C to +40°C only)	3C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH8	0	0.7	1024	0.5		0.1	20.8		0	0	W-
	15			27		2	3.9		0	0	1 805m T-
	30			29		2.2	2.7		0	0	5 115m
	45			29		2.2	2.6		0	0	GL
	60 (1)			28.5		2.1	2.8		0	0	+2 07m
	90			28		2.1	3		0	0	
	120 (2)			27		2	2.7		0	0	
	180 (3)			25.5		1.9	4.8		0	0	
	240 (4)			22.5		1.7	6.6		0	0	
	300 (5)			17.5		1.3	9.5		0	0	
	360 (6)			13.5		0.8	12.8		0	0	
	420 (7)			9		0.6	15.4		0	0	
	480 (8)			5.6	94.3	0.4	17.8		0	0	
	540 (9)			4	86.1	0.3	18.9		0	0	
	600 (10)			2.2	45.2	0.1	19.9		0	0	

Notes

Monitoring order is from left to right across table

Monitoring should be for not less than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1024		
Weather		overcast showeers		
Temperature (°C, between -10°C to +40°C only)		3C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH1	0	0	1031	0	0	0.2	21.8		0	0	
	15			0	0	0.1	21.7		0	0	
	30			0	0	0	21.7		0	0	
	45			0	0	0	21.7		0	0	
	60 (1)			0	0	0	21.7		0	0	
	90			0	0	0	21.7		0	0	
	120 (2)			0	0	0	21.7		0	0	
	180 (3)			0	0	0	21.7		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1031		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	6C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH2	0	0	1031	0	0	0	21.6		0	0	
	15			0	0	0	21.6		0	0	
	30			0	0	0	21.6		0	0	
	45			0	0	0	21.6		0	0	
	60 (1)			0	0	0	21.6		0	0	
	90			0	0	0	21.6		0	0	
	120 (2)			0	0	0	21.6		0	0	
	180 (3)			0	0	0	21.5		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1031		
Weather		overcast windy		
Temperature (°C, between 10°C to +40°C only)		6C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH3	0	-3.1	1031	0	0	0	21		0	0	
	15			0	0	0.4	19.1		0	0	
	30			0	0	0.6	18.5		0	0	
	45			0	0	0.6	18.4		0	0	
	60 (1)			0	0	0.6	18.4		0	0	
	90			0	0	0.6	18.3		0	0	
	120 (2)			0	0	0.6	18.4		0	0	
	180 (3)			0	0	0.6	18.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1031		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	6C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH4	0	0	1031	0	0	0	21.8		0	0	
	15			0	0	0.4	21.4		0	0	
	30			0	0	0.3	21.4		0	0	
	45			0	0	0.2	21.4		0	0	
	60 (1)			0	0	0.1	21.5		0	0	
	90			0	0	0	21.5		0	0	
	120 (2)			0	0	0.1	21.5		0	0	
	180 (3)			0	0	0.1	21.5		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1031		
Weather		overcast windy		
Temperature (°C, between -10°C to +40°C only)		6C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

Site
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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH5	0	0.8	1031	0	0	0	21.3		0	0	
	15			0	0	0	21.2		0	0	
	30			0	0	0	21.2		0	0	
	45			0	0	0	21.2		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.3		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)	AP			
Atmospheric Pressure (mB)	1031			
Weather	overcast windy			
Temperature (°C, between -10°C to +40°C only)	6C			
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress	N/A			
Other Comments / Observations	N/A			
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH6	0	0.3	1031	0	0	0	21.7		0	0	
	15			0	0	0	21.4		0	0	
	30			0	0	0	21.4		0	0	
	45			0	0	0	21.4		0	0	
	60 (1)			0	0	0	21.4		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1031		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	6C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH7	0	0	1031	0	0	0	21.6		0	0	
	15			0	0	0	21.3		0	0	
	30			0	0	0	21.3		0	0	
	45			0	0	0	21.3		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.3		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1031		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	6C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH8	0	-0.2	1031	13.5		0.1	21.6		0	0	
	15			18		0.8	14.7		0	0	
	30			19		0.8	14.7		0	0	
	45			18		0.8	14.5		0	0	
	60 (1)			17		0.8	14.8		0	0	
	90			14		0.7	14.5		0	0	
	120 (2)			10.5		0.5	17.6		0	0	
	180 (3)			5.3		0.3	19.3		0	0	
	240 (4)			4.1	83.2	2	19.8		0	0	
	300 (5)			2.9	57	0.1	20.1		0	0	
	360 (6)			2.8	54.1	0	20.2		0	0	
	420 (7)			2.7	52.6	0	20.3		0	0	
	480 (8)			2	39.9	0	20.6		0	0	
	540 (9)			1.2	23.9	0	20.8		0	0	
	600 (10)			1.7	33.8	0	20.6		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)	AP			
Atmospheric Pressure (mB)	1031			
Weather	overcast windy			
Temperature (°C, between -10°C to +40°C only)	6C			
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress	N/A			
Other Comments / Observations	N/A			
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH1	0	0	1013	0	0	0 1	21		0	0	
	15			0	0	0 2	21 3		0	0	
	30			0	0	0 1	21 5		0	0	
	45			0	0	0	21 6		0	0	
	60 (1)			0	0	0	21 6		0	0	
	90			0	0	0	21 6		0	0	
	120 (2)			0	0	0	21 6		0	0	
	180 (3)			0	0	0	21 5		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between 10°C to +40°C only)	7C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH2	0	0	1013	0	0	0	21.7		0	0	
	15			0	0	0.6	21.3		0	0	
	30			0	0	0.5	21.3		0	0	
	45			0	0	0.4	21.3		0	0	
	60 (1)			0	0	0.2	21.4		0	0	
	90			0	0	0.1	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	7C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH3	0	0	1013	0	0	0	21.4		0	0	
	15			0	0	0.8	18.3		0	0	
	30			0	0	1	17.9		0	0	
	45			0	0	1.1	17.9		0	0	
	60 (1)			0	0	1.1	17.9		0	0	
	90			0	0	1.1	17.9		0	0	
	120 (2)			0	0	1.1	17.9		0	0	
	180 (3)			0	0	1.1	17.9		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	7C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH4	0	0	1013	0	0	0	21.7		0	0	
	15			0	0	0.6	21.2		0	0	
	30			0	0	0.3	21.3		0	0	
	45			0	0	0.2	21.3		0	0	
	60 (1)			0	0	0.2	21.3		0	0	
	90			0	0	0.1	21.3		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1013		
Weather		overcast windy		
Temperature (°C, between -10°C to +40°C only)		7C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH5	0	0	1013	0	0	0	21.6		0	0	
	15			0	0	0	21.3		0	0	
	30			0	0	0	21.3		0	0	
	45			0	0	0	21.3		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.2		0	0	
	120 (2)			0	0	0	21.2		0	0	
	180 (3)			0	0	0	21.2		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between 10°C to +40°C only)	7C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH6	0	0	1013	0	0	0	21.5		0	0	
	15			0	0	0	21.3		0	0	
	30			0	0	0	21.2		0	0	
	45			0	0	0	21.2		0	0	
	60 (1)			0	0	0	21.2		0	0	
	90			0	0	0	21.2		0	0	
	120 (2)			0	0	0	21.2		0	0	
	180 (3)			0	0	0	21.2		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between 10°C to +40°C only)	7C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH7	0	0 1	1013	0	0	0	21 6		0	0	
	15			0	0	0 2	21		0	0	
	30			0	0	0 2	20 9		0	0	
	45			0	0	0 1	21		0	0	
	60 (1)			0	0	0	21		0	0	
	90			0	0	0	21 1		0	0	
	120 (2)			0	0	0	21 1		0	0	
	180 (3)			0	0	0	21 1		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between 10°C to +40°C only)	7C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH8	0	2.8	1013	27	>100	1	11.1		0	0	
	15			36	>100	1.5	9.4		0	0	
	30			31.5	>100	1.5	9.9		0	0	
	45			26.5	>100	1.1	11.7		0	0	
	60 (1)			20.5	>100	0.8	13.6		0	0	
	90			17	>100	0.7	15		0	0	
	120 (2)			15	>100	0.7	15.6		0	0	
	180 (3)			12.5	>100	0.6	16.6		0	0	
	240 (4)			10.5	>100	0.5	17.2		0	0	
	300 (5)			8.2	>100	0.4	18.2		0	0	
	360 (6)			6.8	>100	0.3	18.6		0	0	
	420 (7)			5.4	>100	0.2	19.3		0	0	
	480 (8)			4.9	94.6	0.1	19.5		0	0	
	540 (9)			4.2	85.7	0.1	19.7		0	0	
	600 (10)			3.8	74	0	19.9		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1013		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	7C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104S	0	8.5	1013	78	>100	5	3.1		0	0	
	15			73	>100	5.1	4		0	0	
	30			67	>100	4.4	5.7		0	0	
	45			55	>100	3.8	7.8		0	0	
	60 (1)			53	>100	3.6	8.7		0	0	
	90			59	>100	4	6.8		0	0	
	120 (2)			62	>100	4.1	6.9		0	0	
	180 (3)			54	>100	3.7	8		0	0	
	240 (4)			51	>100	3.4	9.3		0	0	
	300 (5)			47	>100	3.2	10		0	0	
	360 (6)			46.5	>100	3.1	10.4		0	0	
	420 (7)			46	>100	3	10.3		0	0	
	480 (8)			45.5	>100	3.1	10.1		0	0	
	540 (9)			42	>100	2.8	11		0	0	
	600 (10)			44.5	>100	3	10.3		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)	AP			
Atmospheric Pressure (mB)	1013			
Weather	overcast windy			
Temperature (°C, between -10°C to +40°C only)	7C			
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress	N/A			
Other Comments / Observations	N/A			
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH1S	0	-9.5	1007	0	0	0.3	20.9		0	0	
	15			2.4	58.8	1.2	18.7		0	0	
	30			3.2	63.5	1.3	18.4		0	0	
	45			3.4	66.7	1.3	18.3		0	0	
	60 (1)			3.5	68.1	1.3	18.3		0	0	
	120 (2)			3.8	74.6	1.4	17.9		0	0	
	180 (3)			4.4	87.9	1.6	17.1		0	0	
	240 (4)			6.9	>100	2.3	15.9		0	0	
	300 (5)			9.7	>100	2.7	12.9		0	0	
	360 (6)			12.5	>100	3.4	11		0	0	
	420 (7)			15	>100	3.9	9.1		0	0	
	488 (8)			16	>100	4.1	8.2		0	0	
	540 (9)			16.5	>100	4.3	7.4		0	0	
	600 (10)			17	>100	4.4	6.9		0	0	
	660 (11)			18	>100	4.5	6.4		0	0	
	720 (12)			18	>100	4.5	6.2		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		CW		
Atmospheric Pressure (mB)		1005		
Weather		Cold		
Temperature (°C, between -10°C to +40°C only)				
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH2S	0	0	1006	0.3	1.3	0.1	21.6		0	0	7.635
	15			0	0	0.2	21.8		0	0	
	30			0	0	0	21.7		0	0	
	45			0	0	0	21.7		0	0	
	60 (1)			0	0	0	21.7		0	0	
	120 (2)			0	0	0	21.6		0	0	
	180 (3)			0	0	0.1	21.5		0	0	
	240 (4)			0	0	0.3	21.5		0	0	
	300 (5)			0	0	0.3	21.5		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		CW		
Atmospheric Pressure (mB)		1006		
Weather		Overcast and cold		
Temperature (°C, between -10°C to +40°C only)				
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH3S	0	0	1007	0.3	>100	0.2	21.5		0	0	2.25
	15			1	>100	0.2	21.8		0	0	
	30			3.5	>100	0.3	17.6		0	0	
	45			9.7	>100	0.3	18.3		0	0	
	60 (1)			9.1	>100	0.3	18.7		0	0	
	120 (2)			6.6	>100	0.2	19.5		0	0	
	180 (3)			5.8	>100	0.2	19.9		0	0	
	240 (4)			4.9	98.2	0.1	20.2		0	0	
	300 (5)			4.6	86.3	0.1	20.4		0	0	
	360 (6)			4	80	0	20.5		0	0	
	420 (7)			3.1	75.4	0	20.5		0	0	
	488 (8)			4	79.9	0	20.4		0	0	
	540 (9)			4	79	0	20.4		0	0	

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	CW		
Atmospheric Pressure (mB)	1006		
Weather	Cold		
Temperature (°C, between -10°C to +40°C only)			
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH101	0	0.2	1007	0.1	2	0.2	19.7		0	0	
	15			1.4	1.5	3.9	19.6		0	0	
	30			2	1	4.4	19.3		0	0	
	45			2.2	1	4.6	19.2		0	0	
	60 (1)			2	1.1	4	19.7		0	0	
	90			0.9	0.9	2	20.3		0	0	
	120 (2)			0.2	0.9	0.7	21.3		0	0	
	180 (3)			0	1.1	0.4	21.5		0	0	
	240 (4)			0	0.7	0.4	21.5		0	0	
	300 (5)			0	0.6	0.4	21.4		0	0	
	360 (6)			0	0.1	0.4	21.4		0	0	
	420 (7)			0	0.1	0.4	21.5		0	0	
	488 (8)			0	0.1	0.3	21.5		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	CW		
Atmospheric Pressure (mB)	1006		
Weather	Cold		
Temperature (°C, between -10°C to +40°C only)			
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH102	0	0 1	1006	3 7	67 3	0 3	17 7		0	0	7 699
	15			3 2	42 8	4 1	9 3		0	0	
	30			2 8	38 6	3 4	11 8		0	0	
	45			2 1	38 6	2 7	13 6		0	0	
	60 (1)			1 7	32 2	2 1	14 6		0	0	
	120 (2)			1 5	28 8	1 9	15 4		0	0	
	180 (3)			1 2	23 2	1 6	16 3		0	0	
	240 (4)			0 9	18 2	1 3	17 2		0	0	
	300 (5)			0 9	17 2	1 2	17 4		0	0	
	360 (60)			0 8	14 2	1 1	17 6		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		CW		
Atmospheric Pressure (mB)		1006		
Weather		Overcast and cold		
Temperature (°C, between 10°C to +40°C only)				
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes	Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH103	0	0.3	1006	3.8	76.7	0.9	20		0	0	7.445
	15	0.1		4.4	81.9	0.8	20.1		0	0	
	30	0.1		3.4	67.9	0.7	20.3		0	0	
	45	0.1		3.7	57.2	0.7	20.6		0	0	
	60 (1)	0.1		2.5	50.5	0.6	20.7		0	0	
	90			2.3	48.7	0.6	20.6		0	0	
	120 (2)			2.4	49.4	0.6	20.7		0	0	
	180 (3)			2	40	0.5	20.8		0	0	
	240 (4)			2.4	43.5	0.6	20.7		0	0	
	300 (5)			2.4	50	0.6	20.7		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AF		
Atmospheric Pressure (mB)	1006		
Weather	Overcast and cold		
Temperature (°C, between -10°C to +40°C only)			
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH104	0	0.1	1007	34.5		1.4	11.9		0	0	7.97
	15			31.5		1.2	13.2		0	0	
	30			29.5		1.1	13.9		0	0	
	45			25.5		0.8	15.1		0	0	
	60 (1)			24		0.8	15.2		0	0	
	90			23.5		0.8	15.5		0	0	
	120 (2)			20.5		0.7	16.3		0	0	
	180 (3)			19		0.7	16.5		0	0	
	240 (4)			18.5		0.7	16.9		0	0	
	300 (5)			17.5		0.7	16.8		0	0	
									0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	CW		
Atmospheric Pressure (mB)	1006		
Weather	Wet and cold		
Temperature (°C, between -10°C to +40°C only)			
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m TOC)
								PID	H ₂ S	CO	
BH105	0	17		17.5	>100	2.9	4.6		0	0	
	15			94	>100	4.2	0.3		0	0	
	30			94	>100	4.2	0.1		0	0	
	45			95	>100	4.2	0.1		0	0	
	60 (1)			95	>100	4.1	0.1		0	0	
	120 (2)			92	>100	4	0.6		0	0	
	180 (3)			88	>100	3.9	1.5		0	0	
	240 (4)			80	>100	3.5	3.3		0	0	
	300 (5)			72	>100	3.2	4.6		0	0	
	360 (6)			65	>100	2.7	6.7		0	0	
	420 (7)			54	>100	2.2	8.6		0	0	
	488 (8)			49	>100	1.9	10.5		0	0	
	540 (9)			41.5	>100	1.7	11.5		0	0	
	600 (10)			40.5	>100	1.6	11.9		0	0	
	660 (11)			39.5	>100	1.6	12.2		0	0	
	720 (12)			38	>100	1.5	12.7		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		CW		
Atmospheric Pressure (mB)		1006		
Weather		Cold and raining		
Temperature (°C, between -10°C to +40°C only)				
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH1	0	-0.1	1011	0	0	0	21.5		0	0	
	15			0	0	0	21.5		0	0	
	30			0	0	0	21.7		0	0	
	45			0	0	0	21.8		0	0	
	60 (1)			0	0	0	21.8		0	0	
	90			0	0	0	21.8		0	0	
	120 (2)			0	0	0	21.8		0	0	
	180 (3)			0	0	0	21.8		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH2	0	-0.6	1011	0	0	0	21.4		0	0	
	15			0	0	0.5	21.6		0	0	
	30			0	0	0.4	21.6		0	0	
	45			0	0	0.3	21.6		0	0	
	60 (1)			0	0	0.1	21.7		0	0	
	90			0	0	0	21.7		0	0	
	120 (2)			0	0	0	21.7		0	0	
	180 (3)			0	0	0	21.7		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH3	0	0.1	1011	0	0	0	21.7		0	0	
	15			0	0	0	21.7		0	0	
	30			0	0	0	21.7		0	0	
	45			0	0	0	21.6		0	0	
	60 (1)			0	0	0	21.6		0	0	
	90			0	0	0	21.6		0	0	
	120 (2)			0	0	0	21.6		0	0	
	180 (3)			0	0	0	21.6		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1011		
Weather		overcast windy		
Temperature (°C, between -10°C to +40°C only)		5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH4	0	-3	1011	0	0	0	21.6		0	0	
	15			0	0	0.4	21.5		0	0	
	30			0	0	0.4	21.5		0	0	
	45			0	0	0.4	21.5		0	0	
	60 (1)			0	0	0.2	21.6		0	0	
	90			0	0	0	21.6		0	0	
	120 (2)			0	0	0	21.6		0	0	
	180 (3)			0	0	0	21.6		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)	AP			
Atmospheric Pressure (mB)	1011			
Weather	overcast windy			
Temperature (°C, between 10°C to +40°C only)	5.5C			
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress	N/A			
Other Comments / Observations	N/A			
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH5	0	0	1011	0	0	0	21.8		0	0	
	15			0	0	0	21.6		0	0	
	30			0	0	0	21.5		0	0	
	45			0	0	0	21.5		0	0	
	60 (1)			0	0	0	21.5		0	0	
	90			0	0	0	21.5		0	0	
	120 (2)			0	0	0	21.5		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1011		
Weather		overcast windy		
Temperature (°C, between -10°C to +40°C only)		5.5C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH6	0	-6.3	1011	0	0	0	21.8		0	0	
	15			0	0	0	21.5		0	0	
	30			0	0	0	21.4		0	0	
	45			0	0	0	21.4		0	0	
	60 (1)			0	0	0	21.4		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between 10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH7	0	-0.3	1011	0	0	0	21.8		0	0	
	15			0	0	0	21.4		0	0	
	30			0	0	0	21.3		0	0	
	45			0	0	0	21.3		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.3		0	0	
	120 (2)			0	0	0	21.2		0	0	
	180 (3)			0	0	0	21.2		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH8	0	2 2	1011	0	0	0	21 8		0	0	
	15			53	>100	2 2	4 8		0	0	
	30			59	>100	2 5	3 6		0	0	
	45			57	>100	2 4	3 7		0	0	
	60 (1)			55	>100	2 2	4 2		0	0	
	90			52	>100	2 2	5 1		0	0	
	120 (2)			47 5	>100	2	6 4		0	0	
	180 (3)			39 5	>100	1 7	8 9		0	0	
	240 (4)			31	>100	1 3	11 8		0	0	
	300 (5)			23 5	>100	0 9	13 8		0	0	
	360 (6)			19 5	>100	0 7	13 2		0	0	
	420 (7)			15 5	>100	0 6	16 8		0	0	
	480 (8)			11 5	>100	0 4	18		0	0	
	540 (9)			9	>100	0 4	18 6		0	0	
	600 (10)			7 1	>100	0 3	19 1		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1011		
Weather		overcast windy		
Temperature (°C, between 10°C to +40°C only)		5 5C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH1D	0	-9.9	1011	0	>100	0	21.7		0	0	
	15			24	>100	3.6	6.5		0	0	
	30			28	>100	4.3	4.6		0	0	
	45			28	>100	4.3	4.3		0	0	
	60 (1)			28.5	>100	4.3	3.9		0	0	
	90			29	>100	4.4	3.6		0	0	
	120 (2)			30	>100	4.5	3.1		0	0	
	180 (3)			30.5	>100	4.5	2.9		0	0	
	240 (4)			31	>100	4.6	2.6		0	0	
	300 (5)			32	>100	4.6	2.4		0	0	
	360 (6)			32	>100	4.6	2.3		0	0	
	420 (7)			32	>100	4.6	2.2		0	0	
	480 (8)			32	>100	4.6	2.2		0	0	
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Site Biomass Power Plant
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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH1S	0	2.7	1011	1.3	>100	1.7	17.7		0	0	
	15			6.9	>100	2.9	12.5		0	0	
	30			7.4	>100	3.2	12.1		0	0	
	45			7.2	>100	3.1	12.1		0	0	
	60 (1)			7.2	>100	3.1	12.2		0	0	
	90			7.2	>100	3.1	12.2		0	0	
	120 (2)			8	>100	3.1	11.8		0	0	
	180 (3)			12.5	>100	3.4	9.9		0	0	
	240 (4)			14	>100	3.5	9.4		0	0	
	300 (5)			16	>100	3.7	8.1		0	0	
	360 (6)			18	>100	3.7	7.6		0	0	
	420 (7)			19	>100	3.8	7.2		0	0	
	480 (8)			19.5	>100	3.9	6.8		0	0	
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2D	0	5.2	1011	0	0	0	21.7		0	0	
	15			0	0	0.8	20.4		0	0	
	30			0	0	1.1	20.3		0	0	
	45			0	0	1.1	20.3		0	0	
	60 (1)			0	0	1.1	20.3		0	0	
	90			0	0	1	20.3		0	0	
	120 (2)			0	0	1	20.3		0	0	
	180 (3)			0	0	1	20.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1011		
Weather		overcast windy		
Temperature (°C, between -10°C to +40°C only)		5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3S	0	0	1011	0	0	0	21.9		0	0	
	15			0.5	9.4	3.5	9.2		0	0	
	30			0.8	9.5	3.9	8.5		0	0	
	45			0.8	9.4	3.8	8.4		0	0	
	60 (1)			0.8	8.8	3.9	8.4		0	0	
	90			0.8	9.4	3.9	8.3		0	0	
	120 (2)			1	11.5	3.9	8.3		0	0	
	180 (3)			1	12.4	3.9	8.3		0	0	
	240 (4)			1	12	3.9	8.4		0	0	
	300 (5)			1	12.2	4	8.4		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)	AP			
Atmospheric Pressure (mB)	1011			
Weather	overcast windy			
Temperature (°C, between -10°C to +40°C only)	5.5°C			
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress	N/A			
Other Comments / Observations	N/A			
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH101	0	9.5	1011	0.4	0	0.1	21.9		0	0	
	15			0.9	17.3	1.8	20.8		0	0	
	30			1.1	22.6	2	20.7		0	0	
	45			1.1	23.5	2	20.7		0	0	
	60 (1)			1.1	22.4	1.9	20.7		0	0	
	90			1.1	22	1.9	20.7		0	0	
	120 (2)			1	20.7	1.8	20.7		0	0	
	180 (3)			1	19.7	1.7	20.8		0	0	
	240 (4)			0.9	18.3	1.6	20.8		0	0	
	300 (5)			0.8	17	1.6	20.8		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1011		
Weather		overcast windy		
Temperature (°C, between -10°C to +40°C only)		5.5C		
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser	Last calibrated	
		Mass Balance Transducer	Last calibrated	
		MiniRAE PID	Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH102	0	0	1011	0	0	0	21.7		0	0	
	15			0.4	6.5	0.7	19.2		0	0	
	30			0.4	8.2	0.7	19.1		0	0	
	45			0.3	7	0.7	19.3		0	0	
	60 (1)			0.3	5.8	0.6	19.7		0	0	
	90			0.2	5.3	0.5	19.9		0	0	
	120 (2)			0.2	3.8	0.5	20.1		0	0	
	180 (3)			0.1	3.1	0.4	20.2		0	0	
	240 (4)			0.1	3	0.4	20.3		0	0	
	300 (5)			0.1	2.4	0.3	20.5		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH103	0	17.5	1011	12	>100	1.2	17.9		0	0	
	15			13	>100	1.3	17.1		0	0	
	30			13	>100	1.3	17.1		0	0	
	45			13.5	>100	1.4	17		0	0	
	60 (1)			13.5	>100	1.4	17		0	0	
	90			13.5	>100	1.4	17		0	0	
	120 (2)			14	>100	1.4	16.9		0	0	
	180 (3)			14.5	>100	1.4	16.7		0	0	
	240 (4)			15	>100	1.5	16.6		0	0	
	300 (5)			15	>100	1.5	16.4		0	0	
	360 (6)			15.5	>100	1.6	16.3		0	0	
	420 (7)			16.5	>100	1.7	16		0	0	
	480 (8)			17.5	>100	1.8	15.8		0	0	
	540 (9)			18	>100	1.8	15.7		0	0	
	600 (10)			18	>100	1.8	15.5		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104	0	0	1011	0	0	0	21.8		0	0	
	15			23	>100	1.3	16.2		0	0	
	30			24	>100	1.4	16		0	0	
	45			22	>100	1.3	16.3		0	0	
	60 (1)			21	>100	1.2	16.6		0	0	
	90			18.5	>100	1	17.1		0	0	
	120 (2)			18.5	>100	1	17.1		0	0	
	180 (3)			16.5	>100	1	17.2		0	0	
	240 (4)			15.5	>100	0.8	17.8		0	0	
	300 (5)			15.5	>100	0.8	17.9		0	0	
	360 (6)			16	>100	0.8	17.8		0	0	
	420 (7)			16.5	>100	0.8	17.5		0	0	
	480 (8)			15	>100	0.8	17.9		0	0	
	540 (9)			16.5	>100	0.8	17.8		0	0	
	600 (10)			16	>100	0.8	17.7		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104S	0	16 1	1011	4 1	>100	0 1	21 5		0	0	
	15			85	>100	5 1	1 9		0	0	
	30			78	>100	4 6	3 2		0	0	
	45			65	>100	4 1	6 6		0	0	
	60 (1)			58	>100	3 7	7 5		0	0	
	90			49 5	>100	3 2	9 1		0	0	
	120 (2)			40 5	>100	2 4	11 7		0	0	
	180 (3)			33	>100	2	13		0	0	
	240 (4)			29	>100	1 8	14 3		0	0	
	300 (5)			28 5	>100	1 7	14 3		0	0	
	360 (6)			23 5	>100	1 4	15 5		0	0	
	420 (7)			25	>100	1 5	15 3		0	0	
	480 (8)			21 5	>100	1 3	16		0	0	
	540 (9)			21 5	>100	1 3	16		0	0	
	600 (10)			21	>100	1 2	16 2		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between -10°C to +40°C only)	5 5C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH105	0	0.2	1011	0	>100	0	21.6		0	0	
	15			16.5	>100	0.5	17.6		0	0	
	30			15	>100	0.5	17.9		0	0	
	45			13	>100	0.4	18.5		0	0	
	60 (1)			12	>100	0.4	18.4		0	0	
	90			11.5	>100	0.4	18.7		0	0	
	120 (2)			10	>100	0.3	18.9		0	0	
	180 (3)			8.3	>100	0.3	19.4		0	0	
	240 (4)			8.2	>100	0.3	19.4		0	0	
	300 (5)			8.1	>100	0.2	19.5		0	0	
	360 (6)			7.1	>100	0.2	19.7		0	0	
	420 (7)			6.9	>100	0.2	19.7		0	0	
	480 (8)			6.1	>100	0.1	20		0	0	
	540 (9)			6.5	>100	0.2	19.8		0	0	
	600 (10)			6.6	>100	0.2	19.8		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1011		
Weather	overcast windy		
Temperature (°C, between 10°C to +40°C only)	5.5C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH1	0	0	1004	0	0	0.1	20.7		0	0	
	15			0	0	0.1	21.4		0	0	
	30			0	0	0	21.7		0	0	
	45			0	0	0	21.7		0	0	
	60 (1)			0	0	0	21.7		0	0	
	90			0	0	0	21.7		0	0	
	120 (2)			0	0	0	21.7		0	0	
	180 (3)			0	0	0	21.7		0	0	
	240 (4)								0	0	
	300 (5)								0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

	Relevant Information At Time Of Monitoring			
	Monitored by (name, position)	AP		
	Atmospheric Pressure (mB)	1004		
	Weather	overcast		
	Temperature (°C, between -10°C to +40°C only)	8C		
	Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
	Visible Signs of Vegetation Stress	N/A		
	Other Comments / Observations	N/A		
	Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH2	0	0	1004	0	0	0	21.7		0	0	
	15			0	0	0.6	21.3		0	0	
	30			0	0	0.4	21.3		0	0	
	45			0	0	0.3	21.3		0	0	
	60 (1)			0	0	0.2	21.3		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1004		
Weather		overcast		
Temperature (°C, between -10°C to +40°C only)		8C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH3	0	0.2	1003	0	0	0	21.8		0	0	
	15			0	0	1	19.3		0	0	
	30			0	0	1.3	18.9		0	0	
	45			0	0	1.3	18.9		0	0	
	60 (1)			0	0	1.3	18.8		0	0	
	90			0	0	1.3	18.8		0	0	
	120 (2)			0	0	1.3	18.8		0	0	
	180 (3)			0	0	1.3	18.8		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1003		
Weather	overcast		
Temperature (°C, between -10°C to +40°C only)	8C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH4	0	0	1004	0	0	0	21.7		0	0	
	15			0	0	0.3	21.3		0	0	
	30			0	0	0.2	21.3		0	0	
	45			0	0	0	21.3		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.3		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1004		
Weather	overcast		
Temperature (°C, between 10°C to +40°C only)	8C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH5	0	0	1004	0.1	1.6	0	21.7		0	0	
	15			0	0.4	0	21.4		0	0	
	30			0	0	0	21.4		0	0	
	45			0	0	0	21.4		0	0	
	60 (1)			0	0	0	21.4		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1004		
Weather	overcast		
Temperature (°C, between -10°C to +40°C only)	8C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH6	0	0	1004	0	0	0	21.6		0	0	
	15			0	0	0	21.3		0	0	
	30			0	0	0	21.2		0	0	
	45			0	0	0	21.2		0	0	
	60 (1)			0	0	0	21.2		0	0	
	90			0	0	0	21.2		0	0	
	120 (2)			0	0	0	21.2		0	0	
	180 (3)			0	0	0	21.2		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1004		
Weather	overcast		
Temperature (°C, between -10°C to +40°C only)	8C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH7	0	-0.4	1004	0	0	0	21.7		0	0	
	15			0	0	0.1	21.3		0	0	
	30			0	0	0	21.3		0	0	
	45			0	0	0	21.3		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.3		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

	Relevant Information At Time Of Monitoring			
	Monitored by (name, position)	AP		
	Atmospheric Pressure (mB)	1003		
	Weather	overcast		
	Temperature (°C, between -10°C to +40°C only)	8C		
	Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
	Visible Signs of Vegetation Stress	N/A		
	Other Comments / Observations	N/A		
	Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH8	0	-7.6	1004	0	0	0	21.5		0	0	
	15			47.5	>100	2.2	6.5		0	0	
	30			47.5	>100	2.2	6.7		0	0	
	45			47	>100	2.2	6.6		0	0	
	60 (1)			44.5	>100	2.1	7.4		0	0	
	90			41.5	>100	1.9	8.3		0	0	
	120 (2)			36.5	>100	1.7	9.7		0	0	
	180 (3)			29.5	>100	1.3	12.1		0	0	
	240 (4)			25	>100	1.1	13.4		0	0	
	300 (5)			20.5	>100	0.8	14.7		0	0	
	360 (6)			17.5	>100	0.7	15.9		0	0	
	420 (7)			12.5	>100	0.5	17.4		0	0	
	480 (8)			10	>100	0.4	18.1		0	0	
	540 (9)			7.4	>100	0.3	18.9		0	0	
	600 (10)			6.1	>100	0.2	19.4		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1003		
Weather	overcast		
Temperature (°C, between 10°C to +40°C only)	8C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2D	0	9.8	1004	0	0	0	21.6		0	0	
	15			0	0	0.5	20.4		0	0	
	30			0	0	0.8	20		0	0	
	45			0	0	0.8	19.9		0	0	
	60 (1)			0	0	1	19.8		0	0	
	90			0	0	1.2	19.6		0	0	
	120 (2)			0	0	1.3	19.6		0	0	
	180 (3)			0	0	1.1	19.7		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

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Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1004		
Weather	overcast		
Temperature (°C, between -10°C to +40°C only)	8C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2S	0	0	1004	0	0	0	21.5		0	0	
	15			0	0	0	21.3		0	0	
	30			0	0	0	21.3		0	0	
	45			0	0	0	21.3		0	0	
	60 (1)			0	0	0	21.3		0	0	
	90			0	0	0	21.3		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1004		
Weather		overcast		
Temperature (°C, between 10°C to +40°C only)		8C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3D	0	0	1004	0	0	0	21.4		0	0	
	15			3.5	69.3	0.2	20.1		0	0	
	30			3.2	59.6	0.1	20.2		0	0	
	45			2.4	50.2	0.1	20.3		0	0	
	60 (1)			2.3	42.5	0.1	20.4		0	0	
	90			2	38.4	0	20.6		0	0	
	120 (2)			1.8	35.3	0	20.6		0	0	
	180 (3)			1.6	35.9	0	20.6		0	0	
	240 (4)			2.1	40.9	0	20.6		0	0	
	300 (5)			1.7	32.3	0	20.7		0	0	
	360 (6)			1.5	29.5	0	20.7		0	0	
	420 (7)			1.3	26.6	0	20.8		0	0	
	480 (8)			1.1	22.9	0	20.9		0	0	
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1004		
Weather	overcast		
Temperature (°C, between -10°C to +40°C only)	8C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3S	0	0	1004	0.1	1.3	0	21.2		0	0	
	15			1.7	31.8	4.1	12.6		0	0	
	30			1.8	31.7	4.3	12.2		0	0	
	45			1.8	32.1	4.3	12.2		0	0	
	60 (1)			1.8	31.6	4.3	12.2		0	0	
	90			1.8	31.7	4.3	12.2		0	0	
	120 (2)			1.8	31.2	4.3	12.1		0	0	
	180 (3)			1.7	29.5	4.4	12		0	0	
	240 (4)			1.7	29	4.4	11.9		0	0	
	300 (5)			1.7	27	4.3	11.9		0	0	
	360 (6)			1.5	24.7	4.3	11.9		0	0	
	420 (7)			1.2	22.4	4.3	12		0	0	
	480 (8)			1.2	21.6	4.2	12.3		0	0	
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1003		
Weather	overcast		
Temperature (°C, between 10°C to +40°C only)	8C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH101	0	0	1003	0	0	0	21.6		0	0	
	15			1.1	23.9	2.4	20.3		0	0	
	30			0.4	10.3	1.5	20.8		0	0	
	45			0.3	7	0.9	21		0	0	
	60 (1)			0.2	3.9	0.7	21.1		0	0	
	90			0	0.5	0.5	21.3		0	0	
	120 (2)			0	0	0.4	21.3		0	0	
	180 (3)			0	0	0.2	21.4		0	0	
	240 (4)			0	0	0.2	21.4		0	0	
	300 (5)			0	0	0.1	21.4		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1004		
Weather		overcast		
Temperature (°C, between -10°C to +40°C only)		8C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH102	0	0	1003	0	0	0	21.5		0	0	
	15			2.1	36.3	3.5	10.9		0	0	
	30			1.8	31.2	2.8	13.1		0	0	
	45			1.3	25.3	2.3	14		0	0	
	60 (1)			1	20.3	1.9	15.4		0	0	
	90			0.8	14.6	1.6	16.6		0	0	
	120 (2)			0.5	11	1.3	17.2		0	0	
	180 (3)			0.4	6.9	0.7	18.7		0	0	
	240 (4)			0.2	5.1	0.6	19.1		0	0	
	300 (5)			0.2	0	0.6	19.3		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

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Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1003		
Weather	overcast		
Temperature (°C, between -10°C to +40°C only)	8C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH103	0	-7.5	1003	0	0	0	21.6		0	0	
	15			27	>100	2.7	12.7		0	0	
	30			30	>100	3.3	11.9		0	0	
	45			30.5	>100	3.3	11.8		0	0	
	60 (1)			30.5	>100	3.3	11.7		0	0	
	90			30.5	>100	3.3	11.7		0	0	
	120 (2)			30.5	>100	3.3	11.6		0	0	
	180 (3)			30.5	>100	3.4	11.5		0	0	
	240 (4)			31	>100	3.4	11.5		0	0	
	300 (5)			31	>100	3.4	11.5		0	0	
	360 (6)			31	>100	3.4	11.5		0	0	
	420 (7)			31	>100	3.4	11.5		0	0	
	480 (8)			31	>100	3.4	11.5		0	0	
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1003		
Weather		overcast		
Temperature (°C, between 10°C to +40°C only)		8C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

Site Biomass Power Plant
Job No 310826 15 02 2010



Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104	0	0	1004	0	0	0	21.2		0	0	
	15			74	>100	4.5	4.9		0	0	
	30			61	>100	3.9	6.8		0	0	
	45			61	>100	3.9	6.8		0	0	
	60 (1)			56	>100	3.6	7.7		0	0	
	90			51	>100	3.3	8.7		0	0	
	120 (2)			46	>100	2.9	9.7		0	0	
	180 (3)			41	>100	2.5	11		0	0	
	240 (4)			37	>100	2.2	12.1		0	0	
	300 (5)			36	>100	2.1	12.4		0	0	
	360 (6)			33.5	>100	2	13		0	0	
	420 (7)			30	>100	1.8	13.8		0	0	
	480 (8)			29	>100	1.8	14		0	0	
	540 (9)			27.5	>100	1.7	14.4		0	0	
	600 (10)			26.5	>100	1.6	14.7		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)	AP			
Atmospheric Pressure (mB)	1004			
Weather	overcast			
Temperature (°C, between -10°C to +40°C only)	8C			
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated	
	Mass Balance Transducer		Last calibrated	
	MiniRAE PID		Last calibrated	
Visible Signs of Vegetation Stress	N/A			
Other Comments / Observations	N/A			
Boreholes Sampled For Laboratory Analysis				

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Site Biomass Power Plant
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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104S	0	10	1003	0	0	0	21.5		0	0	
	15			73	>100	5.2	2		0	0	
	30			65	>100	4.7	3.9		0	0	
	45			52	>100	4	6.4		0	0	
	60 (1)			45	>100	3.5	8.5		0	0	
	90			38.5	>100	2.6	10.6		0	0	
	120 (2)			34.5	>100	2.4	11.4		0	0	
	180 (3)			21.5	>100	1.6	14.6		0	0	
	240 (4)			22.5	>100	1.5	14.9		0	0	
	300 (5)			20	>100	1.4	15.4		0	0	
	360 (6)			19	>100	1.3	15.7		0	0	
	420 (7)			17	>100	1.1	16.4		0	0	
	480 (8)			15.5	>100	1	16.7		0	0	
	540 (9)			15.5	>100	1	16.7		0	0	
	600 (10)			17	>100	1.1	16.3		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1003		
Weather		overcast		
Temperature (°C, between 10°C to +40°C only)		8C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH105	0	0.1	1003	0	0	0	21.7		0	0	
	15			75	>100	2.6	4.4		0	0	
	30			65	>100	2.2	6.3		0	0	
	45			56	>100	2	7.7		0	0	
	60 (1)			19.5	>100	1.8	9.2		0	0	
	90			15.5	>100	1.6	10.2		0	0	
	120 (2)			44	>100	1.6	10.7		0	0	
	180 (3)			39	>100	1.4	12.1		0	0	
	240 (4)			33.5	>100	1.1	13.2		0	0	
	300 (5)			30	>100	1	13.8		0	0	
	360 (6)			27	>100	0.8	14.7		0	0	
	420 (7)			26	>100	0.8	15.1		0	0	
	480 (8)			25	>100	0.8	15.1		0	0	
	540 (9)			23.5	>100	0.8	15.5		0	0	
	600 (10)			23	>100	0.7	15.7		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1003		
Weather		overcast		
Temperature (°C, between -10°C to +40°C only)		8C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH1	0	0	979	0.1	0	0.1	21.7		0	0	
	15			0	0	0.2	21.4		0	0	
	30			0	0	0	21.4		0	0	
	45			0	0	0	21.4		0	0	
	60 (1)			0	0	0	21.4		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		982		
Weather		overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)		1C		
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH2	0	0	982	0	0	0.1	21.2		0	0	
	15			0	0	0.6	21.2		0	0	
	30			0	0	0.5	21.2		0	0	
	45			0	0	0.4	21.2		0	0	
	60 (1)			0	0	0.3	21.2		0	0	
	90			0	0	0.1	21.3		0	0	
	120 (2)			0	0	0	21.3		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		982		
Weather		overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH3	0	14	982	0	0	0	22.1		0	0	
	15			0	0	2.2	8.3		0	0	
	30			0	0	2.6	7.2		0	0	
	45			0	0	2.6	7.1		0	0	
	60 (1)			0	0	2.6	7		0	0	
	90			0	0	2.6	7		0	0	
	120 (2)			0	0	2.6	7		0	0	
	180 (3)			0	0	2.6	7		0	0	
	240 (4)			0	0	2.6	7.1		0	0	
	300 (5)			0	0	2.5	7.3		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	882		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH4	0	7 6	981	0	0	0 1	21 1		0	0	
	15			0	0	0	21 3		0	0	
	30			0	0	0	21 4		0	0	
	45			0	0	0	21 4		0	0	
	60 (1)			0	0	0	21 4		0	0	
	90			0	0	0	21 4		0	0	
	120 (2)			0	0	0	21 4		0	0	
	180 (3)			0	0	0	21 4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Site Biomass Power Plant
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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH5	0	0	982	0	0	0 1	21 7		0	0	
	15			0	0	0 2	21 5		0	0	
	30			0	0	0	21 4		0	0	
	45			0	0	0	21 4		0	0	
	60 (1)			0	0	0	21 4		0	0	
	90			0	0	0	21 4		0	0	
	120 (2)			0	0	0	21 4		0	0	
	180 (3)			0	0	0	21 4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between 10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104	0	2.9	981	0	0	0	21.1		0	0	
	15			50	>100	1.6	9.4		0	0	
	30			46	>100	1.4	10.4		0	0	
	45			42	>100	1.3	10.7		0	0	
	60 (1)			39	>100	1.2	11.7		0	0	
	90			37	>100	1.1	12.2		0	0	
	120 (2)			35.5	>100	1	12.8		0	0	
	180 (3)			30	>100	0.8	14		0	0	
	240 (4)			25.5	>100	0.7	14.7				
	300 (5)			25	>100	0.7					
	360 (6)			25	>100	0.6					
	420 (7)			22	>100	0.6					
	480 (8)			22	>100	0.6					
	540 (9)			20	>100	0.6					
	600 (10)			20	>100	0.6					

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH7	0	3.5	982	0	0	0	21.7		0	0	
	15			0	0	0	21.5		0	0	
	30			0	0	0	21.4		0	0	
	45			0	0	0	21.4		0	0	
	60 (1)			0	0	0	21.4		0	0	
	90			0	0	0	21.4		0	0	
	120 (2)			0	0	0	21.4		0	0	
	180 (3)			0	0	0	21.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between 10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser	Last calibrated	
	Mass Balance Transducer	Last calibrated	
	MiniRAE PID	Last calibrated	
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
SBH8	0	22.4	981	0.2	0	0	21.2		0	0	
	15			60	>100	3	3.7		0	0	
	30			63	>100	3.1	2.9		0	0	
	45			62	>100	3	2.8		0	0	
	60 (1)			60	>100	2.9	3.4		0	0	
	90			59	>100	2.9	3.6		0	0	
	120 (2)			52	>100	2.4	5.6		0	0	
	180 (3)			48.5	>100	2.2	7.3		0	0	
	240 (4)			39.5	>100	1.8	9.2		0	0	
	300 (5)			34	>100	1.6	11		0	0	
	360 (6)			26	>100	1	13.8		0	0	
	420 (7)			19.5	>100	0.8	15.4		0	0	
	480 (8)			15.5	>100	0.6	16.8		0	0	
	540 (9)			10.5	>100	0.4	18.2		0	0	
	600 (10)			7.7	>100	0.3	19.1		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		982		
Weather		overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH1D	0	8.5	979	37	>100	3.1	6		0	0	
	15			39	>100	6.1	1.5		0	0	
	30			39	>100	6.2	0.9		0	0	
	45			38.5	>100	6.2	0.8		0	0	
	60 (1)			38.5	>100	6.1	0.8		0	0	
	90			38.5	>100	6.1	0.8		0	0	
	120 (2)			38.5	>100	6	0.8		0	0	
	180 (3)			38.5	>100	5.9	0.9		0	0	
	240 (4)			38	>100	5.8	1		0	0	
	300 (5)			38	>100	5.7	1		0	0	
	360 (6)			38	>100	5.6	1.1		0	0	
	420 (7)			38.5	>100	5.6	1.2		0	0	
	480 (8)			38	>100	5.4	1.3		0	0	
	540 (9)			38	>100	5.4	1.3		0	0	
	600 (10)			38	>100	5.4	1.3		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH1S	0	-7.9	979	0	0	0	21.7		0	0	
	15			39	>100	3.5	6.1		0	0	
	30			42.5	>100	3.8	5.3		0	0	
	45			42.5	>100	3.8	5.2		0	0	
	60 (1)			42.5	>100	3.7	5.2		0	0	
	90			42	>100	3.6	5.4		0	0	
	120 (2)			41	>100	3.6	5.5		0	0	
	180 (3)			40.5	>100	3.6	5.8		0	0	
	240 (4)			39.5	>100	3.4	6		0	0	
	300 (5)			39	>100	3.4	6.1		0	0	
	360 (6)			38.5	>100	3.5	6.2		0	0	
	420 (7)			38	>100	3.4	6.2		0	0	
	480 (8)			37.5	>100	3.6	6		0	0	
	540 (9)			36.5	>100	3.6	5.9		0	0	
	600 (10)			36.5	>100	3.6	5.9		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		982		
Weather		overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2D	0	28	981	0	0	0.1	21.5		0	0	
	15			0	0	0.7	20.2		0	0	
	30			0	0	0.7	20.2		0	0	
	45			0	0	0.7	20.2		0	0	
	60 (1)			0	0	0.6	20.3		0	0	
	90			0	0	0.6	20.4		0	0	
	120 (2)			0	0	0.5	20.4		0	0	
	180 (3)			0	0	0.5	20.4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)		AP	
Atmospheric Pressure (mB)		982	
Weather		overcast, some showers, very windy	
Temperature (°C, between -10°C to +40°C only)		1C	
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser	Last calibrated
		Mass Balance Transducer	Last calibrated
		MiniRAE PID	Last calibrated
Visible Signs of Vegetation Stress		N/A	
Other Comments / Observations		N/A	
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2S	0	11.2	981	0	0	0.1	21.5		0	0	
	15			0	0	0.2	21.2		0	0	
	30			0	0	0.1	21.2		0	0	
	45			0	0	0.1	21.2		0	0	
	60 (1)			0	0	0.1	21.2		0	0	
	90			0	0	0.1	21.2		0	0	
	120 (2)			0	0	0.1	21.3		0	0	
	180 (3)			0	0	0.1	21.3		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between 10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3D	0	-0.1	982	0	0	0	21.6		0	0	
	15			6.9	>100	0.2	19.3		0	0	
	30			6.5	>100	0.2	19.3		0	0	
	45			5.7	>100	0.1	19.6		0	0	
	60 (1)			5.2	>100	0.1	19.7		0	0	
	90			4.6	92.9	0.1	20		0	0	
	120 (2)			4.3	89.8	0.1	20		0	0	
	180 (3)			3.7	72.5	0	20.3		0	0	
	240 (4)			3.5	74.6	0	20.4		0	0	
	300 (5)			2.9	59	0	20.6		0	0	
	360 (6)			2.7	51.3	0	20.6		0	0	
	420 (7)			1.8	36.8	0	20.9		0	0	
	480 (8)			1.9	37.1	0	20.9		0	0	
	540 (9)			1.7	38.2	0	20.9		0	0	
	600 (10)			1.7	34.2	0	20.9		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3S	0	0	982	0	0	0	21.2		0	0	
	15			5.4	65	2	7.6		0	0	
	30			6	64.3	2.2	7.2		0	0	
	45			6	65.7	2.2	7.1		0	0	
	60 (1)			5.9	63.9	2.2	7.1		0	0	
	90			6	63.7	2.2	7.1		0	0	
	120 (2)			6.1	63.5	2.2	7		0	0	
	180 (3)			6.1	64.1	2.2	7		0	0	
	240 (4)			6	62.5	2.1	7		0	0	
	300 (5)			5.4	53.9	2	7.2		0	0	
	360 (6)			4.3	46.6	2	7.4		0	0	
	420 (7)			3.7	40.1	1.9	7.9		0	0	
	480 (8)			3.1	36.5	1.8	8.6		0	0	
	540 (9)			2.8	35.7	1.7	9.4		0	0	
	600 (10)			2.4	33.6	1.7	9.9		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH101	0	-0.9	982	0	0	0	21.4		0	0	
	15			0.5	12.8	0.8	20.5		0	0	
	30			0.5	11.2	0.7	20.7		0	0	
	45			0.4	8.4	0.5	20.9		0	0	
	60 (1)			0.3	5.5	0.4	21.6		0	0	
	90			0.2	3.3	0.3	21.1		0	0	
	120 (2)			0	1.4	0.2	21.2		0	0	
	180 (3)			0	0	0	21.3		0	0	
	240 (4)			0	0	0	21.3		0	0	
	300 (5)			0	0	0	21.3		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)		AP	
Atmospheric Pressure (mB)		982	
Weather		overcast some showers very windy	
Temperature (°C, between 10°C to +40°C only)		1C	
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser	Last calibrated
		Mass Balance Transducer	Last calibrated
		MiniRAE PID	Last calibrated
Visible Signs of Vegetation Stress		N/A	
Other Comments / Observations		N/A	
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104	0	0.2	982	0.1	0	0	21.8		0	0	
	15			2.6	>100	0.1	20.8		0	0	
	30			3.1	>100	0	20.8		0	0	
	45			2.3	>100	0.1	20.7		0	0	
	60 (1)			2.5	>100	0	20.8		0	0	
	90			2.9	>100	0	20.7		0	0	
	120 (2)			2.2	>100	0	20.8		0	0	
	180 (3)			2.1	>100	0	20.9		0	0	
	240 (4)			2	>100	0	20.9		0	0	
	300 (5)			2	>100	0	20.9		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)		AP	
Atmospheric Pressure (mB)		982	
Weather		overcast some showers very windy	
Temperature (°C, between -10°C to +40°C only)		1C	
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser	Last calibrated
		Mass Balance Transducer	Last calibrated
		MiniRAE PID	Last calibrated
Visible Signs of Vegetation Stress		N/A	
Other Comments / Observations		N/A	
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH103	0	24.9	982	0	0	0	21.6		0	0	
	15			78	>100	6.6	2.5		0	0	
	30			78	>100	6.6	2.1		0	0	
	45			78	>100	6.5	2.1		0	0	
	60 (1)			78	>100	6.5	2		0	0	
	90			77	>100	6.5	2		0	0	
	120 (2)			77	>100	6.4	2.2		0	0	
	180 (3)			76	>100	6.3	2.4		0	0	
	240 (4)			74	>100	6.2	2.8		0	0	
	300 (5)			72	>100	6.1	3.2		0	0	
	360 (6)			71	>100	6	3.4		0	0	
	420 (7)			71	>100	6	3.5		0	0	
	480 (8)			69	>100	5.9	3.8		0	0	
	540 (9)			69	>100	5.9	3.9		0	0	
	600 (10)			68	>100	5.8	4.1		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Site Biomass Power Plant
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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH102	0	0.2	982	0	0	0	21.1		0	0	
	15			0.4	7.3	0.6	19.3		0	0	
	30			0.3	6.2	0.4	19.7		0	0	
	45			0.2	3.9	0.4	20.1		0	0	
	60 (1)			0.2	3.8	0.4	20.1		0	0	
	90			0.1	2.4	0.3	20.3		0	0	
	120 (2)			0.1	2.3	0.3	20.4		0	0	
	180 (3)			0.1	1.8	0.3	20.5		0	0	
	240 (4)			0	0.7	0.2	20.6				
	300 (5)			0.1	0.1	0.3	20.4				
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from left to right across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		982		
Weather		overcast some showers very windy		
Temperature (°C, between 10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH105	0	-2.9	981	0	0	0	21.1		0	0	
	15			50	>100	1.6	9.4		0	0	
	30			46	>100	1.4	10.4		0	0	
	45			42	>100	1.3	10.7		0	0	
	60 (1)			39	>100	1.2	11.7		0	0	
	90			37	>100	1.1	12.2		0	0	
	120 (2)			35.5	>100	1	12.8		0	0	
	180 (3)			30	>100	0.8	14		0	0	
	240 (4)			25.5	>100	0.7	14.7		0	0	
	300 (5)			25	>100	0.7	15.3		0	0	
	360 (6)			25	>100	0.6	15.5		0	0	
	420 (7)			22	>100	0.6	16.1		0	0	
	480 (8)			22	>100	0.6	16		0	0	
	540 (9)			20	>100	0.6	16.4		0	0	
	600 (10)			20	>100	0.6	16.6		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)		AP	
Atmospheric Pressure (mB)		982	
Weather		overcast some showers very windy	
Temperature (°C, between -10°C to +40°C only)		1C	
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser	Last calibrated
		Mass Balance Transducer	Last calibrated
		MiniRAE PID	Last calibrated
Visible Signs of Vegetation Stress		N/A	
Other Comments / Observations		N/A	
Boreholes Sampled For Laboratory Analysis			

Site Biomass Power Plant
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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104S	0	15	982	0	0	0	21.5		0	0	
	15			76	>100	5.4	1.1		0	0	
	30			72	>100	5.1	2.6		0	0	
	45			65	>100	4.6	3.8		0	0	
	60 (1)			58	>100	4.4	4.2		0	0	
	90			52	>100	3.9	6.8		0	0	
	120 (2)			47	>100	3.7	7.7		0	0	
	180 (3)			39	>100	3	9.9		0	0	
	240 (4)			32.5	>100	2.3	12		0	0	
	300 (5)			29.5	>100	2.1	13		0	0	
	360 (6)			28.5	>100	2	13.4		0	0	
	420 (7)			27	>100	10.9	13.6		0	0	
	480 (8)			26.5	>100	1.9	13.9		0	0	
	540 (9)			27	>100	1.9	13.7		0	0	
	600 (10)			28.5	>100	2	13.4		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	982		
Weather	overcast some showers very windy		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH1D	0	8.1	1028	3.4	0	1.8	16.1		0	0	
	15			16	>100	3.9	6.1		0	0	
	30			42.5	>100	4.8	3.6		0	0	
	45			48	>100	5.6	2.2		0	0	
	60 (1)			47.5	>100	5.4	2.5		0	0	
	90			45.5	>100	5.2	3.1		0	0	
	120 (2)			44	>100	4.9	3.5		0	0	
	180 (3)			42	>100	4.6	4.2		0	0	
	240 (4)			40.5	>100	4.4	4.8		0	0	
	300 (5)			39.5	>100	4.5	4.9		0	0	
	360 (6)			36.5	>100	4.6	4.6		0	0	
	420 (7)			35	>100	4.6	4.9		0	0	
	480 (8)			33	>100	4.6	4.9		0	0	
	540 (9)			31.5	>100	4.5	5.3		0	0	
	600 (10)			30.5	>100	4.5	5.6		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1030.7		
Weather	SUNNY CLEAR WINDY COLD		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH1S	0	10	1028	0	0	0	21.9		0	0	
	15			22.5	>100	4.3	6.1		0	0	
	30			24	>100	4.6	5.4		0	0	
	45			24.5	>100	4.6	4.9		0	0	
	60 (1)			25.5	>100	4.8	3.9		0	0	
	90			26	>100	4.9	3.4		0	0	
	120 (2)			27	>100	5.1	2.9		0	0	
	180 (3)			27.5	>100	5.1	2.3		0	0	
	240 (4)			28.5	>100	5.3	2.1		0	0	
	300 (5)			29	>100	5.4	2		0	0	
	360 (6)			29.5	>100	5.4	2		0	0	
	420 (7)			29.5	>100	5.3	2		0	0	
	480 (8)			29.5	>100	5.4	2		0	0	
	540 (9)			29.5	>100	5.2	2		0	0	
	600 (10)			29.5	>100	5.3	2.1		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1030.7		
Weather		SUNNY CLEAR WINDY COLD		
Temperature (°C, between 10°C to +40°C only)		1C		
Equipment Used (RSK Reference No.)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2D	0	0.2	1028	0	0	0	21.7		0	0	
	15			0	0	1	19.6		0	0	
	30			0	0	1.2	19.5		0	0	
	45			0	0	1.1	19.6		0	0	
	60 (1)			0	0	1.1	19.6		0	0	
	90			0	0	1	19.7		0	0	
	120 (2)			0	0	0.8	19.9		0	0	
	180 (3)			0	0	0.8	20		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1030.7		
Weather		SUNNY CLEAR WINDY COLD		
Temperature (°C, between 10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH2S	0	0 3	1028	0	0	0	21 6		0	0	
	15			0	0	0	21 4		0	0	
	30			0	0	0	21 4		0	0	
	45			0	0	0	21 4		0	0	
	60 (1)			0	0	0	21 4		0	0	
	90			0	0	0	21 3		0	0	
	120 (2)			0	0	0	21 4		0	0	
	180 (3)			0	0	0	21 4		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1030 7		
Weather		SUNNY CLEAR WINDY COLD		
Temperature (°C, between -10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3D	0	0 1	1028	0	0	0	21 6		0	0	
	15			0 5	9 7	0 2	20 7		0	0	
	30			0 4	8	0 1	20 8		0	0	
	45			0 3	6 5	0 1	20 9		0	0	
	60 (1)			0 2	4 8	0	20 9		0	0	
	90			0 2	3 4	0	21		0	0	
	120 (2)			0 1	1 9	0	21		0	0	
	180 (3)			0	0 3	0	21 1		0	0	
	240 (4)			0	0	0	21 1		0	0	
	300 (5)			0	0	0	21 2		0	0	
	360 (6)								0	0	
	420 (7)								0	0	
	480 (8)								0	0	
	540 (9)								0	0	
	600 (10)								0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

	Relevant Information At Time Of Monitoring			
	Monitored by (name, position)	AP		
	Atmospheric Pressure (mB)	1030 7		
	Weather	SUNNY CLEAR WINDY COLD		
	Temperature (°C, between -10°C to +40°C only)	1C		
	Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
	Visible Signs of Vegetation Stress	N/A		
	Other Comments / Observations	N/A		
	Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH3S	0	0	1028	0	0	0	21.7		0	0	
	15			0	0	3.5	15.5		0	0	
	30			0	0	3.9	14.7		0	0	
	45			0	0	4	14.8		0	0	
	60 (1)			0	0	3.9	14.8		0	0	
	90			0	0	4	14.8		0	0	
	120 (2)			0	0	4	14.5		0	0	
	180 (3)			0	0	4	14.5		0	0	
	240 (4)			0	0	4	14.6		0	0	
	300 (5)			0	0	4	14.6		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1030.7		
Weather	SUNNY CLEAR WINDY COLD		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser	Last calibrated	
	Mass Balance Transducer	Last calibrated	
	MiniRAE PID	Last calibrated	
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH101	0	-0 4	1028	0 1	1 4	0	21 6		0	0	
	15			0 3	6 2	0 4	20 9		0	0	
	30			0 3	6 1	0 4	20 8		0	0	
	45			0 2	5 4	0 4	20 9		0	0	
	60 (1)			0 2	5 1	0 4	20 9		0	0	
	90			0 2	3 9	0 3	21		0	0	
	120 (2)			0 1	3 5	0 3	21		0	0	
	180 (3)			0 1	2 9	0 2	21		0	0	
	240 (4)										
	300 (5)										
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1030 7		
Weather	SUNNY CLEAR WINDY COLD		
Temperature (°C, between 10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH102	0	0 6	1028	0	0	0	21 1		0	0	
	15			0 7	14 8	1 7	16		0	0	
	30			0 9	16 2	1 7	16		0	0	
	45			0 7	14 7	1 6	16 4		0	0	
	60 (1)			0 7	13 9	1 5	16 7		0	0	
	90			0 5	11	1 2	17 3		0	0	
	120 (2)			0 5	9 9	1	17 7		0	0	
	180 (3)			0 4	8	0 8	18 4		0	0	
	240 (4)			0 3	6 3	0 7	18 9		0	0	
	300 (5)			0 2	4 9	0 6	19 3		0	0	
	360 (6)										
	420 (7)										
	480 (8)										
	540 (9)										
	600 (10)										

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1030 7		
Weather		SUNNY CLEAR WINDY COLD		
Temperature (°C, between -10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH103	0	2 6	1028	0	0	0	21 6		0	0	
	15			20 5	>100	1 9	15 7		0	0	
	30			23 5	>100	2	15 1		0	0	
	45			24	>100	2 1	15		0	0	
	60 (1)			24 5	>100	2 1	14 9		0	0	
	90			24 5	>100	2 1	14 9		0	0	
	120 (2)			25	>100	2 1	14 9		0	0	
	180 (3)			23	>100	2 1	15 2		0	0	
	240 (4)			23 5	>100	2	15 3		0	0	
	300 (5)			22	>100	2	15 6		0	0	
	360 (6)			20 5	>100	2	16 1		0	0	
	420 (7)			22	>100	1 8	15 7		0	0	
	480 (8)			21 5	>100	1 9	15 8		0	0	
	540 (9)			22	>100	1 9	15 7		0	0	
600 (10)			21 5	>100	1 9	15 6		0	0		
Notes Monitoring order is from left to right across table Monitoring should be for not less than 3 minutes However if high concentrations of gases initially recorded monitoring should be for up to 10 minutes * LEL = Lower Explosive Limit = 5%v/v											

Relevant Information At Time Of Monitoring				
Monitored by (name, position)		AP		
Atmospheric Pressure (mB)		1030 7		
Weather		SUNNY CLEAR WINDY COLD		
Temperature (°C, between 10°C to +40°C only)		1C		
Equipment Used (RSK Reference No)		Infra Red Gas Analyser		Last calibrated
		Mass Balance Transducer		Last calibrated
		MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress		N/A		
Other Comments / Observations		N/A		
Boreholes Sampled For Laboratory Analysis				

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104	0	0	1028	0	0	0	21.7		0	0	
	15			30.5	>100	2	13		0	0	
	30			30.5	>100	2	12.7		0	0	
	45			27.5	>100	1.8	13.9		0	0	
	60 (1)			26.5	>100	1.7	13.8		0	0	
	90			22.5	>100	1.5	14.5		0	0	
	120 (2)			22	>100	1.4	15.1		0	0	
	180 (3)			19	>100	1.2	16.1		0	0	
	240 (4)			17.5	>100	1	16.4		0	0	
	300 (5)			16.5	>100	0.9	16.8		0	0	
	360 (6)			16	>100	0.9	16.8		0	0	
	420 (7)			14	>100	0.9	17.1		0	0	
	480 (8)			14.5	>100	0.8	17.3		0	0	
	540 (9)			12.5	>100	0.8	17.7		0	0	
	600 (10)			12.5	>100	0.7	17.7		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1030.7		
Weather	SUNNY CLEAR WINDY COLD		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH104S	0	28.2	1028	0	0	0	21.7		0	0	
	15			74	>100	5.8	1.5		0	0	
	30			73	>100	5.5	2.4		0	0	
	45			63	>100	4.7	4.7		0	0	
	60 (1)			55	>100	4.5	5.9		0	0	
	90			47.5	>100	3.9	8.2		0	0	
	120 (2)			39.5	>100	3.3	9.9		0	0	
	180 (3)			34.5	>100	2.8	11.4		0	0	
	240 (4)			32	>100	2.3	12.7		0	0	
	300 (5)			28.5	>100	2.1	13.4		0	0	
	360 (6)			26	>100	1.9	14		0	0	
	420 (7)			26.5	>100	1.9	14		0	0	
	480 (8)			26.5	>100	1.9	14.1		0	0	
	540 (9)			23	>100	1.7	15		0	0	
	600 (10)			23.5	>100	1.7	14.8		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1030.7		
Weather	SUNNY CLEAR WINDY COLD		
Temperature (°C, between -10°C to +40°C only)	1C		
Equipment Used (RSK Reference No)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

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Table C2 Ground Gas Monitoring Round Pro Forma Two

Borehole	Time Seconds (Minutes)	Gas Flow (l/hr)	Borehole Pressure (Pa)	Methane (%v/v)	Methane (% LEL *)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Other Gases (ppm)			Depth to Water (m bgl)
								PID	H ₂ S	CO	
BH105	0	-0.5	1028	0	0	0	21.6		0	0	
	15			44	>100	1.3	11.6		0	0	
	30			43	>100	1.2	11.6		0	0	
	45			37.5	>100	1	12.7		0	0	
	60 (1)			35	>100	0.9	13.1		0	0	
	90			32	>100	0.8	13.8		0	0	
	120 (2)			31	>100	0.8	14.2		0	0	
	180 (3)			27	>100	0.7	15.1		0	0	
	240 (4)			25	>100	0.7	15.7		0	0	
	300 (5)			23.5	>100	0.6	16		0	0	
	360 (6)			21	>100	0.6	16.5		0	0	
	420 (7)			19.5	>100	0.6	16.8		0	0	
	480 (8)			19	>100	0.5	17		0	0	
	540 (9)			18.5	>100	0.5	17.1		0	0	
	600 (10)			17.5	>100	0.5	17.4		0	0	

Notes

Monitoring order is from **left to right** across table

Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes.

* LEL = Lower Explosive Limit = 5%v/v

Relevant Information At Time Of Monitoring			
Monitored by (name, position)	AP		
Atmospheric Pressure (mB)	1030.7		
Weather	SUNNY CLEAR WINDY COLD		
Temperature (°C, between 10°C to +40°C only)	1C		
Equipment Used (RSK Reference No.)	Infra Red Gas Analyser		Last calibrated
	Mass Balance Transducer		Last calibrated
	MiniRAE PID		Last calibrated
Visible Signs of Vegetation Stress	N/A		
Other Comments / Observations	N/A		
Boreholes Sampled For Laboratory Analysis			

Site
Job No

Appendix E
Tidal Monitoring Data

TIDAL MONITORING DATA

Client Name	Site Location	Site Assessment
NEVIS POWER LTD	Newport Biomass Power Plant	
BH101	<p>BH101 (G2183) 10/02/2010 12 00:00 22/02/2010 13 10 00</p> <p>Water column above Diver (mH2O)</p> <p>13/02/2010 14/02/2010 15/02/2010 16/02/2010 17/02/2010 18/02/2010 19/02/2010 20/02/2010</p> <p><input checked="" type="checkbox"/> Water column above Diver (mH2O) <input type="checkbox"/> Pressure (mH2O) <input type="checkbox"/> Temperature (Celsius)</p>	
Description Variation in groundwater level during each tidal cycle is between approximately 1.4m and 1.8m for BH101. The break in readings evident on 17 February 2010 for all boreholes was caused when the loggers were temporarily removed from the boreholes to permit groundwater sampling. Raw tidal monitoring data is uncorrected for barometric pressure.		

BH104	<p>BH104 (G2501) 10/02/2010 12 00:00 22/02/2010 14 25 00</p> <p>Water column above Diver (mH2O)</p> <p>13/02/2010 14/02/2010 15/02/2010 16/02/2010 17/02/2010 18/02/2010 19/02/2010 20/02/2010</p> <p><input checked="" type="checkbox"/> Water column above Diver (mH2O) <input type="checkbox"/> Pressure (mH2O) <input type="checkbox"/> Temperature (Celsius)</p>	
Description Variation in groundwater level during each tidal cycle is between approximately 1.2m and 1.4m for BH104. Raw tidal monitoring data is uncorrected for barometric pressure.		

PHOTOGRAPHIC LOG

Client Name NEVIS POWER LTD	Site Location Newport Biomass Power Plant	Site Assessment
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BH105 Description <p>Variation in groundwater level during each tidal cycle is between approximately 1.3m and 1.6m for BH105</p> <p>Raw tidal monitoring data is uncorrected for barometric pressure</p>	<p align="center">BH105 (G2274) 10/02/2010 12 00 00 22/02/2010 14 25 00</p> <p>Water column above Diver (mH2O)</p> <p>13/02/2010 14/02/2010 15/02/2010 16/02/2010 17/02/2010 18/02/2010 19/02/2010 20/02/2010</p> <p><input checked="" type="checkbox"/> Water column above Diver (mH2O) <input type="checkbox"/> Pressure (mH2O) <input type="checkbox"/> Temperature (Celsius)</p>
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BH102 Description <p>The barometric log shows that a long-term variation of about 0.4m in the readings is attributable to changes in atmospheric pressure</p>	<p align="center">BH102 (F5722) 10/02/2010 12 00 00 22/02/2010 13 10 00</p> <p>Pressure (mH2O)</p> <p>Temperature (Celsius)</p> <p>09/02/2010 11/02/2010 13/02/2010 15/02/2010 17/02/2010 19/02/2010 21/02/2010 23/02/2010</p> <p><input checked="" type="checkbox"/> Pressure (mH2O) <input checked="" type="checkbox"/> Temperature (Celsius)</p>
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Appendix F
Modified Wilson and Card Spreadsheet

Job Number:
Client:
Site:

Revised Wilson and Card Classification Ground Gas Risk Assessment

Job No.: 310826 - R2 (00)
Client: Nevis Power Ltd
Site: Newport Biomass Power Plant

For low-rise residential developments without a clear ventilated sub-floor void, flats and commercial / industrial sites

Characteristic Situation	Risk	GSV
1	Very Low	0.07
2	Low	0.7
3	Moderate	3.5
4	Moderate to High	15
5	High	70
6	Very High	>70

From CIRIA Report 659 (2006) "Assessing Risks Posed By Hazardous Ground Gases To Buildings", Wilson et al.

KEY:
GSV
Gas Screening Value
GSV cannot be calculated on a site-specific basis
GSV indicates very low risk
GSV indicates low to moderate risk
GSV indicates moderate or greater risk; Concentrations of CH ₄ ≥20%V/V; CO ₂ ≥30%V/V
Oxygen concentrations ≤10%v/v
Total ground gas concentrations >100%v/v
Negative flow rate
Positive flow rate

BH NO.	DATE	CH4 I %v/v	CH4 SS %v/v	CO2 I %v/v	CO2 SS %v/v	O2 I %v/v	O2 SS %v/v	Flow l/hr	Baro mbar	BH Press mbar	I SUM %v/v	SS SUM %v/v	CH4	CO2	CS No.
SBH1	18/01/2010	<0.1	<0.1	<0.1	<0.1	21.7	21.7	0.2	1025	1022	21.7	21.7	0.00	0.00	CS1
	25/01/2010	<0.1	<0.1	0.2	<0.1	21.8	21.7	0	1032.8	1030	22.0	21.7	0.00	0.00	CS1
	01/02/2010	<0.1	<0.1	0.2	<0.1	21.3	21.5	0	1016.8	1013	21.5	21.5	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	0.5	<0.1	21.5	21.8	0.1	1013.9	1011	22.0	21.8	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	0.1	<0.1	20.7	21.7	0	1006.2	1004	20.8	21.7	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	0.2	<0.1	21.4	21.4	0	986.3	979	21.6	21.4	0.00	0.00	CS1
SBH2	18/01/2010	<0.1	<0.1	0.2	<0.1	20.7	21.7	0	1025	1022	20.9	21.7	0.00	0.00	CS1
	25/01/2010	<0.1	<0.1	<0.1	<0.1	21.6	21.5	0	1032.8	1030	21.6	21.5	0.00	0.00	CS1
	01/02/2010	<0.1	<0.1	<0.1	<0.1	21.7	21.4	0	1016.8	1013	21.7	21.4	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	0.5	<0.1	21.4	21.7	0.3	1013.9	1011	21.9	21.7	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	0.6	<0.1	21.3	21.4	0	1006.2	1004	21.9	21.4	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	0.6	<0.1	21.2	21.3	0	986.3	982	21.8	21.3	0.00	0.00	CS1
SBH3	18/01/2010	<0.1	<0.1	0.9	0.3	9.7	13.5	0.2	1025	1022	10.6	13.8	0.00	0.00	CS1
	25/01/2010	<0.1	<0.1	0.4	0.6	19.1	18.3	3.1	1032.8	1031	19.5	18.9	0.00	0.02	CS1
	01/02/2010	<0.1	<0.1	0.8	1.1	18.3	17.9	0	1016.8	1013	19.1	19.0	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	<0.1	<0.1	21.7	21.6	0.1	1013.9	1011	21.7	21.6	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	1.0	1.3	19.3	18.8	0.2	1006.2	1003	20.3	20.1	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	2.2	2.5	8.3	7.3	14	986.3	982	10.5	9.8	0.00	0.35	CS2
SBH4	18/01/2010	<0.1	<0.1	<0.1	<0.1	21.7	20.6	1.9	1025	1022	21.7	20.6	0.00	0.00	CS1
	25/01/2010	<0.1	<0.1	0.4	<0.1	21.4	21.5	0	1032.8	1031	21.8	21.5	0.00	0.00	CS1
	01/02/2010	<0.1	<0.1	0.6	<0.1	21.2	21.3	0	1016.8	1013	21.8	21.3	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	0.4	<0.1	21.5	21.6	3	1013.9	1011	21.9	21.6	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	0.3	<0.1	21.3	21.4	0	1006.2	1004	21.6	21.4	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	0.1	<0.1	21.1	21.4	7.6	986.3	982	21.2	21.4	0.00	0.00	CS1
SBH5	18/01/2010	<0.1	<0.1	0.1	<0.1	21.4	21.6	0	1025	1022	21.5	21.6	0.00	0.00	CS1
	25/01/2010	<0.1	<0.1	<0.1	<0.1	21.3	21.3	0.8	1032.8	1031	21.3	21.3	0.00	0.00	CS1
	01/02/2010	<0.1	<0.1	<0.1	<0.1	21.6	21.2	0	1016.8	1013	21.6	21.2	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	<0.1	<0.1	21.8	21.4	0	1013.9	1011	21.8	21.4	0.00	0.00	CS1
	15/02/2010	0.1	<0.1	<0.1	<0.1	21.7	21.3	0	1006.2	1004	21.8	21.3	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	<0.1	<0.1	21.5	21.4	0	986.3	982	21.5	21.4	0.00	0.00	CS1
SBH6	18/01/2010	<0.1	<0.1	<0.1	<0.1	21.4	21.4	0	1025	1022	21.4	21.4	0.00	0.00	CS1
	25/01/2010	<0.1	<0.1	<0.1	<0.1	21.7	21.4	0.3	1032.8	1030	21.7	21.4	0.00	0.00	CS1
	01/02/2010	<0.1	<0.1	<0.1	<0.1	21.5	21.2	0	1016.8	1013	21.5	21.2	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	<0.1	<0.1	21.8	21.4	0.3	1013.9	1011	21.8	21.4	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	<0.1	<0.1	21.6	21.2	0	1006.2	1004	21.6	21.2	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	0.3	<0.1	20.7	21.4	2.9	986.3	982	21.0	21.4	0.00	0.00	CS1
SBH7	18/01/2010	<0.1	<0.1	0.3	0.3	21.3	21.3	3.9	1025	1022	21.6	21.6	0.00	0.01	CS1
	25/01/2010	<0.1	<0.1	<0.1	<0.1	21.6	21.3	0	1032.8	1031	21.6	21.3	0.00	0.00	CS1
	01/02/2010	<0.1	<0.1	0.2	<0.1	21.0	21.1	0.1	1016.8	1013	21.2	21.1	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	<0.1	<0.1	21.8	21.2	0.3	1013.9	1011	21.8	21.2	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	0.1	<0.1	21.3	21.3	0.4	1006.2	1004	21.4	21.3	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	<0.1	<0.1	21.5	21.4	3.5	986.3	982	21.5	21.4	0.00	0.00	CS1
SBH8	18/01/2010	27.0	2.2	2.0	0.1	3.9	19.9	0.7	1025	1022	32.9	22.2	0.19	0.00	CS2
	25/01/2010	18.0	1.7	0.8	<0.1	14.7	20.6	0.2	1032.8	1030	33.5	22.3	0.04	0.00	CS1
	01/02/2010	27.0	3.8	1.0	<0.1	11.1	19.9	2.8	1016.8	1013	39.1	23.7	0.76	0.00	CS3
	08/02/2010	53.0	7.1	2.2	0.3	4.8	19.1	2.2	1013.9	1011	60.0	26.5	1.17	0.01	CS3
	15/02/2010	47.5	6.1	2.2	0.2	6.5	19.4	7.6	1006.2	1004	56.2	25.7	3.61	0.02	CS4
	22/02/2010	80.0	7.7	3.0	0.3	3.7	19.1	22.4	986.3	981	66.7	27.1	13.44	0.07	CS4
BH104S	01/02/2010	78.0	44.5	5.0	3.0	3.1	10.3	8.5	1016.8	1013	86.1	57.8	6.63	0.26	CS4
	08/02/2010	85.0	21.0	5.1	1.2	1.9	16.2	16.1	1013.9	1011	92.0	38.4	13.69	0.19	CS4
	15/02/2010	73.0	17.0	5.2	1.1	2.0	16.3	19	1006.2	1003	80.2	34.4	7.30	0.11	CS4
	22/02/2010	76.0	28.5	5.4	2.0	1.1	13.4	15	986.3	981	82.5	43.9	11.40	0.30	CS4
	08/03/2010	74.0	23.5	5.8	1.7	1.5	14.8	28.2	1030.7	1028	81.3	40.0	20.87	0.48	CS5
	03/02/2010	1.4	<0.1	3.9	0.3	19.7	21.5	0.2	1008.5	1007	25.0	21.8	0.00	0.00	CS1
BH101	08/02/2010	0.9	0.8	1.8	1.6	20.8	20.8	0.5	1013.9	1011	23.5	23.2	0.09	0.15	CS2
	15/02/2010	1.1	<0.1	2.4	0.1	20.3	21.4	0	1006.2	1003	23.8	21.5	0.00	0.00	CS1
	22/02/2010	0.5	<0.1	0.8	<0.1	20.5	21.3	0.9	986.3	982	21.8	21.3	0.00	0.00	CS1
	08/03/2010	0.3	0.1	0.4	0.2	20.9	21.0	0.4	1030.7	1028	21.6	21.3	0.00	0.00	CS1
	03/02/2010	3.2	0.8	4.1	1.1	9.3	17.6	0.1	1008.5	1007	16.6	19.5	0.00	0.00	CS1
	08/02/2010	0.4	0.1	0.7	0.3	19.2	20.5	0	1013.9	1011	20.3	20.9	0.00	0.00	CS1
BH102	15/02/2010	2.1	0.2	3.5	0.6	10.9	19.3	0	1006.2	1003	16.5	20.1	0.00	0.00	CS1
	22/02/2010	0.4	0.1	0.6	0.3	19.3	20.4	0.2	986.3	982	20.3	20.8	0.00	0.00	CS1
	08/03/2010	0.7	0.2	1.7	0.6	16.0	19.3	0.6	1030.7	1028	18.4	20.1	0.00	0.00	CS1
	03/02/2010	3.8	2.4	0.9	0.6	20.0	20.7	0.3	1008.5	1006	24.7	23.7	0.01	0.00	CS1
	08/02/2010	12.0	18.0	1.2	1.8	17.9	15.5	17.5	1013.9	1011	31.1	35.3	2.10	0.32	CS3
	15/02/2010	27.0	31.0	2.7	3.4	12.7	11.5	7.5	1006.2	1003	42.4	45.9	2.03	0.26	CS3
BH103	22/02/2010	78.0	68.0	6.6	5.8	7.5	4.1	24.9	986.3	982	92.1	77.9	19.42	1.44	CS5
	08/03/2010	20.5	21.5	1.9	1.9	15.7	15.6	2.6	1030.7	1028	38.1	39.0	0.53	0.05	CS2
	03/02/2010	34.5	17.5	1.4	0.7	11.9	16.8	0.1	1008.5	1007	47.8	35.0	0.03	0.00	CS1
	08/02/2010	23.0	16.0	1.3	0.8	16.2	17.7	0	1013.9	1011	40.5	34.5	0.00	0.00	CS1
	15/02/2010	74.0	28.8	4.5	1.6	4.9	14.7	0	1006.2	1004	83.4	42.8	0.00	0.00	CS1
	22/02/2010	50.0	20.0	1.6	0.6	9.4	16.6	0.2	986.3	981	61.0	37.2	0.10	0.00	CS2
BH104	08/03/2010	30.5	12.5	2.0	0.7	13.0	17.7	0	1030.7	1028	45.5	30.9	0.00	0.00	CS1
	03/02/2010	94.0	40.5	4.2	1.6	0.3	11.9	1.7	1008.5	1006	98.5	54.0	1.60	0.03	CS3
	08/02/2010	16.5	6.6	0.5	0.2	17.6	19.8	0.2	1013.9	1011	34.6	26.6	0.03	0.00	CS1
	15/02/2010	76.0	23.0	2.6	0.7	4.4	15.7	0.1	1006.2	1003	82.0	39.4	0.08	0.00	CS2
	22/02/2010	2.6	2.0	0.1	<0.1	20.8	20.9	2.9	986.3	982	23.5	22.9	0.08	0.00	CS2
	08/03/2010	44.0	17.5	1.3	0.5	11.6	17.4	0.5	1030.7	1028	56.9	35.4	0.22	0.00	CS2
BH105	03/02/2010	34.5	17.5	1.4	0.7	11.9	16.8	0.1	1008.5	1007	47.8	35.0	0.03	0.00	CS1
	08/02/2010	23.0	16.0	1.3	0.8	16.2	17.7	0	1013.9	1011	40.5	34.5	0.00	0.00	CS1
	15/02/2010	74.0	28.8	4.5	1.6	4.9	14.7	0	1006.2	1004	83.4				

Job Number:
Client:
Site:

Characteristic Situation	Risk	GSV
1	Very Low	0.07
2	Low	0.7
3	Moderate	3.5
4	Moderate to High	15
5	High	70
6	Very High	>70

From CIRIA Report 659 (2006) "Assessing Risks Posed By Hazardous Ground Gases To Buildings", Wilson et al.

KEY:
GSV Gas Screening Value
GSV cannot be calculated on a site-specific basis
GSV indicates very low risk
GSV indicates low to moderate risk
GSV indicates moderate or greater risk; Concentrations of CH ₄ ≥20%V/V, CO ₂ ≥30%V/V
Oxygen concentrations ≤10%v/v
Total ground gas concentrations >100%v/v
Negative flow rate
Positive flow rate

BH NO.	DATE	CH ₄ I %v/v	CH ₄ SS %v/v	CO ₂ I %v/v	CO ₂ SS %v/v	O ₂ I %v/v	O ₂ SS %v/v	Flow l/hr	Baro mbar	BH Press mbar	I SUM %v/v	SS SUM %v/v	GSV	CH ₄	CO ₂	CS No.
BH1D	08/02/2010	24.0	32.0	3.6	4.6	6.5	2.2	5.9	1013.9	1011	34.1	38.8	2.38	0.46	0.00	CS3
	22/02/2010	89.0	38.0	6.1	5.4	1.5	13.0	8.5	986.3	979	46.6	56.4	3.32	0.46	0.00	CS3
	08/03/2010	22.5	29.5	4.3	5.3	6.1	2.1	8.1	1030.7	1028	32.9	36.9	1.82	0.43	0.00	CS3
	10/04/2008	9.7	0.2	1.2	<0.1	16.8	20.7	6.2	998	996	27.7	20.9	0.02	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	0.00	CS1
BH2S	03/02/2010	0.3	<0.1	0.1	0.2	21.6	21.5	0	1008.5		22.0	21.7	0.00	0.00	0.00	CS1
	08/02/2010	0.5	1.0	0.2	<0.1	20.6	21.1	0	1013.9	1011	21.3	22.1	0.00	0.00	0.00	CS1
	15/02/2010	<0.1	<0.1	<0.1	<0.1	21.5	21.3	0	1006.2	1004	21.5	21.3	0.00	0.00	0.00	CS1
	22/02/2010	<0.1	<0.1	0.2	0.1	21.2	21.3	11.2	986.3	981	21.4	21.4	0.00	0.00	0.01	CS1
	08/03/2010	<0.1	<0.1	<0.1	<0.1	21.4	21.4	6.2	1030.7	1028	21.4	21.4	0.00	0.00	0.00	CS1
BH2D	10/04/2008	<0.1	<0.1	0.1	<0.1	20.8	21.0	0	998	996	20.9	21.0	0.00	0.00	0.00	CS1
	08/02/2010	2.3	0.7	3.5	4.0	9.2	8.4	5.2	1013.9	1011	15.0	13.1	0.12	0.21	0.00	CS2
	15/02/2010	<0.1	<0.1	0.5	1.1	20.4	19.7	9.8	1006.2	1004	20.9	20.8	0.00	0.11	0.00	CS2
	22/02/2010	<0.1	<0.1	0.7	0.5	20.2	20.4	2.8	986.3	981	20.9	20.9	0.00	0.00	0.01	CS1
	08/03/2010	<0.1	<0.1	<0.1	<0.1	19.6	20.0	6.2	1030.7	1028	19.6	20.0	0.00	0.00	0.00	CS1
BH3S	10/04/2008	0.3	<0.1	0.9	<0.1	19.7	21.0	6.2	998	996	20.9	21.0	0.00	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	0.00	CS1
	03/02/2010	11.0	4.0	0.2	<0.1	21.5	20.4	0	1008.5		32.7	24.4	0.00	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	0.1	0.1	21.3	21.4	0	1013.9	1011	21.4	21.5	0.00	0.00	0.00	CS1
	15/02/2010	1.7	1.2	4.1	4.2	12.6	12.3	0	1006.2	1004	18.4	17.7	0.00	0.00	0.00	CS1
BH3D	22/02/2010	5.4	2.4	2.0	1.7	7.6	9.9	0	986.3	982	15.0	14.0	0.00	0.00	0.00	CS1
	08/03/2010	<0.1	<0.1	3.5	4.0	15.5	14.6	0	1030.7	1028	19.0	18.6	0.00	0.00	0.00	CS1
	10/04/2008	8.3	<0.1	3.3	<0.1	9.8	20.8	0	998	996	21.4	20.8	0.00	0.00	0.00	CS1
	08/02/2010	<0.1	<0.1	0.8	1.0	20.4	20.3	0	1013.9	1011	21.2	21.3	0.00	0.00	0.00	CS1
	15/02/2010	3.5	1.1	0.2	<0.1	20.1	20.9	0	1006.2	1004	23.8	22.0	0.00	0.00	0.00	CS1
BH3S	22/02/2010	6.9	1.7	0.2	<0.1	19.3	20.9	6.1	986.3	982	26.4	22.6	0.01	0.00	0.00	CS1
	08/03/2010	0.5	<0.1	0.2	<0.1	20.7	21.2	6.1	1030.7	1028	21.4	21.2	0.00	0.00	0.00	CS1
	10/04/2008	50.5	<0.1	1.0	<0.1	9.3	20.8	0	998	996	60.8	20.8	0.00	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	0.00	CS1
											0.0	0.0	0.00	0.00	0.00	CS1

WORST-CASE VALUES PER BOREHOLE

	Maximum CH4		Maximum CO2		Minimum O2		Max Flow	Not Applicable	Maximum Total		Maximum GSVs		CS No	
SBH1	<0.1	<0.1	0.5	<0.1	20.7	21.4	0.2			21.2	21.4	0.00	0.00	CS1
SBH2	<0.1	<0.1	0.6	<0.1	20.7	21.3	0.6			21.3	21.3	0.00	0.00	CS1
SBH3	<0.1	<0.1	2.2	2.5	8.3	7.3	14.0			10.5	9.8	0.00	0.35	CS2
SBH4	<0.1	<0.1	0.6	<0.1	21.1	20.6	7.6			21.7	20.6	0.00	0.00	CS1
SBH5	0.1	<0.1	0.1	<0.1	21.3	21.2	0.8			21.5	21.2	0.00	0.00	CS1
SBH6	<0.1	<0.1	0.3	<0.1	20.7	21.2	6.3			21.0	21.2	0.00	0.00	CS1
SBH7	<0.1	<0.1	0.3	0.3	21.0	21.1	3.9			21.3	21.4	0.00	0.01	CS1
SBH8	60.0	7.7	3.0	0.3	3.7	19.1	22.4			66.7	27.1	13.44	0.07	CS4
BH104S	85.0	44.5	5.8	3.0	1.1	10.3	28.2			91.9	57.8	23.97	0.85	CS5
BH101	1.4	0.8	3.9	1.6	19.7	20.8	9.5			25.0	23.2	0.13	0.15	CS2
BH102	3.2	0.8	4.1	1.1	9.3	17.6	0.6			16.6	19.5	0.02	0.01	CS1
BH103	78.0	68.0	6.6	5.8	7.5	4.1	24.9			92.1	77.9	19.42	1.44	CS5
BH104	74.0	25.5	4.5	1.6	4.9	14.7	0.2			83.4	42.8	0.15	0.00	CS2
BH105	94.0	40.5	4.2	1.6	0.3	11.9	2.9			98.5	54.0	2.73	0.05	CS3
BH1S	47.5	35.5	5.4	4.5	0.5	2.2	10.0			53.4	43.2	4.75	0.45	CS4
BH1D	39.0	38.0	6.1	5.4	1.5	2.2	9.9			46.6	45.6	3.86	0.53	CS4
BH2S	0.5	1.0	0.2	0.2	20.6	21.0	11.2			21.3	22.2	0.06	0.02	CS1
BH2D	2.3	0.7	3.5	4.0	9.2	8.4	9.8			15.0	13.1	0.23	0.39	CS2
BH3S	11.0	4.0	4.1	4.2	7.6	9.9	<0.1			22.7	18.1	0.00	0.00	CS1
BH3D	50.5	1.7	1.0	1.0	9.3	20.3	0.1			60.8	23.0	0.05	0.00	CS1

Appendix G
Borehole Logs

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH101
Contract Ref 310826	Start 05 01 10 End 12 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results				
0 00 0 40	1	B			MADE GROUND comprising soft brown mottled grey sandy gravelly CLAY (reworked) Sand is medium Gravel is fine to medium angular to sub angular with occasional coarse angular to sub angular gravel Occasional vegetation with rootlets	(0 70)	
0 70	2	D			MADE GROUND comprising soft grey slightly silty CLAY (reworked) with occasional shells	0 70	
1 20 1 65	3	SPT	N=3				
1 70	4	D				(2 30)	
2 00 2 45	5	SPT	N=4				
2 70	6	D				3 00	
3 00 3 50	7	U ₍₁₀₀₎	6 blows		Soft brown mottled grey CLAY		
3 50	8	D					
4 00 4 45	9	SPT	N=1			(2 50)	

Boring Progress and Water Observations						Chiselling			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)	
05/01/10		2 00	1 60	150	2 00	18 00	18 30	01 00	1 Piezometric pipe 1055mm above ground level
All dimensions in metres									Scale 1 25
Method Used Cable percussion		Plant Used Dando 3000		Drilled By RS		Logged By APrzewieshik		Checked By AGS	



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BOREHOLE LOG

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH101
Contract Ref 310826	Start 05 01 10	End 12 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 70	10	D				Soft brown mottled grey CLAY (<i>stratum text copied from layer at m depth from previous sheet</i>)		
5 00 5 50	11	U ₍₁₀₀₎	8 blows					
5 50	12	D				Soft brown mottled grey slightly silty CLAY	5 50	
6 00 6 45	13	SPT	N=2					
7 00	14	D						
7 50 8 00	15	U ₍₁₀₀₎	5 blows					
8 00	16	D						
8 50	17	D						
							(7 00)	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		
Cable percussion		Dando 3000		RS		APrzewieshk				AGS

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Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH101
Contract Ref 310826	Start 05 01 10	End 12 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 45	18	SPT	N=2			Soft brown mottled grey slightly silty CLAY (<i>stratum text copied from layer at m depth from previous sheet</i>)		
10 00	19	D						
10 50 11 00	20	U ₍₁₀₀₎	5 blows					
11 00	21	D						
12 00 12 50	22	U ₍₁₀₀₎	13 blows			Very dense reddish brown and dark grey slightly clayey fine to coarse sub-angular to rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate		
12 50	23	D					12 50	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used Cable percussion				Plant Used Dando 3000		Drilled By RS		Logged By APrzewieshk		Checked By AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH101
Contract Ref 310826	Start 05 01 10 End 12 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 13 70 13 50 14 00	24 25	SPT B	N=120*			Very dense reddish brown and dark grey slightly clayey fine to coarse sub-angular to rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)		
15 00 15 38 15 00 15 50	26 27	SPT(c) B	N=69*				(5 30)	
16 20	28	D						
16 50 16 88	29	SPT(c)	N=67*					
17 00 17 50	30	B						
17 80	31	D					17 80	
Description on next sheet								

Boring Progress and Water Observations						Chiselling			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)			
Method Used				Plant Used		Drilled By		Logged By		Checked By	
Cable percussion				Dando 3000		RS		APrzewieslik			


Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH101
Contract Ref 310826	Start 05 01 10 End 12 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of	

[illegible]

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		
Cable percussion		Dando 3000		RS		APrzewieslik		AGS		

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH102
Contract Ref 310826	Start 21 01 10	End 26 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 00 0 40	1	B				MADE GROUND comprising soft brown mottled grey sandy gravelly CLAY (reworked) Sand is fine Gravel is fine to coarse angular to sub rounded pumice with occasional angular to sub angular cobbles Occasional fragments of metal and timber Occasional plants with roots and rootlets	(0 40)	
0 40 1 00	2	B				MADE GROUND comprising soft brown mottled grey silty slightly sandy CLAY (reworked)	0 40	
1 20 1 65	3	SPT	N=2				(2 60)	
2 00 2 45	4	U ₍₁₀₀₎	5 blows					
2 50	5	D						
3 00	6	SPT	N=0			Soft brown mottled grey silty CLAY (possibly reworked)	3 00	
3 70	7	D						
4 00 4 45	8	U ₍₁₀₀₎	4 blows					

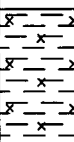

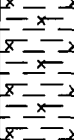
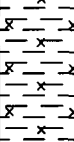
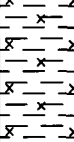
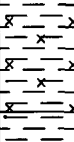



Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
						20 00	20 60	02 00	1 Piezometric pipe 914mm above ground level	
									All dimensions in metres	Scale 1 25
Method Used Cable percussion		Plant Used Dando 2000		Drilled By RS		Logged By APrzewieslk		Checked By		

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH102
Contract Ref 310826	Start 21 01 10	End 26 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Insitu mentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50	9	D				Soft brown mottled grey silty CLAY (possibly reworked) <i>(stratum text copied from layer at m depth from previous sheet)</i>	(6 50)	
5 00 5 45	10	SPT	N=1					
5 70	11	D						
6 00 6 45	12	U ₍₁₀₀₎	6 blows					
6 50	13	D						
7 00	14	D						
7 50 7 95	15	SPT	N=0					
8 00	16	D						
8 70	17	D						

Boring Progress and Water Observations						Chiselling			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)			
Method Used Cable percussion				Plant Used Dando 2000			Drilled By RS		Logged By APrzewieshk		Checked By AGS
All dimensions in metres						Scale			1 25		

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH102
Contract Ref 310826	Start 21 01 10 End 26 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 45	18	U ₍₁₀₀₎	10 blows			Soft brown mottled grey silty CLAY (possibly reworked) <i>(stratum text copied from layer at m depth from previous sheet)</i>	9 50	
9 50	19	D				Soft brown mottled grey silty slightly sandy CLAY (possibly reworked) Sand is fine to medium	(0 50)	
10 00	20	D				Grey silty CLAY (possible reworked)	10 00	
10 50 10 95	21	SPT	N=2				(2 00)	
11 40	22	D					12 00	
12 00 12 45	23	U ₍₁₀₀₎	16 blows			Brown mottled grey sandy CLAY (possibly reworked)	(1 10)	
12 50	24	D					13 10	
13 10	25	D				Grey silty CLAY (possibly reworked)	(0 40)	
							13 50	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres	Scale 1 25
Method Used Cable percussion				Plant Used Dando 2000			Drilled By RS	Logged By A Przewieslik		Checked By AGS

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH102
Contract Ref 310826	Start 21 01 10	End 26 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 13 80 13 50 14 00	26 27	SPT B	N=98*			Dense becoming very dense reddish brown and dark grey, medium to coarse angular to sub rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate Some clay as matrix between medium to coarse gravel and cobbles		
15 00 15 45	28	SPT(c)	N=31					
15 50 16 00	29	B						
16 50 16 95 16 50 17 00	30 31	SPT(c) B	N=32				(6 00)	

Boring Progress and Water Observations						Chiselling			General Remarks					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)						
									All dimensions in metres					
Method Used		Cable percussion		Plant Used		Dando 2000		Drilled By		RS	Logged By	APrzewieslik	Checked By	<div><div></div></div> AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH102
Contract Ref 310826	Start 21 01 10 End 26 01 10	Ground Level (m TBM) 2 1	National Grd Co ordinate ---	Sheet of

Samples and In situ Tests					Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
18 00 18 45 18 00 18 50	32 33	SPT(c) B	N=40			Dense becoming very dense reddish brown and dark grey medium to coarse angular to sub rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate Some clay as matrix between medium to coarse gravel and cobbles <i>(stratum text copied from layer at m depth from previous sheet)</i>	19 50		
19 50 19 86	34	SPT	N=71*			Generally very weak (locally weak) indistinctly laminated reddish brown occasionally mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)	(1 10)		
20 00	35	D					20 60		

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres	Scale 1 25
Method Used Cable percussion			Plant Used Dando 2000			Drilled By RS	Logged By A Przewieshk		Checked By	AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH103
Contract Ref 310826	Start 08 01 10 End 15 01 10	Ground Level (m TBM) 1 4	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 30	1	D				MADE GROUND comprising soft brown mottled grey gravelly CLAY (reworked) Gravel is reddish brown and grey fine to medium angular to sub rounded Occasional vegetation and rootlets		
0 50 1 20	2	B						
1 20 1 65	3	SPT	N=2					
1 50	4	D						
1 50 2 00	5	B						
2 00 2 45	6	U ₍₁₀₀₎	10 blows 100% recovery			Soft brown mottled grey CLAY with rare black pockets of pseudo fibrous peat deposits	2 00	
2 50	7	D						
2 50 3 00	8	B						
3 00 3 45	9	SPT	N=2					
3 50	10	D						
3 50 4 00	11	B						
4 00 4 45	12	U ₍₁₀₀₎	12 blows 30% recovery					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									1 Piezometric pipe 104mm above ground level	
Method Used Cable percussion						Plant Used Dando 3000			All dimensions in metres Scale 1 25	
Drilled By AJ						Logged By APrzewieshk			Checked By AGS	



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BOREHOLE LOG

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH103
Contract Ref 310826	Start 08 01 10	End 15 01 10	Ground Level (m TBM) 1 4	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50 4 50 5 00	13 14	D B				Soft brown mottled grey CLAY with rare black pockets of pseudo fibrous peat deposits (<i>stratum text copied from layer at m depth from previous sheet</i>)		
5 00 5 45	15	SPT	N=1					
6 00 6 00 6 50	16 17	D B						
6 50 6 95	18	U ₍₁₀₀₎	11 blows 40% recovery				(9 20)	
7 00	19	D						
7 50 8 00	20	B						
8 00 8 45	21	SPT	N=9					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres Scale 1 25	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieshk	Checked By	

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Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH103
Contract Ref 310826	Start 08 01 10 End 15 01 10	Ground Level (m TBM) 1 4	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 00 9 50	22 23	D B				Soft brown mottled grey CLAY with rare black pockets of pseudo fibrous peat deposits (<i>stratum text copied from layer at m depth from previous sheet</i>)		
9 50 9 95	24	U ₍₁₀₀₎	14 blows 30% recovery					
10 00	25	D						
10 50 11 00	26	B						
11 00 11 45	27	SPT	N=5			Very soft light grey mottled brown sandy CLAY	11 20	
12 00 12 50 12 00	27 28	B D					(1 70)	
12 50 12 95	30	U ₍₁₀₀₎	18 blows 100% recovery					
13 00	31	D					12 90	
						Dense becoming very dense reddish brown and dark grey SAND and GRAVEL Sand is medium to coarse Gravel is medium to coarse sub angular to sub rounded sandstone quartzite and conglomerate		

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH103
Contract Ref 310826	Start 08 01 10 End 15 01 10	Ground Level (m TBM) 1 4	National Grid Co ordinate -- --	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 14 00	32	B				Dense becoming very dense reddish brown and dark grey SAND and GRAVEL Sand is medium to coarse Gravel is medium to coarse sub angular to sub rounded sandstone quartzite and conglomerate (stratum text copied from layer at m depth from previous sheet)		
14 00 14 45	33	SPT(c)	N=42					
15 00 15 00	34	D						
15 00 15 50	35	B					(4 60)	
15 50 15 95	36	SPT(c)	N=45					
16 00	37	D						
16 50 17 00	36	B						
17 00 17 45	37	SPT(c)	N=38					
						Very dense reddish brown slightly clayey very sandy GRAVEL Gravel is fine to coarse angular to sub angular mudstone with occasional medium to coarse sub rounded to rounded cobbles of sandstone quartzite and conglomerate	17 50	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used Cable percussion						Drilled By AJ			Logged By APrzewieslik	
Plant Used Dando 3000						Checked By			Scale 1 25	
									AGS	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH103
Contract Ref 310826	Start 08 01 10	End 15 01 10	Ground Level (m TBM) 1 4	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
18 00 18 00 18 50	40 41	D B				Very dense reddish brown slightly clayey very sandy GRAVEL Gravel is fine to coarse angular to sub angular mudstone with occasional medium to coarse sub rounded to rounded cobbles of sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)		
18 50 18 81	42	SPT(c)	N=114*					
19 00	43	D					(3 25)	
19 50 20 00	44	B						
20 00 20 45	45	SPT(c)	N=38					
							20 75	
21 00 21 00 21 50	46 47	D B				Generally very weak (locally weak) indistinctly laminated reddish brown occasionally mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)	21 00	
						Weak (locally very weak) reddish brown occasionally mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)	(0 50)	
							21 50	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieslik	Checked By	<div><div></div><div>AGS</div></div>

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH104	
Contract Ref 310826	Start 18 01 10 End 22 01 10	Ground Level (m TBM) 1 6	National Grid Co ordinate --	Sheet of	

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 30	1	D				MADE GROUND comprising soft reddish brown mottled grey gravelly CLAY Gravel is white stained brown fine to medium angular to sub angular pumice and dark grey tabular medium mudstone Occasional vegetation with rootlets		
0 60 1 20	2	B					(1 35)	
1 20 1 65	3	SPT	N=3				1 35	
1 70 1 70 2 00	4 5	D B				Soft brown mottled grey slightly sandy CLAY Sand is fine to medium		
2 00 2 45	6	U ₍₁₀₀₎	10 blows 100% recovery					
2 50 2 50 3 00	7 8	D B						
3 00 3 45	9	SPT	N=2				(3 65)	
3 50 3 50 4 00	10 11	D B						
4 00 4 45	12	U ₍₁₀₀₎	10 blows 100% recovery					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									1 Piezometric pipe 1084mm above ground level	
Method Used Cable percussion						Plant Used Dando 3000		Drilled By AJ	Logged By APrzewieshk	Checked By AGS

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH104
Contract Ref 310826		Start 18 01 10	Ground Level (m TBM) 1 6	National Grd Co ordinate ---	Sheet of
		End 22 01 10			

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50 4 50 5 00	13 14	D B				Soft brown mottled grey slightly sandy CLAY Sand is fine to medium (stratum text copied from layer at m depth from previous sheet)		
5 00 5 45	15	SPT	N=2				5 00	
6 00 6 00 6 50	16 17	D B				Soft brown mottled grey CLAY		
6 50 6 95	18	U ₍₁₀₀₎	4 blows 0% recovery					
7 00	19	D						
7 50 8 00	20	B						
8 00 8 45	21	SPT	N=0				(6 15)	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used Cable percussion						Plant Used Dando 3000			All dimensions in metres Scale 1 25	
						Drilled By AJ			Logged By APrzewieshk	
									Checked By	
									AGS	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH104
Contract Ref 310826	Start 18 01 10	End 22 01 10	Ground Level (m TBM) 1 6	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 00 9 50	22 23	D B				Soft brown mottled grey CLAY (<i>stratum text copied from layer at m depth from previous sheet</i>)		
9 50 10 00	24	U ₍₁₀₀₎	4 blows 0% recovery					
10 00	25	D						
10 50 11 00	26	B						
11 00 11 45	27	SPT	N=2			Dark grey black slightly silty slightly sandy peaty CLAY Sand is medium Peat is pseudo fibrous Strong olfactory evidence of potential rotting vegetation associated with peat deposits Gas haze noted above casing during borehole construction	11 15	
12 00 12 00 12 50	28 29	D B					(1 35)	
12 50 12 55	30	SPT	N=24				12 50	
13 00	31	D				Medium dense becoming very dense coarse sub angular to sub rounded GRAVEL Gravel is sandstone quartzite and conglomerate	(1 50)	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres Scale 1 25	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieslik		

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH104
Contract Ref 310826	Start 18 01 10	End 22 01 10	Ground Level (m TBM) 1 6	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 14 00	32	B				Medium dense becoming very dense coarse sub angular to sub rounded GRAVEL Gravel is sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)		
14 00 14 30	33	SPT(c)	N=87*			Very dense dark grey SAND and GRAVEL Sand is medium Gravel is medium to coarse sub angular to sub rounded sandstone quartzite and conglomerate	14 00	
15 00 15 00 15 50	34 35	D B						
15 50 15 73	36	SPT(c)	N=145*					
16 00 16 00 16 50	37 38	D B						
16 50 17 00	38	B				Occasional cobbles	(5 60)	
17 00 17 23	39	SPT(c)	N=156*					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH104
Contract Ref 310826	Start 18 01 10 End 22 01 10	Ground Level (m TBM) 1 6	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water Backfill & Instru- mentation	Description of Strata	Depth (Thick- ness)	Material Graphic Legend
Depth	No	Type	Results				
18 00 18 00 18 50	40 41	D B			Very dense dark grey SAND and GRAVEL Sand is medium Gravel is medium to coarse sub angular to sub rounded sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)		
18 50 18 73	42	SPT(c)	N=161*				
19 20	43	D					
19 50 20 00	44	B				19 60	
20 00 20 23	45	SPT	N=152*		Very stiff to hard reddish brown gravelly CLAY Gravel is fine to medium angular to sub angular mudstone	(1 00) 20 60	

Boring Progress and Water Observations						Chiselling			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)	
Method Used Cable percussion						Drilled By AJ			Checked By APrzewieslk
Plant Used Dando 3000						Logged By APrzewieslk			Scale 1 25

BOREHOLE LOG

Contract Newport Biomass Power Plant			Client Nevis Power Ltd			Borehole BH105	
Contract Ref 310826		Start 14 01 10	End 21 01 10	Ground Level (m TBM) 1 9	National Grid Co ordinate ---	Sheet ---	of ---

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 40	1	B				MADE GROUND comprising white stained brown fine to medium angular to sub angular GRAVEL Gravel is punice	(0 40)	
0 40 0 90	2	B				MADE GROUND comprising soft brown mottled grey slightly gravelly CLAY (reworked) Gravel is fine to medium angular to sub angular	(0 60)	
1 00 1 50	3	U ₍₁₀₀₎	6 blows			MADE GROUND comprising soft brown mottled grey CLAY (reworked)	1 00	
1 50	4	D					(1 70)	
2 00 2 45	5	SPT	N=3				2 70	
2 70	6	D				Soft brown mottled grey CLAY	(1 30)	
3 00 3 50	7	U ₍₁₀₀₎	5 blows				4 00	
4 00 4 45	8	SPT	N=2			Soft brown mottled grey silty CLAY		

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
09/02/10		19 00		50	8 55				1 Piezometric pipe 1008mm above ground level	
17/02/10		19 00		50	8 24					
24/02/10		19 00		50	8 08					
Method Used Cable percussion						Drilled By RS			Logged By APrzewieslk	Checked By AGS
Plant Used Dando 2000									All dimensions in metres Scale 1 25	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH105
Contract Ref 310826	Start 14 01 10	End 21 01 10	Ground Level (m TBM) 1 9	National Grd Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50	9	D				Soft brown mottled grey silty CLAY (<i>stratum text copied from layer at m depth from previous sheet</i>)		
5 00 5 50	10	U ₍₁₀₀₎	5 blows					
5 50	11	D					(3 50)	
6 00	12	SPT	N=0					
7 00	13	D				Very soft brown mottled grey CLAY		
7 50	14	U ₍₁₀₀₎	7 blows				7 50	
7 50	15	B					(1 50)	
							9 00	

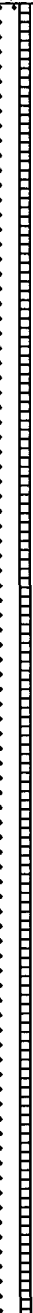
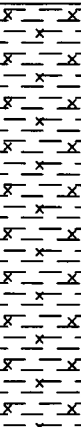
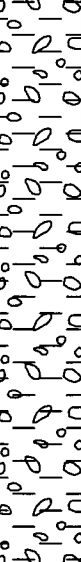
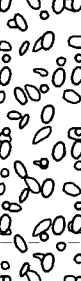
Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used Cable percussion						Plant Used Dando 2000			All dimensions in metres	
						Drilled By RS			Scale 1 25	
						Logged By APrzewieslik			Checked By	
									AGS	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH105
Contract Ref 310826	Start 14 01 10	End 21 01 10	Ground Level (m TBM) 1 9	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 45	16	SPT	N=1			Soft grey silty CLAY with rare pockets of black pseudo fibrous peat deposits		
10 00	17	D						
10 50 11 00	18	U ₍₁₀₀₎	8 blows					
11 20	19	D						
12 00 12 45	20	SPT	N=1				(6 00)	
13 00	21	D						

Boring Progress and Water Observations						Chiselling			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)			

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH105
Contract Ref 310826	Start 14 01 10	End 21 01 10	Ground Level (m TBM) 1 9	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results				
13 50 14 00	22	U ₍₁₀₀₎	40 blows		Soft grey silty CLAY with rare pockets of black pseudo fibrous peat deposits (<i>stratum text copied from layer at m depth from previous sheet</i>)		
14 20	23	D					
15 00 15 45 15 00 15 50	24 25	SPT B	N=7		Dense reddish brown and dark grey fine to coarse sub angular to sub rounded GRAVEL in a grey clay matrix Gravel is sandstone quartzite and conglomerate	15 00	
16 50 16 95	26	SPT	N=25			(2 00)	
17 30	27	D			Dense becoming very dense reddish brown and dark grey medium to coarse angular to sub rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate	17 00	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		



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BOREHOLE LOG












Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH105
Contract Ref 310826	Start 14 01 10	End 21 01 10	Ground Level (m TBM) 1 9	National Grid Co ordinate ---	Sheet of


Samples and In situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
18 00 18 15 18 00 18 50	28 29	SPT B	N=250*			Dense becoming very dense reddish brown and dark grey medium to coarse angular to sub rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)	(3 80)	
19 00 19 50 19 00 19 45	30 31	B SPT	N=39					
20 00 20 50	32	B						
20 80	33	D				Very weak indistinctly laminated reddish brown occasionally mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)	20 80	
21 00 21 15	34	SPT	N=200*				(1 20)	
22 00	35	D				No recovery from 22 00m to 22 09m depth Assumed to be very weak mudstone	22 00 22 09	
22 20 22 48	36	SPT	N=120*			Firm (locally stiff) reddish brown occasionally mottled grey green slightly gravelly CLAY Gravel is fine to medium sub rounded mudstone <i>Description on next sheet</i>	22 26 22 50	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									</	

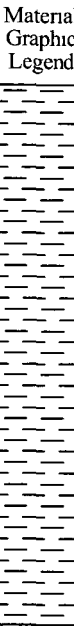
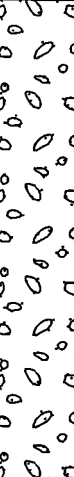
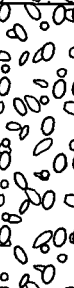
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Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH106
Contract Ref 310826	Start 05 01 10	End 11 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results					
0 50 1 20	1	B				MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	(1 35)	
1 20 1 65	2	SPT	N=4				1 35	
1 50 2 00	3	B				Soft brown mottled grey CLAY with occasional black pseudo fibrous peat deposits		
2 00	4	D						
2 00 2 45	5	SPT	N=6			Light brown pseudo fiborous peat deposits		
2 10 2 50	6	D						
2 50 3 00	7	B				Traces of pseudo fiborous peat deposits		
3 00	8	D						
3 00 3 45	9	SPT	N=2					
3 50 4 00	10	B						
4 00	11	D						
4 00 4 45	12	SPT	N=2					
4 50 4 50	13	B						
5 00	14	D						
5 00 5 45	15	SPT	N=1					
6 00	16	D						
6 00 6 50	17	B						
6 50 6 95	18	SPT	N=1					
7 50	19	D						
7 50 8 00	20	B						
8 00 8 45	21	SPT	N=1					

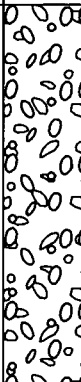

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
06/01/10	16 06	17 50	17 50	150	11 30					
07/01/10	08 05	17 50	17 50	150	10 00					
									All dimensions in metres	
									Scale 1 50	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieshk	Checked By	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH106
Contract Ref 310826		Start 05 01 10 End 11 01 10	Ground Level (m TBM) ---	National Grd Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend		
Depth	No	Type	Results							
9 00 9 00 9 50	22 23	D B	N=2			Soft brown mottled grey CLAY with occasional black pseudo fibrous peat deposits <i>(stratum text copied from layer at m depth from previous sheet)</i> Occasional pockets of sandy pseudo fiborous peat deposits				
9 50 9 95	24	SPT								
10 00	25	D								
10 50 11 00	26	B								
11 00 11 45	27	U ₍₁₀₀₎								
12 00 12 00 12 50	28 29	D B	N=36				Dense reddish brown and dark grey fine to medium SAND and GRAVEL Gravel is sub angular to sub rounded Occasional angular cobbles with lenses of grey silty peat deposits	12 70		
12 50 12 95	30	SPT								
13 00	31	D								
13 50 14 00	32	B								
14 00 14 45	33	SPT(c)								
15 00 15 00 15 50	34 35	D B	N=20				Dense reddish brown and dark grey medium to coarse sub angular to rounded GRAVEL and COBBLES Gravel and cobbles are sandstone quartzite and conglomerate	16 00		
15 50 15 95	36	SPT(c)								
16 00	37	D								
16 50 17 00	38	B								
17 00 17 45	39	SPT(c)								
			N=40							

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH106
Contract Ref 310826	Start 05 01 10	End 11 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
18 00	40	D	N=34			Dense reddish brown and dark grey medium to coarse sub-angular to rounded GRAVEL and COBBLES Gravel and cobbles are sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)	(4 70)	
18 50 18 50	41	B						
18 50 18 95	42	SPT(c)						
19 00	43	D						
19 50 20 00	44	B	N=45			Hard reddish brown occasionally mottled grey green gravelly CLAY Gravel is medium angular to sub angular mudstone	20 70	
20 00 20 45	45	SPT(c)						
20 70	46	D						
20 70 21 00	47	B						

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ			Logged By APrzewieslik	Checked By AGS

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH107
Contract Ref 310826	Start 11 01 10	End 15 01 10	Ground Level (m TBM) ---	National Grd Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 00 0 50	1	B				MADE GROUND comprsing soft brown mottled grey sandy gravelly CLAY (reworked) Sand is fine Gravel is fine to coarse angular to sub rounded with occasional coarse angular to sub angular cobbles		
0 50 1 00	2	B					(1 20)	
1 20 1 65	3	SPT	N=2			MADE GROUND comprising soft brown mottled grey CLAY (reworked)	1 20	
1 80	4	D					(1 30)	
2 00 2 45	5	U ₍₁₀₀₎	5 blows				2 50	
2 50	6	D				Soft brown mottled grey slightly silty CLAY (possibly reworked)		
2 80	7	D						
3 00	8	SPT	N=0					
3 80	9	D						
4 00-4 45	10	U ₍₁₀₀₎	5 blows					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
12/01/10	08 00	5 50	5 00	150	4 00					
13/01/10	15 36	17 00	16 65	150	7 00					


Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH107
Contract Ref 310826		Start 11 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of
		End 15 01 10			

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50	11	D				Soft brown mottled grey slightly silty CLAY (possibly reworked) <i>(stratum text copied from layer at m depth from previous sheet)</i>		
5 00 5 45	12	SPT	N=4					
5 80	13	D						
6 00 6 45	14	U ₍₁₀₀₎	4 blows					
7 50	15	SPT	N=0					
8 50	16	D						

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		
Cable percussion		Dando 2000		RS		APrzewieslk				AGS


Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH107
Contract Ref 310826	Start 11 01 10	End 15 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 45	17	U ₍₁₀₀₎	7 blows			Soft brown mottled grey slightly silty CLAY (possibly reworked) <i>(stratum text copied from layer at m depth from previous sheet)</i>		
9 50	18	D						
10 20	19	D						
10 50 10 95	20	SPT	N=3					
11 40	21	D				Soft grey slightly silty slightly sandy CLAY (possibly reworked)		
12 00 12 45	22	U ₍₁₀₀₎	10 blows					
12 50	23	D						
						Reddish brown and dark grey medium to coarse sub-angular to sub-rounded GRAVEL in a grey clay matrix		

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
								All dimensions in metres		Scale 1 25
Method Used Cable percussion			Plant Used Dando 2000			Drilled By RS		Logged By APrzewieslik		Checked By <div>AGS</div>

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH107
Contract Ref 310826	Start 11 01 10	End 15 01 10	Ground Level (m TBM) ---	National Grd Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 13 50 13 95	24 25	D SPT	N=9			Reddish brown and dark grey medium to coarse sub-angular to sub rounded GRAVEL in a grey clay matrix (<i>stratum text copied from layer at m depth from previous sheet</i>)	14 00	
14 00 14 50	26	B				Dense becoming very dense reddish brown and dark grey medium to coarse sub-angular to rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate		
15 00 15 45 15 00 15 50	27 28	SPT B	N=44					
16 50 16 95 16 50 17 00	29 30	SPT(c) B	N=43				(5 50)	
17 50	31	D						

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres Scale 1 25	
Method Used Cable percussion			Plant Used Dando 2000			Drilled By RS		Logged By APrzewieslik	Checked By	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH107
Contract Ref 310826	Start 11 01 10	End 15 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results					
18 00 18 34	32	SPT	N=79*			Dense becoming very dense reddish brown and dark grey medium to coarse sub angular to rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)		
18 50	33	D						
19 50 19 90	34	SPT	N=61*			Very dense reddish brown sandy GRAVEL Sand is medium Gravel is medium to coarse sub-angular to sub rounded sandstone quartzite and conglomerate	19 50 (0 50) 20 00	
20 40	35	D				Very weak indistinctly laminated reddish brown occasionally mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)	(1 30) 21 30	
21 00 21 36	36	SPT	N=71*					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres	
Method Used		Plant Used		Drilled By		Logged By		Checked By		
Cable percussion		Dando 2000		RS		APrzewieslik		AGS		

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH108
Contract Ref 310826	Start 18 01 10 End 23 01 10	Ground Level (m TBM) ---	National Gnd Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 30	1	D				MADE GROUND comprising grey fine to medium angular to sub angular GRAVEL	(0 35)	
0 60 1 20	2	B				Soft brown mottled grey slightly silty CLAY (possibly reworked) with rare pseudo fibrous peat deposits	0 35	
1 20 1 65	3	SPT	N=4					
1 65	4	D					(2 65)	
1 65 2 00	5	B						
2 00 2 45	6	U ₍₁₀₀₎	3 blows 0% recovery					
2 50	7	D						
2 50 3 00	8	B						
3 00 3 45	15	SPT	N=4			Soft becoming firm brown mottled grey silty CLAY (possibly reworked)	3 00	
3 50	10	D						
3 50 4 00	11	B						
4 00 4 45	12	U ₍₁₀₀₎	10 blows 100% recovery					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
21/01/10	16 05	2 15	3 00	150	1 50					
22/01/10	16 05	14 00	14 00	150	13 75					
									All dimensions in metres	
									Scale 1 25	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieslik	Checked By	


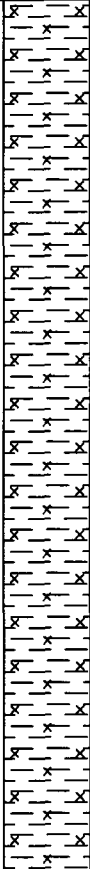
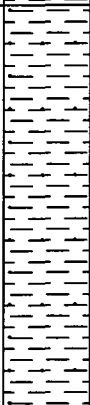
Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH108
Contract Ref 310826	Start 18 01 10	End 23 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of


Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50 4 50 5 00	13 14	D B				Soft becoming firm brown mottled grey silty CLAY (possibly reworked) (stratum text copied from layer at m depth from previous sheet)		
5 00 5 45	9	SPT	N=4					
6 00 6 00 6 50	16 17	D B						
6 50 6 95	18	U ₍₁₀₀₎	10 blows 100% recovery					
7 00	19	D						
7 50 8 00	20	B					(9 00)	
8 00 8 45	21	SPT	N=4					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									</	





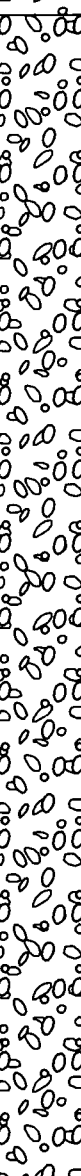
BOREHOLE LOG


Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH108
Contract Ref 310826	Start 18 01 10	End 23 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 00 9 50	22 23	D B	10 blows 100% recovery			Soft becoming firm brown mottled grey silty CLAY (possibly reworked) (stratum text copied from layer at m depth from previous sheet)	12 00	
9 50 9 95	24	U						
10 00	25	D						
10 50 11 00	26	B						
11 00 11 45	27	SPT						
			N=13					
12 00 12 00 12 50	28 29	D B	30 blows 100% recovery			Grey mottled brown slightly sandy CLAY (possibly reworked) with black pseudo fibrous peat deposits	(1 75)	
12 50 12 95	30	U ₍₁₀₀₎						
13 20	31	D						

Boring Progress and Water Observations						Chiselling			General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)				
Method Used Cable percussion				Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieslik		Checked By	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH108	
Contract Ref 310826		Start 18 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---		Sheet of
		End 23 01 10				

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 14 00	32	B				Grey mottled brown slightly sandy CLAY (possibly reworked) with black pseudo fibrous peat deposits (<i>stratum text copied from layer at m depth from previous sheet</i>)	13 75	
						Very dense reddish brown and dark grey SAND and GRAVEL Sand is medium Gravel is fine to coarse sub angular to sub rounded sandstone quartzite and conglomerate	14 00	
14 00 14 23	33	SPT(c)	N=188*			Very dense reddish brown and dark grey GRAVEL and COBBLES Gravel is fine to coarse sub angular to sub rounded sandstone quartzite and conglomerate		
15 00	34	D						
15 00 15 50	35	B						
15 50 15 73	36	SPT(c)	N=188*					
16 00	37	D						
16 50 17 00	38	B						
17 00 17 31	39	SPT(c)	N=106*				(5 80)	


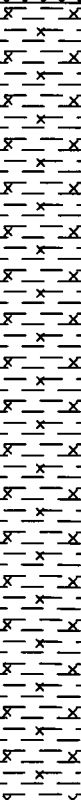
Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		
Cable percussion		Dando 3000		AJ		APrzewieshk				
						All dimensions in metres		Scale		1 25

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH108
Contract Ref 310826	Start 18 01 10 End 23 01 10	Ground Level (m TBM) --	National Grid Co ordinate --	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
18 00 18 00 18 50	40 41	D B				Very dense reddish brown and dark grey GRAVEL and COBBLES Gravel is fine to coarse sub angular to sub rounded sandstone quartzite and conglomerate (<i>stratum text copied from layer at m depth from previous sheet</i>)		
18 50 18 81	42	SPT(c)	N=97*					
19 00	43	D						
19 50 20 00	44	B						
						Stiff to hard reddish brown mottled grey green slightly gravelly CLAY Gravel is fine to medium angular to sub angular mudstone (Mercia Mudstone Group)	19 80	
20 50 21 00	46	B					(1 70)	
21 00	47	D						
							21 50	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres	Scale 1 25
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ			Logged By APrzewieslik	Checked By AGS


Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH109
Contract Ref 310826	Start 13 01 10 End 19 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 30	1	D				MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Sand is medium Gravel is fine to medium angular to sub angular with occasional cobbles	(1 75)	
0 60 1 20	2	B						
1 20 1 65	3	SPT	N=4					
1 70	4	D				Soft brown mottled grey silty CLAY (possibly reworked) with occasional black pseudo fibrous peat deposits	1 75	
1 70 2 00	5	B						
2 00 2 45	6	U ₍₁₀₀₎	8 blows 100% recovery					
2 50	7	D						
2 50 3 00	8	B						
3 00 3 45	9	SPT	N=2					
3 50	10	D						
3 50 4 00	11	B						
4 00 4 45	12	U ₍₁₀₀₎	8 blows 100% recovery					

Boring Progress and Water Observations						Chiselling			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)	
14/01/10		17 00	8 00	150	13 00				
All dimensions in metres									Scale 1 25
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieshik	Checked By AGS


Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH109
Contract Ref 310826	Start 13 01 10	End 19 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
4 50 4 50 5 00	13 14	D B				Soft brown mottled grey silty CLAY (possibly reworked) with occasional black pseudo fibrous peat deposits (<i>stratum text copied from layer at m depth from previous sheet</i>)		
5 00 5 45	15	SPT	N=1					
6 00 6 00 6 50	16 17	D B						
6 50 6 95	18	U ₍₁₀₀₎	8 blows 100% recovery				(9 65)	
7 00	19	D						
7 50 8 00	20	B						
8 00 8 45	21	SPT	N=7					

Boring Progress and Water Observations						Chiselling			General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)			
Method Used Cable percussion				Plant Used Dando 3000		Drilled By AJ		Logged By APrzewieslik		Checked By	 AGS

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH109
Contract Ref 310826	Start 13 01 10	End 19 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 00 9 50	22 23	D B				Soft brown mottled grey silty CLAY (possibly reworked) with occasional black pseudo fibrous peat deposits (<i>stratum text copied from layer at m depth from previous sheet</i>)		
9 50 9 95	24	U ₍₁₀₀₎	14 blows 100% recovery					
10 00	25	D						
10 50 11 00	26	B						
11 00 11 45	27	SPT	N=6				11 40	
12 00 12 00 12 50	28 29	D B				Dark grey black slightly sandy CLAY (possibly reworked) with black pseudo fibrous peat deposits	(1 60)	
12 50 12 95	30	U ₍₁₀₀₎	17 blows 100% recovery					
13 00	31	D				Very dense fine to medium angular to sub-angular SAND and GRAVEL with occasional cobbles	13 00	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres Scale 1 25	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieslk		Checked By <div>AGS</div>



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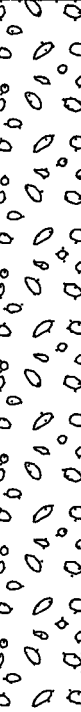

BOREHOLE LOG

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH109
Contract Ref 310826	Start 13 01 10	End 19 01 10	Ground Level (m TBM) ---	National Grd Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 14 00	32	B				Very dense fine to medium angular to sub-angular SAND and GRAVEL with occasional cobbles (<i>stratum text copied from layer at m depth from previous sheet</i>)		
14 00 14 09	33	SPT(c)	19/50 for 10mm					
15 00 15 00	34	D						
15 00 15 50	35	B						
15 50 15 58	36	SPT(c)	25/50 for 5mm					
16 00	37	D						
16 50 17 00	38	B						
17 00 17 16	39	SPT(c)	N=281*				(7 50)	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
									All dimensions in metres Scale 1 25	
Method Used Cable percussion			Plant Used Dando 3000			Drilled By AJ		Logged By APrzewieslik	Checked By	

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH109
Contract Ref 310826	Start 13 01 10	End 19 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
18 00	40	D				Very dense fine to medium angular to sub angular SAND and GRAVEL with occasional cobbles (<i>stratum text copied from layer at m depth from previous sheet</i>)		
18 00 18 50	41	B						
18 50 18 65	42	SPT(c)	N=200*					
19 00	43	D						
19 50 20 00	44	B				Very weak reddish brown mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)		
20 00 20 23	45	SPT(c)	N=176*					
20 70	46	D						
20 70 21 00	47	B						
21 00 21 16	48	SPT	N=244*					
							20 50	
							(1 50)	
							22 00	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used Cable percussion				Plant Used Dando 3000		Drilled By AJ		Logged By APrzewieslik		Checked By AGS

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH110
Contract Ref 310826	Start 18 01 10	End 22 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0 10 0 60	1	B				MADE GROUND comprising white stained brown fine to medium angular to sub angular GRAVEL Gravel is punice	(0 60)	
0 60	2	D				MADE GROUND comprising soft brown mottled grey slightly gravelly CLAY Gravel is fine to medium angular to sub angular	(0 60)	
1 20 1 65	3	SPT	N=2			Soft brown mottled grey silty CLAY with occasional black pseudo fibrous peat	1 20	
1 80	4	D						
2 00 2 50	5	U ₍₁₀₀₎	4 blows					
2 50	6	D						
3 00	7	SPT	N=0					
3 70	8	D						
4 00-4 60	10	B						
4 00	9	U ₍₁₀₀₎	6 blows					

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
18/01/10		4 00	4 00	150	4 00					
Method Used Cable percussion						Plant Used Dando 2000			All dimensions in metres	
Drilled By RS						Logged By APrzewieshk			Scale 1 25	
Checked By AGS						Checked By AGS				




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BOREHOLE LOG

Contract Newport Biomass Power Plant			Client Nevis Power Ltd		Borehole BH110
Contract Ref 310826	Start 18 01 10	End 22 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
5 00 5 45	11	SPT	N=2			Soft brown mottled grey silty CLAY with occasional black pseudo fibrous peat <i>(stratum text copied from layer at m depth from previous sheet)</i>		
5 70	12	D						
6 00 6 50	13	U ₍₁₀₀₎	7 blows					
6 50	14	D						
7 00	15	D						
7 50 7 95	16	SPT	N=2					
8 40	17	D						

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used				Plant Used		Drilled By		Logged By	Checked By	
Cable percussion				Dando 2000		RS		APrzewieslik		
						All dimensions in metres			Scale 1 25	

SINT_LIBRARY_V8_03 GLB/CABLE PERCUSSION LOG | 310826 NEWPORT BIOMASS GPJ v8_03 | 31/03/10 15:15 | AP
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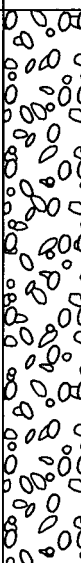
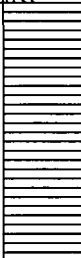
Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Borehole BH110
Contract Ref 310826	Start 18 01 10 End 22 01 10	Ground Level (m TBM) ---	National Grid Co ordinate ---	Sheet of

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9 00 9 50	18	U ₍₁₀₀₎	11 blows			Soft brown mottled grey silty CLAY with occasional black pseudo fibrous peat <i>(stratum text copied from layer at m depth from previous sheet)</i>		
10 00	19	D						
10 50	20	SPT	N=0					
11 40	21	D						
12 00 12 50	22	U ₍₁₀₀₎	16 blows					
12 50	23	D						
13 20	24	D				Dense reddish brown and dark grey medium to coarse sub-angular to sub rounded-SAND-and- GRAVEL -Gravel-is-sandstone-quartzite and conglomerate	13 20	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		AGS
Cable percussion		Dando 2000		RS		APrzewieshk				

Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
13 50 13 95 13 50 14 00	25 26	SPT B	N=5			Dense reddish brown and dark grey medium to coarse sub-angular to sub rounded SAND and GRAVEL Gravel is sandstone quartzite and conglomerate <i>(stratum text copied from layer at m depth from previous sheet)</i>	(2 30)	
15 00 15 34	27	SPT	N=79*				15 50	
15 50 16 00	28	B				Dense reddish brown and dark grey medium to coarse sub-angular to rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate		
16 50 16 88 16 50 17 00	29 30	SPT(c) B	N=65*				(4 40)	

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		
Cable percussion		Dando 2000		RS		A Przewiesłk		AGS		

Contract				Client				Borehole	
Newport Biomass Power Plant				Nevis Power Ltd				BH110	
Contract Ref		Start		Ground Level (m TBM)		National Grid Co ordinate		Sheet	
310826		18 01 10		---		---		of	
End		22 01 10							
Samples and In situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend	
Depth	No	Type	Results						
18 00 18 45 18 00 18 50	31 32	SPT(c) B	N=50			Dense reddish brown and dark grey medium to coarse sub angular to rounded GRAVEL and COBBLES of sandstone quartzite and conglomerate (stratum text copied from layer at m depth from previous sheet)			
19 50 19 95 19 50 19 90	33 34	SPT(c) B	N=44						
19 80 20 10 19 90	36 35	SPT D	N=100*			Very weak reddish brown mottled grey green MUDSTONE (Mercia Mudstone Group Zone II)	19 90 (0 90) 20 80		

Boring Progress and Water Observations						Chiselling			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh mm)		
Method Used		Plant Used		Drilled By		Logged By		Checked By		AGS
Cable percussion		Dando 2000		RS		APrzewieslk				


Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH1
Contract Ref 310826	Date 05 01 10	Ground Level (m TBM) 1 1	National Grid Co ordinate ---	Sheet 1 of 1

Progress Window Run	Samples / Tests				Water Backfill & Instru- mentation	Description of Strata	Depth (Thick- ness)	Material Graphic Legend
	Depth	No	Type	Results				
0 00 1 00 (127mm dia) 100% rec						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular Surface vegetation with rootlets	0 20	
1 00 2 00 (102mm dia) 80% rec						MADE GROUND comprising soft brown mottled grey slightly silty clay (reworked)	(1 60)	
2 00 3 00 (102mm dia) 0% rec						No recovery from 1 80m to 7 10m depth Assumed to be slightly silty clay with occasional peat deposits	1 80	
3 00 4 00 (92mm dia) 0% rec								
4 00 5 00 (92mm dia) 0% rec							(5 30)	ZCL
5 00 6 00 (57mm dia) 0% rec								
6 00 7 00 (57mm dia) 0% rec							7 10	
7 00 8 00 (46mm dia) 90% rec						Soft brown mottled grey slightly silty CLAY	(0 90)	
							8 00	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
						1 Piezometric pipe 1145mm above ground level			
						All dimensions in metres		Scale	1 50
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR	Logged By	APrzewieshsk
						Checked By			AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH2
Contract Ref 310826	Date 05 01 10	Ground Level (m TBM) 1 9	National Grid Co ordinate --	Sheet 1 of 1

Progress	Samples / Tests				Water Backfill & Instru- mentation	Description of Strata	Depth (Thick- ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
↑ 0 00 1 00 (127mm dia) 100% rec ↓						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 20	
↓ 1 00 2 00 (127mm dia) 90% rec ↓						MADE GROUND comprising soft brown mottled grey silty clay (reworked)	(1 70)	
↓ 2 00 3 00 (102mm dia) 0% rec ↓						No recovery between 1 9m to 7 70m depth Assumed to be silty clay	1 90	
↓ 3 00 4 00 (102mm dia) 0% rec ↓								
↓ 4 00 5 00 (92mm dia) 0% rec ↓								
↓ 5 00 6 00 (92mm dia) 0% rec ↓								
↓ 6 00 7 00 (57mm dia) 0% rec ↓								
↓ 7 00 8 00 (57mm dia) 30% rec ↓								
						Soft brown mottled grey silty CLAY	7 70	
							8 00	

Drilling Progress and Water Observations						General Remarks					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)						
05/01/10		8 00			3 00						
						1 Piezometric pipe 1466mm above ground level					
						All dimensions in metres	Scale	1 50			
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR	Logged By	APzeweshik	Checked By	

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH3
Contract Ref 310826	Date 05 01 10	Ground Level (m TBM) 1 2	National Grid Co ordinate ---	Sheet 1 of 1

Progress	Samples / Tests				Water Backfill & Instru- mentation	Description of Strata	Depth (Thick- ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results				
↑ 0 00 1 00 (102mm dia) 100% rec ↓						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 30	
↓ 1 00 2 00 (102mm dia) 100% rec ↓						MADE GROUND comprising soft brown mottled grey silty clay (reworked)	(1 70)	
↓ 2 00 3 00 (102mm dia) 0% rec ↓						No recovery from 2 0m to 7 4m depth Assumed to be silty CLAY	2 00	
↓ 3 00 4 00 (92mm dia) 0% rec ↓								
↓ 4 00 5 00 (92mm dia) 0% rec ↓								
↓ 5 00 6 00 (57mm dia) 0% rec ↓								
↓ 6 00 7 00 (57mm dia) 0% rec ↓								
↓ 7 00 8 00 (46mm dia) 60% rec ↓						Soft brown mottled grey silty CLAY	7 40	
							(0 60)	
							8 00	

Drilling Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)		
						1 Piezometric pipe 1128mm above ground level	
						All dimensions in metres	Scale 1 50
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR
						Logged By	APrzewieslik
						Checked By	AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH4
Contract Ref 310826	Date 05 01 10	Ground Level (m TBM) 2 0	National Grd Co ordinate ---	Sheet 1 of 1

Progress Window Run	Samples / Tests				Water Backfill & Instru mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
	Depth	No	Type	Results				
0 00 1 00 (127mm dia) 100% rec						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 20	
1 00 2 00 (127mm dia) 90% rec						MADE GROUND comprising soft brown mottled grey silty clay (reworked)	(1 70)	
2 00 3 00 (102mm dia) 90% rec						No recovery from 1 90m to 7 60m depth Assumed to be silty clay	1 90	
3 00 4 00 (92mm dia) 0% rec								
4 00 5 00 (92mm dia) 0% rec								
5 00 6 00 (57mm dia) 0% rec								
6 00 7 00 (46mm dia) 0% rec								
7 00 8 00 (46mm dia) 40% rec								
						Soft brown mottled grey silty CLAY	7 60	
							8 00	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
						1 Piezometric pipe 1112mm above ground level			
						All dimensions in metres		Scale	1 50
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR	Logged By	APrzewieshk
						Checked By			AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH5
Contract Ref 310826	Date 05 01 10	Ground Level (m TBM) 1 7	National Grd Co ordinate ---	Sheet 1 of 1

Progress Window Run	Samples / Tests				Water Backfill & Instru- mentation	Description of Strata	Depth (Thick- ness)	Material Graphic Legend
	Depth	No	Type	Results				
0 00 1 00 (127mm dia) 100% rec						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 40	
1 00 2 00 (102mm dia) 90% rec						MADE GROUND comprising soft brown mottled grey silty clay (reworked)	(1 50)	
2 00 3 00 (102mm dia) 90% rec						No recovery from 1 90m to 2 00m depth Assumed to be silty clay	1 90 2 00	
3 00 4 00 (92mm dia) 0% rec						Soft brown mottled grey silty CLAY	(0 90)	
4 00 5 00 (57mm dia) 0% rec						No recovery from 2 90m to 6 10m depth Assumed to be silty clay	2 90 (3 20)	ZCL
5 00 6 00 (57mm dia) 0% rec						Soft brown mottled grey silty CLAY	6 10 (0 90)	
6 00 7 00 (46mm dia) 10% rec						No recovery from 7 00m to 7 40m depth Assumed to be silty clay	7 00 7 40	ZCL
7 00 8 00 (46mm dia) 40% rec						Soft brown mottled grey silty CLAY	(0 60) 8 00	

Drilling Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)		
						1 Piezometric pipe 1087mm above ground level	
						All dimensions in metres	Scale 1 50
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	Logged By
						NR	APrzewiesluk
							Checked By
							AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH6
Contract Ref 310826	Date 06 01 10	Ground Level (m TBM) 2 1	National Grid Co ordinate ---	Sheet 1 of 1

Progress Window Run	Samples / Tests			Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
	Depth	No	Type	Results			
0 00 1 00 (127mm dia) 100% rec					MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 20 0 40	
1 00 2 00 (127mm dia) 90% rec					MADE GROUND comprising soft brown slightly gravelly clay (reworked)		
					Soft brown mottled grey slightly silty CLAY	(1 50)	
2 00 3 00 (102mm dia) 90% rec					No recovery from 1 90m to 2 00m depth Assumed to be silty clay	1 90 2 00	
					Soft brown mottled grey slightly silty CLAY	(0 90)	
3 00 4 00 (102mm dia) 40% rec					No recovery from 2 90m to 3 00m depth Assumed to be silty clay	2 90 3 00	
					Soft brown mottled grey slightly silty CLAY	3 40	
4 00 5 00 (102mm dia) 0% rec					No recovery from 3 40m to 7 00m depth Assumed to be silty clay		
5 00 6 00 (57mm dia) 0% rec						(3 60)	ZCL
6 00 7 00 (57mm dia) 0% rec						7 00	
7 00 8 00 (57mm dia) 30% rec					Soft brown mottled grey slightly silty CLAY	7 30	
					No recovery from 7 30m to 8 00m depth Assumed to be silty clay	(0 70)	ZCL
						8 00	

Drilling Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)		
						1 Piezometric pipe 1364mm above ground level	
						All dimensions in metres	Scale 1 50
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR
						Logged By	APrzewieslik
						Checked By	AGS

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH7
Contract Ref 310826	Date 06 01 10	Ground Level (m TBM) 1 7	National Grid Co ordinate ---	Sheet 1 of 1

Progress Window Run	Samples / Tests				Water Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
	Depth	No	Type	Results				
0 00 1 00 (127mm dia) 100% rec						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 20	
1 00 2 00 (102mm dia) 100% rec						MADE GROUND comprising soft brown mottled grey slightly silty clay (reworked)	(1 90)	
2 00 3 00 (102mm dia) 90% rec						No recovery from 2 10m to 7 00m depth Assumed to be silty clay	2 10	
3 00 4 00 (102mm dia) 0% rec								
4 00 5 00 (57mm dia) 0% rec							(4 90)	ZCL
5 00 6 00 (57mm dia) 0% rec								
6 00 7 00 (46mm dia) 5% rec							7 00	
7 00 8 00 (46mm dia) 30% rec						Soft brown mottled grey silty CLAY	7 30	
						No recovery from 7 30m to 8 00m depth Assumed to be silty clay	(0 70)	ZCL
							8 00	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1 Piezometric pipe 1085mm above ground level			
06/01/10		8 00			3 50				
						All dimensions in metres		Scale	1 50
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR	Logged By	APrzewieshik
						Checked By			AGS

WINDOW SAMPLE LOG

Contract Newport Biomass Power Plant		Client Nevis Power Ltd		Window Sample SBH8
Contract Ref 310826	Date 06 01 10	Ground Level (m TBM) 1 8	National Grid Co ordinate ---	Sheet 1 of 1

Progress Window Run	Samples / Tests				Water Backfill & Instru mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
	Depth	No	Type	Results				
0 00 1 00 (127mm dia) 100% rec						MADE GROUND comprising dark grey slightly clayey sandy GRAVEL Gravel is fine to medium angular to sub angular	0 20	
1 00 2 00 (127mm dia) 100% rec						MADE GROUND comprising soft brown mottled grey slightly silty clay (reworked)	(1 80)	
2 00 3 00 (102mm dia) 80% rec						No recovery from 2 00m to 2 20m depth Assumed to be silty clay	2 00 2 20	ZCL
3 00 4 00 (102mm dia) 30% rec						Soft brown mottled grey silty CLAY	(0 80)	
4 00 5 00 (102mm dia) 0% rec						No recovery from 3 00m to 3 70m depth Assumed to be silty clay	3 00 (0 70)	ZCL
5 00 6 00 (77mm dia) 0% rec						Soft brown mottled grey silty CLAY	3 70 4 00	
6 00 7 00 (57mm dia) 0% rec						No recovery from 4 00m to 7 00m depth Assumed to be silty clay	(3 00)	ZCL
7 00 8 00 (57mm dia) 20% rec						Soft brown mottled grey silty CLAY	7 00 7 20	
						No recovery from 7 20m to 8 00m depth Assumed to be silty clay	(0 80)	ZCL
							8 00	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)				
06/01/10		8 00			3 30	1 Piezometric pipe 727mm above ground level			
						All dimensions in metres Scale 1 50			
Method Used	Tracked window sampling		Plant Used	Dando Terrier		Drilled By	NR	Logged By	APrzewieslik
						Checked By			AGS