



## Appendix 2 Verification Monitoring Results

**Our Ref: GGS192/ILR/60Marlpool/021211**

2<sup>nd</sup> December 2011

SKM Enviros  
10 Ty-nant Court  
Morganstown  
Cardiff  
South Glamorgan  
CF15 8LW

**F.A.O Heidi Hutchings**

Dear Heidi,

## **VERIFICATION MONITORING AT 60 MARLPOOL DRIVE, REDDITCH**

### **1. Introduction**

1.1 Ground-Gas Solutions Limited (GGS) has been commissioned by Sinclair Knight Merz Pty Limited (SKM Enviros) to undertake high frequency ground-gas monitoring of the sub-floor void (SFV) of No. 60 Marlpool Drive, Redditch following the installation of a positive pressure gas protection system. This factual letter report summarises the findings of the continuous bulk ground gas monitoring undertaken at the property.

### **2. Methodology**

2.1 GGS employed continuous ground gas monitoring techniques using high resolution GasClam<sup>®</sup> instrumentation at the site. The GGS high resolution GasClam<sup>®</sup> device was installed on the 16<sup>th</sup> November 2011 and collected 29<sup>th</sup> November 2011. The serial number of the GasClam<sup>®</sup> device deployed was 000035/04/09. This instrument was checked for operation and has a valid calibration certificate (dated 24<sup>th</sup> October 2011).

2.2 The GasClam<sup>®</sup> device has been specially equipped with high resolution gas sensors for methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>), along with gas sensors for oxygen (O<sub>2</sub>). Atmospheric pressure was also monitored.

Ground-Gas Solutions Ltd  
Greenheys  
Manchester Science Park  
Pencroft Way  
Manchester  
M15 6JJ

**Telephone:** 0161 232 7465  
**E-mail:** [info@ground-gassolutions.co.uk](mailto:info@ground-gassolutions.co.uk)  
**Web:** [www.ground-gassolutions.co.uk](http://www.ground-gassolutions.co.uk)

2.3 Data analysis involved converting raw data files downloaded from the GasClam<sup>®</sup> device into excel spread sheets. The raw data was plotted as time-series data, showing gas concentrations and atmospheric pressure plotted against time. The Time-series graph is included at the end of the letter report.

### 3. Results

3.1 A summary of the GasClam<sup>®</sup> results from the sub-floor void are shown in Table 3.1 below, showing the minimum and maximum gas concentrations and atmospheric pressure.

Measurand	Concentrations	
	Min	Max
CH <sub>4</sub> (% v/v)	0.025	0.238
CO <sub>2</sub> (% v/v)	0.025	1.283
O <sub>2</sub> (% v/v)	17.7	20.2
Atmospheric Pressure (millibars)	984	1010

Note - % v/v = percentage by volume

**Table 3.1** Summary of GasClam<sup>®</sup> results for the sub-floor void

3.2 SKM Enviros have set the following bulk gas trigger levels:

- Methane 1.0% v/v
- Carbon Dioxide 1.5% v/v

3.3 The methane and carbon dioxide concentrations recorded at No. 60 Marlpool Drive are consistently below the trigger levels set by SKM Enviros.

#### 4. Limitations

Ground-Gas Solutions Limited (GGS) has prepared this factual report for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed.

GGS accepts no responsibility for the consequences of this document being used for any purpose or project other than for which it was commissioned or for the consequences arising from this document's use by any third party with whom an agreement has not been executed.

GGS accept no responsibility for the interpretation of this factual data. A reviewer of the data provided must take into account other available information and the context in which this data was collected. For example, sampling point location and construction.

GGS accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this factual report.

The full time-series data set and equipment calibration certificates will be included in the Final GGS Verification DataPack™ which will be submitted on completion of the verification monitoring of all remediated properties which form part of this particular contract.

If you have any queries please do not hesitate to contact me.

Yours sincerely



**Kristoffer Harries MEarthSci (hons) CGeol FGS**  
**Senior Geologist**  
For and on behalf of Ground-Gas Solutions Ltd.

Enc. Time Series Graph

c.c. Mr Andrew Collins, Prestige Air Technologies Ltd



## Time Series Graph

# Time Series Data:60 Marlpool Drive, Redditch, (external sub-floor monitoring point)

