

TECHNICAL NOTE – GAS MONITORING MAY 2022

Project Name: Tewin Road, Welwyn Garden City
 Project No: LNH2043
 Revision: P01
 Reference: TRW-BWB-00-XX-RP-YE-0003_GMTN
 By: L. Cross
 Approved: K. Sinclair

BWB Consulting Ltd (BWB) was instructed by Henry Boot Developments (the Client) to carry out additional ground gas monitoring at the site located on Tewin Road, Welwyn Garden City.

This technical note provides an assessment of the results for the two additional ground gas monitoring visits completed at the site utilising the boreholes installed as part of BWBs intrusive investigations completed in July 2021 (report ref: TRW-BWB-00-XX-RP-YE-0002-Ph2_P2).

Project Background & Previous Results

AS part of the above report, BWB completed four gas monitoring visits at the site, the results recorded marginally elevated carbon dioxide concentrations at one location located near the centre of the site (DS103). Significantly elevated methane levels were recorded towards the north-east corner of the Site (DS102), it was likely that these were attributable to leakage from Cadent infrastructure at the site. A leak was identified by Cadent in August 2021 and repaired in November 2021. Therefore, additional gas monitoring visits were recommended to demonstrate that gas levels had reduced.

A summary of the results from the initial monitoring phase is summarised in **Table 1** below.

Table 1: Initial Gas Monitoring Results Summary (July 2021)

Borehole ID	Targeted Geology	Steady Flow (l/hr)		Carbon Dioxide (%v/v)		Methane (%v/v)	
		min.	max.	min.	max.	min.	max.
DS102	Made Ground / Kesgrave Group	<0.1	<0.1	<0.1	4.5	<0.1	95.2
DS103	Made Ground / Kesgrave Group	<0.1	<0.1	2.2	5.1	<0.1	1.0
DS104	Kesgrave Group	<0.1	<0.1	0.4	4.0	<0.1	<0.1
BH101	Kesgrave Group	<0.1	<0.1	1.1	1.4	<0.1	<0.1
BH102	Kesgrave Group	<0.1	<0.1	1.6	3.2	<0.1	<0.1
BH103	Kesgrave Group	<0.1	<0.1	0.7	2.1	<0.1	<0.1
BH104	Kesgrave Group	<0.1	<0.1	0.3	0.9	<0.1	<0.1

Based on the information collected during the investigation, the site was classified as a Characteristic Situation 3 (CS3).

Additional Monitoring Results & Assessment

Following the repair of the gas leak, two additional gas monitoring visits were completed by BWB. The results of these visits are summarised in **Table 2** below.

Table 2: Additional Gas Monitoring Results Summary (April 2022)

Borehole ID	Targeted Geology	Steady Flow (l/hr)		Carbon Dioxide (%v/v)		Methane (%v/v)	
		min.	max.	min.	max.	min.	max.
DS102	Made Ground / Kesgrave Group	<0.1	<0.1	4.3	4.6	93.5	95.2
DS103	Made Ground / Kesgrave Group	<0.1	<0.1	1.4	3.6	<0.1	<0.1
DS104	Kesgrave Group	<0.1	<0.1	1.8	2.1	<0.1	<0.1
BH101	Kesgrave Group	<0.1	<0.1	0.9	1.3	<0.1	<0.1
BH102	Kesgrave Group	<0.1	<0.1	0.1	0.9	<0.1	<0.1
BH103	Kesgrave Group	<0.1	-4.2	3.2	3.6	<0.1	<0.1
BH104	Kesgrave Group	<0.1	-4.5	<0.1	0.6	<0.1	<0.1

The additional results show the same patterns as the initial monitoring results, with marginally elevated carbon dioxide at DS102 and DS103, although they do not exceed action levels. Significantly elevated methane levels continued to be recorded at location DS102.

The full data set for both phase of ground gas monitoring is presented as **Appendix 1**, with an Exploratory Hole Location plan presented as **Drawing 1**.

The Results of the both sets of gas monitoring have been plotted on a quaternary plot depicting the relationships between methane, oxygen and carbon dioxide concentrations.

Figure 1: Quaternary Ground Gas Plot

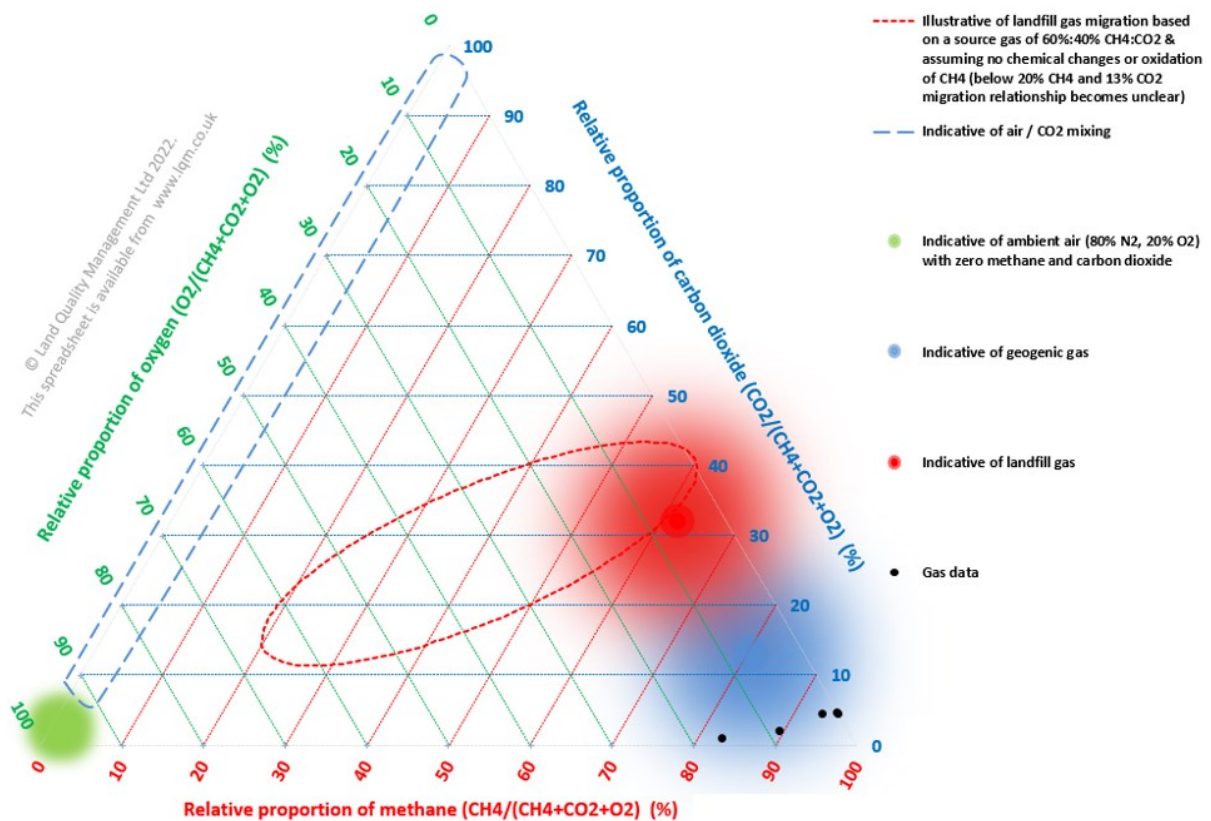
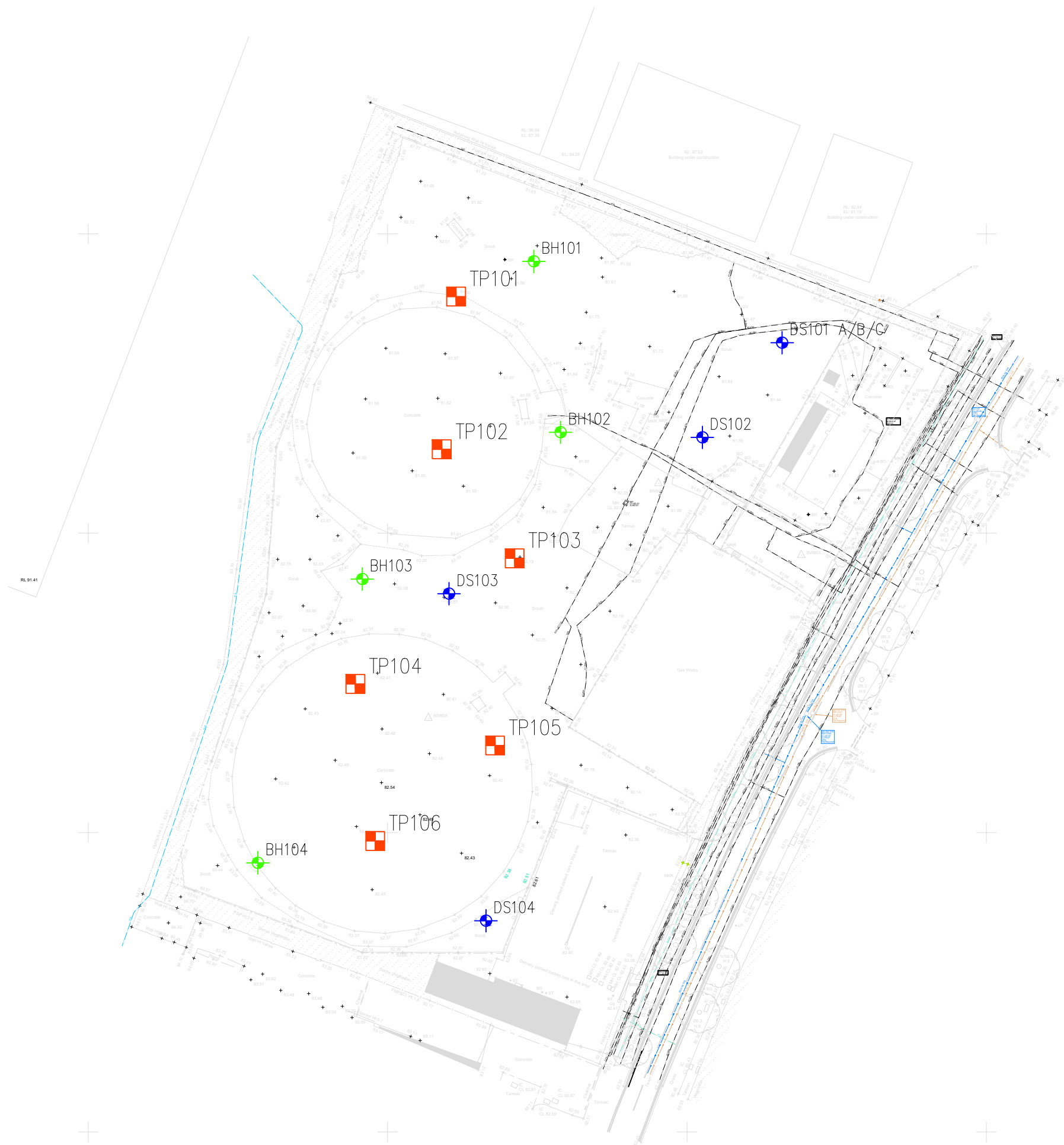


Figure 1 demonstrates that the gas being encountered at location DS102 is a geogenic gas (i.e. natural gas).

Based on the available data, the site remains as a CS3 classified site. However, as the proposed development will be constructed along the western boundary of the site and gas monitoring results show that the methane is localised to the north-eastern area beneath a proposed service yard / access route, BWB considered it appropriate to recommend reducing the classification to a CS2.

Enc. Drawing 1 Exploratory Hole Location Plan
Appendix 1 Ground Gas Monitoring Data

Drawing 1: Exploratory Hole Location Plan






Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key Plan

Legend

-  DS102 DENOTES LOCATION OF DYNAMIC SAMPLE
-  BH101 DENOTES LOCATION OF BOREHOLE
-  TP101 DENOTES LOCATION OF TRAIL PIT

Rev	Date	Details of issue / revision	Drw	Rev
P1	01.01.00	PRELIMINARY ISSUE	AJ	JB

Issues & Revisions

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Client
HENRY BOOT DEVELOPMENTS

Project Title
TEWIN ROAD, WELWYN GARDEN CITY

Drawing Title
EXPLORATORY HOLE LOCATION PLAN

Drawn:	LC	Reviewed:	KES
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BWB Ref:	LNH2043	Date:	06.09.21	Scale@A3:	NTS
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Drawing Status

FINAL

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
TRW-BWB-00-XX-EN-DR-0001	P	1

Appendix 1: Gas Monitoring Results

