

Keith Mullner  
114-130 Lower Hythe Street  
Dartford  
DA1 1BN

24<sup>th</sup> October 2023

**Our Ref:** 5477 23 10 17 Ltr Rpt 01 Rev A AK KM

Dear Keith,

**SITE: 114-130 Lower Hythe Street, Dartford, DA1 1BN**  
**SERVICE: Preliminary Ground Gas Risk Assessment Addendum Letter Report**

### **Introduction**

The work covered in this report was undertaken on behalf of Keith Mullner, in accordance with Sevenoaks Environmental Consultancy Ltd's (SEC) proposal dated July 2023 (Ref: 5477 23 07 18 Ltr 02 FPA 02 REV B KW KM). This addendum provides comment on the environmental ground gas monitoring carried out as part of the previous site investigation and should be read in conjunction with the Geo-Environmental Site Investigation Report (Ref: 5477 23 09 22 Rpt 01 Rev B AK KM) previously provided.

The site formed a rectangular plot comprising 2no. single-storey former precision engineering workshops with external areas laid to hardstanding consisting of asphalt along the eastern boundary and concrete between the 2no. buildings. The 2no. buildings were clad in potential asbestos cement sheeting (see attached Figures 1&2 – Site Location Plan and Existing Layout Plan).

The site is situated within a semi-residential semi-industrial setting with new residential apartment blocks to the east. A former gas works and gas holder was previously situated immediately adjacent the west, the Hufflers Arms public house was located immediately adjacent to the south and Howarth Timber and Building Supplies was present immediately adjacent to the north, beyond which was a metals recycling centre. The ground level across the site was generally flat.

We understand the proposed development involves the change of use from commercial (Use Class B2) to residential (Use Class B3) with associated gardens and under croft parking (see attached Figure 3 – Proposed Development Plan).

As part of the Geo-Environmental Site Investigation referred to above, SEC were instructed to carry out a preliminary ground gas risk assessment. The ground gas was conducted by monitoring the stand pipes that had been installed within 4no. of the 5no. boreholes drilled on site (see Attached Figure 4 – Exploratory Hole Location

Plan). Details of the standpipes installed, and their response zone backfill / materials have been provided in the relevant attached Exploratory Hole Records.

## **Results**

Based on the rounds of monitoring conducted, concentrations of methane did not exceed 0% by Vol in any of the boreholes, carbon dioxide was recorded up to 2.5% by Vol within WS03 and VOC concentrations were recorded up to 4.2ppm (WS05). Flow rates were recorded negligible at 0.0l/hr (see attached Environmental Monitoring data).

Groundwater identified beneath the site at between 1.8m bgl and 2.13m bgl and impacted with elevated concentrations of Ammonia up to 1,540 ug/l (WS01), Total cyanide up to 141ug/l (WS01) and TPH up to 165 ug/l;

## **Assessment**

4 no. rounds of environmental ground gas monitoring were carried out between 1<sup>st</sup> September 2023 and 14<sup>th</sup> October 2023 and included 1 no. round of monitoring undertaken at a period of low/falling atmospheric pressure to help inform a preliminary ground gas risk assessment given consideration of the potential on site sources of ground gas that have been identified which include the following:

- Made Ground across the site up to 1.50m bgl comprising either, dark brown gravelly sandy Clay with varying inclusions of flint and brick fragments or gravelly Sand/sandy Gravel and identified to contain elevated concentrations of Lead (1,470mk/kg WS05 at 0.70m bgl), Arsenic (77mg/kg WS05 at 0.70m bgl), mercury (4.5mg/kg at WS05 at 0.70m bgl), Zinc (1,210mg/kg WS04 at 0.30m bgl) and Copper (449mg/kg WS01 at 0.30m bgl);
- Groundwater identified beneath the site at between 1.8m bgl and 2.13m bgl and impacted with elevated concentrations of Ammonia up to 1,540 ug/l (WS01), Total cyanide up to 141ug/l (WS01) and TPH up to 165 ug/l;
- The site's former industrial use, as a precision-engineering workshop including the storage of oil drums;

Off-site sources of potential contamination identified primarily included a Gas works immediately adjacent to the west of the site 1871-1890, former Factory / Works 9m west of the site, a metal casting factory / foundry 126m from the site, Tanks 4m and a scrap yard 49m from the site.

## **Discussion and Recommendations**

The results of the environmental ground gas monitoring indicate that a ground gas screening value of 0.025 l/hr is applicable to the site. This corresponds with Characteristic Situation 1 of the current CIRIA C665 guidance which suggests a low risk associated with ground gases. However, whilst these initial gas monitoring results are encouraging it is noted that further monitoring would be required to comply with the current CIRIA C665 guidance and given that the site is immediately adjacent to a former Gas works, it is recommended that a precautionary approach be adopted with respect to consideration of potential ground gas risks on site in relation to proposed residential properties. Accordingly, it is recommended that it should be assumed that protective measures consistent with Characteristic Situation 2 of CIRIA C665 Guidance should be included within the design of the proposed development. Subject to the final design of the proposed development, the protective measures may only be required to part of the new buildings, if the ground floor garages / parking are freely vented to the

atmosphere. The following provides some guidance with regards to the inclusion of gas protection measures:

Based upon the assumption that the proposed building will comprise a Type A Building as described in the BS 8485:2015 guidance i.e. private housing with small sized rooms, it is recommended that at least 2 no. different design measures be employed within the design of the proposed building in order to reach a minimum gas protection score of 3.5 points. Inclusion of a passively vented sub-floor void and low permeability hydrocarbon resistant gas protection membrane within the design would achieve the required points (however please refer to Tables 5, 6 and 8 of the BS 8485:2015 guidance for further details). Please note that all joints and penetrations should be appropriately sealed and that protective measures should be fitted appropriately in accordance with the manufacturer's specification and current guidance including BRE414 and BS8485.

At an early design stage prior to construction a Verification Plan detailing the gas protection materials' specifications, methodology of installation, installation design and the installers qualifications and experience should be produced by a suitably qualified independent specialist for submission to the Local Planning Authority (LPA) for their approval prior to installation of the protection measures to avoid proceeding at risk. A suitably qualified independent specialist should also produce a Validation Report in accordance with C735 for the membrane installation to certify that the installation of the protective measures complies with the requirements of the Verification Plan.

In the meantime it is recommended that the existing monitoring boreholes should be retained until the ground gas risk assessment and any protective measures have been approved by the LPA.

Potential residual risks should be mitigated by the implementation of a Discovery Strategy on site during the redevelopment works which should include for the immediate reporting of any potential indicators of ground or water contamination (e.g. cement bonded asbestos sheeting fragments, ash/clinker or hydrocarbon odours) for additional separate assessment by an Environmental Consultant. Additionally groundworkers should wear appropriate PPE/RPE, work in well ventilated areas, avoid confined spaces, avoid contact with soil and groundwater, not smoke, adopt high standards of personal hygiene, and operate with due care.

It is also noted that the recommendations made in the previous Geo-Environmental Site Investigation report remain applicable and are reiterated below for reference;

- That some further investigation be conducted following the clearance of the buildings to slab level to improve access across the site in order to help delineate the extent of the metals impacted Clay Made Ground and confirm the absence of unidentified contamination between exploratory holes locations. However, based upon the available data it will be necessary to conduct remedial work in the proposed garden areas to mitigate potential risks associated with the impacted Made Ground identified. Accordingly, a certified "clean" cover system is recommended in the proposed garden areas which should comprise imported "clean" topsoil provided to a minimum thickness of 600mm laid over a hi-visibility marker layer. Prior to importation of any topsoil to site, the supplier's chemical batch data should be provided to an Environmental Consultant for approval in relation to human health. The cover system should also be certified by an Environmental Consultant including representative validation sample analysis and confirmation of cover system thickness;
- That subject to existing and proposed site levels, it may be necessary to remove existing site soils in garden areas to accommodate the required cover system thickness. All waste disposal associated with the redevelopment of the site should be managed in accordance with the Environment Agency's current WM3 guidance. WAC analysis will be required if it is proposed to dispose of arisings to landfill;
- That remedial excavation to remove impacted Made Ground in areas that are to be capped by hardstanding associated with the proposed development are not considered to require remediation based on the current data given that the hardstanding will effectively break potential exposure pathways;

- That further groundwater level monitoring be conducted to inform the need for a capillary break layer beneath the cover system given the potential for shallower groundwater levels over the winter months than those recorded to date. Additionally further confirmatory groundwater monitoring should be conducted to confirm the initially favourable findings which suggest that groundwater remediation is unlikely to be required;
- That in relation to ground gas risk and for due diligence purposes, it is recommended that it should be assumed that the design of the proposed development should include ground gas protection measures consistent with Characteristic Situation 2 (CS2) of CIRIA C665 guidance (given the close proximity to the site of the former gas works and given consideration of the site's former uses with the potential for organic contaminants (hydrocarbons and solvents) which could cause vapours and ground gases). Based on the BS:8485 guidance, the proposed development can be classed as a Type B building which corresponds with a private or commercial property with multiple occupancy small to medium sized rooms with passive ventilation and other internal spaces throughout ground floor. It is recommended within BS 8485, that for a Type B building with CS2, 3.5 gas protection points are required as a minimum. For example, passive sub floor ventilation (e.g. clear void of formed using gravel) at a very good performance would be worth 2.5 points, and proprietary gas resistant hydrocarbon resistant membrane would be worth 1.0 point, generating the acceptable gas protection score of 3.5 points (however please refer to Tables 5, 6 and 8 of the BS 8485:2015 guidance for further details). Please note that all joints and penetrations should be appropriately sealed and that protective measures should be fitted appropriately in accordance with the manufacturer's specification and current guidance including BRE414 and BS8485. At an early design stage prior to construction a Verification Plan written by a ground gas specialist which details the gas protection materials' specifications, methodology of installation, installation design and the installers qualifications and experience should be submitted to the Regulators for their approval prior to installation of the protection measures to avoid proceeding at risk. An independent specialist should also validate the membrane installation and provide a guarantee / warranty for the installation.
- That it would appear unlikely that dewatering of excavations will be required on site given the apparent depth of the groundwater (~1.8m bgl) however if it is required, consideration of discharge consent to release water to the foul sewer or removal of groundwater to a licensed disposal facility via lorry tankers would be necessary;
- That the existing groundwater and ground gas monitoring boreholes be protected and retained until the LPA have approved a Remedial Method Statement under planning;
- That a Discovery Strategy be implemented on site during the development of the site which should include for the immediate reporting of any potential indicators of ground or water contamination e.g. asbestos fragments, ash or hydrocarbon odours for additional separate assessment by an Environmental Consultant;
- That groundworkers / site operatives avoid contact with soil and groundwater, not smoke, adopt high standards of personal hygiene and operate with due care whilst wearing appropriate PPE;
- That the design of the proposed houses include for water supply pipework that is chemically resistant barrier water supply pipe;
- That prior to the conduct of any remedial work a Remedial Method Statement written by an Environmental Consultant should be approved by the LPA. Additionally, any remedial work undertaken should be documented within a Verification Report, also written by an Environmental Consultant.

Please refer to the attached General Limitations and Exceptions. Kind Regards

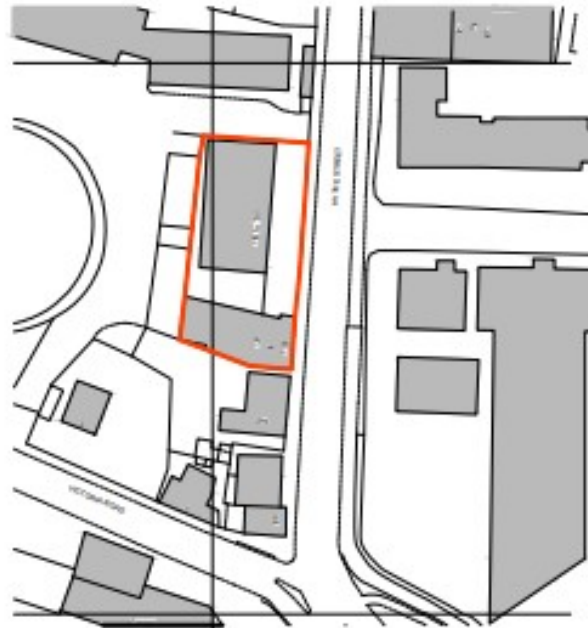
**Damian Jones**

Managing Director [d.jones@sevenoaksenvironmental.co.uk](mailto:d.jones@sevenoaksenvironmental.co.uk)

Enc.

Site Location Plan  
Existing Site Layout Plan  
Proposed Site Layout  
Exploratory Hole Location Plan  
Exploratory Hole Records  
Environmental Monitoring  
General Limitations and Exceptions





Site Location Plan  
1:1250

Crown Copyright. Licence Number 100040584. All rights reserved.  
This map is not to be relied upon for accuracy and is for identification purposes only

SITE: 114-130 Lower Hythe Street, Dartford, DA1 1BN

SCALE: NTS

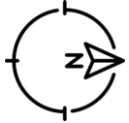
JOB NO: 5477

FIGURE TITLE: Site Location Plan

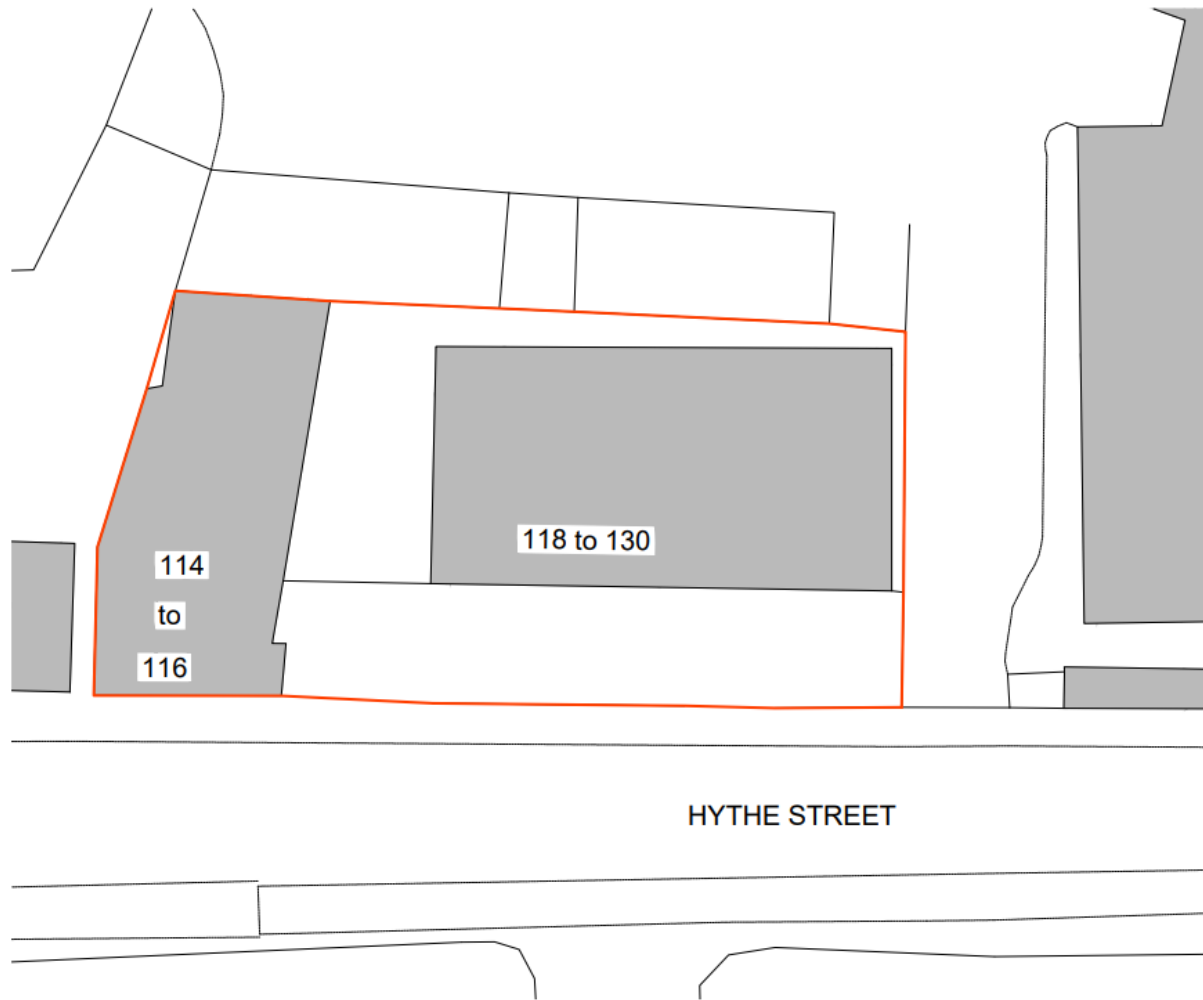
REV: 01

FIGURE NO: 1





This drawing is protected by copyright and must not be copied or reproduced without the written consent of Graham Simpkin Planning. All dimensions and sizes to be checked on site. North points are indicative. ©




Existing Block Plan  
1:200



2 The Parade, Ash Road, Hartley  
Longfield, Kent DA3 8BG  
Tel: 01474 703705  
www.grahamsimpkinplanning.co.uk  
Email: webmail@grahamsimpkinplanning.co.uk

Project Title 114-130 Lower Hythe Street, Dartford, DA1 1BN		Job No 3816
Drawing Title Existing Block Plan	Drawing No 02	Revision -
Date 15.03.2023	Drawn by MS	Checked by PN
Scale 1:200 @ A3	Note	



Crown Copyright. Licence Number 100040584. All rights reserved.  
This map is not to be relied upon for accuracy and is for identification purposes only

SITE: 114-130 Lower Hythe Street, Dartford, DA1 1BN

SCALE: NTS

JOB NO: 5477

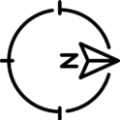
FIGURE TITLE: Existing Site Layout Plan

REV: 01

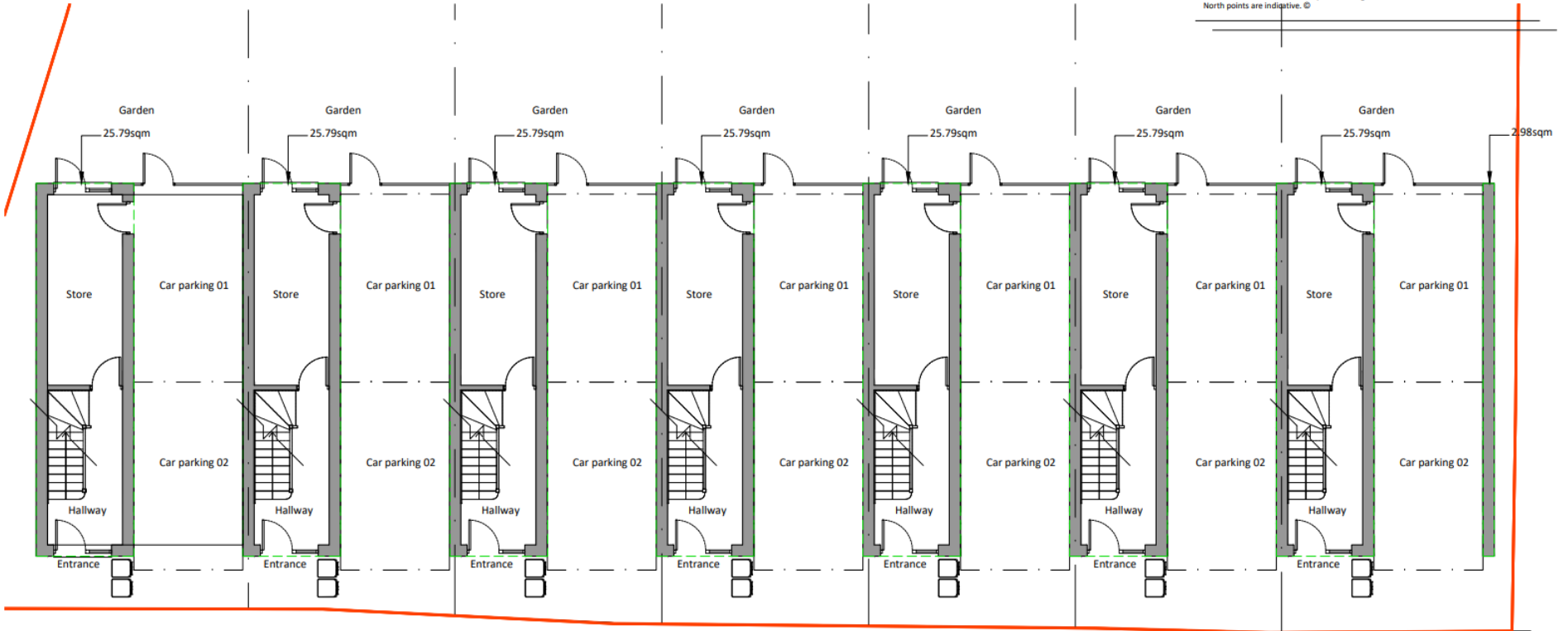
FIGURE NO: 2







This drawing is protected by copyright and must not be copied or reproduced without the written consent of Graham Simpkin Planning. All dimensions and sizes to be checked on site. North points are indicative. ©



Indicative Layout Plan  
1:100

Note:  
Total Site Area - 801 sqm  
Total Footprint - 183.5 sqm  
Total flood site area - 617.5 sqm



2 The Parade, Ash Road, Hartley  
Longfield, Kent DA3 8BG  
Tel: 01474 703705  
www.grahamsimpkinplanning.co.uk  
Email: webmail@grahamsimpkinplanning.co.uk

Project Title 114-130 Lower Hythe Street, Dartford, DA1 1BN		Job No 3816
Drawing Title Indicative Layout Plan	Drawing No 03	Revision -

Crown Copyright. Licence Number 100040584. All rights reserved.  
This map is not to be relied upon for accuracy and is for identification purposes only

SITE: 114-130 Lower Hythe Street, Dartford, DA1 1BN

SCALE: NTS

JOB NO: 5477

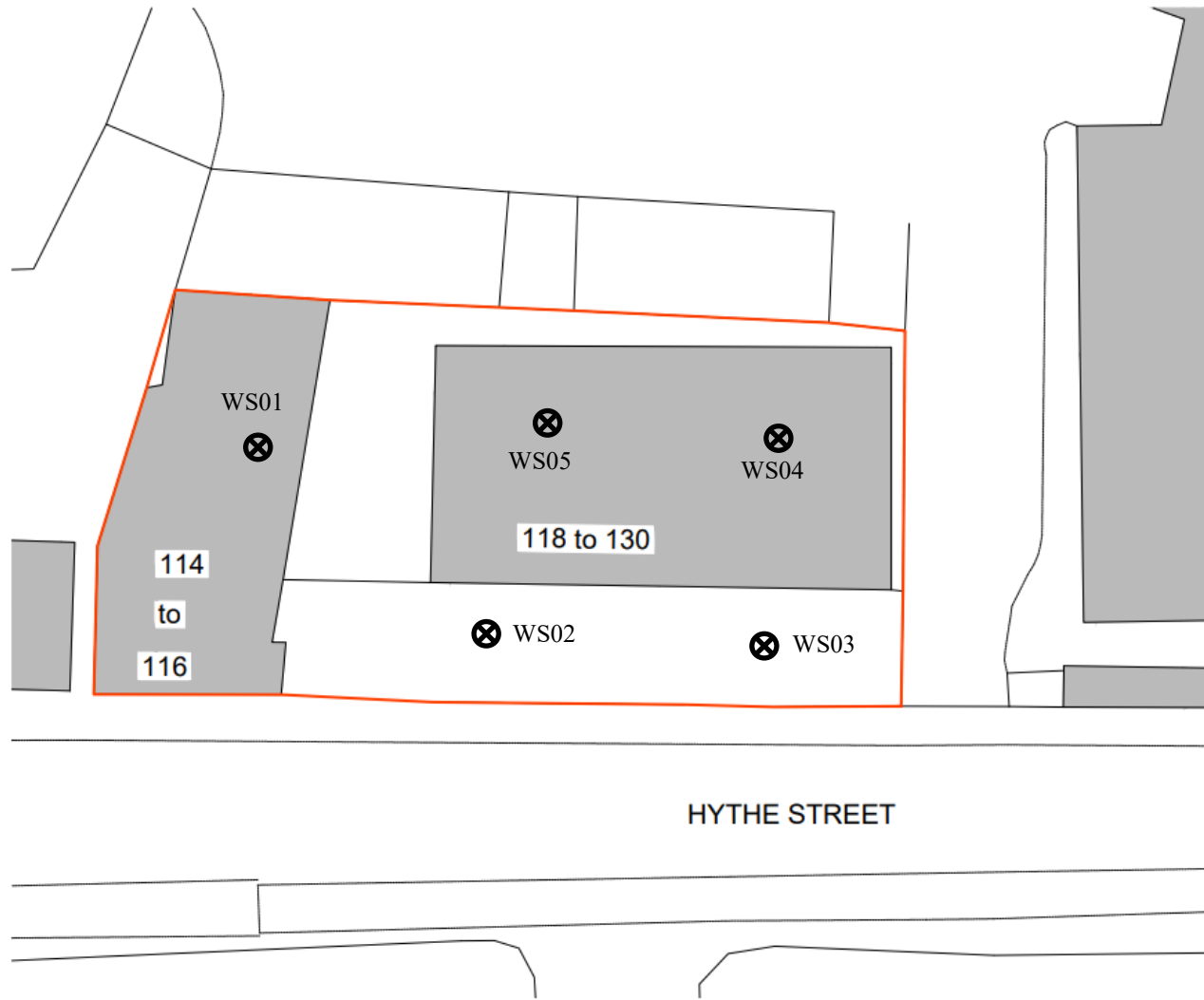
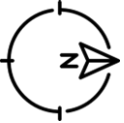


FIGURE TITLE: Proposed Site Layout Plan

REV: 01


FIGURE NO: 3











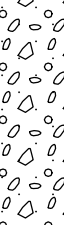


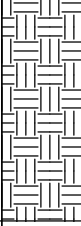
Existing Block Plan  
1:200

Crown Copyright. Licence Number 100040584. All rights reserved.  
This map is not to be relied upon for accuracy and is for identification purposes only

SITE: 114-130 Lower Hythe Street, Dartford, DA1 1BN	SCALE: NTS	JOB NO: 5477	
FIGURE TITLE: Exploratory Hole Location Plan	REV: 01	FIGURE NO: 4	

**BOREHOLE LOG**

Project <b>Geo-Environmental Site Investigation - 114-130 Lower Hythe Street, Dartford, DA1 1BN</b>				BOREHOLE No <b>WS01</b>	
Job No 5477	Date 18-08-23	Ground Level (m)	Co-Ordinates ()		
Contractor <b>Sevenoaks Environmental Consultancy Ltd</b>				Sheet 1 of 1	

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA	Geology	Instrument/ Backfill
Depth	Type No	Test Result					DESCRIPTION		
0.15	D	2.8ppm				(0.20) 0.20	MADE GROUND: Concrete		
0.30	D	0.8ppm					MADE GROUND: Soft to firm dark brown slightly gravelly sandy Clay. Sand is fine to medium. Gravel comprised occasional fine to medium sub-angular to sub-rounded flint fragments and rare sub-angular to sub-rounded fine to medium brick fragments.  ...@0.20-0.30m bgl flint boulders noted.		
0.70	D	0.8ppm				(1.00)			
						1.20			
1.60	D	1ppm				(1.80)	Medium dense to dense light brown sandy GRAVEL. Gravel comprised abundant fine to coarse sub-angular to sub-rounded flint fragments and rare cobbles of flint.  ...Borehole collapsed from 3m to 2.2m bgl.		
2.50	D	2.2ppm				3.00			

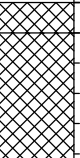
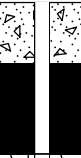
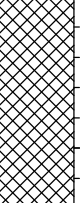




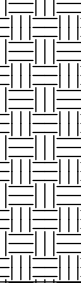
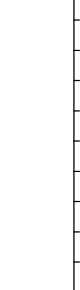

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Dia. mm	Water Depth	From	To	Hours	From	To	

All dimensions in metres Scale 1:25	Client <b>Keith Mullner</b>	Method/ Plant Used <b>CDS</b>	Logged By <b>AK</b>
--	-----------------------------	-------------------------------------	------------------------

Report ID: AGS4 UK.BH || Project: 5477 114-130 LOWER HYTHE STREET.GPJ || Library: GINT STD AGS 4\_0\_GLB || Date: 30 October 2023

## BOREHOLE LOG

Project Geo-Environmental Site Investigation - 114-130 Lower Hythe Street, Dartford, DA1 1BN				BOREHOLE No <b>WS02</b>	
Job No 5477	Date 18-08-23	Ground Level (m)	Co-Ordinates ()		
Contractor Sevenoaks Environmental Consultancy Ltd				Sheet 1 of 1	

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA		Geology	Instrument/Backfill
Depth	Type No	Test Result					DESCRIPTION			
0.05	D	1.3ppm				0.10	MADE GROUND: Asphalt			
0.70	D	0.7ppm				(1.10)	MADE GROUND: Soft to firm brown slightly clayey gravelly Sand. Sand is fine to medium. Gravel comprised frequent fine to coarse sub-angular to sub-rounded brick and sandstone fragments and rare fine to medium sub-angular to sub-rounded flint and chalk fragments.			
1.60	D	0.8ppm				1.20	Medium dense to dense light brown very sandy GRAVEL. Gravel comprised abundant sub-angular to sub-rounded fine to coarse flint fragments. Sand was medium to coarse.			
2.50	D	0.9ppm				(1.80)	...Borhole collapsed from 3.00m to 2.00m bgl.			
						3.00				

Report ID: AGS4 UK.BH || Project: 5477 114-130 LOWER HYTHE STREET.GPJ || Library: GINT STD AGS 4.0.GLB || Date: 30 October 2023

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											Groundwater encountered at 2.2m bgl.
All dimensions in metres Scale 1:25			Client Keith Mullner			Method/ Plant Used CDS			Logged By AK		

### BOREHOLE LOG

Project Geo-Environmental Site Investigation - 114-130 Lower Hythe Street, Dartford, DA1 1BN				BOREHOLE No <b>WS03</b>	
Job No 5477	Date 18-08-23	Ground Level (m)	Co-Ordinates ()	Sheet 1 of 1	
Contractor Sevenoaks Environmental Consultancy Ltd					


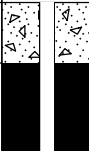




SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA		Geology	Instrument/Backfill
Depth	Type No	Test Result					DESCRIPTION			
0.05	D	1.1ppm				0.10	MADE GROUND: Asphalt			
0.15	D	1.3ppm				0.20	MADE GROUND: Loose grey sandy Gravel (MOT). Gravel comprised abundant medium to coarse sub-angular to sub-rounded limestone fragments. Sand is fine to coarse.			
0.50	D	1.2ppm				(1.20)	MADE GROUND: Medium dense light brown sandy Gravel. Gravel comprised abundant medium to coarse sub-angular to sub-rounded brick and sandstone fragments and rare medium sub-rounded flint fragments. With cobbles of brick and sandstone fragments.			
1.30	D	5.6ppm				1.40	MADE GROUND: Sandstone cobble.			
						1.50	Medium dense to dense brown very sandy GRAVEL. Gravel comprised abundant sub-angular to sub-rounded fine to coarse flint fragments. Sand was fine to coarse.  ...Borhole collapsed from 4.00m to 1.40m bgl.			
2.50	D	2ppm				(2.50)				
3.50	D	13.3ppm				4.00				

Report ID: AGS4 UK.BH || Project: 5477 114-130 LOWER HYTHE STREET.GPJ || Library: GINT STD AGS 4.0.GLB || Date: 30 October 2023

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											Groundwater encountered at 2.0m bgl.
All dimensions in metres Scale 1:25			Client Keith Mullner			Method/ Plant Used CDS			Logged By AK		

## BOREHOLE LOG

Project <b>Geo-Environmental Site Investigation - 114-130 Lower Hythe Street, Dartford, DA1 1BN</b>				<b>BOREHOLE No WS04</b>	
Job No <b>5477</b>	Date <b>18-08-23</b>	Ground Level (m)	Co-Ordinates ()		
Contractor <b>Sevenoaks Environmental Consultancy Ltd</b>				Sheet <b>1 of 1</b>	

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA		Geology	Instrument/Backfill
Depth	Type No	Test Result					DESCRIPTION			
0.30	D	0.8ppm				(0.20)	MADE GROUND: Concrete			
						0.20	MADE GROUND: Soft to firm dark brown slightly gravelly sandy Clay. Sand is fine to medium. Gravel comprised occasional fine to medium sub-angular to sub-rounded flint fragments and rare sub-angular to sub-rounded fine to medium brick fragments.  ...@0.20-0.30m bgl flint boulders noted.			
0.70	D	0.7ppm				(1.00)				
1.50	D	0.7ppm				1.20	Medium dense to dense light brown sandy GRAVEL. Gravel comprised abundant fine to coarse sub-angular to sub-rounded flint fragments and rare cobbles of flint.  ...Borehole collapsed from 3m to 2m bgl.			
2.50	D	1.7ppm				(1.80)				
						3.00				











Report ID: AGS4 UK.BH || Project: 5477 114-130 LOWER HYTHE STREET.GPJ || Library: GINT STD AGS 4.0.GLB || Date: 30 October 2023

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											Groundwater encountered at 2.2m bgl.

All dimensions in metres Scale 1:25	Client <b>Keith Mullner</b>	Method/ Plant Used <b>CDS</b>	Logged By <b>AK</b>
--	-----------------------------	-------------------------------------	------------------------

## BOREHOLE LOG

Project <b>Geo-Environmental Site Investigation - 114-130 Lower Hythe Street, Dartford, DA1 1BN</b>				<b>BOREHOLE No WS05</b>	
Job No <b>5477</b>	Date <b>18-08-23</b>	Ground Level (m)	Co-Ordinates ( )		
Contractor <b>Sevenoaks Environmental Consultancy Ltd</b>				Sheet <b>1 of 1</b>	

SAMPLES & TESTS			Water	Reduced Level	Legend	Depth (Thickness)	STRATA		Geology	Instrument/Backfill
Depth	Type No	Test Result					DESCRIPTION			
0.23	D	0.9ppm				(0.20) 0.20 0.25	MADE GROUND: Concrete.			
0.70	D	1ppm				(1.25)	MADE GROUND: Loose grey sandy Gravel (MOT). Gravel comprised abundant medium to coarse sub-angular to sub-rounded limestone fragments. Sand is fine to coarse.  MADE GROUND: Soft to firm dark brown slightly gravelly sandy Clay. Sand is fine to medium. Gravel comprised occasional fine to medium sub-angular to sub-rounded flint fragments and rare sub-angular to sub-rounded fine to medium brick fragments.  ...@0.20-0.30m bgl flint boulders noted.			
1.30	D	1.1ppm				1.50				
1.80	D	0.8ppm				(1.50)	Medium dense to dense light brown sandy GRAVEL. Gravel comprised abundant fine to coarse sub-angular to sub-rounded flint fragments and rare cobbles of flint.  ...Borehole collapsed from 3m to 2.6m bgl.			
2.50	D	1.4ppm				3.00				

Report ID: AGS4 UK.BH || Project: 5477 114-130 LOWER HYTHE STREET.GPJ || Library: GINT STD AGS 4.0.GLB || Date: 30 October 2023

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth	From	To	Hours	From	To	
											Groundwater encountered at 2.2m bgl.
All dimensions in metres Scale 1:25			Client <b>Keith Mullner</b>			Method/ Plant Used <b>CDS</b>			Logged By <b>AK</b>		



**Date:** 01/09/2023  
**Site:** Dartford  
**Job Ref:** 5477  
**Monitoring Round:** 01  
**Engineer & Log No:** JH 113

Borehole Ref:	Methane %	Carbon Dioxide %	Oxygen %	Carbon Monoxide (ppm)	H2S %	VOCs (ppm)	Flow l/hr	Dip [m]	Plumb [m]	Comments
WS01	0.0	1.7	18.0	0.0	0.0	2.9	0.0	1.86	2.02	Took GW samples, Light Brown, No Odour,
WS02	0.0	0.0	20.7	0.0	0.0	1.7	0.0	Dry	1.77	-
WS04	0.0	2.4	17.9	0.0	0.0	2.2	0.0	Dry	2.00	-
WS05	0.0	0.3	20.5	0.0	0.0	4.2	0.0	2.05	2.45	Took GW samples, Brown, No Odour

Atmospheric pressure start:	1006mb
Atmospheric pressure finish:	1006mb
Weather:	Cloudy, Rainy, Sunny, All Over





**Date:** 15/09/2023  
**Site:** Dartford  
**Job Ref:** 5477  
**Monitoring Round:** 02  
**Engineer & Log No:** JH 113

Borehole Ref:	Methane %	Carbon Dioxide %	Oxygen %	Carbon Monoxide (ppm)	H2S %	VOCs (ppm)	Flow l/hr	Dip [m]	Plumb [m]	Comments
WS01	0.0	2.0	17.4	0.0	0.0	0.2	0.0	1.91	2.03	No Sample
WS02	0.0	0.0	20.9	0.0	0.0	0.8	0.0	Dry	1.77	No sample
WS04	0.0	1.0	19.7	0.0	0.0	2.2	0.0	Dry	2.01	No Sample
WS05	0.0	1.7	19.0	0.0	0.0	2.5	0.0	2.11	2.44	No Sample

Atmospheric pressure start:	1013mb
Atmospheric pressure finish:	1013mb
Weather:	Sunny, Dry



**Date:** 28/09/2023  
**Site:** Dartford  
**Job Ref:** 5477  
**Monitoring Round:** 03  
**Engineer & Log No:** JH 113

Borehole Ref:	Methane %	Carbon Dioxide %	Oxygen %	Carbon Monoxide (ppm)	H2S %	VOCs (ppm)	Flow l/hr	Dip [m]	Plumb [m]	Comments
WS01	0.0	2.1	17.9	0.0	0.0	1.0	0.0	1.92	2.10	No Sample
WS02	0.0	0.8	19.9	0.0	0.0	1.1	0.0	Dry	1.85	No sample
WS04	0.0	2.5	17.7	0.0	0.0	1.4	0.0	Dry	2.11	No Sample
WS05	0.0	0.3	20.6	0.0	0.0	1.2	0.0	2.13	2.55	No Sample

Atmospheric pressure start:	1012mb
Atmospheric pressure finish:	1013mb
Weather:	Cloudy, Dry



**Date:** 14/10/2023  
**Site:** Dartford  
**Job Ref:** 5477  
**Monitoring Round:** 04  
**Engineer & Log No:** TI 114

Borehole Ref:	Methane %	Carbon Dioxide %	Oxygen %	Carbon Monoxide (ppm)	H2S %	VOCs (ppm)	Flow l/hr	Dip [m]	Plumb [m]	Comments
WS01	0.0	0.7	19.8	0.0	0.0	0.0	0.0	1.9	2.10	No Sample
WS02	0.0	1.2	19.5	0.0	0.0	0.7	0.0	1.8	1.85	No sample
WS04	0.0	2.4	19.3	0.0	0.0	0.5	0.0	Dry	2.11	No Sample
WS05	0.0	0.2	20.3	0.0	0.0	0.3	0.0	2.08	2.55	No Sample

Atmospheric pressure start:	997mb
Atmospheric pressure finish:	997mb
Weather:	Cloudy, Wet, Humid, Warm

## General Limitations and Exceptions

1. The advice given in this report with respect to contaminated land/pollution is based on the guidelines available at the time of writing.
2. The Client is advised that the conditions observed on site by SEC at the time of the investigation or assessments are subject to change. Certain indicators of the presence of hazardous substances may have been latent at the time of the most recent site reconnaissance or investigation and they may subsequently have become observable.
3. Comments made relating to land gas or groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. The normal rate of conduct of an exploratory hole does not usually permit the recording of an equilibrium groundwater level for any one strike. Land gas and / or groundwater conditions may vary as a result of seasonal or other effects.
4. The opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between or beyond borehole positions, these are only for guidance only and no liability can be accepted for their accuracy.
5. Ground contamination often exists as small discrete areas of contamination and there can be no certainty that any or all such areas have been located, sampled and/or identified.
6. This assessment may be subject to amendment in light of additional information becoming available.
7. The findings and opinions conveyed in this report are based on information obtained from a variety of sources, including that from 1) previous site investigations and 2) chemical testing laboratories, and which SEC has assumed are correct. Nevertheless, SEC cannot and does not guarantee the authenticity or reliability of the information it has relied upon. SEC can accept no responsibility for inaccuracies within the data supplied by other parties.
8. This report is written in the context of an agreed scope of work between SEC and the Client and should not be used in a different context. In light of additional information becoming available, improved practices and changes in legislation amendment or re-interpretation of the assessment or report in whole or part may be necessary after its original submission.
9. This report is provided for sole use by the Client and is confidential to them. No responsibility whatsoever for the contents of the report will be accepted to anyone other than the Client.
10. SEC believes that providing information about limitations is essential to help the Client identify and thereby manage risks.
11. The copyright of written materials supplied shall remain the property of SEC but with a royalty free perpetual licence, granted to the Client on payment in full of any outstanding monies.
12. SEC does not provide legal advice and the advice of the Clients legal advisors may also be required.
13. SEC notes that this assessment is subject to regulatory review and approval.
14. This report represents a stage in an iterative process of investigation and assessment and as such it is possible that further work may be recommended.
15. An ecological, topographical or asbestos survey was outside of the scope of this report.

16. The use of data generated by this site investigation for the design of foundations or geotechnical assessment was outside the scope of this report.