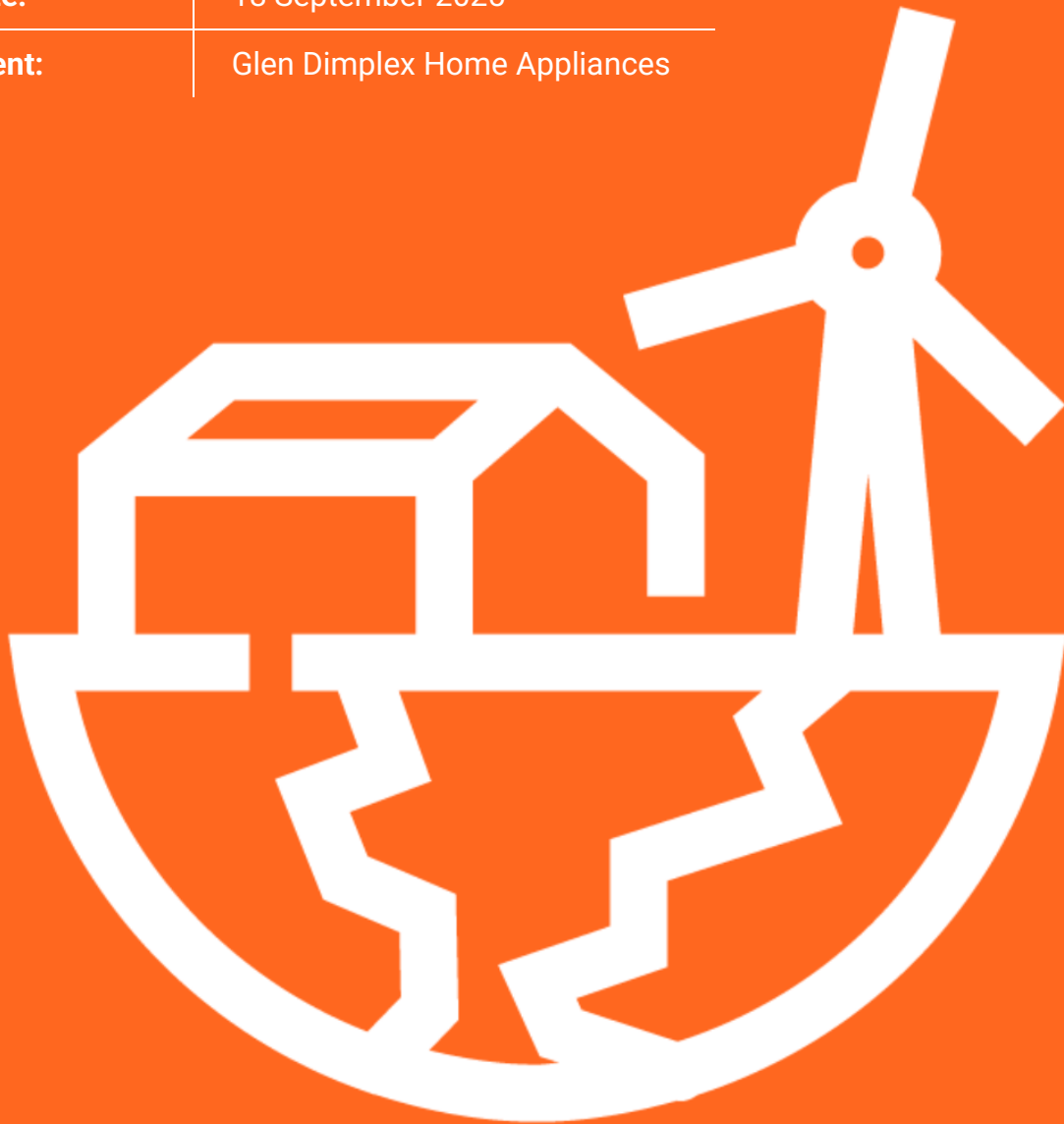


GROUND GAS ADDENDUM

Site:	Glen Dimplex, Prescot
References:	17-500-R4-1
Date:	18 September 2025
Client:	Glen Dimplex Home Appliances





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QUALITY ASSURANCE

Report references

17-500-R5

REV REF	DESCRIPTION	DATE
01	First issue	September 2025

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DRAWING LIST:

17-500-001 – Site Location Plan
17-500-003 – Historical Features Plan
17-500-004 – Site Features Plan
17-500-005 – Exploratory Hole Location Plan
17-500-006 – Depth of Made Ground Plan
17-500-012 – Depth to Bedrock Plan
17-500-018 – Groundwater Contamination Exceedances Plan
17-500-026 – Human Health Contamination Exceedances Plan
17-500-031 – Ground Gas Conceptual Site Model
17-500-034 /-035 /-036 – Cross Section Plan



1. INTRODUCTION

1.1. BACKGROUND

E3P has previously completed a series of ground investigations on behalf of Glen Dimplex Home Appliances (the client) at the Glen Dimplex factory, Stoney Lane, Whiston, Prescott, L35 2XW.

The findings of the 2025 internal ground investigation are presented within the E3P report entitled Glen Dimplex, Prescott, Phase II Geoenvironmental Site Assessment Report; reference 17-500-R2-1, dated April 2025.

During the investigation, E3P installed twelve ground gas monitoring wells, which were to be monitored over a period of six months after installation. The data collected from the gas monitoring wells are summarised in this report, and this comprises the completed ground gas assessment.

1.2. PROPOSED DEVELOPMENT

At present, a proposed development plan has not been decided; however, it is assumed the redevelopment will comprise residential dwellings with associated private gardens, roadways, and associated infrastructure.

At the time of writing this report, the proposed development is potentially subject to change and will be updated following significant changes.

1.3. OBJECTIVES AND SCOPE

The objectives of the ground gas addendum report are to provide a detailed assessment of ground gas risk based on all available data from the E3P ground investigation works.

1.4. LIMITATIONS

The limitations of this report are presented in APPENDIX I.

1.5. CONFIDENTIALITY

E3P has prepared this report solely 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. Should any third party wish to use or rely upon the report's contents, written approval must be sought from E3P; a charge may be levied against such consent.

1.6. PREVIOUS GROUND GAS MONITORING DATA (EXTERNAL)

During April and May 2024, E3P completed a phase of preliminary ground gas monitoring, comprising four rounds of monitoring on twelve monitoring wells installed across the site, outside the footprint of the main factory structure. A subsequent assessment of the ground gas monitoring data was completed in June 2024, with full data and assessment presented within the entitled Glen Dimplex, Prescott, Phase I and II Geoenvironmental Site Assessment Report; reference 17-500-R1-2, dated June 2024.



A summary of findings is presented below:

- ✳ Four rounds of ground gas monitoring were undertaken between April and May 2024, with atmospheric pressures noted to be falling, steady and rising during the monitoring period, and atmospheric pressures ranging between 992 and 1017 mbar. It was therefore considered that the ground gas monitoring had been undertaken over representative conditions.
- ✳ The majority of locations recorded a peak and steady flow rate of 0.1 l/hr (limit of detection of the analyser), however elevated flow rates were recorded in WS101 and WS102 during Visit 2, recorded at 0.2 l/hr and 0.4 l/hr, respectively and within WS103 during Visit 1, recorded at 0.2 l/hr. These marginally elevated flow rates were not considered to present an indication of a significant ground gas risk.
- ✳ The majority of locations recorded a methane concentration of 0.1% v/v (limit of detection of the analyser), however elevated concentrations were noted in WS103 and WS105 during Visit 1, with peak readings of 2.7% v/v and 1.9% v/v, respectively. A higher peak reading of methane was also recorded in WS109 at 6.0% v/v during Visit 2, however the steady methane reading dropped to 1.2% v/v.
- ✳ Carbon dioxide was recorded at concentrations ranging from 0.1% v/v to 3.4% v/v. A peak reading of 17.0 % v/v was recorded within WS107 during Visit 2, however the steady reading dropped to 1.7% v/v.
- ✳ The ternary gas plot indicated the majority of the ground gas monitoring results had standard oxygen and generally low carbon dioxide concentrations with limited occasions of carbon dioxide concentrations above 5%, and no elevated methane, which was indicative of natural sources. On three occasions within WS103, WS105 and WS107, elevated methane and carbon dioxide and partially depleted oxygen were recorded, which was considered to be potentially indicative of organic material, Made Ground or organic contamination undergoing anaerobic degradation. On one occasion in WS109, elevated methane concentrations with no elevated carbon dioxide and depleted oxygen was recorded, which was considered to be potentially indicative of the 'cross-gas' effect from potential volatile contamination in the ground.
- ✳ Based on the peak flow rates, the majority of site was classified as Characteristic Situation 1 (CS1), however there were two noted areas falling within Characteristic Situation 2 (CS2) (WS103 and WS105), and an additional two areas falling within Characteristic Situation 3 (CS3) (WS107 and WS109). Therefore, as a precautionary measure, it was recommended that the whole site should be categorised within CS2, which would require basic gas protection measures, with any proposed plots within the area of CS3 classification potentially requiring further precautions.
- ✳ In addition, further consideration is also required in areas where elevated volatile contaminants have been identified within soils and groundwater across the southern boundary of the site. In these areas, vapour resistant membranes may be required to be installed during the build phase for any proposed buildings situated within the immediate vicinity of the impacted soils.



2. GROUND GAS RISK ASSESSMENT

2.1. RATIONALE

Hazardous ground gas qualitative risk assessment is based on a conceptual site model (CSM) similar to that used for soil and groundwater contamination sources (i.e., source-pathway-receptor pollutant linkages).

The risk can be assessed based on knowledge of the ground conditions and CSM and a measure of hazardous gas concentrations and gas flow at the site within monitoring standpipes.

2.2. SOURCES AND PATHWAYS OF GROUND GAS

Table 2.1 summarises the potential sources and pathways of ground gas within the context of the recorded site setting and proposed development.

Table 2.1 Identified Potential Sources of Ground Gas

SOURCE

Made Ground

Made Ground deposits were encountered within all exploratory hole locations to depths of between 0.00 m and in excess of 3.00 m bgl although, in general, Made Ground was encountered to a depth of less than 2.00 m bgl.

Hydrocarbon odours were noted within three locations, situated across the site within the Made Ground deposits. The depths the hydrocarbon odour was encountered ranged from 0.45–2.40 m bgl (BH106, BH109, BH112) and was typically noted within a reworked very gravelly clay with gravel of sandstone, mudstone, concrete, ash, and rare instances of slag.

In addition, chlorinated solvent impact has been identified within Made Ground deposits, primarily in the eastern and southern parts of the main factory structure, with greatest concentrations identified within BH104, located within the immediate vicinity of an enamel slurry tank (considered to be the primary source of identified VOC impact on the site).

Superficial Strata

Superficial deposits were encountered within all exploratory hole locations, with the superficial deposits varying across the site. The most common stratum recorded was a dark reddish brown gravelly sandy CLAY with gravel of sandstone, mudstone, and instances of coal and rare shale. Typically, the CLAY was locally interbedded with lenses of a dark orange to brown very clayey fine to medium SAND between 2.00-9.00 m bgl. The lenses of SAND provide a potential preferential pathway for ground gas migration.

A rare band of clayey very sandy GRAVEL interbedded within the CLAY was recorded in three exploratory hole locations situated towards the northeast of site (BH102, BH111, and BH203). The GRAVEL bands were encountered between 4.00-8.50 m bgl and were gravel of mudstone and sandstone. The bands of GRAVEL provide a potential preferential pathway for ground gas migration.

In addition, chlorinated solvent impact has been identified within superficial within BH104, located within the immediate vicinity of an enamel slurry tank (considered to be the primary source of identified VOC impact on the site).



Bedrock Strata

The bedrock geology was encountered between 4.00–13.50 m bgl across all exploratory investigations and comprised of SANDSTONE.

The site is located within a Coal Mining Reporting Area, however not within a development high risk area. There are no mine entries, coal outcrops, past or probably shallow coal mine workings beneath or close to the site. The risk from underground coal workings is therefore considered to be very low and no further works are deemed to be required in relation to coal mining.

Landfill Sites

No landfill sites (current or historic) are located within 250 m of the site. The site has undergone significant historical development and ground working, the Made Ground associated with the landmark development may produce hazardous ground gases such as methane and carbon dioxide.

Other Gases

The BGS reports that the site is situated in Radon Class 1, and therefore radon protective measures are not necessary in the construction of new dwellings or extensions.

Three infilled ponds

Historically infilled ponds have been identified on-site, which present potential sources of organic deposits and thus hazardous ground gases. However, due to the age of historical infilling, they are not considered likely to present significant sources of ground gases.

Elevated concentrations of VOCs have been identified within soils and shallow groundwater, which presents a potential vapour risk. These are associated with an enamel slurry tank, which is considered to be the primary source of identified VOC impact on the site.

2.3. MONITORING FREQUENCY

The CIRIA C665 guidance on gas risk assessment includes recommendations for periods/frequencies for monitoring visits. These recommendations take into account the nature of the proposed development and the likely generation potential of the source.

The proposed development comprises private residential properties, which would be classified as a Type A development (high sensitivity) in accordance with BS8485:2015+A1:2019. Furthermore, it is considered that the likely generation potential of the identified gas sources (taking into account the likelihood of future increases in gas generation) would be best classified as high.

Therefore, within the context of the proposed residential end-use and ground gas generation potential, the gas assessment requires twelve visits over six months, with at least two sets of readings at low or falling atmospheric pressure.



2.4. GROUND GAS RISK ASSESSMENT METHODOLOGY

The potential impact on the development from ground gases has been assessed with reference to standards and guidelines published in:

- ✳ CIRIA Report 665 – Assessing risks posed by hazardous ground gases to buildings (2007);
- ✳ BS8485:2015+A1:2019 – Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings; and,
- ✳ CL:AIRE Publication “Good Practice for Risk Assessment for Coal Mine Gas Emissions” (October 2021).

BS8485 provides guidance on the level of gas protection requirements based upon the characteristic situation (CS) and the proposed development based on building type.

Therefore, in accordance with BS8485, based on the measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) shall be derived for each monitoring point, from which the site characteristic hazardous gas flow rate (Q_{hgs}), and then the Characteristic Situation (CS) can be determined.

The following equation should be utilised:

$$Q_{hg} = q \left(\frac{C_{hg}}{100} \right)$$

Where:

q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe.

C_{hg} is the measured hazardous gas concentration (in percentage volume/volume).

The subsequent derived gas screening value (GSV) should be the maximum Q_{hg} (flow rate x concentration as a percentage volume) for all the monitoring events.

A ‘worst case check’ may be carried out using the maximum recorded flow in any hole with the maximum concentration in any hole with the maximum concentration in any hole to present the plausible worst case conditions. Adoption of the worst case Q_{hg} requires thorough justification and reference to the CSM.

The final derived GSV can then be used to characterise the site as summarised in Table 2.2.

Table 2.2 Site Characterisation by GSV (BS8485:2015+A1:2019)

CS	HAZARD POTENTIAL	GSV (l/hr) FOR METHANE AND CARBON DIOXIDE	ADDITIONAL FACTORS
CS1	Very Low	< 0.07	Typically <1% methane concentration and <5% carbon dioxide concentration (otherwise consider an increase to CS2)
CS2	Low	< 0.70	Typical measured flow rate <70 l/h (otherwise consider an increase to CS3)
CS3	Moderate	< 3.5	N/A
CS4	Moderate to High	< 15	N/A
CS5	High	< 70	N/A
CS6	Very High	> 70	N/A



Notes

- 1) The CS is equivalent to the characteristic GSC in CIRIA C665.
- 2) The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter should be considered.
- 3) Gas Screening Value is the Borehole Gas Volume Flow Rate, in litres per hour, multiplied by the concentration in the air stream of the particular gas being considered.
- 4) The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.

It should be noted that in the first instance, this assessment has been carried out in accordance with BS8485:2015+A1(2019) and the thresholds given therein.

2.5. MONITORING METHODOLOGY

Concentrations of methane (CH₄), carbon dioxide (CO₂) and oxygen (O₂) were measured using a calibrated infrared gas analyser (GFM435) with gas flow rates measured using an integrated flow meter.

Gas measurements were recorded for a minimum of 300 seconds (5 minutes) at each location, increasing to 600 seconds if elevated concentrations were identified, at which point the maximum concentration of CH₄ and CO₂, together with the lowest concentration of O₂ were recorded.

In addition, concentrations of VOC gases were also measured using a Minirae 3000 Photo Ionisation Detector (PID) Monitor calibrated to Isobutylene.

The results of the ground gas monitoring are presented in Table 2.3.

In addition to the raw data, results for each individual standpipe have been assessed with reference to guidance provided in BS8485:2015+A1:2019. Based on the initial peak measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) have been derived for each monitoring point, from which an individual Characteristic Situation (CS) can be determined.

2.6. SUMMARY OF MONITORING RESULTS

Table 2.3 presents the ground gas and groundwater monitoring results to date.



Table 2.3 Summary of Ground Gas Monitoring Results

WELL	DATE	CH ₄ PEAK (%V/V)	CH ₄ STEADY (%V/V)	CH ₄ Q _{hg} (l/hr)	CO ₂ PEAK (%V/V)	CO ₂ STEADY (%V/V)	CO ₂ Q _{hg} (l/hr)	O ₂ (%V/V)	MAX PID READINGS (PPM)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPON SE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
BH101	13/02/25	0.1	0.1	0.0001	0.6	0.2	0.0006	20.0	0.0	1018	Steady	0.1	0.1	2.00– 6.00	5.84	1.58
	27/02/25	0.1	0.1	0.0001	2.0	2.0	0.0020	19.5	0.0	1013	Rising	0.1	0.1		5.84	1.49
	12/03/25	0.1	0.1	0.0002	6.8	1.9	0.0136	19.3	0.0	998	Falling	0.2	0.1		5.84	1.63
	01/04/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.7	0.0	1019	Falling	0.1	0.1		5.84	1.69
	22/04/25	0.1	0.1	0.0001	0.8	0.8	0.0008	19.3	0.1	1007	Steady	0.1	0.1		5.84	1.67
	08/05/25	0.1	0.1	0.0001	0.4	0.2	0.0004	20.2	0.1	1016	Falling	0.1	0.1		5.84	1.82
	28/05/25	0.1	0.1	0.0001	0.9	0.3	0.0009	20.2	0.1	1005	Rising	0.1	0.1		5.84	1.14
	10/06/25	0.1	0.1	0.0003	2.3	1.6	0.0069	19.0	0.1	1007	Rising	0.3	0.1		5.84	1.51
	17/07/25	0.1	0.1	0.0001	2.2	2.1	0.0022	18.6	0.1	1007	Steady	0.1	0.1		5.84	1.45
	29/07/25	0.1	0.1	0.0001	0.6	0.2	0.0006	20.0	0.1	1017	Falling	0.1	0.1		5.84	1.42
	04/08/25	0.1	0.1	0.0001	0.9	0.3	0.0009	20.2	0.1	998	Falling	0.1	0.1		5.80	1.40
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.3	0.1	1008	Falling	0.1	0.1		5.80	1.40
BH102	13/02/25	0.1	0.1	0.0001	0.8	0.8	0.0008	17.4	0.0	1018	Steady	0.1	0.1	3.00– 8.00	6.97	5.81
	27/02/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.2	0.0	1013	Rising	0.1	0.1		6.97	5.84
	12/03/25	0.1	0.1	0.0001	0.9	0.9	0.0009	18.0	0.0	998	Falling	0.1	0.1		6.97	5.64
	01/04/25	0.1	0.1	0.0001	0.9	0.9	0.0009	18.6	0.6	1019	Falling	0.1	0.1		6.97	5.71
	22/04/25	0.1	0.1	0.0001	0.7	0.7	0.0007	19.1	1.8	1007	Steady	0.1	0.1		7.00	5.67
	08/05/25	0.1	0.1	0.0001	0.2	0.1	0.0002	20.3	0.4	1016	Falling	0.1	0.1		7.00	5.49
	28/05/25	0.1	0.1	0.0001	1.3	1.3	0.0013	18.7	0.1	1005	Rising	0.1	0.1		7.00	5.43
	10/06/25	0.1	0.1	0.0001	1.3	1.3	0.0013	18.5	0.2	1007	Rising	0.1	0.1		7.00	5.41
	17/07/25	0.1	0.1	0.0001	1.1	1.1	0.0011	19.0	0.2	1007	Steady	0.1	0.1		7.00	5.31
	29/07/25	0.1	0.1	0.0001	0.9	0.8	0.0009	18.6	0.2	1017	Falling	0.1	0.1		7.00	5.31
	04/08/25	0.1	0.1	0.0001	0.9	0.9	0.0009	18.0	0.2	998	Falling	0.1	0.1		7.00	5.31
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.0	0.4	1008	Falling	0.1	0.1		7.00	5.31
BH103	13/02/25	0.1	0.1	0.0001	0.9	0.8	0.0009	18.6	0.0	1018	Steady	0.1	0.1	0.50– 1.50	1.51	Dry
	27/02/25	0.1	0.1	0.0001	1.5	1.3	0.0015	18.6	0.0	1013	Rising	0.1	0.1		1.51	Dry
	12/03/25	0.2	0.2	0.0002	2.9	2.9	0.0029	16.6	0.0	998	Falling	0.1	0.1		1.51	Dry
	01/04/25	0.1	0.1	0.0001	3.7	3.7	0.0037	16.4	3.7	1019	Falling	0.1	0.1		1.51	Dry
	22/04/25	0.1	0.1	0.0001	3.6	2.2	0.0036	18.6	0.5	1007	Steady	0.1	0.1		1.51	Dry
	08/05/25	0.1	0.1	0.0001	4.2	4.2	0.0042	15.8	0.1	1016	Falling	0.1	0.1		1.51	Dry
	28/05/25	0.1	0.1	0.0001	3.8	2.8	0.0038	18.0	0.2	1005	Rising	0.1	0.1		1.51	Dry
	10/06/25	0.1	0.1	0.0001	18.5	17.5	0.0185	3.1	0.1	1007	Rising	0.1	0.1		1.51	Dry
	17/07/25	0.1	0.1	0.0001	3.6	2.2	0.0036	18.6	0.2	1007	Steady	0.1	0.1		1.50	Dry
	29/07/25	0.1	0.1	0.0001	3.6	2.2	0.0036	18.6	0.1	1017	Falling	0.1	0.1		1.50	Dry
	04/08/25	0.1	0.1	0.0001	3.6	2.2	0.0036	18.6	0.1	998	Falling	0.1	0.1		1.50	Dry
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	4.4	0.1	1008	Falling	0.1	0.1		1.50	Dry
BH104	13/02/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	0.0	1018	Steady	0.1	0.1	2.50– 5.00	5.10	2.29
	27/02/25	0.1	0.1	0.0001	5.0	5.0	0.005	12.6	0.0	1013	Rising	0.1	0.1		5.10	2.73
	12/03/25	0.1	0.1	0.0001	6.9	6.7	0.0069	17.4	0.0	998	Falling	0.1	0.1		5.10	2.64



WELL	DATE	CH ₄ PEAK (%V/V)	CH ₄ STEADY (%V/V)	CH ₄ Q _{hg} (l/hr)	CO ₂ PEAK (%V/V)	CO ₂ STEADY (%V/V)	CO ₂ Q _{hg} (l/hr)	O ₂ (%V/V)	MAX PID READINGS (PPM)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPON SE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
BH104	01/04/25	0.1	0.1	0.0001	6.9	6.9	0.0069	7.7	726	1019	Falling	0.1	0.1	2.50– 5.00	5.10	2.62
	22/04/25	0.1	0.1	0.0001	5.8	5.8	0.0058	9.5	1200	1007	Steady	0.1	0.1		5.10	2.78
	08/05/25	0.1	0.1	0.0001	6.6	6.6	0.0066	6.7	1753	1016	Falling	0.1	0.1		5.10	2.78
	28/05/25	0.1	0.1	0.0001	6.9	6.9	0.0069	7.2	3700	1005	Rising	0.1	0.1		5.10	2.51
	10/06/25	0.1	0.1	0.0001	10.2	8.0	0.0102	7.3	1468	1007	Rising	0.1	0.1		5.10	2.55
	17/07/25	0.1	0.1	0.0001	1.2	0.3	0.0012	19.8	1500	1007	Steady	0.1	0.1		5.10	2.40
	29/07/25	0.1	0.1	0.0001	6.9	6.9	0.0069	7.2	1468	1017	Falling	0.1	0.1		5.10	2.40
	04/08/25	0.1	0.1	0.0001	1.2	0.3	0.0012	19.8	3500	998	Falling	0.1	0.1		5.10	2.40
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	0.6	3500	1008	Falling	0.1	0.1		5.10	2.40
BH105	13/02/25	0.1	0.1	0.0001	0.6	0.6	0.0006	14.4	0.0	1018	Steady	0.1	0.1	2.00– 5.00	5.06	Dry
	27/02/25	0.1	0.1	0.0001	0.8	0.8	0.0008	10.8	0.0	1013	Rising	0.1	0.1		5.06	Dry
	12/03/25	0.1	0.1	0.0001	0.8	0.8	0.0008	11.8	0.0	998	Falling	0.1	0.1		5.06	Dry
	01/04/25	0.1	0.1	0.0001	0.9	0.9	0.0009	10.0	1.9	1019	Falling	0.1	0.1		5.06	Dry
	22/04/25	0.1	0.1	0.0001	1.0	0.9	0.0010	8.9	2.1	1007	Steady	0.1	0.1		5.06	Dry
	08/05/25	0.1	0.1	0.0001	1.0	0.9	0.0010	10.1	1.1	1016	Falling	0.1	0.1		5.06	Dry
	28/05/25	0.1	0.1	0.0001	1.3	1.1	0.0013	8.9	1.3	1006	Rising	0.1	0.1		5.06	Dry
	10/06/25	0.1	0.1	0.0001	1.4	1.3	0.0014	8.0	0.1	1008	Rising	0.1	0.1		5.06	Dry
	17/07/25	0.1	0.1	0.0001	0.8	0.8	0.0008	10.8	0.1	1008	Steady	0.1	0.1		5.00	Dry
	29/07/25	0.1	0.1	0.0001	1.0	0.9	0.0010	10.1	0.1	1018	Falling	0.1	0.1		5.00	Dry
	04/08/25	0.1	0.1	0.0001	0.8	0.8	0.0008	10.8	0.1	997	Falling	0.1	0.1		5.00	Dry
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	10.5	1.1	1010	Falling	0.1	0.1		5.00	Dry
BH106	13/02/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	0.0	1018	Steady	0.1	0.1	1.00– 2.00	2.14	1.46
	27/02/25	0.1	0.1	0.0001	0.2	0.2	0.0002	19.0	0.0	1013	Rising	0.1	0.1		2.14	1.38
	12/03/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.3	0.0	998	Falling	0.1	0.1		2.14	1.35
	01/04/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.0	0.0	1019	Falling	0.1	0.1		2.15	1.42
	22/04/25	0.1	0.1	0.0001	0.2	0.1	0.0002	20.0	1.1	1007	Steady	0.1	0.1		2.15	1.45
	08/05/25	0.1	0.1	0.0001	0.3	0.1	0.0003	20.1	1.1	1016	Falling	0.1	0.1		2.15	1.59
	28/05/25	0.1	0.1	0.0001	0.3	0.3	0.0003	19.5	0.8	1005	Rising	0.1	0.1		2.15	1.42
	10/06/25	0.1	0.1	0.0001	0.3	0.3	0.0003	19.4	2.1	1007	Rising	0.1	0.1		2.15	1.33
	17/07/25	0.1	0.1	0.0001	0.3	0.1	0.0003	20.1	2.1	1008	Steady	0.1	0.1		2.15	1.30
	29/07/25	0.1	0.1	0.0001	0.3	0.3	0.0003	19.4	3.0	1017	Falling	0.1	0.1		2.15	1.30
	04/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	2.0	997	Falling	0.1	0.1		2.15	1.30
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.6	1.6	1008	Falling	0.1	0.1		2.15	1.30
BH107	13/02/25	0.1	0.1	0.0121	0.1	0.1	0.0121	19.7	0.0	1018	Steady	12.1	0.1	2.00– 3.00	3.05	1.84
	27/02/25	0.1	0.1	0.0004	0.1	0.1	0.0004	19.8	0.0	1013	Rising	0.4	0.1		3.05	1.83
	12/03/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.2	0.0	998	Falling	0.1	0.1		3.05	1.46
	01/04/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	3.5	1019	Falling	0.1	0.1		3.05	1.47
	22/04/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.2	2.3	1007	Steady	0.1	0.1		3.05	1.51
	08/05/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	5.1	1016	Falling	0.1	0.1		3.05	1.66



WELL	DATE	CH ₄ PEAK (%V/V)	CH ₄ STEADY (%V/V)	CH ₄ Q _{hg} (l/hr)	CO ₂ PEAK (%V/V)	CO ₂ STEADY (%V/V)	CO ₂ Q _{hg} (l/hr)	O ₂ (%V/V)	MAX PID READINGS (PPM)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPON SE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
BH107	28/05/25	0.1	0.1	0.0061	0.1	0.1	0.0061	20.4	0.9	1005	Rising	6.1	0.1	2.00– 3.00	3.05	1.49
	10/06/25	0.1	0.1	0.0001	0.2	0.1	0.0002	19.8	1.9	1008	Rising	0.1	0.1		3.05	1.44
	17/07/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.2	2.0	1007	Steady	0.1	0.1		3.05	1.44
	29/07/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.2	1.9	1017	Falling	0.1	0.1		3.05	1.42
	04/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.8	1.5	998	Falling	0.1	0.1		3.05	1.42
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	1.4	5.1	1011	Falling	0.1	0.1		3.05	1.42
BH108	13/02/25	0.1	0.1	0.0001	0.8	0.8	0.0008	12.9	0.0	1018	Steady	0.1	0.1	0.60– 1.60	1.65	Dry
	27/02/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.3	0.0	1013	Rising	0.1	0.1		1.65	Dry
	12/03/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.3	0.0	998	Falling	0.1	0.1		1.65	Dry
	01/04/25	0.1	0.1	0.0001	1.7	1.7	0.0017	13.0	0.0	1019	Falling	0.1	0.1		1.65	Dry
	22/04/25	0.1	0.1	0.0001	2.2	2.2	0.0022	12.3	0.1	1007	Steady	0.1	0.1		1.65	Dry
	08/05/25	0.1	0.1	0.0001	2.4	2.4	0.0024	9.4	0.4	1016	Falling	0.1	0.1		1.65	Dry
	28/05/25	1.7	1.3	0.0017	3.1	3.0	0.0031	8.6	0.1	1005	Rising	0.1	0.1		1.65	Dry
	10/06/25	0.6	0.1	0.0006	3.1	3.1	0.0031	11.2	0.4	1007	Rising	0.1	0.1		1.65	Dry
	17/07/25	0.1	0.1	0.0001	2.2	2.2	0.0022	12.8	0.4	1007	Steady	0.1	0.1		1.63	Dry
	29/07/25	1.7	1.3	0.0017	3.1	3.0	0.0031	8.6	0.4	1017	Falling	0.1	0.1		1.63	Dry
	04/08/25	1.7	1.3	0.0017	3.1	3.0	0.0031	8.6	0.4	998	Falling	0.1	0.1		1.63	Dry
	12/08/25	1.7	1.3	0.0017	7.4	7.4	0.0074	3.3	0.4	1008	Falling	0.1	0.1		1.63	Dry
BH109	13/02/25	0.1	0.1	0.0001	0.6	0.3	0.0006	19.8	0.0	1018	Steady	0.1	0.1	3.00– 8.00	5.82	2.46
	27/02/25	0.1	0.1	0.0001	0.3	0.2	0.0003	20.1	0.0	1013	Rising	0.1	0.1		5.82	2.79
	12/03/25	0.1	0.1	0.0004	1.2	0.3	0.0048	19.8	0.0	998	Falling	0.4	0.1		5.82	2.56
	01/04/25	0.1	0.1	0.0001	2.4	2.3	0.0024	13.0	0.1	1019	Falling	0.1	0.1		5.82	3.02
	22/04/25	0.1	0.1	0.0001	0.6	0.2	0.0006	20.2	0.1	1007	Steady	0.1	0.1		5.82	3.01
	08/05/25	0.1	0.1	0.0001	0.5	0.3	0.0005	20.3	0.3	1016	Falling	0.1	0.1		5.82	3.21
	28/05/25	0.1	0.1	0.0001	0.7	0.5	0.0007	20.0	0.1	1005	Rising	0.1	0.1		5.82	3.05
	10/06/25	0.1	0.1	0.0001	0.5	0.3	0.0005	17.9	0.1	1007	Rising	0.1	0.1		5.82	2.75
	17/07/25	0.1	0.1	0.0001	0.5	0.4	0.0005	17.7	0.1	1007	Steady	0.1	0.1		5.82	2.75
	29/07/25	0.1	0.1	0.0001	0.6	0.2	0.0006	20.2	0.1	1017	Falling	0.1	0.1		5.82	2.75
	04/08/25	0.1	0.1	0.0001	0.3	0.2	0.0003	20.1	0.1	998	Falling	0.1	0.1		5.82	2.75
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	19.2	0.1	1008	Falling	0.1	0.1		5.82	2.75
BH110	13/02/25	0.1	0.1	0.0961	0.4	0.4	0.3844	18.3	0.0	1018	Steady	96.1	0.1	3.00– 5.00	4.63	3.48
	27/02/25	0.1	0.1	0.0001	0.6	0.6	0.0006	16.7	0.0	1013	Rising	0.1	0.1		4.63	3.13
	12/03/25	0.1	0.1	0.0001	0.6	0.5	0.0006	18.3	0.0	998	Falling	0.1	0.1		5.82	3.02
	01/04/25	0.1	0.1	0.0001	0.6	0.5	0.0005	18.6	3.0	1019	Falling	0.1	0.1		5.82	3.05
	22/04/25	0.1	0.1	0.0001	0.6	0.6	0.0006	18.8	1.1	1007	Steady	0.1	0.1		5.82	3.02
	08/05/25	0.1	0.1	0.0001	0.6	0.5	0.0006	19.4	0.4	1016	Falling	0.1	0.1		5.82	3.12
	28/05/25	0.1	0.1	0.0001	1.3	1.1	0.0013	14.1	0.4	1005	Rising	0.1	0.1		5.82	3.11
	10/06/25	0.1	0.1	0.0001	0.6	0.6	0.0006	17.9	0.4	1009	Rising	0.1	0.1		5.82	3.24
	17/07/25	0.1	0.1	0.0001	0.6	0.5	0.0013	17.7	1.4	1007	Steady	0.1	0.1		5.82	3.24



WELL	DATE	CH ₄ PEAK (%V/V)	CH ₄ STEADY (%V/V)	CH ₄ Q _{hg} (l/hr)	CO ₂ PEAK (%V/V)	CO ₂ STEADY (%V/V)	CO ₂ Q _{hg} (l/hr)	O ₂ (%V/V)	MAX PID READINGS (PPM)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPON SE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
BH110	29/07/25	0.1	0.1	0.0001	0.6	0.6	0.0006	17.9	0.4	1007	Falling	0.1	0.1	3.00– 5.00	5.82	3.24
	04/08/25	0.1	0.1	0.0001	1.3	1.3	0.0013	18.5	0.2	997	Falling	0.1	0.1		5.82	3.24
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	18.5	0.3	1010	Falling	0.1	0.1		5.82	3.24
BH111	13/02/25	0.1	0.1	0.0001	0.4	0.1	0.0004	20.1	0.0	1018	Steady	0.1	0.1	2.00– 6.00	5.29	4.62
	27/02/25	0.1	0.1	0.0001	0.7	0.3	0.0007	19.1	0.0	1014	Rising	0.1	0.1		5.29	4.70
	12/03/25	0.1	0.1	0.0001	1.5	0.5	0.0015	18.7	0.0	997	Falling	0.1	0.1		5.29	4.49
	01/04/25	0.1	0.1	0.0001	2.2	2.2	0.0022	12.8	0.4	1019	Falling	0.1	0.1		5.29	4.51
	22/04/25	0.1	0.1	0.0001	2.9	2.9	0.0029	7.8	0.2	1007	Steady	0.1	0.1		5.29	4.50
	08/05/25	0.1	0.1	0.0001	3.0	3.0	0.0030	6.1	0.4	1016	Falling	0.1	0.1		5.29	4.61
	28/05/25	0.1	0.1	0.0001	6.6	6.5	0.0066	4.1	1.6	1005	Rising	0.1	0.1		5.29	4.93
	10/06/25	0.1	0.1	0.0001	3.2	3.1	0.0032	7.0	0.4	1007	Rising	0.1	0.1		5.29	4.71
	17/07/25	0.1	0.1	0.0001	3.1	3.0	0.0031	12.0	0.5	1007	Steady	0.1	0.1		5.29	4.50
	29/07/25	0.1	0.1	0.0001	0.7	0.3	0.0007	19.1	0.4	1017	Falling	0.1	0.1		5.29	4.50
	04/08/25	0.1	0.1	0.0001	3.0	3.0	0.0030	6.1	0.4	998	Falling	0.1	0.1		5.29	4.50
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	4.9	0.5	1008	Falling	0.1	0.1		5.29	4.50
BH112	13/02/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.1	0.0	1018	Steady	0.1	0.1	4.00– 8.00	7.38	2.36
	27/02/25	0.1	0.1	0.0002	0.1	0.1	0.0002	20.0	0.0	1013	Rising	0.2	0.1		7.38	3.71
	12/03/25	0.1	0.1	0.0001	0.2	0.1	0.0002	20.1	0.0	998	Falling	0.1	0.1		7.38	3.76
	01/04/25	0.1	0.1	0.0001	0.7	0.7	0.0007	19.7	1.7	1019	Falling	0.1	0.1		7.38	3.86
	22/04/25	0.1	0.1	0.0001	0.8	0.7	0.0008	20.0	0.2	1007	Steady	0.1	0.1		7.38	3.87
	08/05/25	0.1	0.1	0.0001	0.4	0.3	0.0004	20.4	1.3	1016	Falling	0.1	0.1		7.38	4.02
	28/05/25	0.1	0.1	0.0001	0.4	0.4	0.0004	20.4	0.9	1006	Rising	0.1	0.1		7.38	3.74
	10/06/25	0.1	0.1	0.0001	0.4	0.4	0.0004	20.4	0.7	1007	Rising	0.1	0.1		7.38	3.59
	17/07/25	0.1	0.1	0.0001	0.3	0.3	0.0003	20.2	1.0	1007	Steady	0.1	0.1		7.35	3.57
	29/07/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.1	0.7	1017	Falling	0.1	0.1		7.35	3.55
	04/08/25	0.1	0.1	0.0001	0.2	0.1	0.0002	20.1	0.5	998	Falling	0.1	0.1		7.35	3.55
	12/08/25	0.1	0.1	0.0001	0.1	0.1	0.0001	20.1	0.8	1008	Falling	0.1	0.1		7.35	3.55

Notes

CIRIA Characteristic Situation

Q_{hg}

CS1

<0.07

Typical Max CO₂ <5 % Typical Max CH₄ <1 %

Values in BOLD exceed CS1 Thresholds

CS2

<0.7

Flow rate not to exceed 70 l/hr otherwise consider increase to CS3

Values in BLUE denote water above level of response zone (flooded)

CS3

<3.5

CS4

<15

Quantitative Risk Assessment required to evaluate scope of protective measures



2.7. GROUNDWATER

The water level within several monitoring wells was recorded to be above or within 0.10 m of the top of the response zone (flooded) on a number of occasions, as summarised in Table 2.4, thus rendering some of the monitoring data unreliable. These wells were classed as “flooded”. Each time a flooded well was encountered, the well was bailed and left to re-equilibrate. Wells were re-monitored after a period of 20-30 minutes.

Table 2.4 Flooded Monitoring Well Data

WELL	VISITS											
	1	2	3	4	5	6	7	8	9	10	11	12
BH101	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BH102	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH103	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH104	Y	N/A	N/A	N/A	N/A	N/A	Y	Y	Y	Y	Y	Y
BH105	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH106	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH107	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
BH108	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH109	Y	Y	Y	Y	Y	N/A	Y	Y	Y	Y	Y	Y
BH110	N/A	N/A	Y	Y	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH111	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BH112	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Within the remaining monitoring wells, groundwater levels were observed to generally remain steady throughout the monitoring period but varied between wells. Therefore, the water levels are likely indicative of groundwater flow present through the site.

2.8. BAROMETRIC PRESSURE

Visits 3, 5, 7, 9, and 11 were undertaken during periods of relatively low pressure, with the lowest pressure recorded during Visit 3 at 997m bar. Visits 3 and 11 were undertaken during periods of low falling pressure; Visits 5 and 9 during periods of steady low pressure; and Visit 7 during a period of rising low pressure.

Visits 4 and 10 were undertaken during a period of relatively high pressure, with the highest pressure recorded during both visits at 1019 mbar. Both visits were also undertaken during periods of falling high pressure.

Visits 1, 2, 6, 8, and 12 were undertaken during periods of relatively steady pressure, with highest pressures recorded to be during Visit 2 at 1015 mbar and the lowest pressure recorded during Visit 8 at 1009 mbar. Visits 2 and 8 were undertaken during periods of rising pressure, Visits 6 and 12 during periods of falling pressure, and Visit 1 during a period of steady pressure.



2.9. GAS FLOW

Throughout the monitoring period, flow rates were predominantly recorded to be 0.1 l/hr (limit of detection of the analyser) within the majority of wells.

However, three instances of elevated peak flow rates were recorded in BH107, ranging between 0.4 l/hr (Visit 2) and 12.1 l/hr (Visit 1). Singular instances of elevated peak flow rates were also recorded in BH101, BH109, BH110, and BH112 at 0.2 l/hr, 0.4l/hr, 96.1l/hr and 0.2l/hr, respectively.

It should be noted that all steady flow rates were recorded to be 0.1 l/hr for all boreholes, suggesting the elevated peak flow rates were likely resultant from high groundwater levels causing compression the well with an initial release of compressed gas following monitoring, rather than been reflective of a gas source.

2.10. GAS CONCENTRATIONS

The maximum methane value recorded within the monitoring wells was 1.7% v/v in BH108 on four occasions (Visits 7, 10, 11, and 12). However, the majority of locations recorded a peak and steady methane value of 0.1% v/v in the remainder of monitoring wells.

Carbon dioxide was typically recorded at concentrations ranging from 0.1% v/v to 4.9% v/v (BH111). However, multiple instances of concentrations of carbon dioxide exceeding the 5% v/v threshold have been identified in four locations (BH101, BH103, BH104, and BH108) ranging between 5.0% v/v to a maximum peak reading of 18.5% v/v (BH103).

VOCs were typically recorded at concentrations ranging from 0.0 ppm (limit of detection of the analyser) to 5.1 ppm (BH107). However, within BH104, which was located in close proximity to the enamel slurry tank (considered to be the primary source of identified VOC impact on the site), elevated concentrations of VOCs were identified, ranging from 726 ppm (Visit 4) to 3700 ppm (Visit 7). This indicates that volatile vapours from the identified impact source have been slowly migrating through the natural stratum and accumulating within the monitoring well.

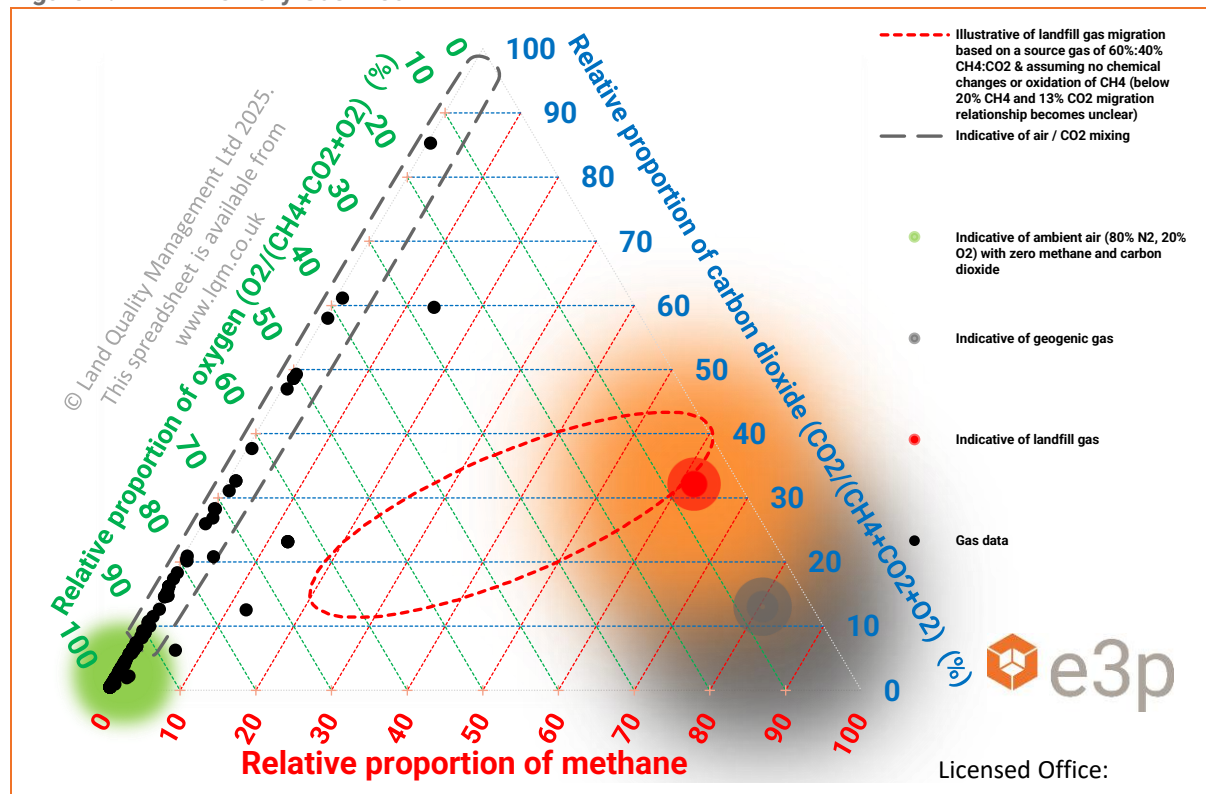
2.11. TERNARY PLOT FOR GROUND GAS

A ternary gas plot is a triangular plot of three variable which equal 100%. They allow the composition of gas to be identified and can help to identify the potential source of gas. As carbon dioxide is present in natural soils (such as Glacial Till), this can lead to uncertainty about whether it is necessary to increase the gas regime. On this basis, a ternary plot has been used as an assessment tool for the gas monitoring data to identify if there is a true risk.

Figure 2.1 shows the ternary gas plot for the gas monitoring data.



Figure 2.1 Ternary Gas Plot



The ternary gas plot indicates the majority of the ground gas monitoring results have standard oxygen and generally low carbon dioxide concentrations, with limited occasions of elevated carbon dioxide concentrations above 5%, and elevated methane above 1%, which is indicative of a natural source (ambient air - green area on the ternary plot) and air/CO₂ mixing.

2.12. RADON RISK

The site is in an area where less than 1% of homes are above the Radon Action Level, therefore radon protection measures are not required to be incorporated into any proposed new dwellings.

All sites registered from 1st December 2022 onwards will have been assessed against the updated radon maps by NHBC and will be required to have radon protection measures installed in accordance with the updated mapping.

Figure 2.2 indicates that based on the less than 1% area observed, the site falls under a Radon Potential Class of 1 within the User Guide for the HPA-BGS Joint Radon Potential Dataset for Great Britain (Ref: IR/11/044, dated 2011). A Radon potential class of 1 indicates that no Radon Measures are required in all new dwellings, as shown in Figure 2.3.



Figure 2.2 Radon Affected Area Potential Class

Radon Potential Class*	Is the property in a Radon Affected Area?	Additional information
1	No	The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). The property is not in a radon affected area.
2	Yes	The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
3	Yes	The property is in an Intermediate probability radon area (3 to 5% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
4	Yes	The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
5	Yes	The property is in a Higher probability radon area (10 to 30% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
6	Yes	The property is in a Higher probability radon area (more than 30% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.

*The Radon Potential Class number should not be included in answers.

Source: User Guide for the HPA-BGS Joint Radon Potential Dataset for Great Britain (Ref: IR/11/044, dated 2011)

Figure 2.3 Radon Affected Area Measures Required

Radon Potential Class*	What level of radon protective measures are required for new buildings in England and Wales?	What level of radon protective measures are required for new dwellings in Scotland?
1	None**	None**
2	None	Stage 1
3	Basic	Stage 1
4	Basic	Stage 1
5	Full	Stage 2
6	Full	Stage 2

*The Radon Potential Class number should not be included in answers.

**in 2008 HPA recommended that building regulations be amended to ensure that all new buildings, extensions etc include basic radon protective measures. At the time of writing, relevant UK authorities were considering this advice.*

Basic radon protection measures are required to be installed as Section 5.1 of BRE211_2015: Radon Guidance on protective measures for new buildings.



3. CONCLUSION

The determined Characteristic Situation for each standpipe, based on peak flow rate, is presented in Table 3.1.

Table 3.1 Gas Profile and Location

WELL	DEPTH TO WATER (m bgl)	MAX FLOW (l/hr)	MAX CH ₄ (%V/V)	MAX CH ₄ Q _{hg} (l/hr)	MAX CO ₂ (%V/V)	MAX CO ₂ Q _{hg} (l/hr)	MAX VAPOUR (PPM)	CHARACTERISTIC SITUATION
BH101	1.14–1.82	0.3	0.1	0.0003	6.8	0.0136	0.1	Flooded
BH102	5.31–5.84	0.1	0.1	0.0001	1.3	0.0013	1.8	CS1
BH103	Dry	0.1	0.2	0.0002	18.5	0.0185	3.7	CS1
BH104*	2.29–2.78	0.1	0.1	0.0001	6.9	0.0069	3700	CS1 / Vapour
BH105	Dry	0.1	0.1	0.0001	1.4	0.0014	2.1	CS1
BH106	1.30–1.46	0.1	0.1	0.0001	0.3	0.0003	3.0	CS1
BH107	1.42–1.84	12.1	0.1	0.0121	0.2	0.0121	5.1	Flooded
BH108	Dry	0.1	1.7	0.0017	3.1	0.0031	0.4	CS1
BH109*	2.46–2.75	0.1	0.1	0.0001	0.5	0.0005	0.3	CS1
BH110*	3.02–3.48	96.1	0.1	0.0961	1.3	0.3844	3.0	CS1#
BH111	4.49–4.71	0.1	0.1	0.0001	6.6	0.0066	1.6	CS1
BH112	2.36–4.02	0.2	0.1	0.0002	0.8	0.0008	1.7	Flooded

Notes: * Flooded monitoring well data omitted. # CS classification reduced to CS1 due to peak flow rate caused by high groundwater levels.

Based upon the ground gas monitoring data, the majority of the site is classified within Characteristic Situation 1 (CS1) – Very Low Gas Risk due to GSV levels for methane and carbon dioxide being below the CS1 threshold of 0.07 l/hr.

It is noted that elevated concentrations of carbon dioxide above 5% v/v and elevated concentrations of methane above 1% v/v have been identified. However, these are considered to be isolated occurrences and not a true representation of the ground gas regime, since no persistent gas source capable of creating a gas risk has been identified on-site, and no genuine gas flow rate has been recorded during the monitoring period.

The ternary gas plot indicates the majority of the ground gas monitoring results have standard oxygen and generally low carbon dioxide concentrations, with limited occasions of elevated carbon dioxide Concentrations above 5%, and elevated methane above 1%, which is indicative of a natural source (ambient air - green area on the ternary plot) and air/CO₂ mixing.

In relation to borehole BH110 which recorded an elevated peak flow rate of 96.1 l/hr during Visit 1; this would initially be classified as CS3. However, as peak, and steady flow rates remained at 0.1 l/hr during all further monitoring visits, this elevated peak flow rate is considered likely to be the result of high groundwater levels causing compression within the well with an initial release of compressed gas following monitoring. Given that subsequent monitoring of BH110 did not identify any elevated gas flow rates or elevated concentrations of methane or carbon dioxide, a CS1 classification is considered appropriate.

However, further consideration will be required in areas where elevated volatile contaminants have been identified within soils, groundwater, and monitoring wells (i.e. BH104) across the southern boundary of the site. In these areas, vapour resistant membranes may be required to be installed during the build phase for any proposed buildings situated within the immediate vicinity of the impacted soils.



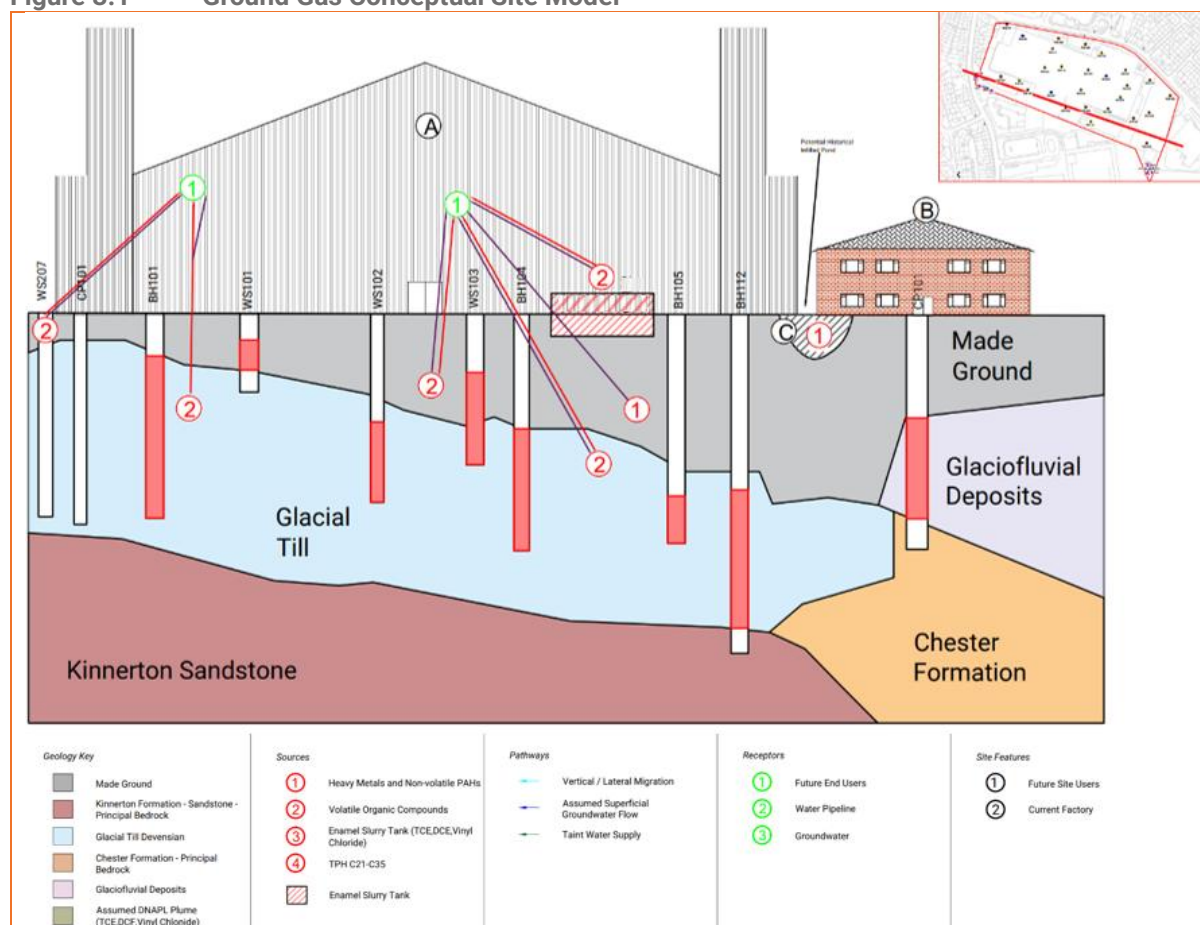
The specific design of the vapour membranes including affected plots and mitigation measures will be required to be completed as a separate exercise using the detailed development layout and in consideration of the remediation scheme for the VOC impact and treatment.

A Radon Class 1 has been applied to the site; therefore no Radon protective measures are required in the construction of new residential dwellings.

It is recommended that the full ground gas assessment and recommended protection measures (if applicable) are agreed with the local authority and regulators prior to their adoption on-site. Furthermore, all protection measures adopted should be validated by a suitably qualified engineer.

A detailed Gas Protection Design Report will also be required for plots considered to be at risk from hazardous vapour gas ingress.

Figure 3.1 Ground Gas Conceptual Site Model



END OF REPORT

Appendix I: Limitations





GENERAL

This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P "Terms of Business" or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.

The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects' responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.

E3P does not warrant work/data undertaken/provided by others.



INTRUSIVE INVESTIGATION REPORTS

Coverage: The following report titles (or combination) may cover this category of work: Geoenvironmental Site Investigation; Geotechnical Assessment; GIR (Ground Investigation Reports); Preliminary Environmental And Geotechnical Risk Assessment; Preliminary Summary; Coal Mining Risk Assessment, Ground Gas Addendum; and, Geotechnical Risk Register.

The investigation has been undertaken to provide information concerning either:

- The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
- Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

Unless otherwise specified in the scope of works, 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. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

For geotechnical investigations, the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation, and which have therefore not been taken into account in this report

The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, E3P has used reasonable skill and care to extrapolate conditions between these points based on assumptions to develop our interpretation and conclusions.

The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation and at the time of the investigation.

Conditions can change between investigation points both spatially and over time and these interpretations should therefore be considered indicative. The assessment of extreme weather events and their impact on ground conditions is not within the scope of E3P's work

The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of



any future changes or amendments to these values. Specific assumptions associated with the risk assessment process have been outlined within the body or associated appendix of the report.

Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

Where soil contamination concentrations recorded as part of this investigation are used for commentary on the potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed and the waste classification and any subsequent disposal option agreed upon with licenced subcontractors and/or the relevant regulators.

The results of the asbestos testing are factually reported, and interpretation is given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.

If costs have been included in relation to additional site works, and/or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIATION AND ENABLING WORK STRATEGY REPORTS

These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected based on the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models, or associated guidance.

The outputs of the Detailed Quantitative Risk Assessments are based upon the manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

Before adoption on-site, assessment criteria will need to be discussed and agreed upon with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales



associated with the Regulatory Authority engagement are not within the control of E3P. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

E3P does not accept liability for any subcontract work that has not been completed in strict accordance with an approved E3P Remediation and Enabling Works Strategy.

GEOTECHNICAL DESIGN REPORT (GDR)

The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS AND BUILD PHASE MITIGATION)

These reports are factual and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of earthworks or remedial works.

The data is presented and will be compared with assessment criteria.

Appendix II: Glossary





ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
MRA	Mining Remediation Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAP L	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAP L	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation



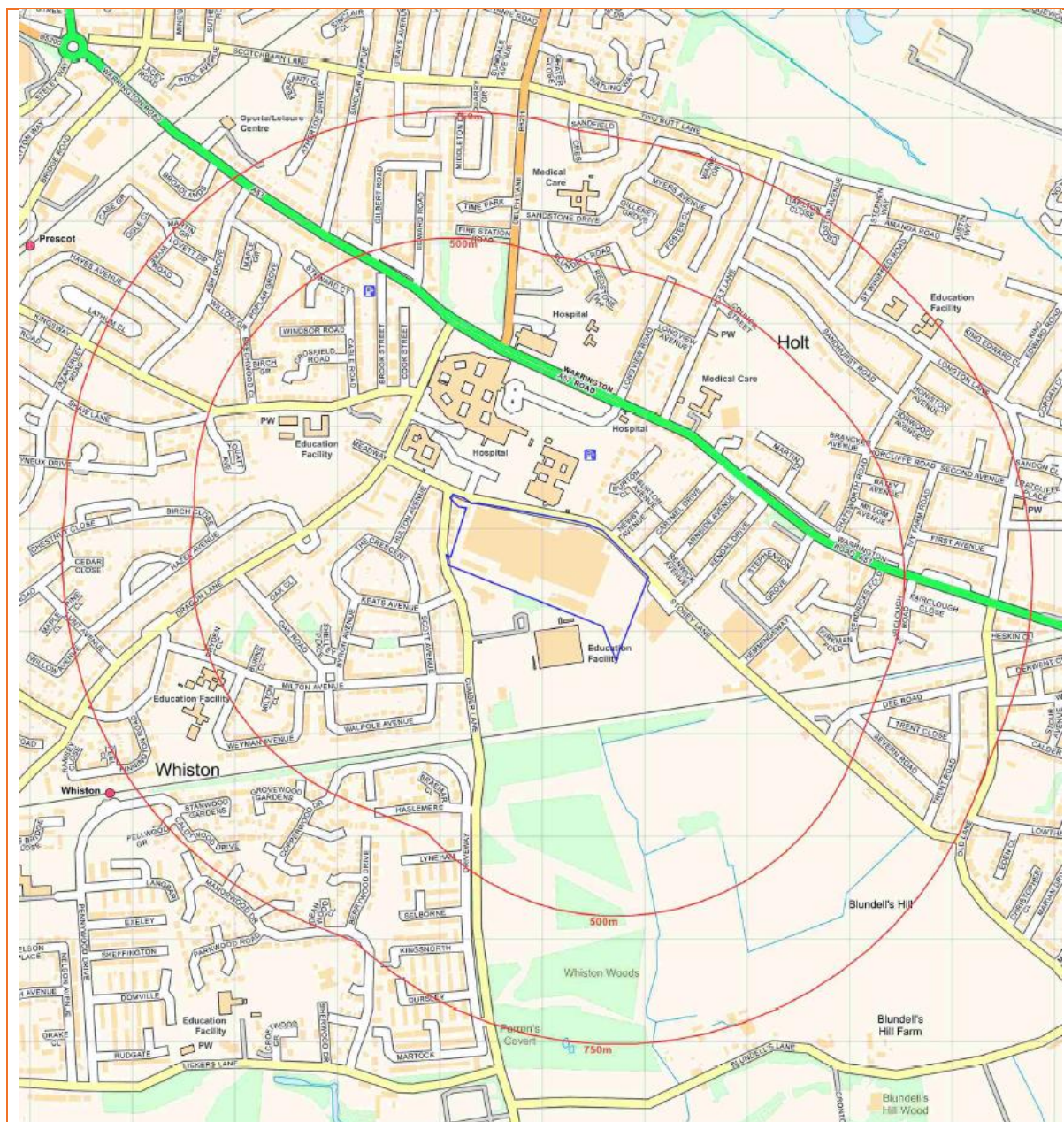
MCV	Moisture condition value	WRAP	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	SSRT	Site Specific Remediation Target
PSD	Particle Size Distribution	DD	Dry Density
CL:AI RE	Contaminated Applications in Land: Real Environments	Mc	Moisture Content
ρ	Bulk Density	GPR	Ground Penetrating Radar
NDP	Nuclear Density Probe	FFL	Finished Floor Level
LEL	Lower Explosive Limit	UKWIR	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	LOD	Limit of Detection
PFAS	Per- and Poly-Fluorinated Substances	PFOA	Perfluorooctanoic Acid

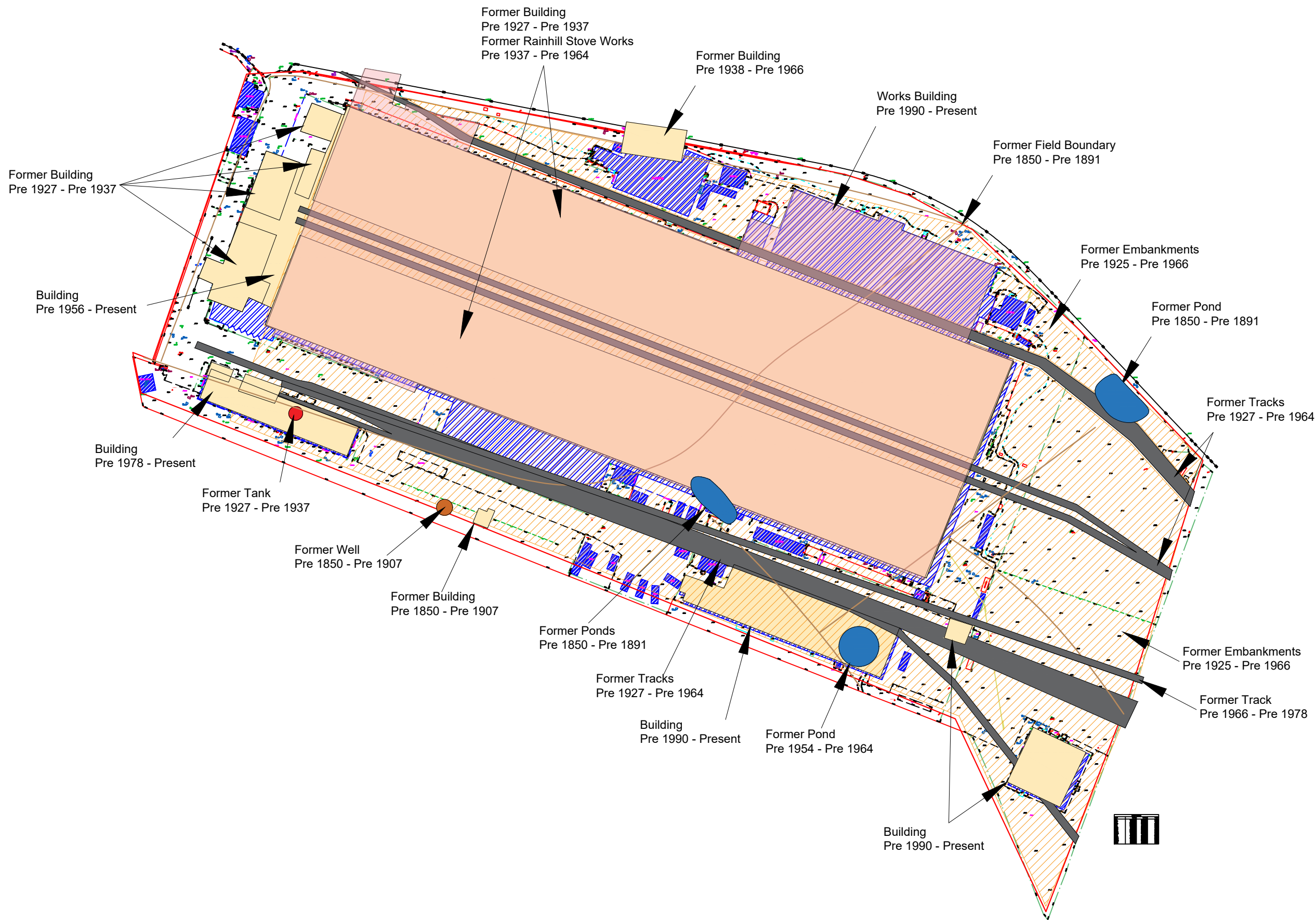
Appendix III: Drawings





DRAWING 17-500-001 – Site Location Plan





Historical Features

- Former/Present Buildings
- Former Tank
- Former Ponds
- Former Tracks
- Works
- Former Well

Notes:

P1	REVC	17.05.2024	EB	MW	MW
P1	REVB	13.05.2024	EB	ID	MW
P1	REVA	05.03.2024	OW	MW	BH
Phase	Issue	Date	Drawn	Checked	PM

Client:

Glen Dimplex

Job Title:

Prescott

Job No:

17-500

Drawing No:

003

Date:

17.05.2024

Scale:

NTS@ A3

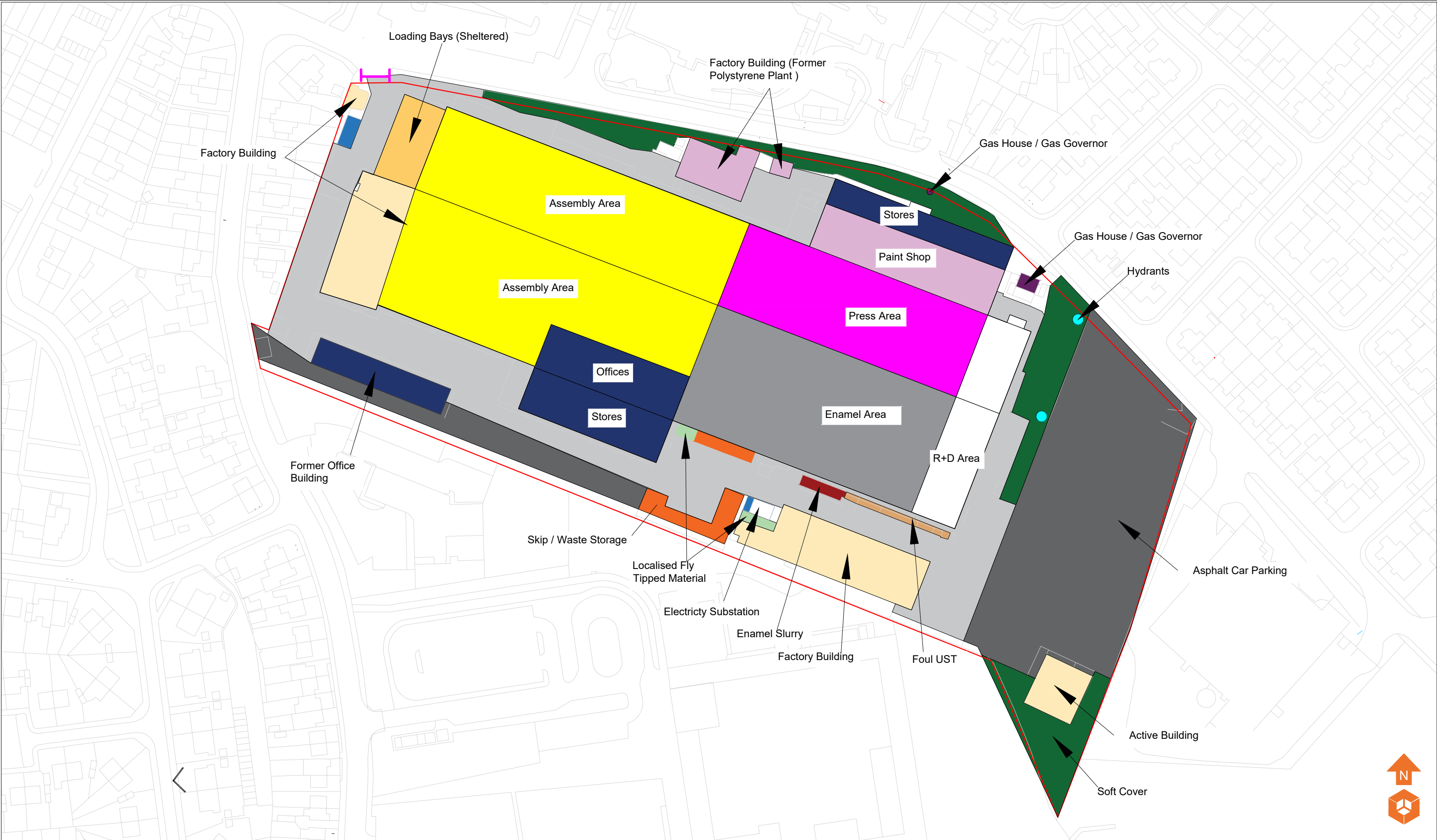
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Historical Features Plan

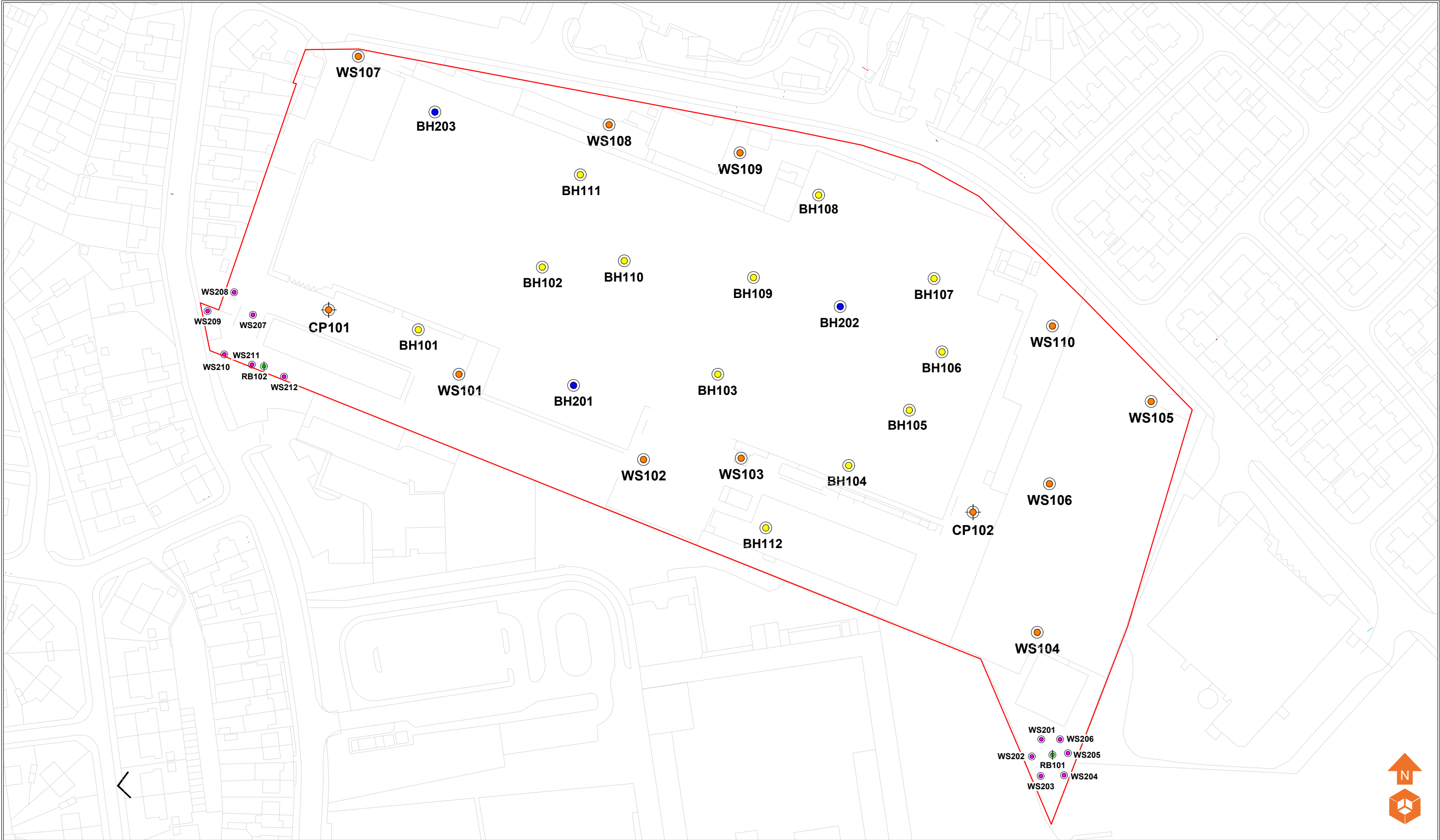


Environmental Engineering
Partnership Ltd
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Website: www.e3p.co.uk

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Site Features Factory Building (Active) Loading Bays (Sheltered) Skip / Waste Storage Vacant Buildings Asphalt Car Parking Concrete Roadways Electricity Substation (active) Hydrants Gas House / Gas Governor Soft Cover Ennamel Slurry UST Loalised Fly Tipped Material Foul UST Site Entrance (Security Manned) Assembly Area Press Area Enamel Area Paint Shop Office / Stores	Notes:						Client: Glen Dimplex		Job No: 17-500	Date: 21.03.2025	e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk																								
	<table><tr><td>P1</td><td>REVC</td><td>21.03.2025</td><td>TG</td><td>ID</td><td>MW</td></tr><tr><td>P1</td><td>REVB</td><td>13.05.2024</td><td>EB</td><td>ID</td><td>MW</td></tr><tr><td>P1</td><td>REVA</td><td>22.03.2024</td><td>EB</td><td>MW</td><td>MW</td></tr><tr><td>Phase</td><td>Issue</td><td>Date</td><td>Drawn</td><td>Checked</td><td>PM</td></tr></table>						P1	REVC	21.03.2025	TG		ID	MW	P1	REVB	13.05.2024	EB	ID	MW	P1	REVA	22.03.2024	EB	MW	MW	Phase	Issue	Date	Drawn	Checked	PM	Job Title: Prescott		Drawing No: 004	Scale: NTS@ A3
	P1	REVC	21.03.2025	TG	ID	MW																													
P1	REVB	13.05.2024	EB	ID	MW																														
P1	REVA	22.03.2024	EB	MW	MW																														
Phase	Issue	Date	Drawn	Checked	PM																														
Drawing Title: Site Features Plan								The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.																											



- Location Symbols
- Approximate Window Sample Borehole Location (E3P February 2024)
 - Approximate Cable Percussive Borehole Location (E3P February 2024)
 - Approximate Window Sample Borehole Location (WS200 Series)
 - Approximate Rotary Borehole Location
 - Approximate Borehole Location (BH100 Series)
 - Approximate Borehole Location (BH200 Series)

Notes:

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P1	REVC	07.10.2024	OW	ID	MW
P1	REVB	13.05.2024	EB	ID	MW
P1	REVA	22.03.2024	EB	ID	MW
Phase	Issue	Date	Drawn	Checked	PM

Client:

Glen Dimplex

Job Title:

Prescott

Job No:

17-500

Drawing No:

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Date:

05.02.2025

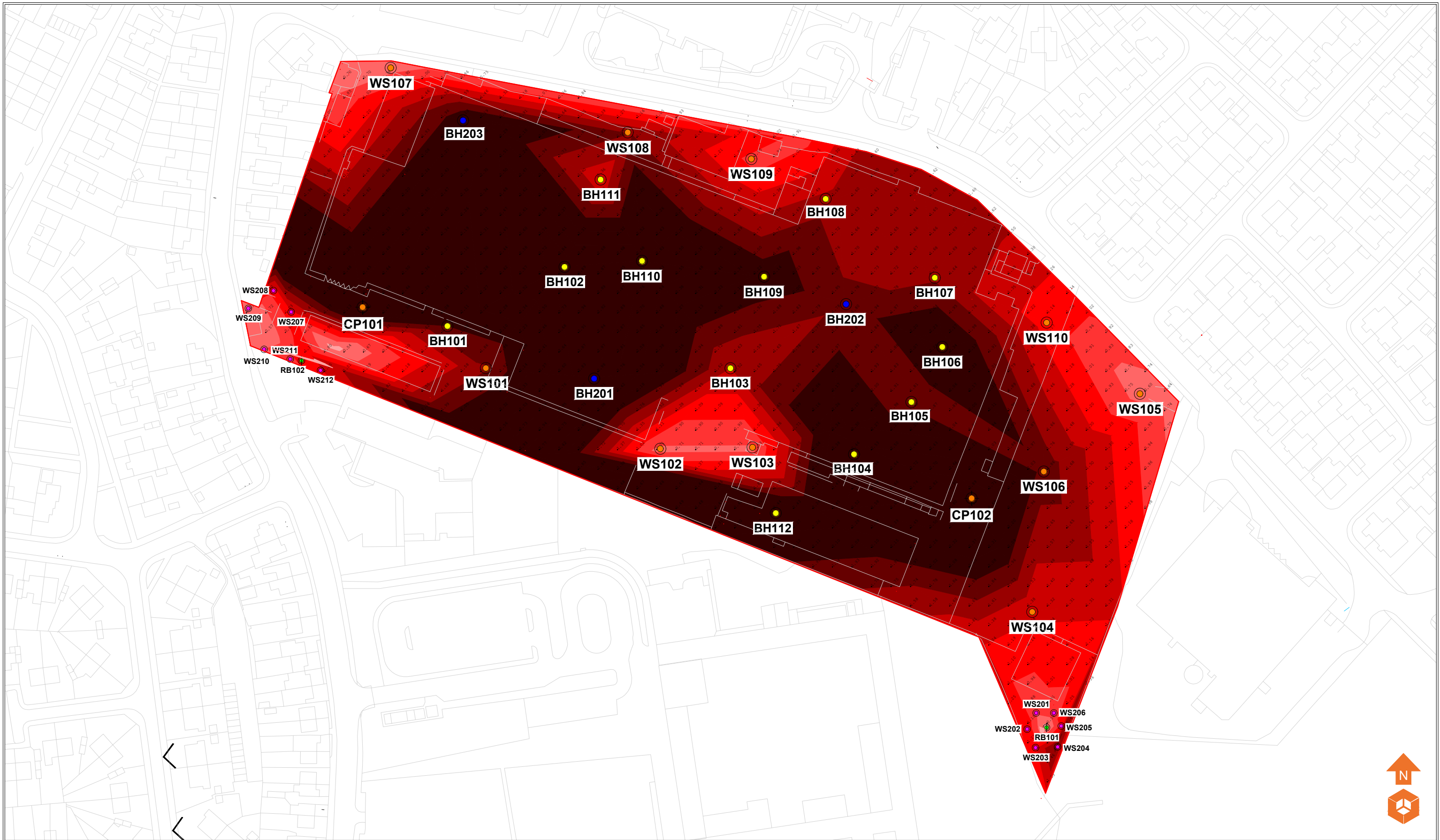
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- Location Symbols**
- WS107: Approximate Window Sample Borehole Location (E3P February 2024)
 - BS108: Approximate Cable Percussive Borehole Location (E3P February 2024)
 - BS109: Approximate Window Sample Borehole Location (WS200 Series)
 - BS110: Approximate Rotary Borehole Location
 - BS111: Approximate Borehole Location (BH100 Series)
 - BS112: Approximate Borehole Location (BH200 Series)

Made Ground Depth (m)

0.50 - 0.74m
0.75 - 0.99m
1.00 - 1.24m
1.25 - 1.49m
1.50 - 1.74m
1.75 - 1.99m
2.00m

Notes:

P1	REVE	05.02.2025	OW	ID	MW
P1	REVD	03.10.2024	OW	MW	MW
P1	REVC	21.05.2024	OW	MW	MW
P1	REVB	13.05.2024	EB	ID	MW
P1	REVA	25.03.2024	EB	ID	MW
Phase	Issue	Date	Drawn	Checked	PM

Client:

Glen Dimplex

Job Title:

Prescott

Job No:

17-500

Drawing No:

006

Date:

05.02.2025

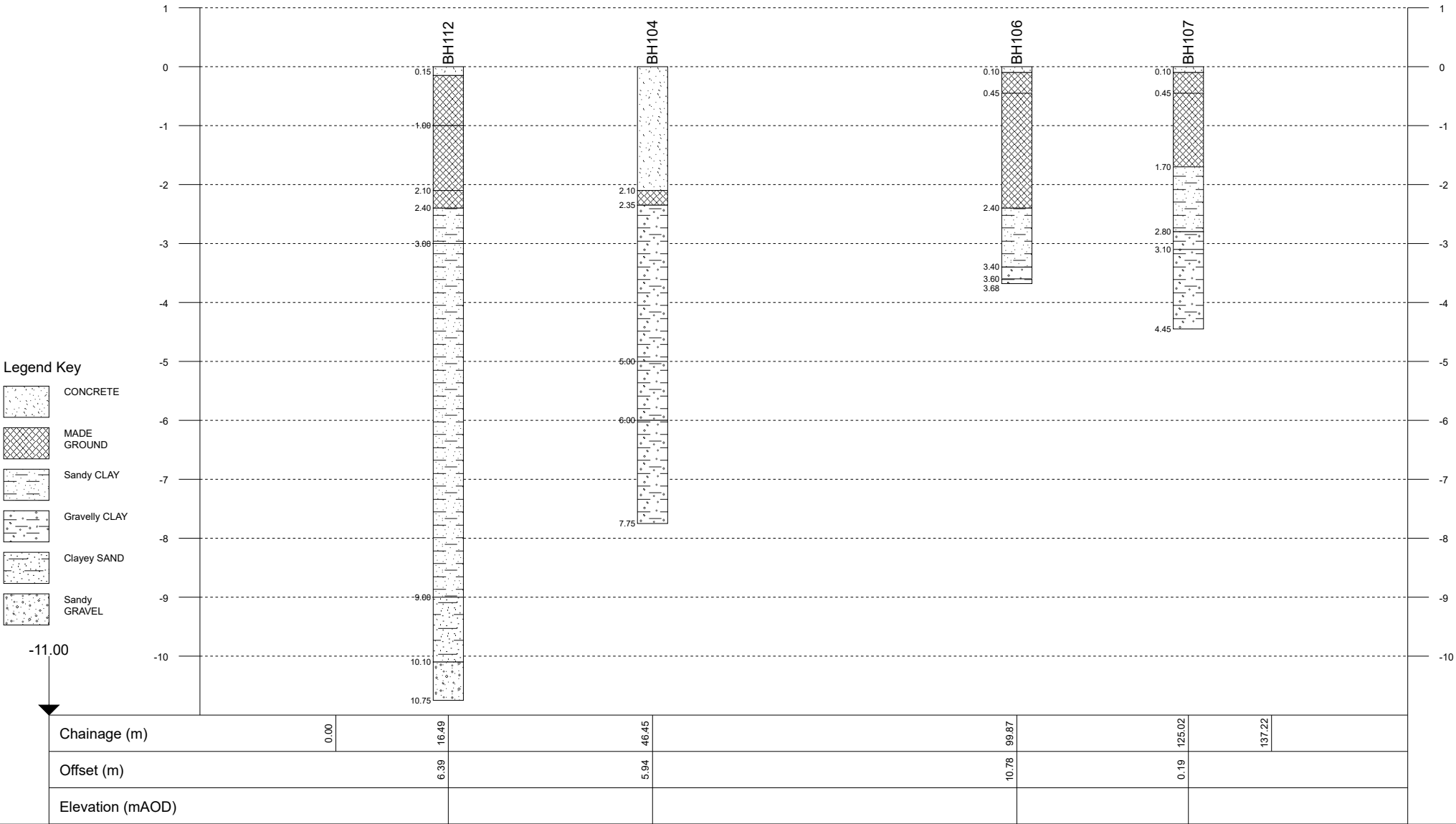
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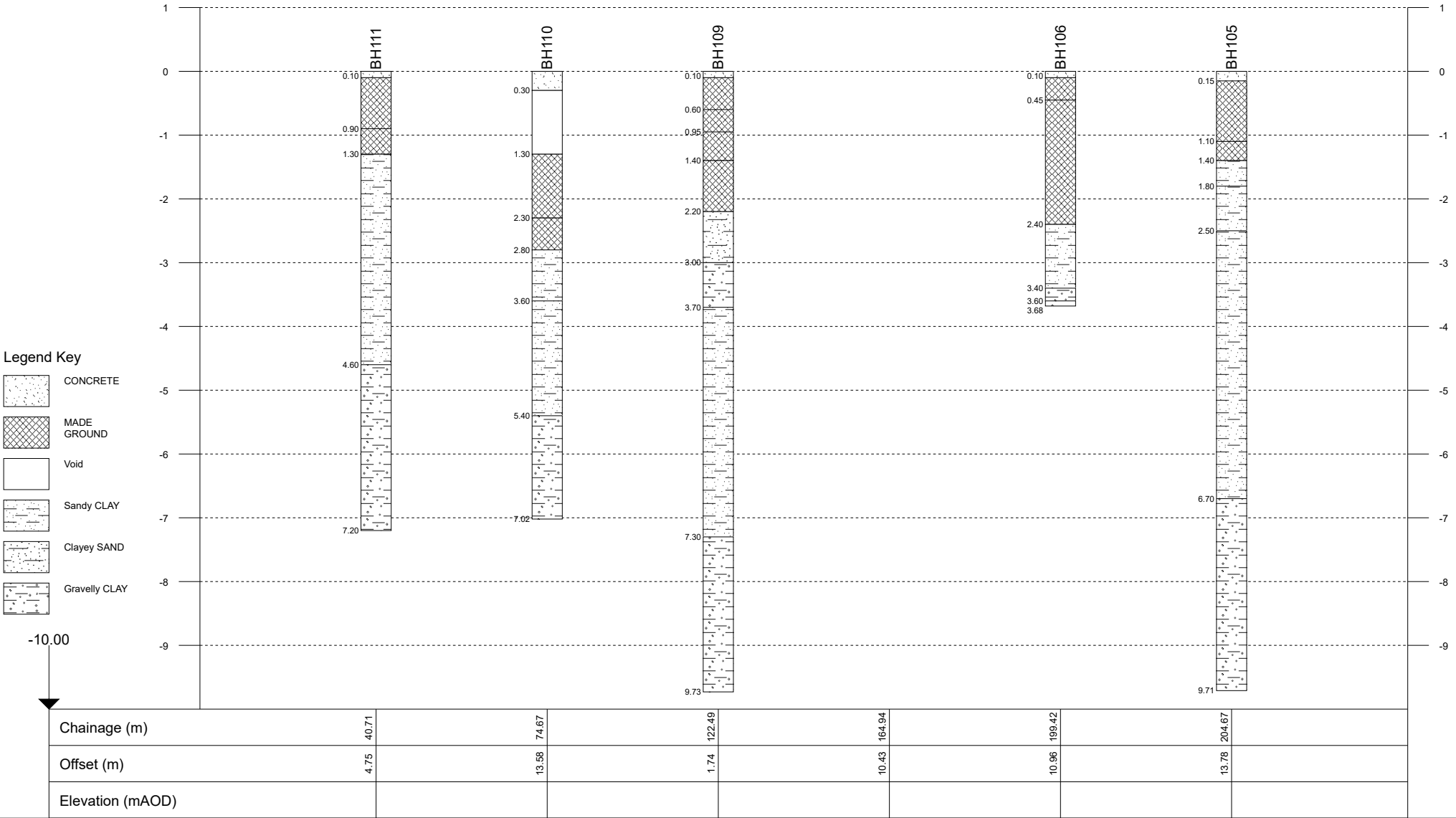
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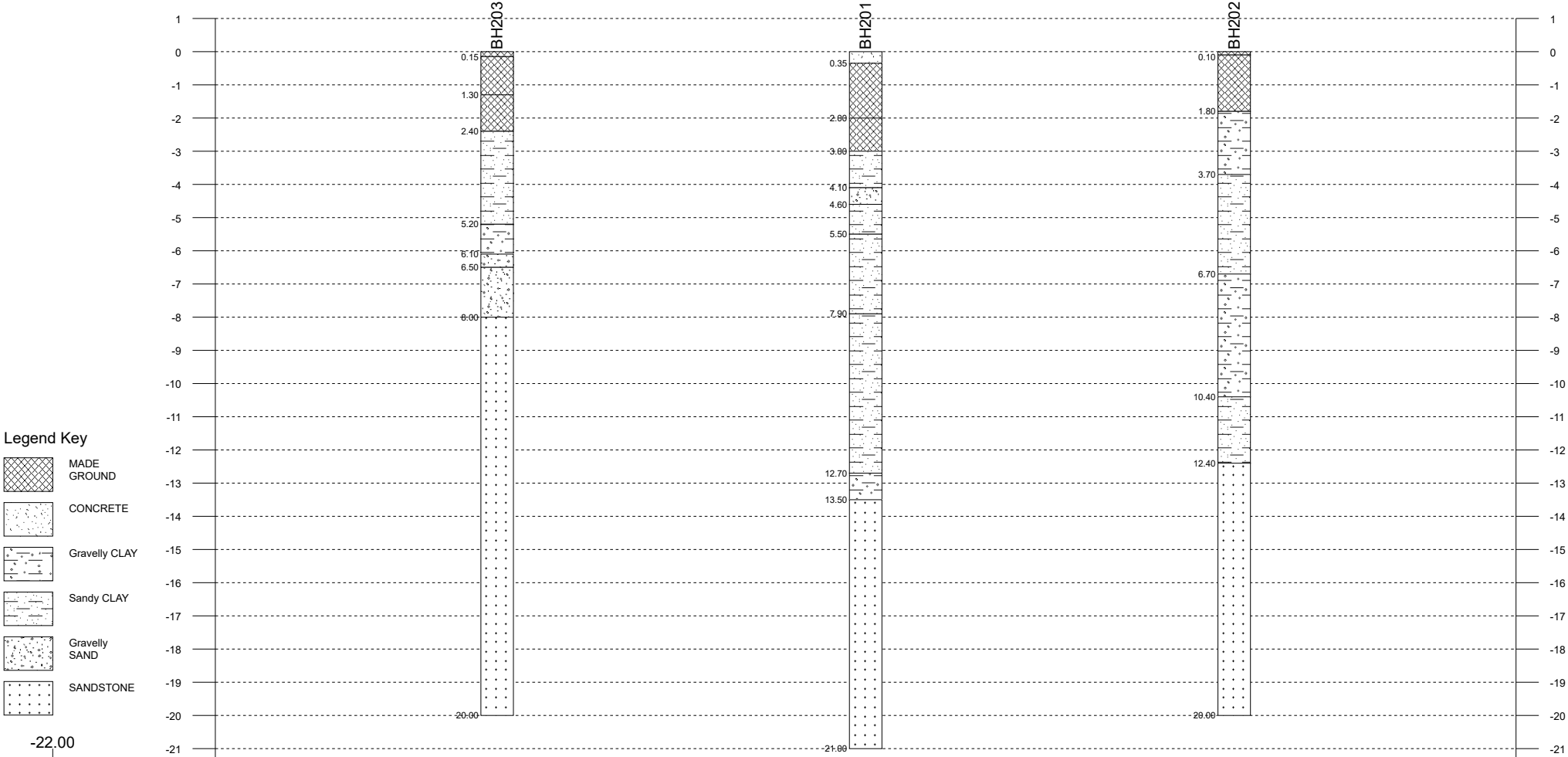
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Project Id: 17500
Project Title: Glen Dimplex
Location: Prescot
Client: Glen Dimplex Homes Appliances Ltd

Title: 17-500-035 - Superficial Boreholes East to West
Vertical Scale: 1:85
Horizontal Scale: Not to scale
Engineer:





-22.00

Chainage (m)	2.72	115.70	226.63
Offset (m)	0.26	1.02	0.21
Elevation (mAOD)			

Appendix IV: Exploratory Hole Logs





Borehole Log

Borehole No. **BH101**

Sheet 1 of 1

Project Name: Glen Dimplex

Project No. 17500

Co-ords: 347894E - 391541N

Hole Type BH

Location: Prescot

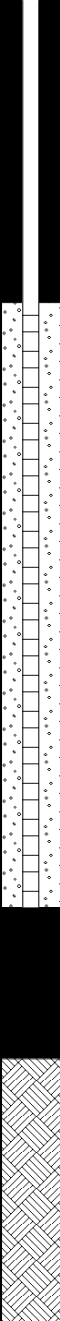
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Client: Glen Dimplex Homes Appliances Ltd

Dates: 23/01/2025

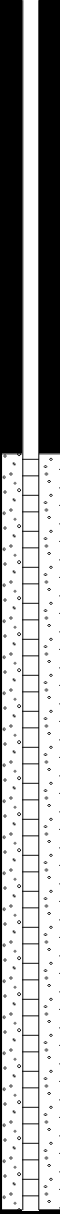
Logged By I.Diack

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10		MADE GROUND: Concrete. POOR RECOVERY: MADE GROUND: Black and red slightly sandy gravel with frequent cobbles. Gravel is fine to coarse, very angular to subrounded of asphalt, concrete, brick, mudstone and sandstone. Cobbles are subangular of asphalt and brick.	1	
		1.20	SPT	N=2 (1,0/0,0,1,1)					
		1.80	ES		1.70				
		2.00	SPT	N=4 (1,1/1,1,1,1)	2.00		MADE GROUND: Soft brown mottled black sandy very gravelly clay. Gravel is fine to medium, subangular to rounded of asphalt and mudstone (Reworked Clay). Soft very low strength brown very sandy CLAY with lenses of brown very clayey fine to medium SAND. (Becoming Firm Low Strength from 3.00m bgl).	2	
		2.90	ES						
		3.00	SPT	N=9 (2,2/2,2,2,3)					3
		4.00 - 4.45	U	Ublow=70	3.60		Firm low strength brown gravelly CLAY. Gravel is fine to medium, subangular to rounded of mudstone and sandstone. (Becoming very stiff high strength at 5.00m bgl) (Becoming very stiff very high strength at 6.50m bgl).	4	
		5.00	SPT	N=29 (3,5/5,6,8,10)					5
		6.50	SPT	N=42 (6,8/8,10,12,12)					6
		8.00	SPT	N=50 (10,13/13,13,14,10)					8
	8.50	SPT	50 (25 for 75mm/50 for 235mm)	8.74				9	
End of Borehole at 8.74m								10	

Remarks

1. Terminated due to refusal on very stiff CLAY at 8.74m bgl. 2. Environmental Monitoring Well Installed - Response Zone 2.00-6.00m bgl. 3. Water strike encountered at 1.70m bgl as seepage. 4. No elevated PID readings encountered. 5. Coordinates are approximate.



				Borehole Log			Borehole No. BH102		
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 347943E - 391561N		Hole Type BH	
Location: Prescot				Level:		Scale 1:50			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 22/01/2025		Logged By I.Diack			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10			MADE GROUND: Concrete.	
		0.50	ES		0.40			POOR RECOVERY: MADE GROUND: Black and red slightly sandy gravel with frequent cobbles. Gravel is fine to coarse, very angular to subrounded of asphalt, concrete, brick, mudstone and sandstone. Cobbles are subangular of asphalt and brick.	
		1.20	SPT	N=4 (1,1/1,1,1,1)	1.00			MADE GROUND: Black silty very sandy clay (Reworked Clay).	1
					1.30			MADE GROUND: Dark reddish brown mottled black gravelly very sandy clay. Gravel is fine to medium, subangular to rounded of brick, concrete, and mudstone.	
		2.00	SPT	N=9 (2,2/2,2,2,3)				MADE GROUND: Dark reddish brown mottled grey very sandy very gravelly clay. Gravel is fine to medium, subangular to rounded of sandstone and mudstone (Reworked Clay).	2
		3.00	SPT	N=12 (2,2/2,3,3,4)	2.90				
		3.20	ES					Stiff medium strength brown gravelly very sandy CLAY with pockets of brown very sandy GRAVEL. Gravel is fine to coarse, very angular to rounded of mudstone and sandstone.	3
		3.50 - 4.00	U						
		4.00	SPT	N=24 (5,5/5,6,6,7)	4.00			Stiff high strength dark brown gravelly CLAY. Gravel is fine to medium, subangular to rounded of mudstone and sandstone.	4
		5.00 - 5.45	U	Ublow=85	5.10			Very stiff very high strength brown gravelly very sandy CLAY with pockets of brown very sandy clayey GRAVEL. Gravel is fine to coarse, very angular to rounded of sandstone and mudstone.	5
								6	
								7	
								8	
					8.50			End of Borehole at 8.50m	9
									10

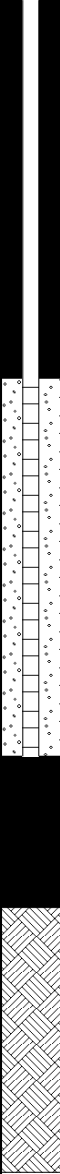
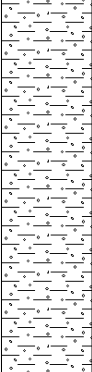
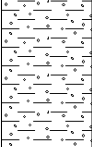
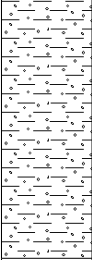
Remarks

1. Terminated due to refusal on very stiff CLAY at 8.50m bgl. 2. Environmental Monitoring Well Installed - Response Zone 3.00-8.00m bgl. 3. Water strike encountered at 5.50m bgl as slow ingress. 4. No elevated PID readings encountered. 5. Coordinates are approximate.

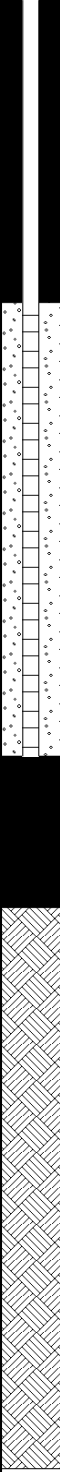
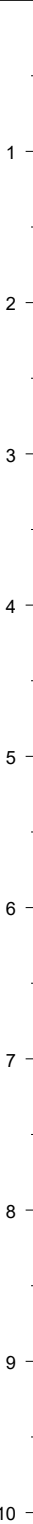

				Borehole Log				Borehole No. BH103 Sheet 1 of 1	
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 348004E - 391515N		Hole Type BH	
Location: Prescott				Level:				Scale 1:50	
Client: Glen Dimplex Homes Appliances Ltd				Dates: 17/01/2025				Logged By I.Diack	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	 0.40	0.20			0.20			MADE GROUND: Concrete.	
		0.40			0.40			MADE GROUND: Dark grey sandy gravel. Gravel is fine to coarse, subangular to subrounded of sandstone, mudstone, brick and concrete (Organic odour encountered).	
		0.50	ES					MADE GROUND: Dark brown to black silty gravelly clay. Gravel is fine to coarse, subangular to subrounded of brick, sandstone, and mudstone.	1
		0.60	ES						
		1.20	SPT	N=12 (2,3/3,3,3,3)					
		1.50							
		2.00	SPT	N=17 (2,3/3,4,5,5)	2.00			Orangish brown gravelly clayey fine to medium SAND. Gravel is fine to coarse, subangular to subrounded of sandstone and mudstone.	2
		3.00 - 3.45	U	Ublow=55				Very stiff high strength brown slightly gravelly silty sandy CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone and mudstone.	3
		3.50	ES		3.50				
		4.00	SPT	N=26 (3,5/5,6,7,8)	4.00			Very stiff high strength brown slightly sandy CLAY.	4
5.00	SPT	32 (8,10/10,10,12,)	5.00			Very stiff high strength brown silty gravelly very sandy CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone.	5		
6.50	SPT	N=50 (12,12/12,12,16,10)				Highly weathered SANDSTONE bedrock recovered as: Very stiff very high strength reddish brown sandy very gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.	6		
6.80	SPT	50 (25 for 100mm/50 for 100mm)	6.90			End of Borehole at 6.90m	7		
								8	
								9	
								10	

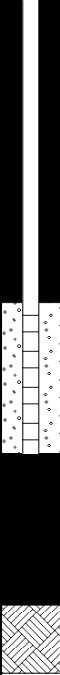
Remarks 1. Terminated due to refusal on very stiff CLAY at 6.90m bgl. 2. Environmental Monitoring Well Installed - Response Zone 0.50-1.50m bgl. 3. Water strike encountered at 0.40m bgl as seepage. 4. No elevated PID readings encountered. 5. Coordinates are approximate.									
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		Borehole Log				Borehole No. BH104			
Project Name: Glen Dimplex		Project No. 17500		Co-ords: 348049E - 391493N		Sheet 1 of 1			
Location: Prescot				Level:		Hole Type BH			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 16/01/2025		Scale 1:50			
Logged By I.Diack									
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	 2.10	2.10	ES		2.10		 MADE GROUND: Concrete.		1
		2.30	ES		2.35				 MADE GROUND: Reddish brown sandy gravelly clay. Gravel is fine to medium, subangular to rounded of mudstone, sandstone, and concrete.
		3.00	SPT	N=21 (3,4/4,5,6,6)			 Very stiff high strength brown silty sandy gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of sandstone and mudstone.	3	
		4.00 - 4.45	U	Ublow=68				 Very stiff high strength brown slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded of mudstone and sandstone.	4
		5.00	SPT	N=25 (3,5/5,6,7,7)	5.00		 Highly weathered SANDSTONE bedrock recovered as: Very stiff very high strength reddish brown sandy very gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.		5
		5.50	ES					 End of Borehole at 7.75m	6
		6.50	SPT	50 (8,10/50 for 295mm)	6.00		7		
		7.50	SPT	50 (10,11/50 for 250mm)	7.75		8		
									9
									10

Remarks
1.Terminated due to refusal on very stiff CLAY at 7.75m bgl. 2. Environmental Monitoring Well Installed - Response Zone 2.50-5.00m bgl. 3. Water strike encountered at 2.10m bgl as seepage. 4. No elevated PID readings encountered. 5. Coordinates are approximate.


				Borehole Log			Borehole No. BH105		
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 348083E - 391506N		Hole Type BH	
Location: Prescot				Level:		Scale 1:50			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 21/01/2025		Logged By I.Diack			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15		MADE GROUND: Concrete.		
		0.70	ES				POOR RECOVERY: MADE GROUND: Black and grey slightly sandy very gravelly clay with occasional cobbles. Gravel is fine to coarse, angular to subrounded of mudstone, concrete, sandstone, brick, metal, and rare slag. Cobbles are subangular of brick.		
		1.00	ES						
		1.20	SPT	N=2 (1,1/0,0,1,1)	1.10		MADE GROUND: Soft light brown very sandy clay (Reworked Clay).		
					1.40		Soft light brown sandy very gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone and mudstone.		
		2.00	SPT	N=9 (2,2/2,2,2,3)	1.80		Stiff medium strength dark brown sandy CLAY.		
		2.60	ES		2.50		Stiff medium strength brown slightly gravelly very sandy CLAY with rare cobbles. Gravel is fine to medium, subangular to subrounded of sandstone and mudstone with rare shale. Cobbles are subrounded of shale. (Becoming very stiff high strength at 5.00m bgl). (Becoming very stiff very high strength from 6.50m bgl).		
		3.00 - 3.45	U	Ublow=40					
		4.00	SPT	N=11 (2,2/2,2,3,4)					
		5.00	SPT	N=21 (4,4/4,5,6,6)					
					6.70		Highly weathered SANDSTONE bedrock recovered as: Reddish brown very gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone.		
					8.00		50 (10,10/50 for 295mm)		
					9.50		50 (8,15/50 for 205mm)		
					9.71				
End of Borehole at 9.71m								10	
Remarks 1. Terminated due to refusal on very stiff CLAY at 9.71m bgl. 2. Environmental Monitoring Well Installed - Response Zone 2.00-5.00m bgl. 3. Water strike encountered at 5.00m bgl as slow ingress. 4. No elevated PID readings encountered. 5. Organic materials and organic odours encountered between 0.20-0.40m bgl in Made Ground. 6. Coordinates are approximate.									



				Borehole Log			Borehole No. BH107		
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 348095E - 391557N		Hole Type BH	
Location: Prescott				Level:		Scale 1:50			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 15/01/2025		Logged By I.Diack			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10			MADE GROUND: Concrete.	1
					0.45				
					1.00			MADE GROUND: Reddish brown gravelly very sandy clay. Gravel is fine to coarse, subangular to subrounded of sandstone, mudstone, and occasional concrete and slate.	
		ES	N=3 (1,0/0,0,1,2)		1.20				
					1.50			Stiff medium strength reddish brown slightly gravelly very sandy CLAY with frequent lenses of brown very clayey fine SAND. Gravel is fine to medium, subangular to subrounded of sandstone.	2
		ES			2.00				
					2.40			Stiff medium strength dark reddish brown slightly sandy very gravelly CLAY. Gravel is fine to medium, subangular to rounded of sandstone. (Very stiff very high strength from 4.00m bgl).	3
		SPT	N=15 (2,3/3,3,4,5)		2.80				
					3.00 - 3.45			Highly weathered SANDSTONE bedrock recovered as: Stiff medium strength reddish brown gravelly very sandy CLAY. Gravel is fine to medium, angular to subrounded of sandstone. (Becoming very stiff very high strength at 4.00m bgl).	4
		U	Ublow=100		3.10				
				4.00			End of Borehole at 4.45m	5	
	SPT	N=50 (0,10/10,10,15,15)		4.45					
									6
									7
									8
									9
									10

Remarks
1. Terminated due to refusal on very stiff CLAY at 4.45m bgl. 2. Environmental Monitoring Well Installed - Response Zone 2.00-3.00m bgl. 3. Water strike encountered at 0.50m bgl and 1.50 m bgl as seepage. 4. No elevated PID readings encountered. 5. Coordinates are approximate.

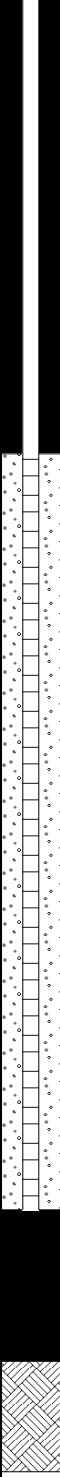

				Borehole Log			Borehole No. BH108 Sheet 1 of 1		
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 348057E - 391587N		Hole Type BH	
Location: Prescot				Level:		Scale 1:50			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 16/01/2025		Logged By I.Diack			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10		MADE GROUND: Concrete.		
		0.50	ES				POOR RECOVERY: MADE GROUND: Black and grey slightly sandy gravel with occasional cobbles. Gravel is fine to coarse, very angular to subrounded of brick, concrete, sandstone, limestone, metal and rare glass. Cobbles is subangular of brick.	1	
		0.60	ES			0.65			
		1.00	SPT	N=4 (1,1/1,0,1,2)			MADE GROUND: Firm reddish brown mottled orange and grey slightly gravelly clay. Gravel is fine to medium, subangular to subrounded of sandstone, mudstone, and rare concrete and brick (Reworked Clay).		
		1.80	ES			1.60			
		2.00 - 2.45	U	Ublow=50		2.50	Stiff to very stiff greyish brown gravelly very sandy CLAY. Gravel is fine to medium, subangular to rounded of sandstone and mudstone. (Becoming very gravelly at 2.80m bgl).	2	
		3.00	SPT	N=23 (2,3/4,5,6,8)			Very stiff high high strength reddish brown gravelly very sandy CLAY. Gravel is fine to medium, very angular to rounded of sandstone. (Becoming very stiff very high strength at 5.00m bgl).	3	
		5.00	SPT	N=43 (6,8/8,10,10,15)				4	
		6.50	SPT	50 (10,12/50 for 290mm)				5	
					6.79			6	
							End of Borehole at 6.79m	7	
								8	
								9	
								10	

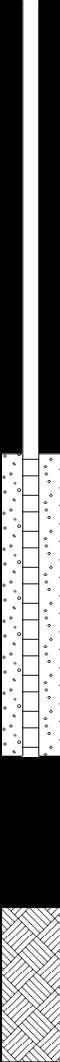
Remarks
 1. Terminated due to refusal on very stiff CLAY at 6.79m bgl. 2. Environmental Monitoring Well Installed - Response Zone 0.60-1.60m bgl. 3. Water strike encountered at 1.50m bgl as seepage. 4. No significantly elevated PID readings encountered (peak reading of 1.1 ppm at 0.40m bgl). 5. Coordinates are approximate.



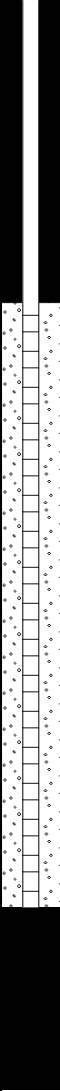
				Borehole Log				Borehole No. BH109 Sheet 1 of 1	
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 348020E - 391561N		Hole Type BH	
Location: Prescot				Level:				Scale 1:50	
Client: Glen Dimplex Homes Appliances Ltd				Dates: 22/01/2025				Logged By I.Diack	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10		MADE GROUND: Concrete.		
					0.60		POOR RECOVERY: MADE GROUND: Grey slightly silty gravel. Gravel is fine to coarse, angular to subrounded of concrete and limestone.		
		1.00	ES		0.95		POOR RECOVERY: MADE GROUND: Grey and red slightly silty gravel with occasional cobbles. Gravel is fine to coarse, very angular to subrounded brick, sandstone, and concrete.	1	
		1.20	SPT	N=2 (1,1/0,1,0,1)	1.40		MADE GROUND: Black slightly gravelly silty very sandy clay. Gravel is fine, subangular to subrounded of concrete and mudstone (Very strong hydrocarbon odour and hydrocarbon sheen encountered).		
		2.00	SPT	N=5 (1,1/1,1,1,2)	2.20		MADE GROUND: Dark brown and red very sandy gravel with occasional cobbles. Gravel is fine to coarse, very angular to subrounded of brick, concrete, sandstone and rare pockets of organic material. Cobbles are subangular of brick (Slight hydrocarbon odour encountered).	2	
		2.40	ES				Greyish brown clayey fine to medium SAND.		
		3.00	SPT	N=9 (1,2/2,2,2,3)	3.00		Firm low strength greyish brown sandy gravelly CLAY. Gravel is fine to medium, subangular to subrounded of sandstone and mudstone.	3	
		4.00 - 4.45	U	Ublow=78	3.70		Stiff medium strength reddish brown very sandy CLAY with frequent lenses of brown very clayey fine to medium SAND.	4	
		4.00	SPT	N=12 (2,2/2,2,3,5)					
		5.00	SPT	N=24 (3,5/5,5,6,8)				5	
	6.50	SPT	N=31 (6,7/4,8,9,10)				6		
					7.30		Highly weathered SANDSTONE bedrock recovered as: Very stiff very high strength reddish brown gravelly very sandy CLAY. Gravel is fine to medium, angular to subrounded of sandstone.	7	
	8.00	SPT	50 (10,12/50 for 280mm)					8	
	9.50	SPT	50 (12,13/50 for 230mm)					9	
					9.73		End of Borehole at 9.73m	10	

Remarks 1. Terminated due to refusal on very stiff CLAY at 9.73m bgl. 2. Environmental Monitoring Well Installed - Response Zone 3.00-8.00m bgl. 3. Water strike encountered at 6.00m bgl as moderate ingress. 4. No significantly elevated PID readings encountered (peak reading of 0.9 ppm at 0.80m bgl). 5. Coordinates are approximate.									
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				Borehole Log				Borehole No. BH110 Sheet 1 of 1	
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 347971E - 391572N		Hole Type BH	
Location: Prescott				Level:		Scale 1:50			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 23/01/2025		Logged By I.Diack			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		MADE GROUND: Concrete.		
							VOID SPACE.		
		1.30	SPT	N=0 (1,0/0,0,0,0)	1.30				
		2.00 2.00	ES SPT	N=9 (2,2/2,2,2,3)	2.30		MADE GROUND: Black slightly sandy gravel. Gravel is fine to coarse, subangular to subrounded of slag, ash, brick, plastic, mudstone, sandstone and occasional metal.		
		3.00 3.20	SPT ES	N=11 (2,2/2,2,3,4)	2.80		MADE GROUND: Grey very sandy very gravelly clay with lenses of grey very sandy very clayey gravel. Gravel is fine to coarse, subangular to subrounded of slag, mudstone, and sandstone.		
		4.00 - 4.45	U	Ublow=100	3.60		Soft to firm brown very sandy CLAY. (Becoming very stiff medium strength at 3.00m bgl).		
		5.00	SPT	N=26 (4,5/5,6,7,8)	5.40		Stiff medium strength reddish brown slightly gravelly very sandy CLAY with frequent lenses of brown very clayey fine SAND. Gravel is fine to medium, subangular to subrounded of sandstone. (Becoming very stiff high strength at 5.00m bgl).		
		6.50	SPT	50 (0,15/50 for 200mm)			Very stiff high strength brown gravelly CLAY. Gravel is fine to medium, subangular to subrounded of mudstone and sandstone. (Becoming very stiff very high strength at 6.50m bgl).		
		6.90	SPT	50 (25 for 75mm/50 for 125mm)	7.02				
							End of Borehole at 7.02m		
Remarks 1. Terminated due to refusal on very stiff CLAY at 7.02m bgl 2.Environmental Monitoring Well Installed - Response Zone 3.00-5.00m bgl. 3. No elevated PID readings encountered. 4. Voided ground encountered between 0.30-1.30m bgl. 5. Coordinates are approximate.									

				Borehole Log				Borehole No. BH111 Sheet 1 of 1	
Project Name: Glen Dimplex				Project No. 17500		Co-ords: 347951E - 391605N		Hole Type BH	
Location: Prescott				Level:		Scale 1:50			
Client: Glen Dimplex Homes Appliances Ltd				Dates: 23/01/2025		Logged By I.Diack			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10		MADE GROUND: Concrete. POOR RECOVERY: MADE GROUND: Black and red slightly sandy gravel with occasional cobbles. Gravel is fine to coarse, very angular to subrounded of concrete, brick, mudstone, slag, and occasional coal fragments. Cobbles are subangular of brick.		
		1.00	ES		0.90			1	
		1.20	SPT	N=5 (3,1/1,1,1,2)	1.30		MADE GROUND: Firm to stiff brown mottled grey gravelly very sandy clay. Gravel is fine to medium, subangular to subrounded of mudstone, sandstone and rare brick (Reworked Clay). Firm low strength brown very sandy CLAY. (Becoming stiff medium strength at 3.00m bgl).		
		2.00	SPT	N=8 (2,2/2,2,2,2)				2	
		3.00	SPT	N=13 (2,3/2,3,4,4)				3	
		3.60	ES						
		4.00 - 4.45	U	Ublow=69				4	
		5.00	SPT	N=29 (4,5/5,6,8,10)	4.60		Very stiff high strength brown slightly sandy very gravelly CLAY with frequent bands of slightly clayey very sandy GRAVEL. Gravel is fine to coarse, very angular to rounded of sandstone and mudstone. (Becoming very stiff very high strength at 6.50m bgl).	5	
		6.50	SPT	50 (10,12/50 for 245mm)				6	
		7.00	SPT	50 (12,12/50 for 195mm)	7.20		End of Borehole at 7.20m	7	
							8		
							9		
							10		

Remarks 1. Terminated due to refusal on very stiff CLAY at 7.20m bgl 2. Environmental Monitoring Well Installed - Response Zone 2.00-6.00m bgl. 3. Water strike encountered at 5.00m bgl as very slow ingress. 4. No elevated PID readings encountered. 5. Coordinates are approximate.									
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Borehole Log

Borehole No. **BH112**

Sheet 1 of 2

Project Name: Glen Dimplex

Project No. 17500

Co-ords: 348044E - 391461N

Hole Type BH

Location: Prescot

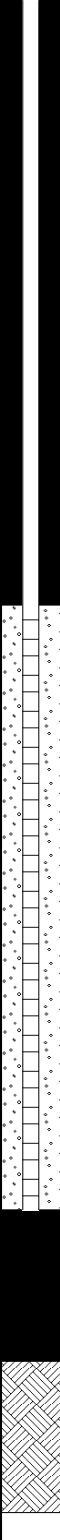
Level:

Scale 1:50

Client: Glen Dimplex Homes Appliances Ltd

Dates: 14/01/2025

Logged By I.Diack

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15		MADE GROUND: Concrete.		
					1.00		POOR RECOVERY: MADE GROUND: Firm dark brown mottled black very sandy very gravelly clay with frequent cobbles. Gravel is fine to coarse, very angular to subrounded of brick, concrete, sandstone, limestone, and rare fine fragments of coal and metal. Cobbles are angular of brick (Slight hydrocarbon odour encountered).	1	
		1.20	SPT	N=5 (1,1/1,1,1,2)					
		1.50	ES					MADE GROUND: Firm dark brown mottled black very sandy very gravelly clay with frequent cobbles. Gravel is fine to coarse, very angular to subrounded of brick, concrete, sandstone, limestone, and rare fine fragments of coal and metal. Cobbles are angular of brick (Slight hydrocarbon odour encountered).	2
		2.00	ES						
		2.00	SPT	N=4 (1,1/1,1,1,1)		2.10			
						2.40		MADE GROUND: Firm to stiff grey silty sandy gravelly clay. Gravel is fine to medium, subangular to rounded of mudstone and sandstone (Reworked Clay) (Slight Hydrocarbon sheen). Firm brown slightly sandy CLAY.	
		3.00	SPT	N=6 (1,2/1,1,2,2)		3.00			3
		4.00	SPT	N=9 (1,2/2,2,2,3)				Firm low strength dark reddish brown gravelly very sandy CLAY with occasional bands of brown clayey fine to medium SAND. Gravel is fine to medium, subangular to subrounded of sandstone. (Becoming very stiff high strength at 8.0m bgl).	4
		4.40	ES						
	5.00 - 5.45	U	Ublow=100					5	
								6	
								7	
	8.00	SPT	N=32 (3,5/5,7,8,12)					8	
					9.00				
	9.50	SPT	50 (10,11/50 for 280mm)				Highly weathered SANDSTONE bedrock recovered as: Dense reddish brown very clayey fine to medium SAND.	9	
								10	

Remarks

1. Complete. 2. Environmental Monitoring Well Installed - Response Zone 4.00-8.00m bgl. 3. Water strike encountered at 1.50m bgl and 6.5m bgl as seepage and moderate ingress respectively. 4. No significantly elevated PID readings encountered (peak reading of 3.3 ppm at 2.00m bgl in Made Ground). 5. Slight hydrocarbon odour encountered between 0.15-2.10m bgl in Made Ground. 6. Slight hydrocarbon sheen encountered between 2.10-2.40m bgl in Made Ground. 7. Coordinates are approximate.



					Borehole Log			Borehole No. BH112 Sheet 2 of 2	
Project Name: Glen Dimplex					Project No. 17500		Co-ords: 348044E - 391461N		Hole Type BH
Location: Prescott					Level:		Scale 1:50		Logged By I.Diack
Client: Glen Dimplex Homes Appliances Ltd					Dates: 14/01/2025				

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	SPT	50 (12,12/50 for 245mm)	10.10 10.75		 Highly weathered SANDSTONE bedrock recovered as: Dense reddish brown very clayey fine to medium SAND.  Highly weathered SANDSTONE bedrock recovered as: Dense red very sandy GRAVEL. Gravel is fine to coarse, very angular to subangular of SANDSTONE.	End of Borehole at 10.75m	11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks

1. Complete. 2. Environmental Monitoring Well Installed - Response Zone 4.00-8.00m bgl. 3. Water strike encountered at 1.50m bgl and 6.5m bgl as seepage and moderate ingress respectively. 4. No significantly elevated PID readings encountered (peak reading of 3.3 ppm at 2.00m bgl in Made Ground). 5. Slight hydrocarbon odour encountered between 0.15-2.10m bgl in Made Ground. 6. Slight hydrocarbon sheen encountered between 2.10-2.40m bgl in Made Ground. 7. Coordinates are approximate.

