

Mr L Worthington
Castlemead Group Limited
Abenbury House
17 Wilkinson Business Park
Clywedog Road South
Wrexham
LL13 9AE

Our Ref: 7962CMG240226L

Date: 26th February 2024

Dear Liam

Re: Proposed Development on land at Cwrt Pentwmpath, Llay

Coopers were requested by Castlemead Group Limited to undertake soil sampling, risk assessment and reporting with regards to potential PCBs in the vicinity of an electricity sub-station present on site, as recommended by Coopers in our site investigation report:

- “Site Investigation for land at Cwrt Pentwmpath, Llay”, Reference No. 7962si, dated 21st December 2022

This letter report has been provided as an addendum to Report No. 7962si and should be read in conjunction with the report.

Preliminary Conceptual Site Model

The desk study and preliminary conceptual site model had identified an electric sub-station on site adjacent to the central section of the eastern site boundary (see Coopers Drawing Reference No. 7962/01RevC, attached). At the time of the site investigation this was surrounded by limestone gravel and turf beyond the gravel on the northern side of the sub-station. A garage had been present immediately adjacent to the south east and an access road to the south west. The sub-station had been constructed prior to 1980 when the use of dielectric liquids containing PCBs was still in use. The manufacture of PCBs was banned in 1981 and the removal from systems has been imposed in stages since then, with complete removal being required by 2025. It is not known whether the dielectric fluid has been completely removed from this electric sub-station, as yet.

There was no visual evidence of liquid spillages. However, if spillages had occurred, as the liquids have a low mobility and leachability in soils, due to adsorption to soils, these would have migrated a limited distance. If PCB contamination had mobilised a short distance, given the topography of the site trending north to south and west to east, this may be present below the original garage and car park and proposed car park (see Munro Associates Drawing Reference No. P-105B, attached). PCBs have a low volatility, therefore they would not pose a risk due to vapour inhalation within the proposed residential properties. Future residents of the site are unlikely to come into contact with the PCBs, as these would be below mainly hardstanding and a limited area of newly placed landscaping, the PCBs posing a negligible risk to future residents if the soils remain in situ. Grounds maintenance contractors would not be expected to be digging in this area due to underlying services. However, consideration was given to the potential for the soils to be relocated to the garden growing medium during the construction process. Any soils containing PCB contamination may then pose a moderate to high risk to the health of future residents, being exposed due to dermal contact, ingestion of contaminated soils and vegetables and inhalation of contaminated dust indoors and outdoors.

It was considered that a negligible risk would be posed to the controlled waters receptors, the Secondary (A) Aquifer within the underlying bedrock and the surface water course 82m from the site, due to the potential for only very low leachate concentrations to be generated, the attenuation of leachates migrating vertically through the clay and clayey sand bands and attenuation due to the distance between the source and the receptor.

Scope of Site Investigation

Additional site investigation was undertaken following the disconnection of the electricity sub-station, the demolition of the garage and removal of tarmac from the car park adjacent to the electricity sub-station. The adjacent access road is to remain in situ. Three hand dug trial pits were excavated to the underlying natural ground, these being located to the front and sides of the sub-station. The locations are illustrated on the attached Coopers Drawing Reference No. 7962/01RevC. The hand dug trial pit logs are also attached. Three made ground samples, one from each hand dug trial pit were selected for submission to DETS, an MCERTS accredited laboratory. The samples were stored in appropriate sample containers provided by the chemical laboratory and retained in cool boxes with ice packs. Each sample was scheduled for PCB 7 and PCB WHO12 suites of analysis.

General Site and Ground Conditions

Since the site investigation discussed in Report Reference No. 7962si, the former residential buildings and garage adjacent to the electricity sub-station have been demolished and hardstanding to be replaced such as the tarmac surface of the adjacent car park has been removed. The site entrance road, adjacent grass verge and electricity sub-station are to remain in place for the redevelopment. Photographs 1 to 5 illustrate the area around the sub-station.



Photograph 1: South west side and access point to electricity sub-station. Photograph taken by Coopers on 2nd February 2024



Photograph 2: North west side of electricity sub-station. Photograph taken by Coopers on 2nd February 2024



Photograph 3: South east and south west side with access point to electricity sub-station. Photograph taken by Coopers on 2nd February 2024



Photograph 4: View to south east of electricity sub-station, with garage and tarmac stripped. Photograph received by Coopers from Castlemead Group Limited on 31st January 2024



Photograph 5: View eastwards along site access road towards electricity sub-station. Photograph taken by Coopers on 2nd February 2024.

Madeground was encountered at the surface in two of the hand dug pits (HDTP101 and HDTP102), this comprising a sandy gravel of natural stone and rare brick and clay pipe fragments. This was found to be between 0.5m and 0.65m deep. The same madeground strata was recorded in HDTP103 below a madeground (similar to topsoil) at 0.3m below ground level (bgl) and extending to 0.55m bgl. No olfactory or visual evidence of contamination was recorded.

Results

The results of the chemical analysis are presented in the DETS Certificate of Analysis (Reference No. 24-02528), attached. All the concentrations were below the level of detection.

Human health risk assessment

There are no published generic assessment criteria (GACs) for PCBs. However, Coopers have previously calculated GACs for PCBs where toxicity data is available, the GACs (approximately $7.7\text{E}10^{-5}\text{mg/kg}$) all being below the level of detection (LOD) ($<0.01\text{mg/kg}$). Therefore, it is not feasible to confirm that there is negligible risk to human health, should there be trace concentrations of PCBs. However, in Coopers experience had there been a spillage of dielectric fluid, the concentrations reported by the laboratory would be significantly above the LOD.

Coopers consider there is a very low likelihood of PCBs present within the ground around the electricity sub-station. The likelihood of spillages to the north west and south east of the sub-station would have been negligible, as there is only a narrow verge to the north west adjacent to the access road and a garage was present immediately adjacent to the south east of the building. Had spillages occurred, these would likely have been to the front on the south west side of the sub-station. As discussed in the preliminary conceptual site model, the residents would not come into contact with the PCBs at the residential plots as the dielectric fluids with PCBs have very limited mobility/leachability and very low volatility, the main risk driver being dermal and ingestion pathways. The ground around the sub-station is currently covered generally in gravel, with a small area of turf over madeground topsoil in the narrow verge to the north west of the sub-station. This will prevent any digging in the ground by the residents, the only activity in the vicinity of the building being access to the building itself and mowing the grass. The only potential digging in the ground around here would be by maintenance contractors.

Build Phase Precautions

The current ground levels will be maintained. The made ground gravel and turf over made ground topsoil immediately surrounding the sub-station is to be left in-situ. Should the made ground gravel require releveling to enable construction of the hardstanding for the car park area, this should be retained below the hardstanding to ensure it is not mobilised to surfaces in the residential properties. This will ensure that should there be any slight elevated concentrations of PCBs present that a pathway between the contamination and the residents will not be created.

Summary

The materials surrounding the electricity sub-station have been shown to be suitable for use in the public open space around the sub-station and below the hardstanding of the car park area to be constructed.

It is recommended that this report is submitted to Wrexham County Borough Council in support of the planning application.

Yours sincerely



J A Lewis (Mrs)
BSc(Hons), MSc, MCIWEM C.WEM, C.Sci, C.Env.
Senior Geo-environmental Engineer

For Coopers (Chester) Ltd

Enc.

Coopers Drawing Reference No. 7962/01RevC
Munro Associates Drawing Reference No. P-105B
Coopers Hand Dug Trial Pit Logs HDTP101 to HDTP103
DETS Certificate of Analysis (Reference No. 24-02528)

KEY TO EXPLORATORY HOLES

(All positions are approximate unless otherwise stated)

- Window sample boreholes WS01, WS02, WS03a, WS04 & WS05 drilled for Coopers on 20 January 2023
- Hand dug service pit WS03 dug by Coopers on 20 January 2023
- DCP locations DCP01 by Coopers on 23 November 2022
- Trial pits TP01 - TP05 excavated by Coopers on 23 November 2022
- Hand dug trial pit excavated by Coopers: HDTP01 on 23 November 2022 HDTP101 - HDTP103 on 02 February 2024
- Infiltration pits excavated by Coopers: ITP01 - ITP03 on 23 November 2022 ITP101 - ITP103 on 10 March 2023

KEY TO FORMER FEATURES

(All positions are approximate unless otherwise stated)

- Former buildings (taken from ref. e)
- Former hedgeline (taken from ref. e)
- Former area of dense vegetation (taken from ref. e)

KEY TO EXISTING FEATURES

(All positions are approximate unless otherwise stated)

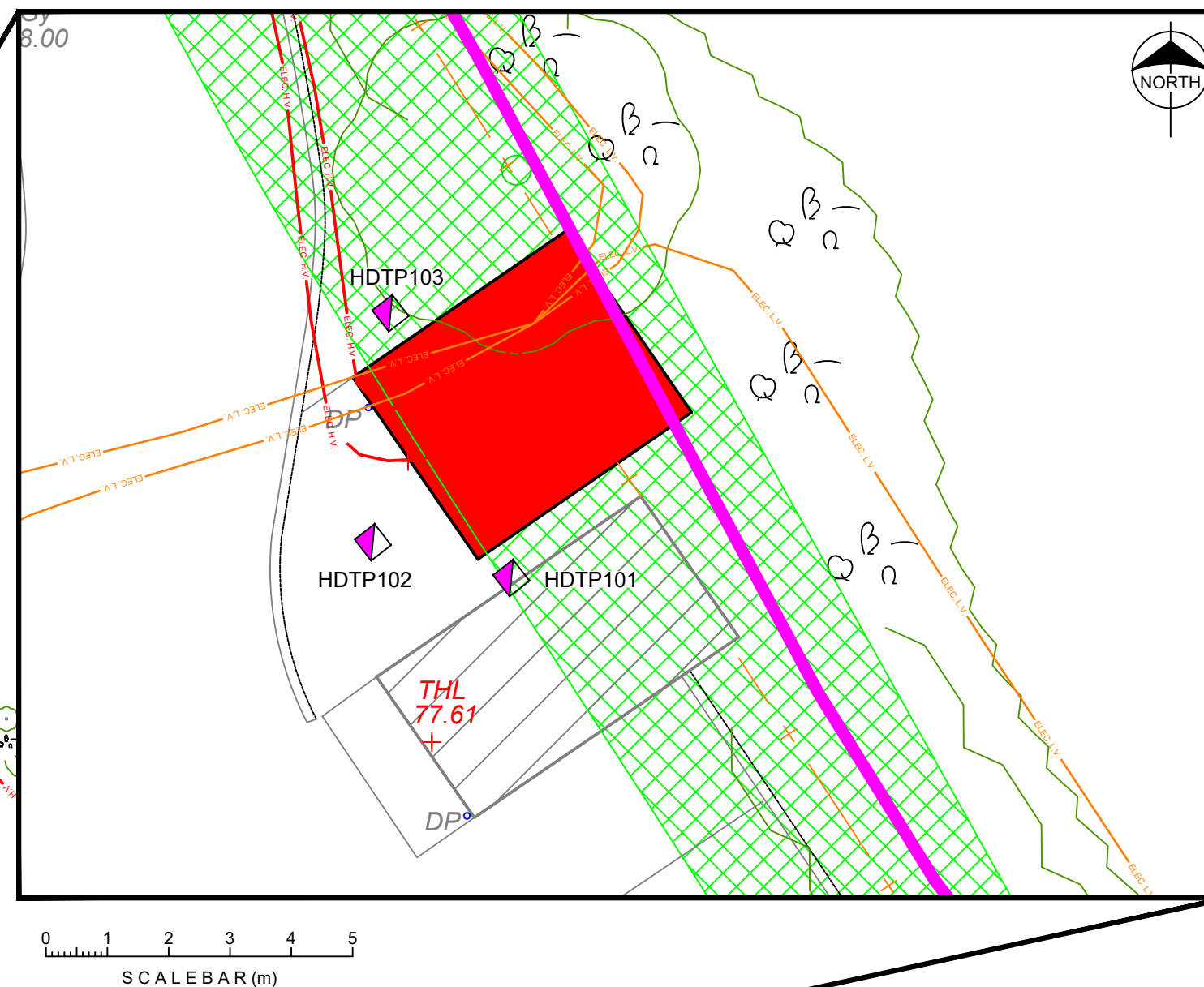
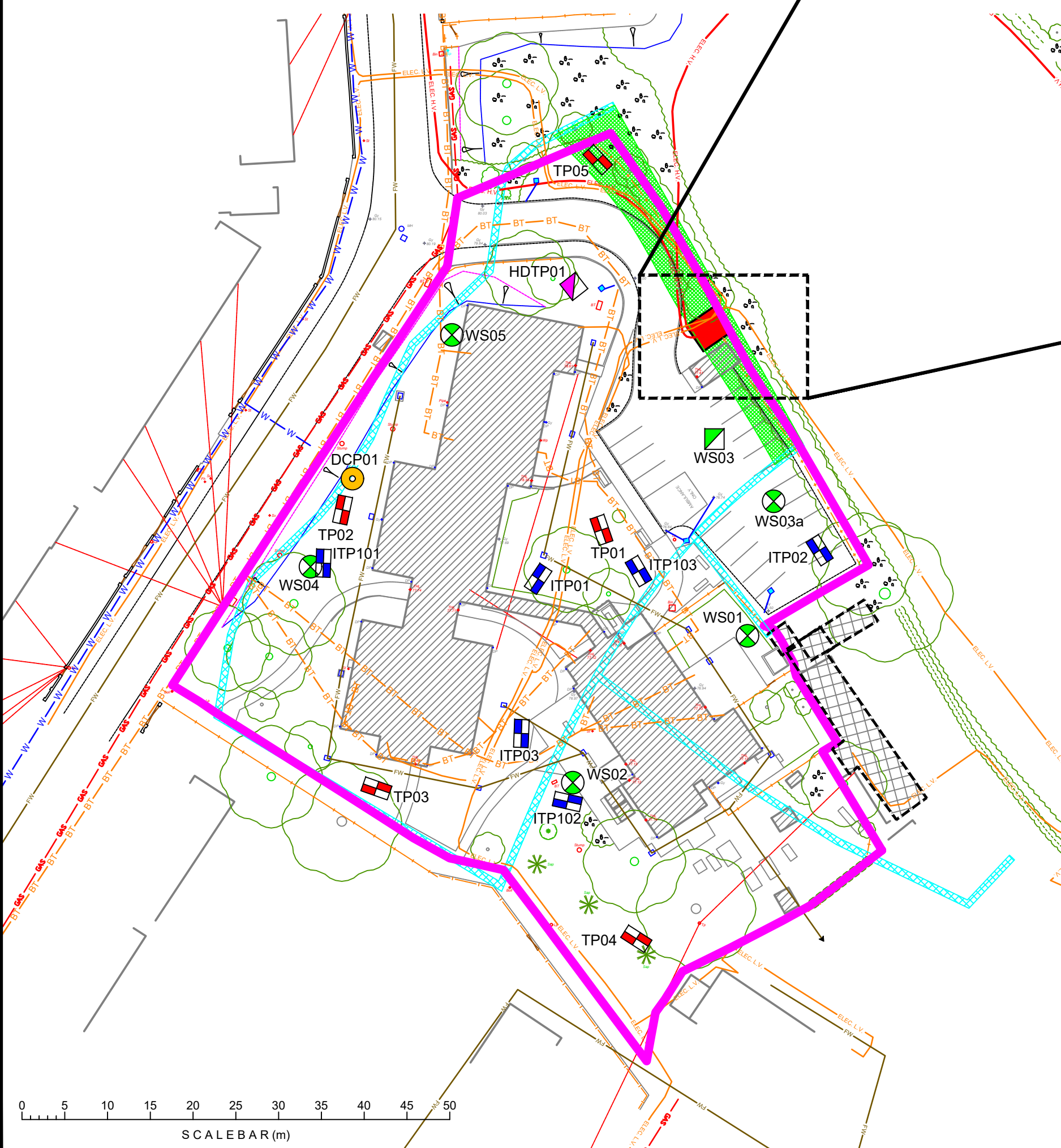
- Surveyed building (taken from ref. a)
- Surveyed substation (taken from ref. a)
- Surveyed tree (taken from ref. a)
- Surveyed hedgeline (taken from ref. a)
- Surveyed fence line (taken from ref. a)
- Surveyed top of bank (taken from ref. a)
- Surveyed bottom of bank (taken from ref. a)
- Site boundary (taken from ref. b)

KEY TO CONJECTURED SERVICES

(All positions are approximate unless otherwise stated)

- BT lines (taken from ref. c)
- High voltage electricity lines (taken from ref. c)
- Low voltage electricity lines (taken from ref. c)
- Gas lines (taken from ref. c)
- Potable water lines (taken from ref. c)
- Foul sewer line (taken from ref. c & d)
- Surveyed overhead cables (taken from ref. a)
- Surface water lines
- Surveyed soakaway locations (taken from ref. a)

Note:
Only above services available to Coopers at time of drawing production.



THIS DRAWING SHOULD ONLY
BE PRINTED IN COLOUR

This drawing is to be read in conjunction with the following:-

- The Survey House, Eight Avenue, Llay, Wrexham, Topographical Survey, ref. 3626_0001, dated 19 May 2020.
- Munro Associates, Cwrt Pentwmpath, Eighth Avenue, Llay, Wrexham, Site Layout, ref. 20.211_p-105, rev. I dated 04 July 2022.
- UCML, Cwrt Pentwmpath, Utility Study, dated 21 February 2022.
- PDF referenced 'Castlemead Plan' received by Coopers showing foul water.
- Groundsure, Cwrt Pentwmpath, L Lay, ref. GS-9191729, dated November 2022.

REVISION BOX

Rev.	Date	Revision	By	Appd.
A	30.01.23	Plan updated with latest Coopers exploratory holes.	AH	JL
B	14.03.23	Plan updated with latest Coopers exploratory holes.	AH	JL
C	22.02.24	Plan updated with latest Coopers exploratory holes.	OS	JL

coopers
chartered consulting engineers

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Web: http://coopers.co.uk

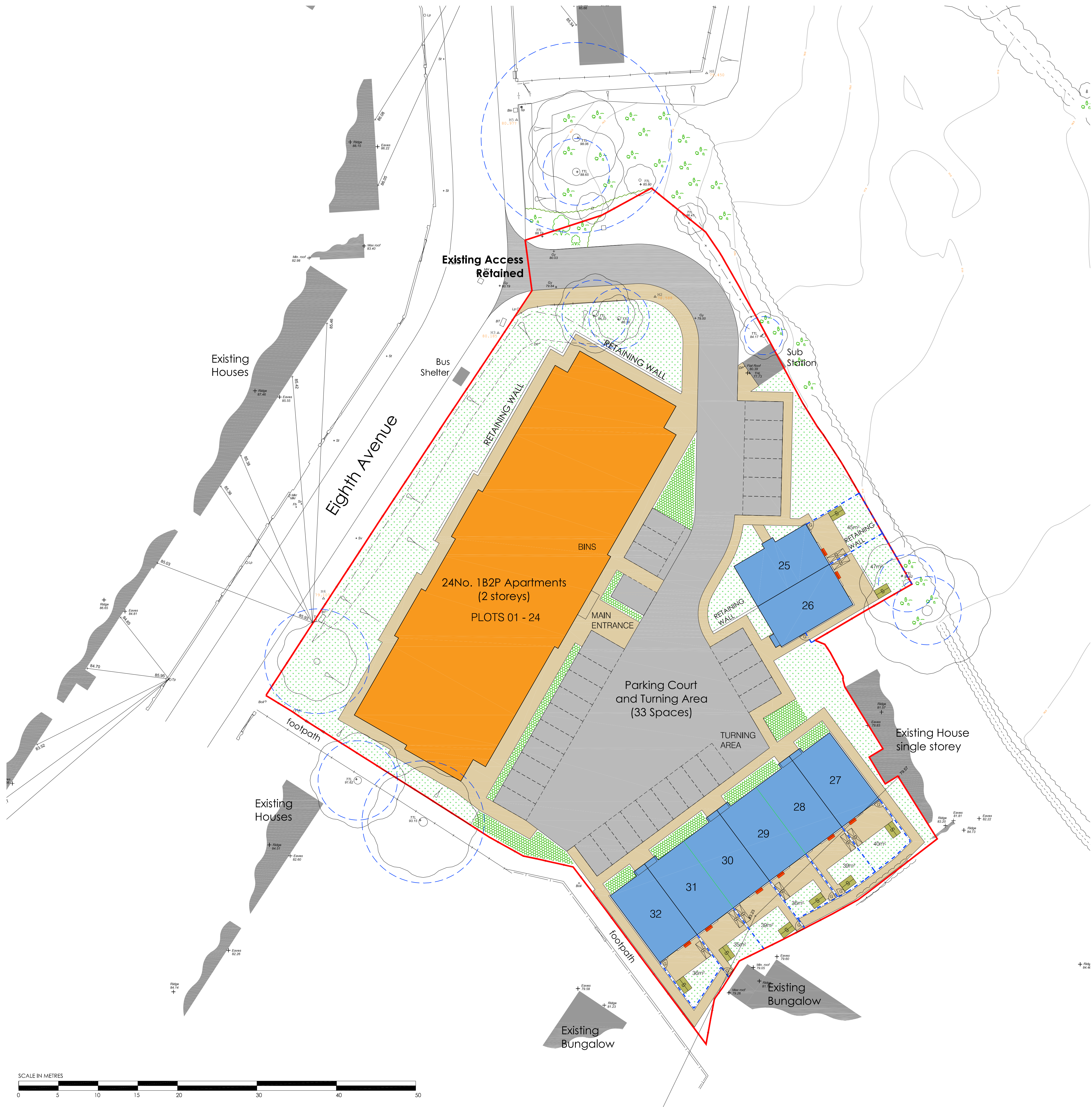
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Client
CASTLEMEAD GROUP LTD

Project
Cwrt Pentwmpath, Llay.

Title
SITE PLAN

DRAWING NUMBER	SCALE at A2 1:500 & 1:100		
	DATE	21.12.22	REVISION
	DRAWN	OS / AH	C
	CHECKED	JL	



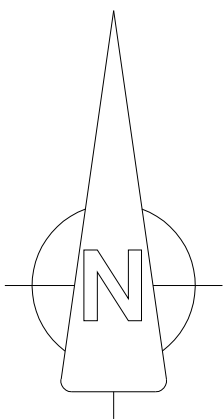
LEGEND

- 1.8m high timber hit and miss fencing with concrete posts and gravel boards
- 1.8m high personnel gate to match fencing. Lockable to SBD standard.
- Concrete paving slabs to private paving. Paths to be 900mm wide (minimum) or 1200mm wide (minimum) to shared or communal areas.
- 6'X4' shed securely fixed to concrete base.
- Area identified for storage of refuse and recycling bins and trolley.
- Air source heat pump unit.
- Soft landscaping

Schedule of Accommodation	
8	1B2P bungalows
24	1B2P apartments
32	total

Site Area 4744m² approx

NOTES:
ALL DIMENSIONS TO BE CHECKED AND CONFIRMED ON SITE PRIOR TO ANY WORKS OR FABRICATION.
DO NOT SCALE OFF THIS DRAWING.
ANY ERRORS, OMISSIONS OR DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF MUNRO ASSOCIATES IMMEDIATELY.



B	Feb 22	Apartment building updated in line with revised floor plan	PO
A	Jan 22	Alterations to car parking spaces	MC
REV	DATE	DESCRIPTION	BY

Drawing Status
PRELIMINARY



CHARLTON HOUSE DRAYTONS PASSAGE
SHOPPLATCH SHREWSBURY SY1 1HF
T: 01743 341438
E: design@munro-associates.com

Client	Wales and West Housing		
Project	Cwrt Pentwmpath Eighth Avenue Lloy Wrexham LL12 0TT		
Scale	1:250 @ A1	Date	November 2021
		Drawn	PCO

Drawing Title
**Site Layout
(Option B)**

Project No.	Drawing No.	Revision
20.211	P-105	B

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Registered in England and Wales
Registration No. 08117820 Vat No. 650 8829 15

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk		Site CWRTPENTWMPATH, LLAY		Trial Pit Number HDT101	
Machine : Hand Dug Method : Manual Excavation		Dimensions 0.30 x 0.30 x 0.60m		Ground Level (mOD)		Client Castlemead Group Ltd		Job Number 7962	
		Location (Observed measurements)		Dates 02/02/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.20	JV				(0.50)	MADEGROUND. Grey, sandy, angular to sub-angular, fine to coarse GRAVEL of natural stone. Sand is fine to coarse. *Assumed as medium dense.			
0.40	JV				0.50	Brown, slightly silty, very clayey, fine to medium SAND. *Assumed as loose to medium dense.			
0.55	JV				0.60	Complete at 0.60m			
									
Remarks Location CAT scanned prior to digging. Sides stable during digging. No groundwater encountered during digging. *Based upon trenchside stability characteristics. HDT1 locations shown on Coopers Drawing No. 7962/01. Backfilled with arisings upon completion.									
Scale (approx) 1:40					Logged By LP		Checked By PRS		



coop

ers

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Coopers (Chester) Ltd

tel: 01244 684 910

web: www.coopers.co.uk

email: admin@coopers.co.uk

Site

CWRT PENTWMPATH, LLAY

Trial Pit Number

HDTP102

Machine : Hand Dug

Method : Manual Excavation

Dimensions

0.30 x 0.30 x 0.77m

Ground Level (mOD)

Client

Castlemead Group Ltd

Job Number

7962

Location (Observed measurements)

Dates

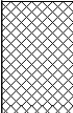
02/02/2024

Engineer

Coopers (Chester) Ltd

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	JV				(0.65)	MADEGROUND. Greyish brown, sandy, angular to sub-angular, fine to coarse GRAVEL of natural stone. Sand is fine to coarse. Rare inclusions of brick fragments and clay pipe. *Assumed as medium dense.		
0.50	JV				(0.65)	Brown, slightly silty, very clayey, fine to medium SAND. *Assumed as loose to medium dense.		
0.70	JV				0.77	Complete at 0.77m		



Remarks

Location CAT scanned prior to digging.
 Sides stable during digging.
 No groundwater encountered during digging.
 *Based upon trenchside stability characteristics.
 HDTP locations shown on Coopers Drawing No. 7962/01.
 Backfilled with arisings upon completion.

Scale (approx)

1:40

Logged By

LP

Checked By

PRS

 Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site CWRT PENTWMPATH, LLAY		Trial Pit Number HDTP103			
Machine : Hand Dug Method : Manual Excavation		Dimensions 0.30 x 0.30 x 0.65m		Ground Level (mOD)		Client Castlemead Group Ltd		Job Number 7962	
		Location (Observed measurements)		Dates 02/02/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.20	JV				(0.30)	MADEGROUND (similar to topsoil). Dark brown, sandy SILT.			
					0.30				
0.50	JV				(0.25)	MADEGROUND. Greyish brown, sandy, angular to sub-angular, fine to coarse GRAVEL of natural stone. Sand is fine to coarse. *Assumed as medium dense.			
0.60	JV				0.55	Brown, slightly silty, very clayey, fine to medium SAND. *Assumed as loose to medium dense.			
					0.65	Complete at 0.65m			
 Remarks Location CAT scanned prior to digging. Sides stable during digging. No groundwater encountered during digging. *Based upon trenchside stability characteristics. HDTP locations shown on Coopers Drawing No. 7962/01. Backfilled with arisings upon completion.									
Scale (approx) 1:40						Logged By LP		Checked By PRS	



Certificate of Analysis

Certificate Number 24-02528

Issued: 12-Feb-24

Client Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Our Reference 24-02528

Client Reference 7962

Order No P/O 9934

Contract Title CWRT, PENTWMPATH, LLAY

Description 3 Soil samples.

Date Received 07-Feb-24

Date Started 07-Feb-24

Date Completed 12-Feb-24

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 24-02528

Client Ref 7962

Contract Title CWRT, PENTWMPATH, LLAY

Lab No	2296395	2296396	2296397
Sample ID	HDTP101	HDTP102	HDTP103
Depth	0.40	0.20	0.50
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	02/02/2024	02/02/2024	02/02/2024
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
PCBs						
PCB 28 + PCB 31	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 52	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 101	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 153	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 138	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 180	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 77	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 81	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 105	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 114	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 118	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 123	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 126	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 156	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 157	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 167	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 169	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 189	DETSC 3401*	0.01	mg/kg	< 0.01	< 0.01	< 0.01
PCB 7 Total	DETSC 3401#	0.01	mg/kg	< 0.01	< 0.01	< 0.01

Information in Support of the Analytical Results

Our Ref 24-02528
 Client Ref 7962
 Contract CWRT, PENTWMPATH, LLAY

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2296395	HDTP101 0.40 SOIL	02/02/24	GJ 250ml x2, GJ 60ml		
2296396	HDTP102 0.20 SOIL	02/02/24	GJ 250ml x2, GJ 60ml		
2296397	HDTP103 0.50 SOIL	02/02/24	GJ 250ml x2, GJ 60ml		

Key: G-Glass J-Jar

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report