

MAES Y CAPEL, COEDPOETH, Sustainable Drainage Options

Introduction

Condition 4 of the planning consent for the proposed alterations to Maes y Capel states: *'No part of the development shall commence until a scheme for the comprehensive and integrated drainage of the site indicating provision for foul water, surface water and land drainage has been submitted to and approved in writing by the Local Planning Authority. Prior to the submission of those details, an assessment shall be carried out into the potential for disposing of surface water by means of Sustainable urban Drainage Systems (SuDS) in accordance with the principles of sustainable drainage systems set out in Technical Advice Note 15: Development and Flood Risk, and the results of the assessment shall be submitted in writing to the Local Planning Authority. Where a SuDS scheme is to be implemented, the submitted details shall:*

- i) Provide information about the design storm period and intensity, the method employed to delay and control the surface water discharged from the site and the measures taken to prevent pollution of receiving ground water and/or surface waters;*
- ii) Specify the responsibilities of each party for the implementation of the SuDS scheme, together with a timetable for that implementation; and,*
- iii) Provide a timescale for implementation, management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime'.*

Condition 5 consolidate this statement; *'No part of the development shall be occupied until the sustainable drainage scheme for the site has been completed in accordance with condition no. 4. The sustainable drainage scheme shall be managed and maintained thereafter in strict accordance with the agreed management and maintenance plan'.*

The proposed changes, recently granted planning consent for the works to Maes y Capel, Coedpoeth increase the building footprint by approximately 98m², through the provision of two new bay windows and the addition of a new entrance/ reception area (see figure1).



Figure 1. Proposed building footprint with new areas highlighted.

Existing Surface Water Drainage

A drainage survey has been undertaken to inform the design of the proposed alterations to the building. There are separate foul and surface water systems, with three separate outfalls to the surface water network, two serving the front elevation, with one outfall to the rear. Investigations of the surface water drain run serving the southwest corner of the building have been limited as the proposed changes to this area of the building are minor.

The new bay window to the southeast elevation and the additional entrance/ reception area have required a more detailed investigation of the drains serving this part of the building. The surface water drains connect into the surface water sewer below Greenfield Road.

Topography

The topography of the site falls from the southwest towards the northeast. All of the proposed new works are on the southwest elevation which faces the High Street. There is a landscape area between the High Street and the front elevation of the building. The ground floor level of the building is below that of the High Street.

Ground Investigation

A ground investigation has been carried out (see Appendix 1). In the immediate vicinity of the building there is made ground. The underlying strata is clay. Chemical testing of samples recovered from two trial pits identified levels of lead in the soil at levels exceeding threshold values.

Given that the underlying ground is clay then the option to dispose of surface water by infiltration has been discounted. There are no watercourses in the vicinity of the site. Discharge to the surface water sewer (as existing) is the most practical solution and it also the highest ranking option available to the site from the Welsh Government (WG) priority levels for surface water runoff destination.

To avoid the potential for lead to lead to above ground contamination it is recommended that a minimum of 500mm of clean soil cover be provided to break the source receptor pathway.

Increase in Discharge Rate

Using the formula $Q = 2.78 A p i$ from the modified rational method a discharge rate Q (in l/s) can be calculated. In the formula A is the area (in Ha), p is a runoff coefficient (assumed to be 1 for the impermeable roofs being considered) and i is the rainfall intensity, which to establish a runoff rate in an extreme storm event has been assumed to be 50mm/hr.

The roof area of the two new bay windows and the extension to the entrance is 98m². The associated runoff rate during an event with 50mm/hr or rainfall is 1.4l/s. This is in the same sort of order that flow can be restricted to by the use of a small orifice plate.

In practical terms reducing the flow and providing attenuation is not viable. This does not however mean that the advantages that can be obtained by applying sustainable urban drainage principles to the project cannot be obtained. The options described below will remove surface water runoff during high-frequency/ low-intensity events and will provide a degree of attenuation storage during storm events. It is however difficult to mathematically quantify these benefits against specific storm events.



Sustainable Drainage Options

Despite the elevated levels of lead found during the ground investigation there are options which allow softer SuDS drainage features to be incorporated into the design while controlling the pollution hazard. As noted previously, by providing a minimum of 500mm of clean soil cover the source receptor pathway can be broken.

Introducing soft features such as rain gardens will enable surface water disposal during more frequent events by infiltration and evapotranspiration and will also provide a degree of attenuation storage. It also allows the amenity & biodiversity objectives within the WG SuDS drainage strategy to be addressed.

Drawing 4937-MYC-XX-DR-C-1601_S2_P03 Proposed Drainage Layout (Appendix 2) shows the proposed drainage layout for Maes y Capel. Two rain gardens are to be introduced on the southern side of the building. The rainwater pipes from the new bay extensions and the western elevation of the new entrance/ reception area will discharge to the raingardens, together with several areas of the original building roof (see figure 2).

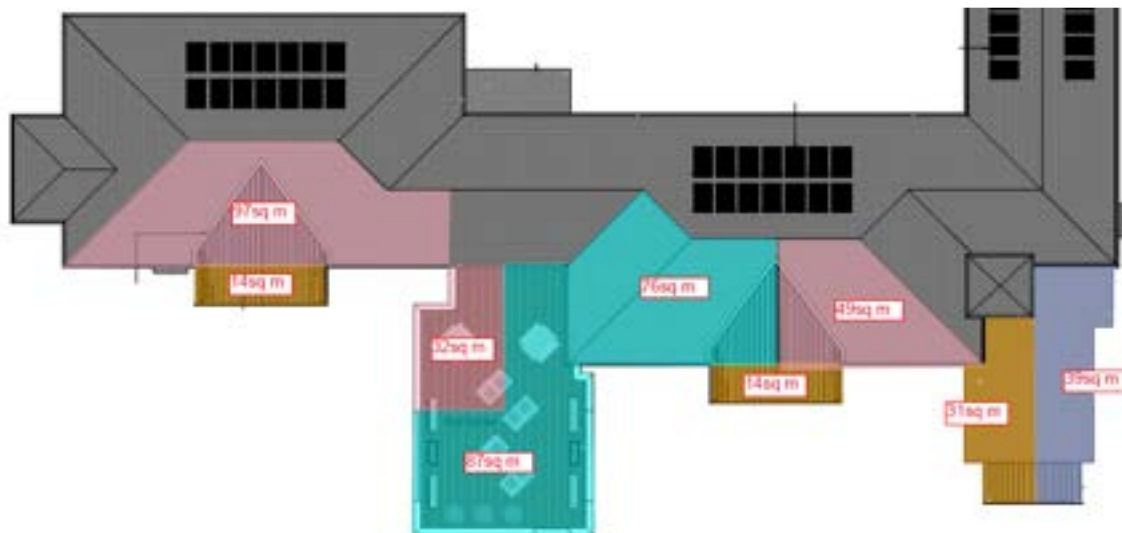


Figure 2. Proposed areas to drain to raingardens

A larger scale copy of the above plan is included as Appendix 3.

The coloured areas in figure 2 represent:

- Pink – existing roof to drain to rain garden
- Brown – new roof to drain to raingarden
- Blue – Existing roof to surface water drain
- Purple – Proposed roof to surface water drain

The proposed construction of the raingardens is shown on drawing 4937-MYC-XX-DR-C-5603_S2_P01 included as Appendix 4.



Suitable plant species for use in the rain garden will be selected by the Landscape Architect. Appendix 5 is a list of plants considered suitable which is taken from the document 'Rain Garden Guide' published by Reset Development <https://raingardens.info/wp-content/uploads/2012/07/UKRainGarden-Guide.pdf>

Roof Area to Rain Gardens

Figure 2 shows the areas of the building it is proposed to drain via rain gardens. This is a combination of both new and existing roofs. Due to the site topography it is impractical to drain the eastern area of the new entrance to a rain garden. Table 1 summarises and compares the existing and proposed drainage scenarios.

Feature	To SW drain (existing) (m ²)	Proposed new building (m ²)	Proposed to raingarden (m ²)	Proposed to SW drain (m ²)
W wing roof	97		97	
W bay window	n/a	14	14	
Roof Terrace	119		32	87
E wing roof	125		49	76
E bay window	n/a	14	14	
Entrance roof (W)		31	31	
Entrance roof (E)		39		39
Total	341	98	237	202

Table 1 .Roof area summary

The western rain garden can store 5.1m³ of runoff (assuming no loss by evapotranspiration). This is 35mm of rainfall on the roof area it serves. There is 4.3m³ of storage in the eastern rain garden, which is 45mm of rainfall on the roof area it serves. During high-frequency/ low intensity events rainwater will enter the rain garden and be lost by evapotranspiration. During more intense or long duration events, once the storage volume is achieved any excess water will rise above the level of the gully gratings and discharge to the surface water drain.

Water stored in the rain garden will always be disposed of by evapotranspiration.

External Paved Areas

There are 207m² of external paved areas adjacent to the southwest elevation of Maes y Capel. As part of the proposed refurbishment works these are to be replaced with 406m² of porous resin bound chipping surface. Surface water will be disposed of by infiltration and evaporation during high frequency/ low intensity events. While the underlying ground is effectively impermeable, the kerb race to the rain gardens will be founded on permeable type 3 subbases material (See section B-B on drawing 4937-MYC-XX-DR-C-5603_S2_P01 (Appendix 4) allowing surface water which has found its way into the porous subbase below the resin bound chipping surface to enter the underdrain below the rain gardens during more significant periods of wet weather.



Water Quality

A summary of the quality of water to be discharged from the site is included in Appendix 6. The sources of rainwater to be discharged from the site and their potential for contamination have been assessed using the simple index approach (SIA) as described in section 26.7.1 of the SuDS manual.

The potential for pollution from residential roofs is very low. Wherever practical runoff from new roofs is directed to rain gardens to mitigate any pollution risk. In one area directing the runoff from a new area of roof to a rain garden is impractical. To compensate, runoff from some areas of the existing roof are to be diverted to the rain garden. Currently 341m² of roof drains directly to the surface water drain. This area is reduced to 202m² by the proposal, providing an improvement in the quality of surface water being discharged from the site.

The SIA does not provide any guidance on runoff from footways. A worst case scenario, assessing the paths as individual driveways has been considered. Porous paving is to be used, which provides mitigation for pollution risks. As the existing impervious paths are to be replaced, this too will provide a nett gain in the quality of runoff from the site.

Implementation

Implementation of the SuDS drainage works will be an integral part of the construction package to rebuild the building. The project has recently been tendered and should commence on site this autumn.

Management and Maintenance

All of the proposed SuDS drainage works are within the curtilage of the site and will be maintained by the site owner, the Housing & Economy Dept of Wrexham County Borough Council. A surface water drainage maintenance plan is included in Appendix 7.

Summary

Planning consent has been granted for modifications to Maes y Capel, Coedpoeth which includes 98m² of new build construction. During a 50mm/hr rainfall event the runoff from these additional areas will be 1.4l/s. A ground investigation has confirmed that the underlying ground is clay, with elevated levels of lead present. Infiltration is unlikely to be effective. There are no watercourses in the vicinity of the building. The existing site drains to a surface water sewer.

The 1.4l/s flow rate from the proposed new building areas is in the same order as can be achieved by a small flow restrictor and it will be difficult to demonstrate any benefit from the provision of a flow restrictor. There are however opportunities to apply sustainable drainage principles to the surface water drains which will provide benefits to the drainage network, even if these are difficult to fully quantify.



It is proposed to take the runoff from majority of the new roofs to raingardens. It is not practical to drain one area of the new roof to a raingarden due to the site topography, however there is an opportunity to divert some areas of the existing roof, also to rain gardens to compensate. The proposal is to take surface water from 237m² of new and existing roof to raingardens. At present 341m² of roof from the southern elevation of the building discharge directly to the surface water drain. This area will be reduced to 202m² by the proposal.

Rain gardens provide an opportunity for the disposal of runoff by evapotranspiration. In extreme events they also provide attenuation storage.

Currently there are 207m² of external paved areas adjacent to the southwest elevation of Maes y Capel. As part of the proposed refurbishment works these are to be replaced with 406m² of porous resin bound chipping surface. Surface water will be disposed of by infiltration and evaporation during high frequency/ low intensity events. This construction will also provide attenuation storage during more significant periods of wet weather.

Wherever practical runoff from new roofs is directed to rain gardens to mitigate any pollution risk, providing an improvement in the quality of surface water being discharged from the site.

The use of porous paving also helps mitigate pollution risks. Although there is a nett increase of hard surfaces, replacing the existing impervious paths will also provide a nett gain in the quality of runoff from the site.

All of the proposed SuDS drainage works are within the curtilage of the site and will be maintained by the site owner, the Housing & Economy Dept of Wrexham County Borough Council.

Prepared by	David High BSc CEng MICE	18 th August 2023
Checked by		
Approved by		
Document Reference	4937-CAU-MYC-XX-RP-D-0300-S3.P01	
Status	For Comment and Approval	

Appendices

- 1 Ground Investigation
- 2 Drawing 4937-MYC-XX-DR-C-1601_S2_P03 Proposed Drainage Layout
- 3 Roof area take off
- 4 Drawing 4937-MYC-XX-DR-C-5603_S2_P01 Proposed Drainage Construction Details Sheet 4
- 5 Suitable plant species
- 6 Water quality summary
- 7 SuDS Maintenance Schedule



APPENDIX 1

Ground Investigation

Wrexham County Borough Council
Housing and Economy
Ruthin Road
Wrexham
LL13 7TU

Our ref: 4937-CAU-XX-XX-XX-O-X300.A0.C1

Date: Tuesday, 30 August 2022

By e-mail

F.A.O. Tracey Roberts

Re: Maes Y Capel- Soil Lead Exceedance

Summary

Preliminary chemical analysis was undertaken on a selection of soil samples from the grounds at Maes Y Capel in Coedpoeth, Wrexham as part of the ground investigation works carried out on the 23rd and 24th June 2022. Made Ground samples within TP1 and TP4 were found to contain exceedances in lead with respect to the generic acceptance criteria (GAC) for Public Open Space (POS).

Site Setting

The site is located off Greenfield Road, Coedpoeth, Wrexham, LL11 3UD, approximately 5.5km west of Wrexham town centre. The site currently comprises of an existing main building with associated infrastructure and parking and is still occupied by residents. See Figure 1 below for reference. The site is surrounded by residential housing and the A525 is located to the south of the southwest boundary.



Certificate Number 9113
ISO 9001, ISO 14001

Caulmert Limited

Registered Office: InTec, Parc Menai, Bangor, Gwynedd, LL57 4FG

Company Registered No. 06716319

Company Registered in Cardiff



Figure 1: Site area delineated by redline boundary

The proposed works involve removing some internal walls and potentially introducing bay extensions and retaining ramp structures to achieve the proposed architectural layout. See Figure 2 enclosed for reference.

Historical Maps

When consulting the historical maps, the earliest map extract (pre-1900) shows the site to comprise of a row of buildings with associated strips of land (presumed gardens). 'The Smelt' is labelled on the map c.100m northwest. Coal mining shafts are located c. 230m northwest and c.500m northeast.

By the 1920s map extract 'The Smelt' has gone and the wider area has increased in residential housing. No significant changes were noted between 1920 and 1960 other than increased residential housing.

By the 1970s another 'Smelt' was present c.300m northwest. No other significant changes noted until 1980s when 'Maes Y Capel' was built. Between the 1980s and present no significant changes occurred.

See Appendix 1 for site Geotechnical Checklist.

Published Geology

According to the published geology for the area (1:50,000 British Geological Survey 'GeoIndex'), the site is shown to be underlain by 'Glacial Till' superficial deposits and bedrock of the 'Pennine Lower Coal Measures' comprising of mudstone, siltstone and sandstone.

Fieldwork

The fieldwork was undertaken on 23rd and 24th June 2022 4no trial holes to a maximum of 3m bgl and 2no hand dug pits to 1.14m bgl were excavated, a plan of the trial holes is presented in Figure 3 enclosed. The locations were positioned on reviewing the utility ground penetrating radar (GPR)

survey, (provided in Appendix 2) and CAT scanning prior to dig. Excavations were supervised, logged and sub-sampled by an Engineering Geologist from Caulmert Ltd.

Ground Conditions

In general, the ground conditions encountered during the ground investigation reflected those detailed within the published geology.

Ground conditions generally comprised of topsoil (0-0.4m bgl), over reworked silt/silty sand or Made Ground ash (0.2-1.1m bgl) over firm to stiff slightly sandy gravelly clay (0.6-3m bgl).

A summary of the ground conditions encountered during this site investigation is presented in Table 1.

A copy of the logs along with photographs of the arisings from each of the excavations is included in Appendix 3.

Table 1 – Summary of Ground Conditions

Location	mbgl			
	Topsoil	Reworked Soil	Made Ground	Clay
TP01	0-0.25	0.25-1.1	-	1.1-2.5*
TP02	0-0.3	0.3-0.8	-	0.8-2*
TP03	0-0.2	0.2-0.6	-	0.6-2.7*
TP04	0-0.4	-	0.4-0.85	0.85-3*
HDP1	-	-	0-1.14	1.15*
HDP2	-	-	0-1.14	1.15*

Topsoil

The topsoil was encountered across the site within all the excavations excluding the hand dug pits. Topsoil was encountered between 0-0.4m bgl comprising of dark brown sandy silt with rootlets and occasional piece of anthropogenic materials such as metal, plastic, pipe etc.

No visual or olfactory evidence of contamination was observed.

Reworked Soil

Reworked soil was encountered in TP01-03 and was encountered between 0.2 and 1.1m bgl comprising of greyish brown very sandy slightly clayey silt or brown very gravelly sand containing occasional gravels of brick, glass, metal, pottery and sandstone.

Made Ground

Made ground was encountered in TP04 between 0.4-0.85m bgl consisting black gravelly slightly silty sand containing gravels of glass bottle, plastic and sandstone.

Made ground was further encountered within HDP1 and HDP1 consisting of Tamac over siltstone gravel subbase over sandy clayey gravel with frequent cobbles. Gravel and cobbles of brick and sandstone.

Clay

Clay was encountered across the site within all of the excavations between 0.8-3m bgl. Clay deposits consisted of firm to stiff grey mottled orange slightly sandy gravelly clay or stiff dark grey slightly gravelly CLAY. Gravel fine to coarse rounded to sub-rounded of siltstone.

Groundwater

Groundwater was not encountered during the ground investigation. Groundwater levels may vary seasonally.

Chemical Testing

Three soil samples were submitted for chemical testing consisting of one sample of reworked soils from TP01 (0.4-0.45m) and a sample of underlying natural clay (1.1m), along with one sample of the Made Ground ash encountered at TP04 (0.4-0.6m). The chemical suite included:

Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Hg, Se, Zn)

Chromium VI

Total TPH (>C6-C40)

Speciated PAH

Asbestos screen

Soil organic matter (SOM)

Water soluble sulphate

Findings

When compared with the generic assessment criteria (GAC) for public open space 1% SOM all contaminants were found to be below the criteria thresholds with the exception of lead within reworked clay from TP01 (0.4-0.45m) and Made Ground ash (0.4-0.6m). A copy of the laboratory results can be viewed within Appendix 4.

Lead within TP01 0.4-0.45m was found to be 719.3 mg/kg and TP04 0.4-0.6m 1243 mg/kg which both surpass the threshold criteria of 630mg/kg. Natural lead exceedance maps observed on the 'UK Soil Observatory' website do not indicate the site should naturally contain high lead with an average value of 114.11 mg/kg being recorded.

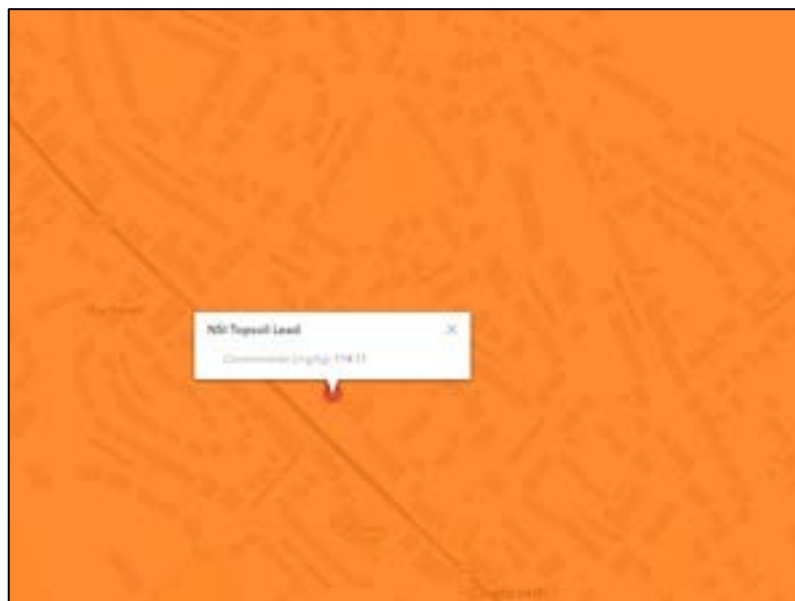


Figure 4: Average Natural Lead Levels in Topsoil (Adapted from 'UK Soil Observatory')

No asbestos was identified in the samples submitted to the lab.

Exceedances in lead within the reworked and made ground soils (the source) pose potential risk for the following receptors:

- Construction workers (without correct PPE)
- Current and future residents using the garden areas (not for vegetable growing).

The pathway is the potential generation of contaminated dust from these soils resulting in the potential inhalation and ingestion.

Recommendations for Further Works

Lead exceedances have been proven within the reworked clay and Made Ground ash deposits at the location of TP01 (0.4-0.45m) and TP04 (0.4-0.6m). These soils are currently unsuited for the current and future land use. The following steps are recommended to aid remediation:

1. Collect further soil samples spread across the site for lead testing within the upper 500mm using a hand auger, to establish if lead is on average in exceedance across the site or if it is in fact isolated to locations TP01 and TP04 within Made Ground and reworked soils. Further values obtained will then be assessed against GAC for POS.
2. A 'Remediation Strategy' to be produced, which will act as a record of how the remediation objectives will be met and carried out on site.
3. Once the 'Remediation Strategy' has been adhered to a 'Verification Plan' should be implemented and reported to demonstrate that the contamination risks that have been highlighted on the site have been reduced and that remediation objectives and criteria outlined within the 'Remediation Strategy' have been met. This will include a site visit for verification testing of soils.

Prior to implementing a 'Remediation Strategy' the extent of the lead exceedance should be identified as mentioned above.

Areas of lead exceedance can implement a 500mm clean soil cover system to break the source receptor pathway. The inclusion of such a cover system should be discussed with the architect once extent of exceedances is known.

Alternatively, soils may be remediated via an off-site disposal route. Should this be the preferred option a classification exercise should be undertaken to assess whether the materials are classed as hazardous or non-hazardous.

The quantity/extent of soil exceedance will determine which route is the most economical for the project.

Workers on site should be made aware of any exceedances and carry out works with the appropriate PPE.

Should you have any questions please feel free to contact me via email or phone call.

Yours Sincerely

Amy Pritchett

Amy Pritchett

Engineering Geologist
On behalf of Caulmert Ltd

Encls.



FIGURES

Figure 2- Proposed Development Plan

Figure 3- Excavation Plan

APPENDICIES

Appendix 1- Geotechnical Checklist

Appendix 2- GPR Survey

Appendix 3- Soil Logs

Appendix 4- Chemical Lab Results

Figure 2- Proposed Development Plan



1 | Level 00 - Ground Floor
 1 : 100



elliswilliams

Project Number: 2705
 Project Name: Maes y Capel

Drawing Status: D1 Costings
 Drawing Number: 2705-EWA-MYC-00-GA-A-10400
 Drawing Name: Lv 00 Plan As Proposed
 Date: 26.01.22
 Drawn By: JH

Rev: P3
 Scale: 1 : 100

Wellfield Chester Road Preston Brook WA7 3BA
 T: 01928 752200 E: info@ewa.co.uk W: ewa.co.uk

Figure 3- Excavation Plan

Appendix 1- Geotechnical Checklist

Project Title	Maes Y Capel	Project Number	4937
Client	WWC Commercial Cleaning		
Ground Conditions			
Made Ground	Thin made ground deposits expected at the surface of the site from previous development.		
Superficial Deposits	Till, Devensian		
Bedrock Deposits	'Pennine Lower Coal Measures' comprising of mudstone, siltstone and sandstone.		
Are there any nearby bedrock faults?	Yes a fault is shown to run southwest to northeast along the eastern end of the site.		
Are there any nearby borehole records?	Yes there are 2no historical boreholes on site		
If yes, provide a brief summary of the borehole records.	SJ25SE/939 31.65 mbgl: Topsoil/drift 0-6.6m Grey shale with thin bands of sandstone 6.6-13.5m Iron stained sandstone (with thin coal lenses at 20.6-20.65m) 13.5m-22.8 Dark grey black mudstone 22.8-29.2m Coal 29.2-30.4 Dark grey black mudstone 30.4-31.65m SJ25SE/939 33.2mbgl: Drift 0-4.6m Shale 4.6-5.3m Sandstone 5.3-6.05m Shale interbedded with thin bands of sandstone and thin bands of sandstone and coal from 15.25m. 6.05-23.2m Sandstone with iron staining 23.2-33.2m		
Topography	The site is level with some localised areas of raised landscaped ground.		
Mining			
Is the site in a Coal Mining Reporting Area?	Yes		
Are there any coal seam outcrops on or nearby to the site?	No		
Is site in an area where past shallow coal mine workings are probable to underlie the site?	No		
Are there any mine entries on or nearby the site?	Yes 1 shaft located c. 100m northwest of the site boundary		
Other	No recorded underground workings. Not located in a development risk area		

	Boreholes on site indicate only thin bands of coal and no evidence of voids.
Ground Gasses/Contamination	
Site History	 Pre 1900s The pre 1900s map shows the site to comprise of a long building (or row of buildings) with surrounding strips of land (presumed gardens). 'The smelt' is located c.100m northwest and a cemetery c. 100m south. Shafts are located c. 230m northwest and c.500m northeast. The wider area comprises predominantly of residential and agricultural land.  Pre 1920s

The pre 1920s map extract shows the smelt to have gone. The main site and remainder surrounding area has not changed significantly.

No significant change between 1920 and 1960s map extracts.



By the 1970s the wider site area contains more residential housing in all directions. The smelt is now located c.300m northwest. No other significant change noted.



	By 1980 the current Maes Y Capel building structure was built. The surrounding area has increased residential housing. No notable change between 1980s and present.
Potential contamination sources on site	Made Ground from previous development.
Potential contamination sources nearby	Construction of the residential dwellings and roads adjacent to site
Radon risk at the site?	The site is in a 10-30% radon elevated area. Radon protection measures are required.
Other gasses	No historical landfill sites identified within 500m of the site.
Flooding	
Rivers	Afon Clywedog is c.350m southwest.
Coastal	N/A
Online flood risk maps	N/A

Figure 1 – Site Location Plan



Appendix 2- GPR Survey



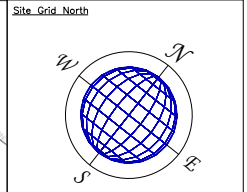
- END OF TRACE ABBREVIATIONS:
- EDT05A - END OF TRACE / OUT OF SURVEY AREA
 - EDT05B - END OF TRACE / UNABLE TO SONDE
 - EDT05C - END OF TRACE / WEAK SIGNAL
 - EDT05D - END OF TRACE / SIGNAL LOSS
 - EDT05E - END OF TRACE / UNABLE TO TRACE
- UNDERGROUND SERVICES KEY:
- WATER MAIN
 - ELECTRICITY
 - SEWER / FOUL
 - SEWER / SURFACE
 - SEWER COMBINED
 - CATV
 - BT
 - COMMS
 - GAS
 - UNKNOWN GPS
 - UNKNOWN SERVICE
 - TRAFFIC SIGNAL
- TAKEN FROM RECORDS - CL 2X
- SEWER / FOUL TFR
 - SEWER COMBINED TFR
 - WATER MAIN TFR
 - GAS TFR
 - ELEC TFR

QUALITY LEVELS

- WATER-Q1-B1
- ELECTRICITY-Q1-B1
- FOUL WATER-Q1-B1
- SURFACE WATER-Q1-B1
- BT-Q1-B1
- COMMUNICATIONS-Q1-B2
- Q1-Q1-B2
- UNDERGROUND-Q1-B2
- TRAFFIC SIGNAL CABLE-Q1-B2
- Q1-Q1-B2 STOP/UTILITY RECORD SEARCH

NOTE

The position and depths of underground apparatus as indicated on this plan are approximate and are intended for guidance only. The cross of locating the apparatus previously before commencing any excavations or other works to the immediate vicinity therefore rests entirely upon the person undertaking or responsible for those works.



- Symbols/Abbreviations (Where Applicable):
- +AV: AIR VALVE
 - +BB: BELLISH BEACON
 - +BH: BOREHOLE
 - +BM: BENCHMARK
 - +BOL: BOLLARD
 - +BS: BUS STOP
 - +CAM: CAMERA
 - +CS: CABLE STAY
 - +CATV: CATV INSPECTION CHAMBER
 - +CBOX: ELECTRICITY BOX, CABLE BOX, ETC.
 - +CCTV: CCTV CAMERA
 - +CATCH: CATCH PIT
 - +ECC: ELECTRICITY COVER
 - +EPIC: ELECTRICITY POLE
 - +ERC: EARTH ROD
 - +FHE: FIRE HYDRANT
 - +FP: FLY POLE
 - +G: GULLY
 - +GV: GAS VALVE
 - +INS: INSPECTION COVER (SQUARE)
 - +INVC: INSPECTION COVER (ROUND)
 - +K: KERB OUTLET
 - +L: LETTER BOX
 - +LIC: LIGHTING COLUMN
 - +LAMP: LAMP POST
 - +LAMP/BS: LAMP POST/BUS STOP
 - +M: MANHOLE (SQUARE)
 - +M: MANHOLE (ROUND)
 - +MOR: MANHOLE
 - +P: POST
 - +PE: PEDESTAL EYE
 - +R: ROAD SIGN
 - +S/R: SIGN POST
 - +SMP: STREET NAME PLATE
 - +ST: STOP TAP
 - +STP: STOP SIGN
 - +TDB: TELEPHONE CALL BOX
 - +TLP: TELEPHONE POLE
 - +TLP/EP: TELEGRAPH POLE/ELECTRIC POLE
 - +T/EC: TELECOM INSPECTION COVER
 - +WM: WATER METER
 - +W: GATE
 - +X: DEFINED POINT
 - +X: CONTROL POINT
 - +T: TREE (CONIFEROUS)
 - +T: TREE (DECIDUOUS)
 - +F: FOLIAGE
 - +H: HEDGE
 - +DPC 99.99m: DAMP PROOF COURSE LEVEL
 - +EL 99.99m: EAVES LEVEL
 - +F 99.99m: FLOOR LEVEL
 - +RL 99.99m: RIDGE LEVEL
 - +SL 99.99m: SCOTCH LEVEL
 - +TL 99.99m: THRESHOLD LEVEL

Revision Information		
Rev	Date	Description

INFORMATION

1) Distance Survey conducted and data was collected using DTM115 and DTM115, transformed from WGS84.

2) Only services located during the site survey are shown on this plan. Further investigation may be required to ascertain the full extent of the site services.

3) Copyright of this drawing is owned by PM Surveys UK Ltd. No part of this drawing is to be reproduced in any form or by any means without the written permission of PM Surveys UK Ltd.

NOTES

1) GPR survey only

2) Detailed notes along 1:100, 1:500 and 1:1000 topographical survey supplied by client.



PM Surveys UK Ltd
Unit 3, Queensferry Industrial Estate
Pentris
Fintshire, CH15 2DJ
Tel: 01244 952477
Email: info@pmsurveys.co.uk

Client Info	
EWA	for Wrexham Borough Council
Tel: mark.jones@ewa.co.uk	
Project	
Maes Y Capel GPR	
Project No	
PMS22112	Sheet: AD
Scale: 1:100	Drawn By: JY
Approved By: JY	
Date	
PMS22112	Issue: 16/06/21