



CONSULTING ENGINEERS

**CIVIL • STRUCTURAL
GEOTECHNICAL • ENVIRONMENTAL**

MGD/17040/01

20th December 2019

Anwyl Homes & Bellway Homes
Anwyl House 2 Alderman Road
St Davids Park Liverpool
Clos Dewi Sant Merseyside
Ewloe L24 9LR
CH5 3DT

Attn: Mr P Harkness & Mr J Matthews

**RE: SUPPLEMENTARY INVESTIGATION WORKS AT GRESFORD RD, LLAY, WREXHAM –
PLOTS 271 - 273**

Dear Mr Harkness,

Further to your recent instructions we have undertaken a programme of supplementary investigation within the rear gardens of plots 271 – 273 to re-evaluate the requirements for a clean capping system within these plots.

The site has been subject to a previous programme of site investigation by REFA which consisted of forty seven (47 No.) machine excavated trial pits and eleven (11 No.) window sample boreholes. The full details of this investigation are provided in report reference 17040/GEIR/A dated November 2018. A formal remediation strategy (report reference 17040/REM/001, dated November 2018) was also developed for the site based upon the original REFA site investigation. A supplementary site investigation was also undertaken by REFA within the area of the former farm buildings which is detailed within letter report reference MD/17040 dated December 2018. These reports should be reviewed when considering this report.

Due to extremely marginal exceedances above the assessment criteria for arsenic in location TP44 (0.4m) and lead in location TP46 (0.2m) identified within the localised made ground deposits during the initial site investigation, a remediation strategy was requested by the local authority. This remediation strategy detailed a precautionary requirement for a clean capping system to be incorporated within localised garden areas which included the garden areas to plots 271 – 273. However, following the removal of topsoil from the area incorporating plots 271 – 273, the client has informed us that it appears that the topsoil is directly underlain by natural strata. We have therefore re-visited the site to undertake further investigation within this area to confirm the ground conditions and re-evaluate the requirement for a clean capping system.

- **General**

We understand that the proposed development comprises of three hundred and sixty two (362 No.) residential properties along with associated road access and garden areas. The proposed development plan is appended to this report for reference.

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- **Investigations**

This investigation commissioned by REFA utilised five (4 No.) trial pits (TP201 – TP204) which were supervised by a REFA engineer. These trial pits were targeted within the rear garden areas of plots 271 – 273 and were excavated to depths between 0.8 – 1.3m bgl. The locations of the trial pits are shown upon the appended supplementary site investigation plan (17040/42).

- **Ground conditions**

No topsoil has been identified within the trial pits as this has already been removed during the development works.

No made ground deposits have been identified within any of the trial pits.

All trial pits were shown to comprise solely of natural clay strata which has been proven in this investigation to a maximum depth of 1.3m bgl. The natural strata comprised of a soft yellowish brown slightly sandy slightly gravelly clay generally to depths of 0.3m bgl underlain by a firm reddish brown slightly sandy slightly gravelly clay. The trial pit logs of trial pits TP34 and TP43 undertaken during the initial REFA investigation in March 2017 have also been reviewed due to their proximity to plots 271 – 273. No made ground deposits were identified in these locations and ground conditions were confirmed to comprise of topsoil directly overlying natural clay strata.

No visual or olfactory signs of contamination have been observed within the natural strata.

CONCLUSIONS

The supplementary site investigation has not identified any made ground deposits within the garden areas of plots 271 – 273. Trial pits have confirmed the presence of natural clay strata proven from current ground level to at least 1.3m bgl.

No visual or olfactory evidence of contamination has been observed within the natural clay strata and reference to the initial desk study has confirmed no evidence to suggest naturally arising elevated concentrations of contaminants within the natural strata.

It can therefore be confirmed that a clean capping layer is not required within the garden areas of plots 271 – 273. This will be detailed and updated within a revision of the remediation strategy.

If during ground works suspicious ground conditions or contamination are identified then the consulting engineer should be consulted and appropriate regulatory authorities should be notified.

We trust that this information meets with your requirements at this time but if you do require anything further or have any queries then please do not hesitate to contact us.

Yours Sincerely



Matthew Dowling (MGeol)

R E FRY & ASSOCIATES LTD

ENC:

Planning layout (PLA/03)

Supplementary Investigation Plan (17040/42)

Trial pit records

Trial pit photographs



Home farm Gresford Road, Llay

ISSUED FOR
PLANNING

FUTURE
PROPOSED
RETAIL
DEVELOPMENT
(Subject to necessary
Reserved Matters
Application)

Cross hatched areas indicate land to be safeguarded
to facilitate pedestrian refuges. All pedestrian refuge
points to be agreed following planning approval.

Cross hatched areas indicate land to be safeguarded
to facilitate pedestrian refuges. All pedestrian refuge
points to be agreed following planning approval.

Footpath to tie in with agreed Pedestrian Refuges
once agreed post Planning Approval

ACCOMMODATION SCHEDULE - LLAY - BELLWAY HOMES					
Unit Ref/Name	Bed No.	Unit No.	Unit ft²	ft² Total	
Private					
5LE(A)168	LEWIS A	5BED/2STOREY DETACHED	1	1677	1677
4A129	LARCH	4BED/2STOREY DETACHED	26	1293	33618
4FA124	FAIRHAVEN	4BED/2STOREY DETACHED	18	1239	22302
4OA115	OAKWOOD	4BED/2STOREY DETACHED	16	1151	18416
3WE103 /SEA103	WESTONEASTON	3BED/2STOREY DETACHED	35	1025	35875
3G0099	GORDON ALT B GAR	3BED/2STOREY DETACHED	2	988	1976
3G0099	GORDON ALT B	3BED/2STOREY DETACHED	24	988	23712
3G0098	GORDON	3BED/2STOREY DETACHED	4	978	3912
3LA094	LANDOWN	3BED/2STOREY DETACHED	8	943	7544
3SH091	SHELLEY	3BED/2STOREY SEMI	1	910	910
3BY085 - ALT	BYRON ALT	3BED/2STOREY SEMI	1	855	855
Affordable Units					
3SH091	SHELLEY	3BED/2STOREY SEMI	3	910	2730
3GR087	GREENWICH	3BED/2STOREY MEWS	2	870	1740
3HA085	HAMPTON	3BED/2STOREY MEWS	2	855	1710
2C0081	COVENTRY	2BED/2STOREY SEMI	2	811	1622
3CH073	CHATS WORTH	3BED/2STOREY SEMI	6	733	4398
2WIFF068	WISTASTON	2BED APARTMENT FF	8	684	5472
2ST062	STUDLEY	2BED/2STOREY SEMI	14	619	8666
1WIGF055	WISTASTON	1BED APARTMENT GF	8	551	4408

Grand Total: 181 Units 181543 ft²

Unit Ref/Name	Bed No.	Unit No.	Unit ft²	ft² Total
DE	DELMARE	4BED/2STOREY DETACHED	4	1790
CA	CAERNARFON	4BED/2STOREY DETACHED	4	1551
KI	KINGSLEY	4BED/2STOREY DETACHED	13	1462
GL	GLYN	4BED/2STOREY DETACHED	9	1404
ME	MELDEN	4BED/2STOREY DETACHED	9	1311
CA	CARDIGAN	4BED/2STOREY DETACHED	21	1175
PO	PORTHMADOG	4BED/2STOREY DETACHED	9	1025
AS	ASCOT	4BED/2STOREY DETACHED	21	1271
SN	SNOWDEN	3BED/2STOREY SEMI	6	1045
TE	TENBY	3BED/2STOREY DETACHED	7	1035
PU	PULFORD	3BED/2STOREY DETACHED	14	1033
CH	CHESTER	3BED/2STOREY SEMI	2	958
BR	BRETTON	3BED/2STOREY SEMIMEWS	10	851
EL	ELWY	3BED/2STOREY SEMIMEWS	5	724
YE	YEOVIL	3BED/2STOREY SEMIMEWS	1	750
Affordable Units				
CH	CHESTER	3BED/2STOREY SEMI	1	958
MO	MONMOUTH	3BED/2STOREY SEMIMEWS	9	804
CA	CARMARTHEN	2BED/2STOREY SEMIMEWS	23	685
YE	YEOVIL	1BED APARTMENT	1	450
FL	FLAT	1BED APARTMENT	12	500

Grand Total: 181 Units 190568 ft²

1:1000 0 10 20 30 50m

P	23.07.18	Road alignment adjacent plots 63 / 67 amended. Band adjacent plot 159 amended. Both amendments to address LPA comment. Parking amended to plot 159 to achieve required visibility.	JNL	
N	13.07.18	Private Drives serving plots 227-229 & 335, 355 amended. Plots 515 & 161 amended. Amendments made to address highway comments.	JNL	
M	02.07.18	Safeguard Highway Improvements added; paths to Anwyl houses amended; garages removed from Cardigan.	RH	JNL
L	27.06.18	Sub-station position further amended plots 235-240 revised; plots 330-333 revised. Kinnerton House type changed to Bolton. Highway amended following meeting with LPA 22nd June 2018.	RH	JNL
K	08.06.18	Sub-station position amended.	JNL	
J	18.05.18	Revised Sketch taken to CAD.	RH	JNL
H	03.05.18	Amends to mix to clients comments.	JNL	
G	01.05.18	Partial re-design following meeting with LPA 25.03.18.	TJA	JNL
F	26.03.18	Further layout amends to clients comments.	JNL	
E	23.03.18	Further layout amends to clients comments.	JNL	
D	20.03.18	Amended to LPA comments.	JNL	
C	14.02.18	Further amendments to layout. Additional landscaping added to courtyard plots 228-235. Parking plot 18 amended. Orientation of plots 166-168 amended.	JNL	
B	13.02.18	Layout amended including access to commercial land amended and layout amended to suit, plots facing Gresford Road (Anwyl) amended to LPA comments, road hierarchy changed, 4.3m roads added in front of plots 20-26 & 190-197, footpath route from existing bus stop on Gresford Road amended, additional elements of block paving added, green linkages between areas of open space increased in width.	JNL	
A	30-11-2017	Issued for Planning	JNL	
Rev	Date	Description	By	Chd

Project: Home Farm, Gresford Road Llay

Drawing Title: Overall Planning Layout

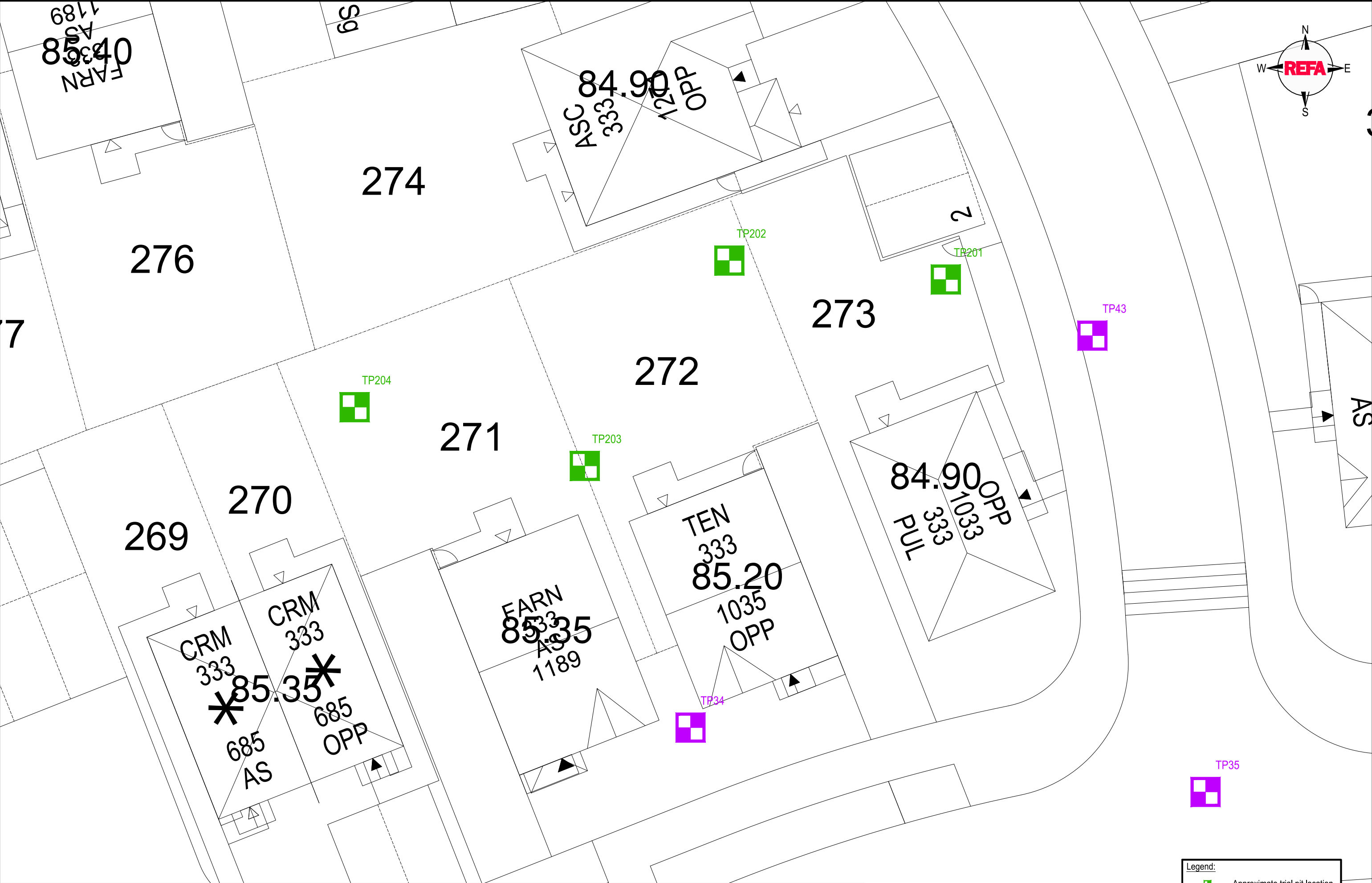
Drawn by: JNL Checked by: - Date: July 2017

Status: PLANNING Scale @ A1: 1:1000

Job no: AH085 Draw no: PLA03 Rev: P

astle planning & design limited
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REFA CONSULTING ENGINEERS CIVIL • STRUCTURAL GEOTECHNICAL • ENVIRONMENTAL	45 Bridgeman Terrace Wigan Lancashire WN1 1TT (01942) 826 020 Email : Info@refa.co.uk Web: www.refa.co.uk	Client:	ANWYL CONSTRUCTION/BELLWAY HOMES	Scale:	1:150	Drawn:	ADP		
		Project:	GRESFORD LANE, LLAY	Sheet Size:	A3	Date:	20.12.19	Rev	
		Drawing Title:	SUPPLEMENTARY SITE INVESTIGATION PLAN PLOTS 271-273	Drawing No:	17040/42	Approved:	MGD	Revision Details	



Legend:	
	Approximate trial pit location (REFA December 2019)
	Approximate trial pit location (REFA March 2017)



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Trial Pit Log

Trial Pit No
TP201
Sheet 1 of 1

Project Name: Gresford Rd, LLay, Wrexham	Project No. 17040	Co-ords: -	Date 06/12/2019
		Level:	
Location: Gresford Rd, LLay, Wrexham		Dimensions (m) 0.70 2.20	Scale 1:25
Client: Anwyl Construction/Bellway Homes Ltd			Logged MGD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			Soft yellowish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	
				0.80			Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	
							End of Pit at 0.80m	

Remarks: No groundwater encountered.	
Stability: Pit Stable	



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Trial Pit Log

Trial Pit No

TP202

Sheet 1 of 1

Project Name: Gresford Rd, LLay, Wrexham

Project No.
17040

Co-ords: -

Level:

Date

06/12/2019

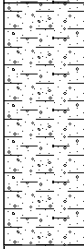
Location: Gresford Rd, LLay, Wrexham

Dimensions (m) 0.70 2.20

Scale
1:25

Logged
MGD

Client: Anwyl Construction/Bellway Homes Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	1.00		HVP=77	0.30			Soft yellowish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	
				1.10			Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	1
							End of Pit at 1.10m	2
								3
								4
								5

Remarks: No groundwater encountered.

Stability: Pit Stable

AGS



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Trial Pit Log

Trial Pit No

TP203

Sheet 1 of 1

Project Name: Gresford Rd, L Lay, Wrexham

Project No.
17040

Co-ords: -

Level:

Date

06/12/2019

Location: Gresford Rd, L Lay, Wrexham

Dimensions (m) 0.70 2.20

Scale
1:25

Logged
MGD

Client: Anwyl Construction/Bellway Homes Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	1.00		HVP=86	0.25			Soft yellowish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	1
				1.30			Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	2
							End of Pit at 1.30m	3
								4
								5

Remarks: No groundwater encountered.

Stability: Pit Stable

AGS



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Trial Pit Log

Trial Pit No

TP204

Sheet 1 of 1

Project Name: Gresford Rd, LLay, Wrexham

Project No.
17040

Co-ords: -

Level:

Date

06/12/2019

Location: Gresford Rd, LLay, Wrexham

Dimensions (m) 0.70 2.20

Scale
1:25

Logged
MGD

Client: Anwyl Construction/Bellway Homes Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	1.00		HVP=100	0.20			Soft yellowish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	1
				1.30			Firm to stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, sub-angular to rounded of mixed lithologies.	2
							End of Pit at 1.30m	3
								4
								5

Remarks: No groundwater encountered.

Stability: Pit Stable



Trial Pit Photographs – Gresford Road, Llay (Plots 271 – 273)

Photo 1 – Trial Pit 201



Photo 2 – Arising's from Trial Pit 201



Photo 3 – Trial Pit 202



Photo 4 – Arising's from Trial Pit 202



Photo 5 – Trial Pit 203



Photo 6 – Arising's from Trial Pit 203

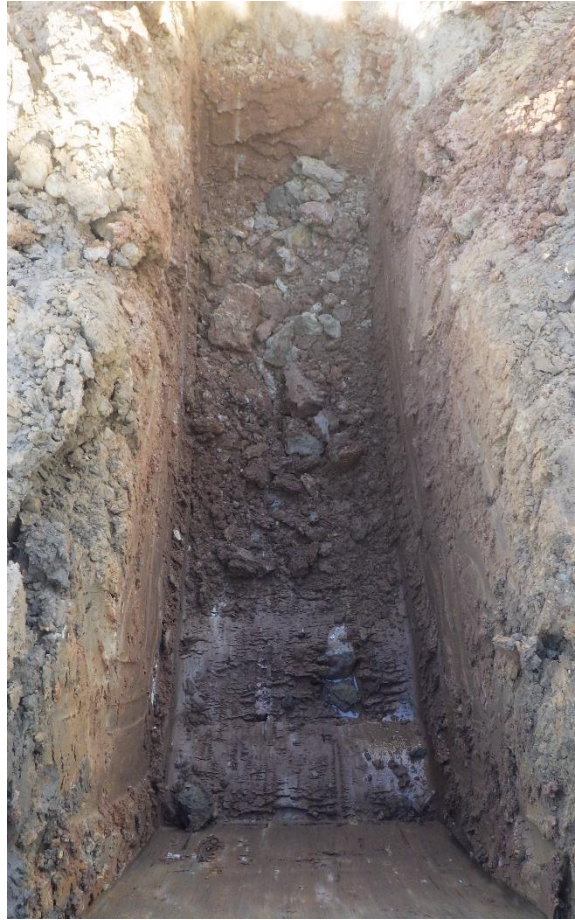


Photo 7 – Trial Pit 204



Photo 8 – Arising's from Trial Pit 204