



Tel: 02920 735354
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Terra Firma (Wales) Limited
5 Deryn Court, Wharfedale Road
Pentwyn, Cardiff
CF23 7HA

Trial Pit No:
TP2
Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions: 1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

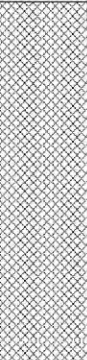
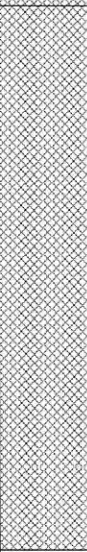
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown sandy gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m

Stability: Trial pit stable

Remarks:

Project Name: Dyffryn Cellwen	Project No: 14753	Co-ords: - Level:	Date: 24/05/2018
-------------------------------	-------------------	----------------------	------------------

Location: Dyffryn Cellwen	Dimensions: 1.80	Scale: 1:25
Client:	Depth 3.00	Logged:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				1.20			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass	1
							MADE GROUND: firm brown very gravelly CLAY with inclusions of brick and glass	2
				3.00			End of Pit at 3.000m	3
								4
								5

Stability: Trial pit stable

Remarks:



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Trial Pit No:

TP4

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions: 1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass	1 2 3 4 5
							End of Pit at 3.000m	

Stability: Trial pit stable

Remarks:



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Trial Pit No:

TP5

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions: 1.80

Depth
3.00

0.80

Scale:
1:25

Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m

Stability: Trial pit stable

Remarks:



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Trial Pit No:

TP6

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

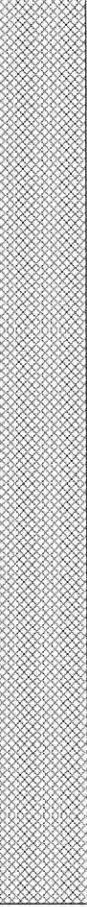
Dimensions: 1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m



Stability: Trial pit stable

Remarks:

ANNEX E
Rotary Percussive Borehole
Logs



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Borehole No.

BH01

Sheet 1 of 3

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				2.50				Backfill broken ground (DRILLERS DESCRIPTION)	1
								Weathered mudstone TILL. (DRILLERS DESCRIPTION)	2
									3
									4
									5
									6
				7.30				MUDSTONE. (DRILLERS DESCRIPTION)	7
									8
									9
									10

Remarks:



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Borehole No.

BH01

Sheet 2 of 3

Project Name:	Dyffryn Cellwen	Project No:	14753	Co-ords:		Hole Type	BH
Location:	Dyffryn Cellwen	Level:				Scale	1:50
Client:		Dates:	26/07/2018 - 26/07/2018			Logged By	ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								MUDSTONE. (DRILLERS DESCRIPTION)	
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks:



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Borehole No.

BH01

Sheet 3 of 3

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								MUDSTONE. (DRILLERS DESCRIPTION)	
				21.50					21
				22.20 22.20				COAL. (DRILLERS DESCRIPTION) MUDSTONE. (DRILLERS DESCRIPTION) COAL dark MUDSTONE. (DRILLERS DESCRIPTION)	22
				23.60					23
								MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	24
									25
									26
									27
									28
									29
				30.00				End of Borehole at 30.000m	30

Remarks:



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Borehole No.

BH02

Sheet 1 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

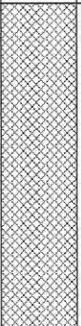
Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				2.20				Backfill BROCKEN GROUND. (DRILLERS DESCRIPTION)	1
								Weathered mudstone TILL. (DRILLERS DESCRIPTION)	2
				5.70				MUDSTONE. (DRILLERS DESCRIPTION)	3
									4
									5
									6
									7
									8
									9
									10

Remarks:



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Borehole No.

BH02

Sheet 2 of 4

Project Name: Dyffryn Cellwen Project No: 14753 Co-ords: Hole Type: BH

Location: Dyffryn Cellwen Level: Scale: 1:50

Client: Dates: 26/07/2018 - 26/07/2018 Logged By: ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				10.50				MUDSTONE. (DRILLERS DESCRIPTION)	
								MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks:



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Borehole No.

BH02

Sheet 3 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				21.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	
								COAL. (DRILLERS DESCRIPTION)	21
				23.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	23
				24.10				SANDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	24
									25
									26
									27
									28
									29
				30.00					30

Remarks:



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Borehole No.

BH02

Sheet 4 of 4

Project Name: Dyffryn Cellwen	Project No: 14753	Co-ords:	Hole Type BH
Location: Dyffryn Cellwen		Level:	Scale 1:50
Client:		Dates: 26/07/2018 - 26/07/2018	Logged By ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				30.50				COAL. (DRILLERS DESCRIPTION)	
				31.00				MUDSTONE. (DRILLERS DESCRIPTION)	
								End of Borehole at 31.000m	31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks:



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Borehole No.

BH03

Sheet 1 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 25/06/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								Backfill BROCKEN GROUND. (DRILLERS DESCRIPTION)	1
				2.50					2
								Weathered mudstone TILL. (DRILLERS DESCRIPTION)	3
				4.00					4
								MUDSTONE. (DRILLERS DESCRIPTION)	5
									6
									7
									8
									9
				9.50				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	10

Remarks:





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Borehole No.

BH03

Sheet 3 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 25/06/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				20.30				COAL. (DRILLERS DESCRIPTION)	
								MUDSTONE. (DRILLERS DESCRIPTION)	
				21.00				COAL. (DRILLERS DESCRIPTION)	21
				22.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	22
									23
				23.50				SANDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	24
									25
									26
									27
				28.20				COAL. (DRILLERS DESCRIPTION)	28
				28.70				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	29
								End of Borehole at 24.000m	
									30

Remarks:



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Borehole No.

BH03

Sheet 4 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 25/06/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				31.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks:

ANNEX F
Laboratory Soil Chemical Test Results



Certificate of Analysis

Certificate Number 18-12841

05-Jun-18

Client Terra Firma (Wales) Ltd
5 Deryn Court
Wharfdale Road
Pentwyn
Cardiff
CF23 7HB

Our Reference 18-12841

Client Reference (not supplied)

Order No ML

Contract Title Dyffryn Cellwen

Description 6 Soil samples.

Date Received 30-May-18

Date Started 30-May-18

Date Completed 05-Jun-18

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

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Sample ID	Depth	Lab No	Completed	Matrix Description
TP1	0.2	1345192	05/06/2018	Dark brown gravelly, sandy CLAY
TP2	0.4	1345193	05/06/2018	Dark brown clayey, sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP3	0.3	1345194	05/06/2018	Dark brown gravelly, sandy CLAY
TP4	0.2	1345195	05/06/2018	Dark brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP5	0.6	1345196	05/06/2018	Dark brown sandy, GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP6	0.2	1345197	05/06/2018	Dark brown clayey, sandy GRAVEL including odd rootlets (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis

Soil Samples

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Lab No	1345192	1345193	1345194	1345195	1345196	1345197
Sample ID	TP1	TP2	TP3	TP4	TP5	TP6
Depth	0.20	0.40	0.30	0.20	0.60	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Moisture Content	DETSC 1004	0.1	%	14	5.1	14	6.0	14	3.1
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.9	< 1.0	< 1.0	< 1.0	4.4	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	8.9	3.8	5.9	4.5	9.3	9.2
Beryllium	DETSC 2301#	0.2	mg/kg	1.1	< 0.2	0.7	0.2	0.2	0.4
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	0.8	1.1	0.7	0.9	1.7	0.9
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.2	< 0.1	0.1	0.3	0.2
Chromium	DETSC 2301#	0.15	mg/kg	15	4.6	15	5.9	12	11
Chromium III	DETSC 2301*	0.15	mg/kg	15	4.6	15	5.9	12	11
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	30	4.5	24	12	13	21
Lead	DETSC 2301#	0.3	mg/kg	26	6.7	15	8.1	20	18
Manganese	DETSC 2301#	20	mg/kg	1400	310	220	240	290	400
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.6	1.7	0.4	0.9	0.6	0.9
Nickel	DETSC 2301#	1	mg/kg	30	5.4	22	7.0	7.3	15
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	84	29	56	43	60	95
Inorganics									
pH	DETSC 2008#			8.0	9.3	7.8	10.8	11.2	8.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Organic matter	DETSC 2002#	0.1	%	1.6	0.4	1.1	0.7	1.6	1.7
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.02	0.07	0.02	0.11	0.29	0.04
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	4.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	44	< 1.4

Summary of Chemical Analysis

Soil Samples

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Lab No	1345192	1345193	1345194	1345195	1345196	1345197
Sample ID	TP1	TP2	TP3	TP4	TP5	TP6
Depth	0.20	0.40	0.30	0.20	0.60	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Aromatic C35-C44	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	48	< 10
Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	48	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.04	0.14	0.19
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.03	0.04
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.12	0.44	0.49
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.09	0.35	0.38
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.06	0.24	0.28
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.12	0.32	0.42
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.11	0.32	0.57
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.04	0.13	0.19
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.16	0.37
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.10	0.27
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.05	0.09
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.10	0.29
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.74	2.4	3.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1345192	TP1 0.20	SOIL	NAD	none	Michael Rutherford
1345193	TP2 0.40	SOIL	NAD	none	Michael Rutherford
1345194	TP3 0.30	SOIL	NAD	none	Michael Rutherford
1345195	TP4 0.20	SOIL	NAD	none	Michael Rutherford
1345196	TP5 0.60	SOIL	NAD	none	Michael Rutherford
1345197	TP6 0.20	SOIL	NAD	none	Michael Rutherford

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * not included in laboratory scope of accreditation.

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

ANNEX G
Plasticity Test Results



2788

Laboratory Report



GEO Site & Testing Services Ltd

Contract Number: 39518

Client Ref: **14753**

Report Date: **19-06-2018**

Client PO:

Client **Terrafirma Wales Ltd**
5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HB

Contract Title: **Dyffryn Cellwen**
For the attention of: **Matthew Lake**

Date Received: **04-06-2018**
Date Commenced: **04-06-2018**
Date Completed: **19-06-2018**

Test Description

Moisture Content

BS 1377 : Part 2 : 3.2 - * UKAS

Qty

3

4 Point Liquid & Plastic Limit (LL/PL)

BS 1377 Part 2 : 4.3 & 5.3 - * UKAS

3

Disposal of Samples on Project

1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

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 Signatories:

Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)

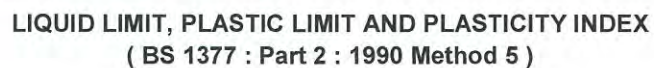
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant)

Wayne Honey (Administrative/Quality Assistant)

GEO Site & Testing Services Ltd

Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN

Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk



Contract Number

39518

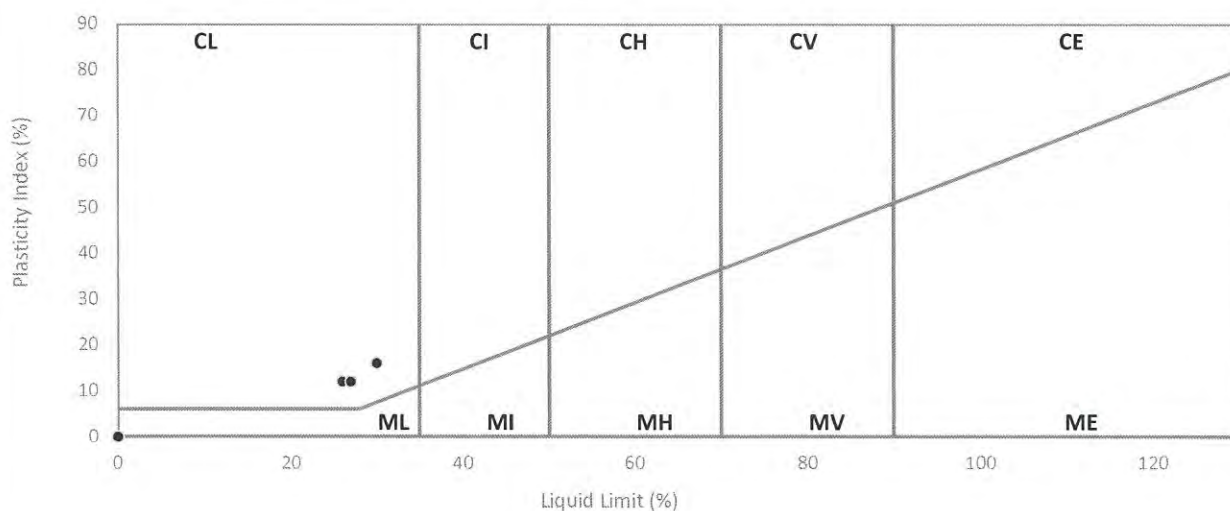
Site Name

Dyffryn Cellwen

Symbols: NP : Non Plastic

: Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	18-06-18	Emma Sharp	
DB	Approved	19-06-18	Paul Evans	



DRAWINGS



Job Number:
14753

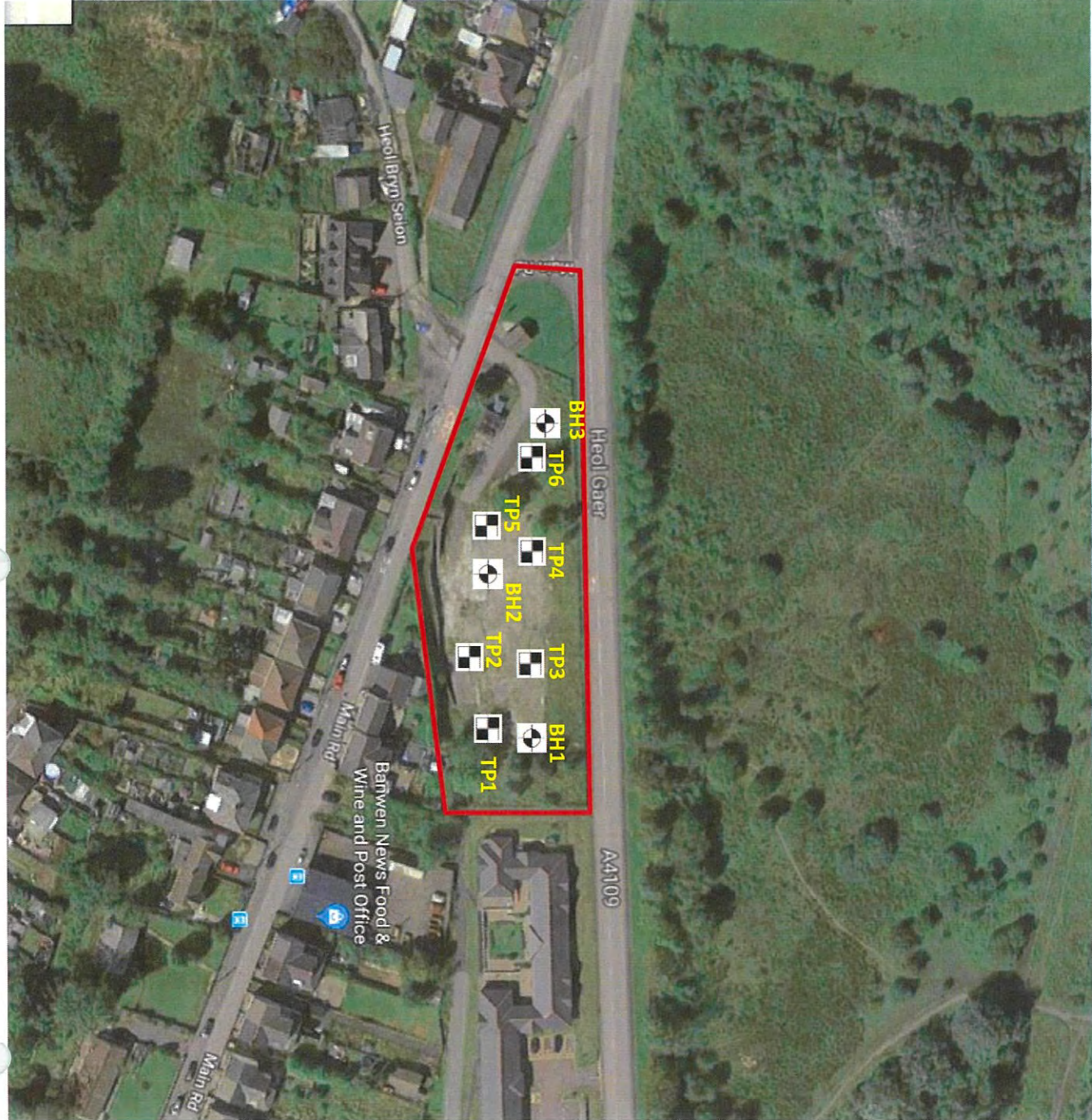
Job Title:
Dyffryn Cellwyn

Drawing Title:
Site Location

Drawing Number:
02

Scale:
Not To Scale

- Legend:
-  Borehole Location
 -  Trial Pit Location



C

C

Construction of 6 Dwellings and Associated Works

Land at Main Road, Dyffryn Cellwen

Materials to be used
in the construction of the external surfaces

July 2020

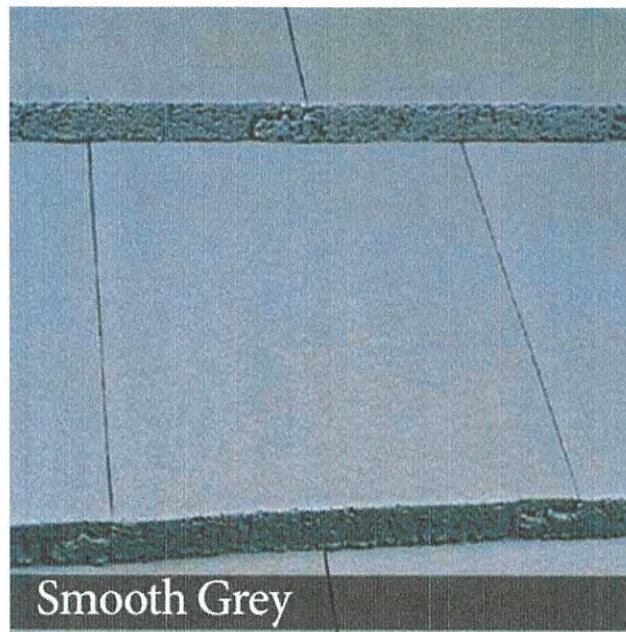
C

C

External materials to be used in the construction of the dwellings

Roof

- Roof covering to be Marley Modern concrete interlocking tiles, colour Smooth Grey.
- Ridge tiles to be complimentary Marley concrete angular tile, colour Smooth Grey.



Soffits, Fascias and Rainwater Goods

- All soffits, fascias and rainwater goods to be uPVC, colour Light Oak.

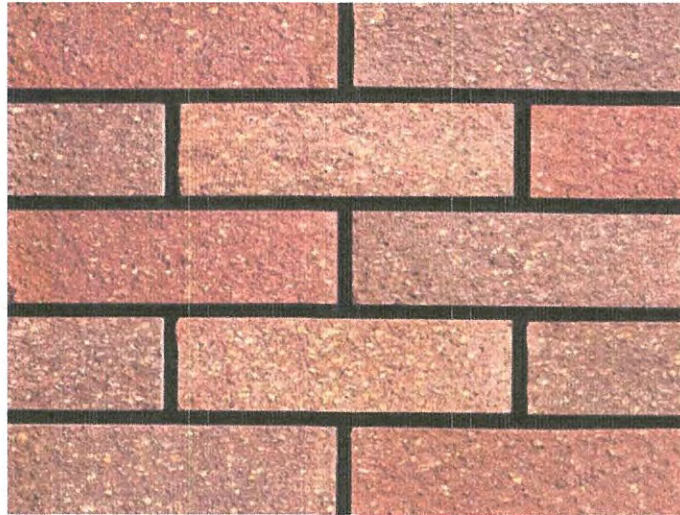


C

C

Walls

- All external wall surfaces to be Facing Quality Brick Chepstow Brindle Rustic by PD Edenhall.



Windows and Doors

- All windows and doors to be uPVC double glazed products. Frame colour to be Light Oak.



C

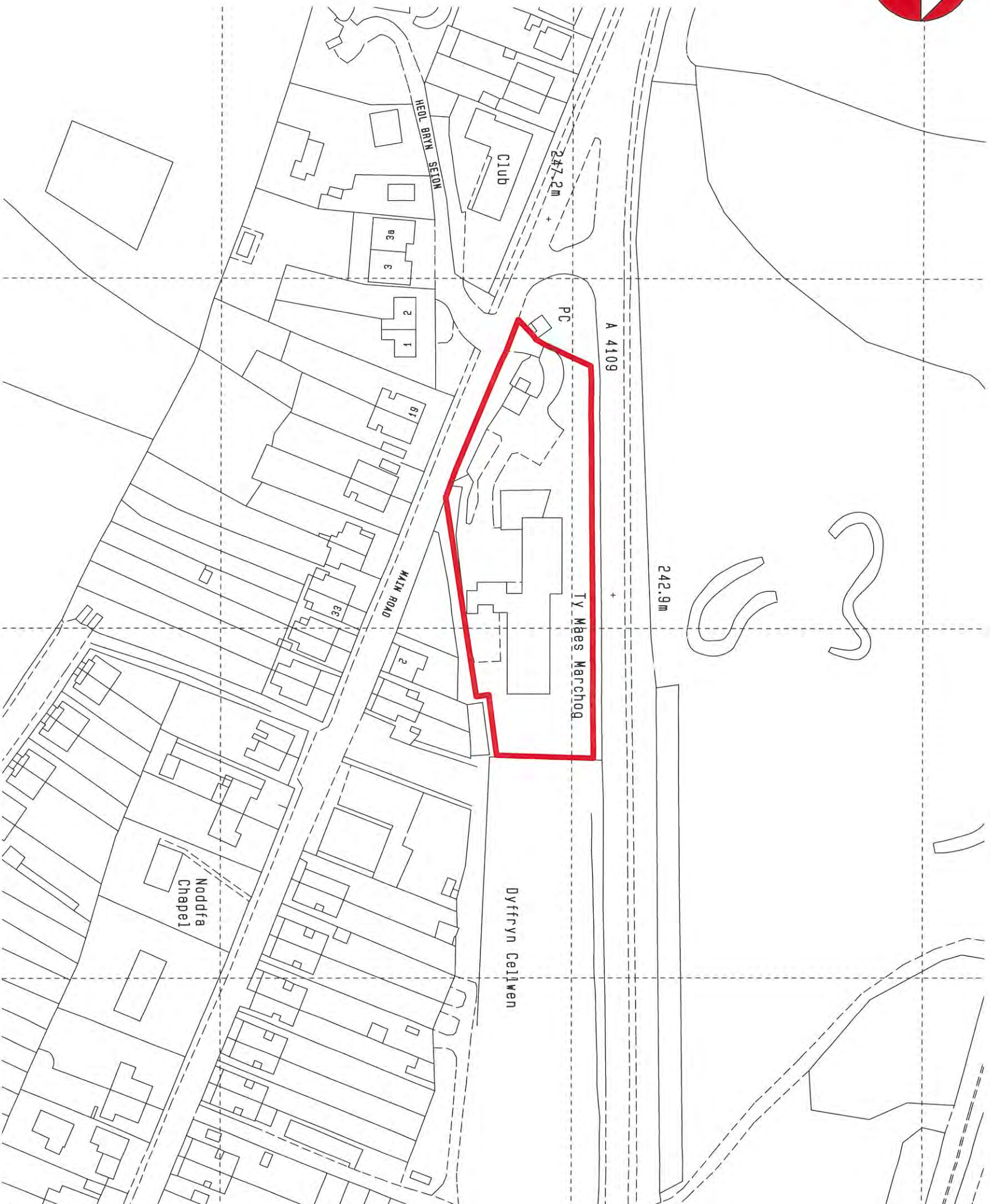
C

External drives and paths

- All drives and car parking areas to be constructed in permeable bituminous materials.
- All paths to the periphery of the dwellings to be constructed in trowel finished small aggregate concrete.

C

C



Do not scale from this drawing.
Refer to figured dimensions only.

The Contractor shall check all dimensions
and report all errors and omissions to the
Architect.

Revision A
Drawing revised for new
planning application
06/01/2017 CL

Client

NPT Homes

Project

Ty Maes Marcog

Drawing Title

Site location plan

Project No	Drawing No	Revision
1711	(00)01	A

Scale

1:1250 Sheet size:
A3

Drawn	Director	Date
CL	CL	06/01/2017

Project Status	Stage
Preliminary	P
Tender	T
Planning	PL
Construction	C
	P



Eos Architects Limited
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South Wales NP23 4PF
Tel: 01633 354771
www.eosarchitects.co.uk



site section 1

site section 2

O/H cables dotted

A 4109

existing public toilets

existing sub station

New access in existing access location

existing garage retained for plot 1

plot 1

plot 2

plot 3

plot 4

plot 5

plot 6

Trees T4-T9 inclusive removed shown dotted

adeptable road

+ occasional tree planting to maintain views

private driveway

single storey garages

Trees T10-T12 inclusive removed shown dotted

Existing trees retained shown thus

new adptable footpath at Main Road

Tree T16 removed shown dotted

21m habitable room distance

	plot 1		plot 2		plot 3		plot 4		plot 5		plot 6	
	min	max	min	max	min	max	min	max	min	max	min	max
dwelling												
length	8,500	9,000	10,000	10,500	10,000	10,500	10,000	10,500	8,500	9,000	8,500	9,000
width	8,500	9,000	7,300	7,800	7,800	7,800	7,300	7,800	8,500	9,000	8,500	9,000
height	8,500	9,000	8,500	9,000	8,500	9,000	8,500	9,000	8,500	9,000	8,500	9,000
garage												
length	5,500	6,000	5,500	6,000	5,500	6,000	5,500	6,000	5,500	6,000	5,500	6,000
width	2,800	3,200	2,800	3,200	2,800	3,200	2,800	3,200	2,800	3,200	2,800	3,200
height	4,500	4,700	4,500	4,700	4,500	4,700	4,500	4,700	4,500	4,700	4,500	4,700

MAIN ROAD

EG

2

6

12

Do not scale from this drawing
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and report all errors and omissions to the
Architect.

Revision G
Drawing revised for new
planning application
06/01/2017 CL

Client
NPT Homes

Project
Ty Maes Marcog

Drawing Title
Proposed site plan

Project No 1771
Drawing No (03/01)
Revision C

Scale 1:500
Sheet size: A3

Drawn CL
Director CL
Date 06/01/2017

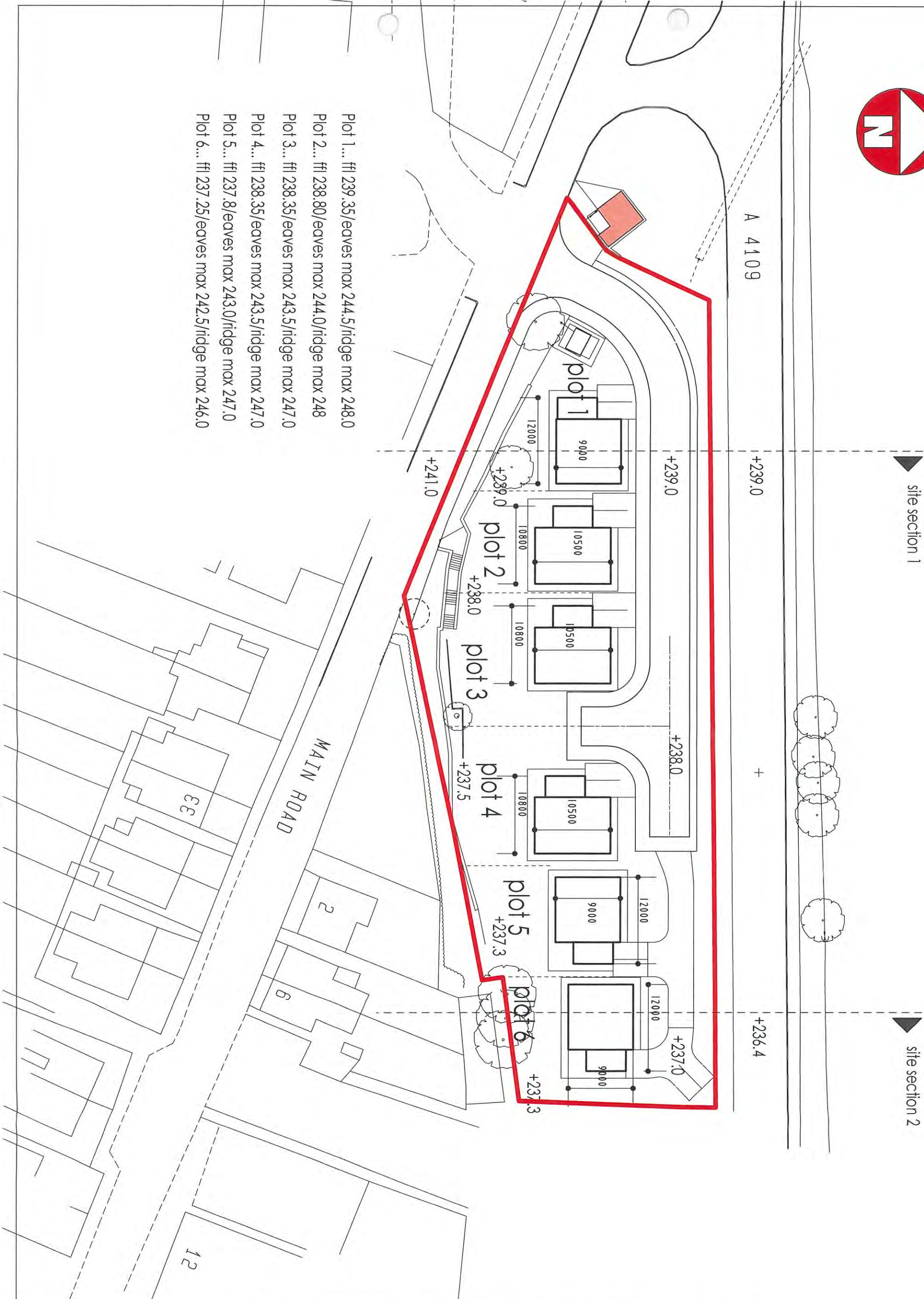
Project Status
Preliminary P
Tender T
Planning PL
Construction C
Stage P



site section 1

site section 2

- Plot 1... ffl 239.35/eaves max 244.5/ridge max 248.0
Plot 2... ffl 238.80/eaves max 244.0/ridge max 248
Plot 3... ffl 238.35/eaves max 243.5/ridge max 247.0
Plot 4... ffl 238.35/eaves max 243.5/ridge max 247.0
Plot 5... ffl 237.8/eaves max 243.0/ridge max 247.0
Plot 6... ffl 237.25/eaves max 242.5/ridge max 246.0



Do not scale from this drawing
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Architect.

Revision A
Drawing revised for new
planning application
06/01/2017 CL

Client
NPT Homes

Project
Ty Maes Marcog

Drawing Title
Proposed levels

Project No	Drawing No	Revision
1771	(03/02	A

Scale
1:500
Sheet size:
A3

Drawn	Director	Date
CL	CL	06/01/2017

Project Status	Stage
Preliminary	P
Tender	T
Construction	C
Planning	P



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186 0533 234771
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The Contractor shall check all dimensions
and report all errors and omissions to the
Architect

Revision A
Drawing revised for new
planning application
06/01/2017 CL

Client
NPT Homes

Project
Ty Maes Marcog

Drawing Title
Site sections

Project No	Drawing No	Revision
1771	(03)03	A

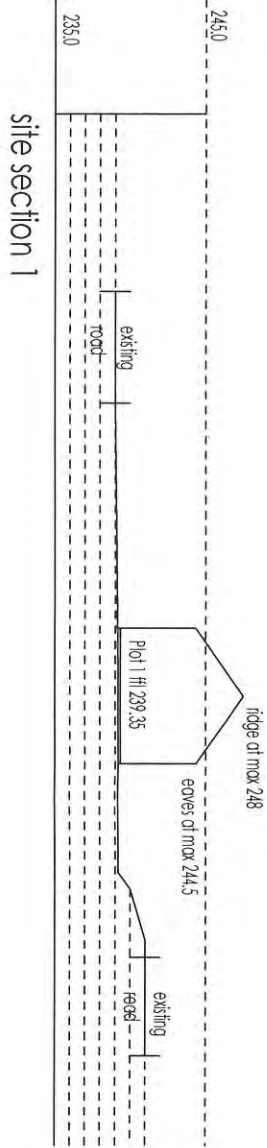
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Drawn	Director	Date
CL	CL	06/01/2017

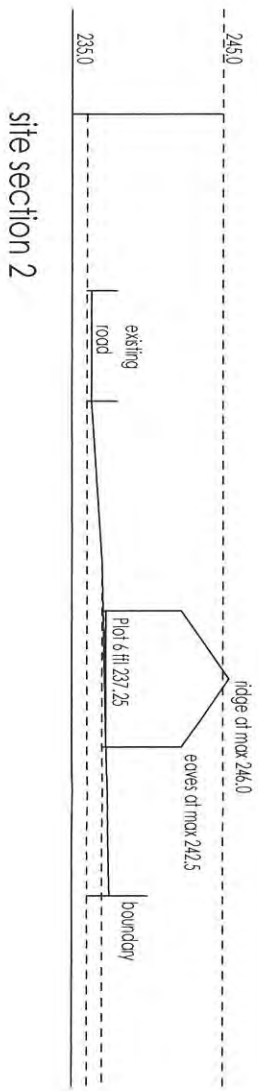
Project Status			Stage
Preliminary	P	Tender	T
Planning	PL	Construction	C
			P



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site section 1



site section 2

HAWKESWOOD ECOLOGY
Specialists in Ecological Survey and Assessment

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Mobile: 07957 154794 E-mail: hawkeswoodecology@btinternet.com
VAT Reg No 926 9271 93
(Proprietors: Niki and Eric Hawkeswood)



BAT MONITORING SURVEYS,
TY MAES MARCHOG;
ESPL NUMBER: 51198A:OTH:EPS:2015

On behalf of

NPT HOMES LTD

November 2015

Ref: HE/30/2013/Year1

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We confirm that in preparing this Report we have exercised reasonable skill and care, taking into account the project objectives, the agreed scope of the work and prevailing site conditions.

CONTENTS

- Summary
- 1. Introduction
- 2. Methodology
- 3. Survey Team Experience
- 4. Field Survey
- 5. Relevant Legislation
- 6. Discussion
- 7. Conclusions
- 8. References

Figure 1: Location of Observers and Compensation Provision.

SUMMARY

Following destruction of a bat roost under licence in 2015 bat monitoring surveys were undertaken. This was in accordance with the approved Method Statement which accompanied the licence application for Natural Resources Wales European Protected Species Licence 51198A:OTH:EPS:2013. The monitoring undertaken is the first of two years at Ty Maes Marchog.

The demolition of the building containing the roosts was undertaken in January 2015. The compensation roosts were already present in the replacement building which is located adjacent to the demolished building.

A common pipistrelle bat appeared to emerge from a bat box during the second monitoring survey. No other activity was associated with the building although there was evidence of a maternity roost of common pipistrelle in a nearby house.

1 INTRODUCTION

- 1.1 Hawkeswood Ecology was commissioned by NPT Homes Ltd to undertake annual bat monitoring of the newly constructed Ty Maes Marchog. The survey complies with the terms incorporated within a derogation Licence gained allowing a bat roost to be destroyed in 2015 by demolition of an adjacent building. The new Ty Maes Marchog Building is located at Grid reference SN 85210 10189.
- 1.2 The new building has replaced an earlier sheltered housing scheme, both buildings being known as Ty Maes Marchog. The earlier building was considered to support common pipistrelle and brown long-eared bats. Compensation has been provided in the new building for both species. As a part of the derogation licence requirements, monitoring is to be undertaken of the compensation in years 1 and 3 post construction.
- 1.3 The objectives of the monitoring survey are:
 - To establish whether the mitigation and compensation arrangements are being used by bats;
 - To assess the importance of any roost recorded.
- 1.4 Two evening observations took place on 27th May and 30th June 2015 as required by the licence. No access to the building interior was possible.
- 1.5 This report consists of the results of the first years monitoring of the mitigation and compensation provided.

2. METHODOLOGY

- 2.1 Evening observations involved two observers and covered all relevant parts of the buildings. Machines used were Echo Meter EM3 real time expansion units.
- 2.2 Recordings taken in the field were analysed using AnalookW software, by use of which it is possible to separate most species present from the sonograms produced.

Constraints

- 2.3 No constraints to the survey were noted.

3. SURVEY TEAM EXPERIENCE

- 3.1 The surveyor and report author is Eric Hawkeswood. Eric has been an active member of the Brecknock Bat Group since 1999 and been involved in a number of long running surveys within the county. He is a Natural Resources Wales (NRW) licensed bat worker (no. 38508:OTH:CSAB:2012) and has extensive experience of roost inspections and emergence work. He has been a professional in the nature conservation field for twenty four years formerly working as

Reserves Manager and Conservation Officer at Gwent Wildlife Trust and Woodland Manager for the Ruperra Conservation Trust. Eric has worked as an Ecological Consultant as joint proprietor of Hawkeswood Ecology since 2001.

- 3.2 Assistant surveyor on the evening observations was Emma Adamson. Emma has extensive experience of emergence, re-entry and activity surveys having worked with Hawkeswood Ecology since 2006.

4 FIELD SURVEY

- 4.1 Two evening emergence observations took place on 27th May and 30th June 2015. The conditions at the time of the observations are detailed below in Table 1:

Table 1: Weather Conditions for evening observation:

Date	Survey type	Times	Weather conditions
27th May 2015	Evening emergence	21.05 - 22.17 hours (sunset 21.17 hrs)	10-10°C, 100% cloud, F3 W breeze, good visibility, light drizzle throughout.
30th June 2015	Evening emergence	21.25 - 22.36 hours (sunset 21.37 hrs)	21 -20°C, clear, F1/2 S breeze, good visibility, dry.

- 4.2 Bat activity was fairly constant in both surveys with but far more sporadic during the first observation in May. In this observation all bats recorded were common pipistrelle bats and no activity was associated with Ty Maes Marchog.
- 4.3 Activity was greater in the second observation with common pipistrelle the most frequently recorded species. At 21.58 a common pipistrelle appeared to emerge from a bat tube on the eastern elevation of the building. There was a frequent passage of bats from housing to the south of Ty Maes Marchog with a minimum of ten bats (common pipistrelle) seen emerging from a house on Cross Road, the number of which could not be confirmed. These bats foraged to the rear of Ty Maes Marchog before mainly passing along the eastern elevation and crossing into open ground on the northern side of the A4109, Heol Gaer.
- 4.4 At 22.14 a soprano pipistrelle was noted foraging along the hedgerow on the northern side of Heol Gaer but it was not associated with the building. Apart from the probable emergence of common pipistrelle from Ty Maes Marchog at 21.58, no other activity associated with the building was noted.

5 RELEVANT LEGISLATION

- 5.1 British bats are protected under the Wildlife and Countryside Act 1981. Schedule 5 of this act made it illegal to intentionally kill, injure or take any British bat. It is also an offence to intentionally damage or destroy their place of rest (the roost).
- 5.2 Further all bat species are protected under Annex IV of the European Communities Council Directive on the Conservation of Natural Habitats and Wild

Fauna and Flora (The Habitats Directive) as amended which requires the United Kingdom government to provide bats with strict protection.

- 5.3 The Habitats Directive is transcribed into England and Wales Law by The Conservation of Habitats and Species Regulations 2010. This legislation states in Part 3, Protection of Species, paragraph 41(1) that a person who:
- (a) deliberately captures, injures or kills any wild animal of a European protected species,
 - (b) deliberately disturbs wild animals of any such species,
 - (c) deliberately takes or destroys the eggs of such an animal, or
 - (d) damages or destroys a breeding site or resting place of such an animal,
- is committing an offence.
- 5.4 Further, with regard to disturbance of EPS, Paragraph 41(2) that disturbance is an act which is likely to:
- (a) to impair their ability—
 - (i) to survive, to breed or reproduce, or to rear or nurture their young, or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
 - (b) to affect significantly the local distribution or abundance of the species to which they belong.
- 5.5 In the case of a development involving the loss or modification of a structure which may affect bats the above legislation must be considered and it may be necessary to apply to the Welsh Assembly Government for a European Protected Species Licence EPSL.
- 5.6 The introduction of the Conservation of Habitats and Species Regulations 2010, has removed the defence of killing or injuring a protected species during a lawful operation, thus even in an instance where planning permission is granted, the presence of bats must be considered and mitigated for prior to commencement of works. Under the above regulations, a WAG licence can only be given if three tests are satisfied:
- The action proposed is in the interest of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance to the environment;
 - That there is not a satisfactory alternative;
 - That the action proposed will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 5.7 Failure to satisfy the regulations and obtain an EPSL where required is likely to result in prosecution and can lead to severe fines of up to £5000 per animal and possible imprisonment.

6 DISCUSSION

- 6.1 A common pipistrelle was thought to emerge from a bat tube on the eastern elevation of the building. No other activity was noted that could be associated with the building.
- 6.2 A probable common pipistrelle nursery roost was identified from a house in Cross Road to the rear of the building but the house number could not be confirmed; this is unrelated to the Ty Maes Marchog building.
- 6.3 No passes by brown long-eared bat were noted in either monitoring survey.

7 CONCLUSIONS

- 7.1 It appears that at least one of the compensation tubes is currently used by a single common pipistrelle.
- 7.2 Monitoring should continue as required in the agreed conditions for a further year in 2017.

8 REFERENCES

Mitchell Jones, A J & Robertson C J (Eds) *Bat workers Manual*, 3rd Edition, Joint Nature Conservation Committee, 2004

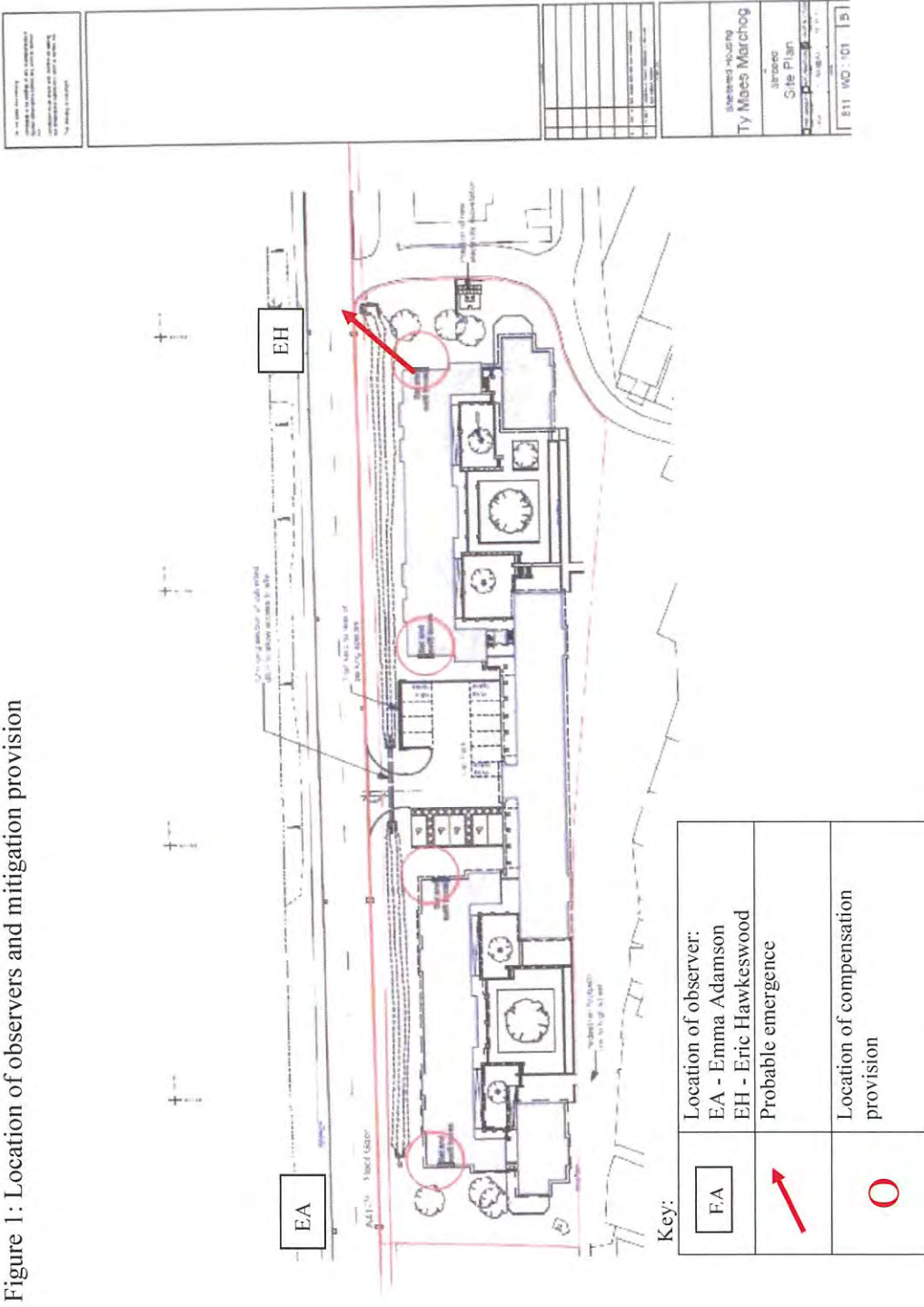
Mitchell Jones, A J, *Bat Mitigation Guide*, English Nature 2004

Bat Conservation Trust (2012), *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

Russ, J. (1999) *The Bats of Britain and Ireland, Echolocation Calls, Sound Analysis and Species identification* – Alana Books.

**FIGURE 1:
LOCATION OF OBSERVERS AND COMPENSATION PROVISION**

Figure 1: Location of observers and mitigation provision



HAWKESWOOD ECOLOGY

Specialists in Ecological Survey and Assessment

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Mobile: 07957 154794 E-mail: hawkeswoodecology@btinternet.com
(Proprietors: Niki and Eric Hawkeswood)

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C

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