DATRYS

Development at Bronfedw

Betws Garmon, Gwynedd

Porosity Report
July 2021

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Porosity Report
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Client:	Arwel Griffiths
Report Status:	**Final**
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Reviewed By:	Jonathan Allen
Approved By:	Adam Caldwell
Date:	July 2021

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1. INTRODUCTION

In accordance with your instructions, Datrys undertook porosity tests for a greenfield site at Bronfedw, Betws Garmon on the 15th of June 2021.

In carrying out these tests Datrys did not encounter any complications, services & utilities or below ground structures. All tests were completed as proposed and results were recorded for evaluation and future design purposes.

The intention of the testing was to identify ground permeability for potential use of a soakaway and drainage field.

2. GENERAL OVERVIEW

The site is located south east of Llyn Cwellyn in Betws Garmon at National Grid Reference SH 57080 54344.

The purpose of the investigation was to undertake Soil Infiltration tests in accordance with BRE Digest 365.

On the 15th of June two trial pits were undertaken to depths of 1m and 0.6m. The pits indicated that there is topsoil overlaying brown, well graded, sightly silty, slightly sandy sub-angular GRAVEL with occasional cobbles to the termination of the pit. Groundwater was not encountered. All trial pits were stable with no sign of collapse.

The trial pits were undertaken within the site as indicated within the attached plan (Appendix A).

The purpose of this report is to ascertain the infiltration values of the underlying strata for the design of surface water soakaways and drainage field within the proposed development.

3. SITE CONDITIONS

The weather at the time of the investigation was dry and sunny.

The site is located on a greenfield south east of Llyn Cwellyn in Betws Garmon.

The site topography consists of a fall down from north east to south west of approximately 1.5m. The site topography is consistent and ties in with the adjacent access road connecting to the site from the A4085.

The pits indicated that there is topsoil overlaying brown, well graded, sightly silty, slightly sandy sub-angular GRAVEL with occasional cobbles to the termination of the pit. No ground water was encountered. British Geological Survey Maps indicate that the bedrock formation within the site is categorised as Nant Ffrancon Subgroup, which could vary from siltstone to sandstone thus having a variable permeability.

Figure A – Google Earth Abstract of Site

4. SOIL INFILTRATION RESULTS

Three porosity tests were undertaken within each pit; the soakaway test results indicated that both pits, once filled, showed signs of water movement and began infiltration. Due to the promise of the first test, two further tests were carried out to ensure accuracy and undertaken in accordance to BRE365.

The trial pit was stable with no sign of collapse.

No ground water was encountered.

Porosity Pit 1			
	Depth (m)	Soil Infiltration Rate (m/s)	Vp Rate (m/s)
Test 1	0.8	1.80x10-4	1.86
Test 2	0.8	1.25x10-4	2.66
Test 3	0.8	5.54x10-5	6.01

Porosity Pit 2			
	Depth (m)	Soil Infiltration Rate (m/s)	Vp Rate (m/s)
Test 1	0.4	1.65x10-4	2.02
Test 2	0.4	6.46x10-5	5.16
Test 3	0.4	2.82x10-5	11.82

5. CONCLUSIONS

Our findings indicate that the brown, well graded, slightly silty, slightly sandy sub-angular GRAVEL with occasional cobbles is considered to have sufficient permeability (above 1x10-6m/s) therefore the site is suitable for infiltration.

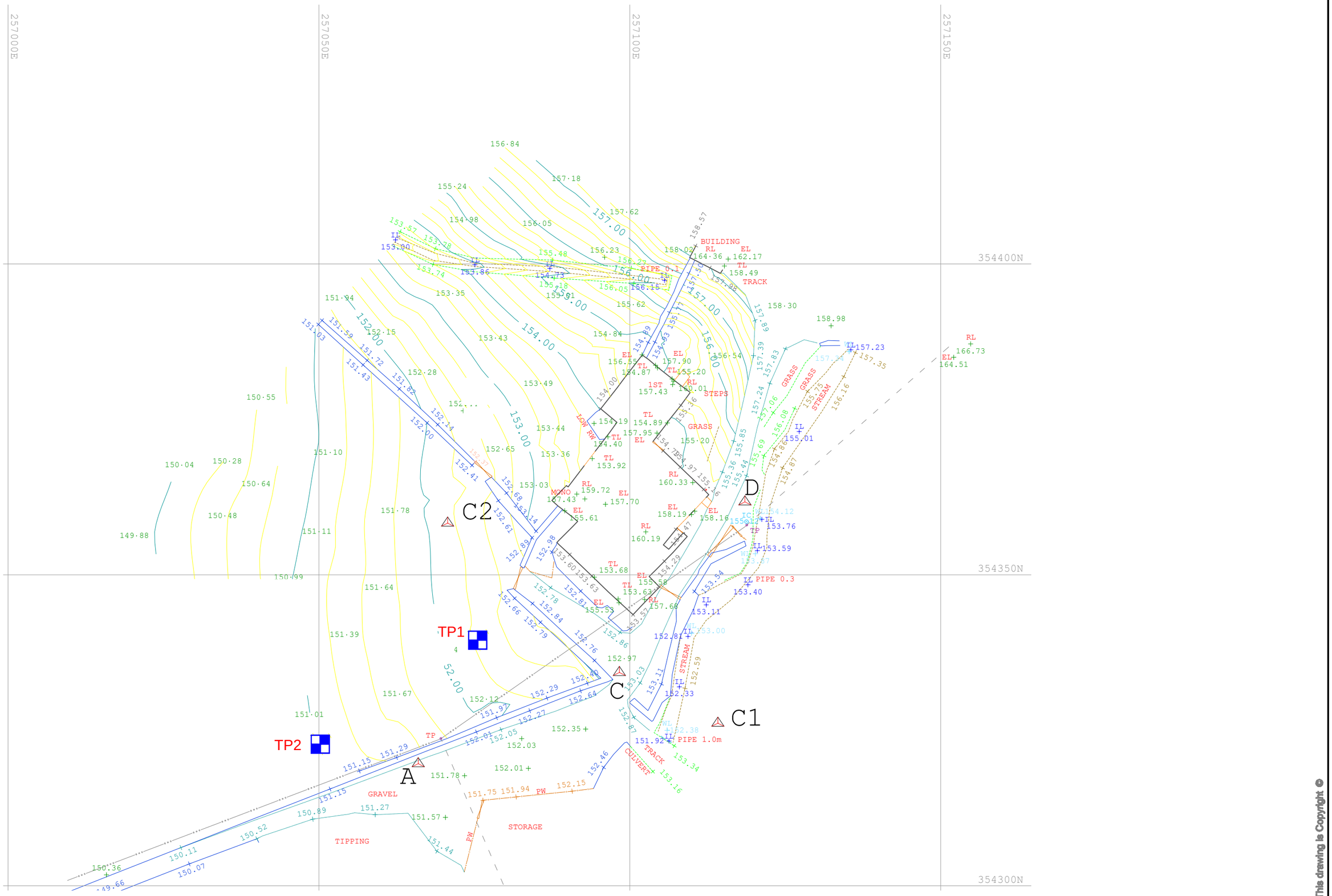
As infiltration to ground is feasible we recommend that further investigation is undertaken to determine how and where infiltration will be implemented (following the SuDS hierarchy and Building Regulations Part H).

Whilst the tests indicate a suitable strata for soakaways, in accordance with the desired traits of SAB, the incorporation of 'leaky' SUDS features should be considered to maximise any opportunity for infiltration/percolation by implementing additional features where possible.

As the Vp rate is below 12m/s, which is the required rate by Building Regs Part H, the use of a Drainage Field will require filter sand surround to artificially slow down infiltration. Discussions with Building Regulations have indicated that 700mm of sand will be required, similar to the drainage mound detail within the Building Regulations, Part H.

APPENDIX

APPENDIX A – POROSITY PIT LOCATION PLAN

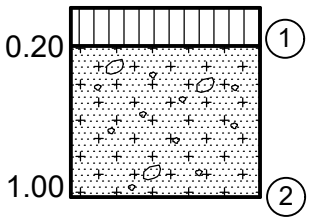


TITLE: Porosity Pit Location Plan	PROJECT: Bron Fedw Uchaf, Rhydd Ddu	DATRYS MODELU DYLUNIO PEIRIANNEG MODEL DESIGN ENGINEERING	
Job No. 21147	DATE 09.06.21	SCALE NOT TO SCALE	
ACAD Ref. -	CHECKED	PASSED	
DRAWN JA	DRG No.	REV	

APPENDIX B – TRIAL PIT LOG

21147

TP1



SIDES STABLE
NO WATER
ENCOUNTERED

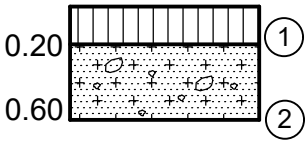
① TOPSOIL

② brown, well graded, slightly silty, slightly sandy, sub angular, GRAVEL with occasional cobbles

TITLE	PROJECT			
Porosity Test 1	Bronfedw Betws Garmon	DATRYS	DRAWN AA	SCALE 1:40
			DATE 26.07.21	CHKD JA
			DRG No. 21147/TP1	

21147

TP2



SIDES STABLE
NO WATER
ENCOUNTERED

① TOPSOIL

② brown, well graded, slightly silty, slightly sandy, sub angular, GRAVEL with occasional cobbles

TITLE	PROJECT			
Porosity Test 2	Bronfedw Betws Garmon	DATRYS	DRAWN AA	SCALE 1:40
			DATE 26.07.21	CHKD JA
			DRG No. 21147/TP2	