



THE ENTERPRISE CENTRE,
MERTHYR INDUSTRIAL PARK,
PENTREBACH,
MERTHYR TYDFIL,
SOUTH WALES,
CF48 4DR.

BLANDFORD CONSULTING

Geologists Working With The Environment...

**Mr Kevin Jones,
Railway Inn,
High Street,
Bedlinog,
Treharris, CF46 6RP.**

Our Ref: BC/MB/10.23.02.

Date: 16th October 2023.

Dear Mr Jones,

Re: Percolation Test, Land at Former Railway Inn, Bedlinog.

At your instruction we've carried out a percolation test on land at the former Railway Inn in Bedlinog, which is situated on the High Street in Bedlinog (see Figure 1). The test was carried out at the rear of the property where it is planned to install a soakaway intended to manage the run-off from car parking areas as required by planning condition 3 of the permission for the development (ref. no. P/20/0108). A soakaway was planned, located in the rear garden area of the development, the soakaway was originally intended to manage run-off from the rear of the properties and the car parking areas (see Figure 2). The drainage arrangements have been amended in agreement with building control and the soakaway is now intended to serve only the car parking areas (see Figure 2).

A trial pit was excavated close to the proposed location of the soakaway, it encountered Made Ground to a depth of 0.25m, underlain with a sandy GRAVEL and COBBLE which is interpreted as being weathered bedrock (see Figure 3). The published geology for the Site shows it to be underlain with a thick sandstone development assigned to the Brithdir Beds, a sub-division of the Upper Coal Measures. The weathered bedrock interpreted as being present in the trial pit is consistent with the published geology. The test was carried out in accordance with Digest 365. The supply of water filled the pit to a depth of 0.76m, with the result that the infiltration rate applies to the weathered bedrock.

Three tests was carried out, the reported figure below is for the slowest of the three tests, providing a conservative approach to the calculation of the infiltration rate and soakaway design (see Figure 4). The tests were carried out following a period of intermittent and sometimes heavy rainfall with heavy rainfall on the day prior to the tests being carried out.

No groundwater was encountered in the trial pit.

The infiltration rate was found to be 1.464×10^{-4} . It is noted that the car parking areas are shown to be surfaced with permeable paving, however, planning condition 3 requires management of the run-off from the parking areas. The soakaway design calculations have been carried out on the basis that the car parking areas will be hard surfaced, providing a very conservative design outcome. From the calculation tables below it is deduced that the maximum capacity of the soakaway will be for the 120 minute duration storm. Based on a soakaway design using a gravel fill with an assumed 35% void capacity, the required area of the soakaway

will be 9.94 square metres, *e.g.* 3.15m x 3.15m. Based on a soakaway design using a crate fill with a 95% void capacity the area of the soakaway required will be 3.31 square metres, *e.g.* 1.15m x 2m. Both the above soakaway solutions are based on an active depth of 1.0m within the soakaway, *i.e.* if the invert level is 500mm below ground, the base of the soakaway will be at 1.50m below ground level.

If you have any queries, please feel free to give me a call.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Dr Malcolm Blandford', with a stylized flourish at the end.

Dr Malcolm Blandford.
Chartered Geologist.

Figure 1
Location Plan



Figure 2
Schematic Drainage Layout Plan

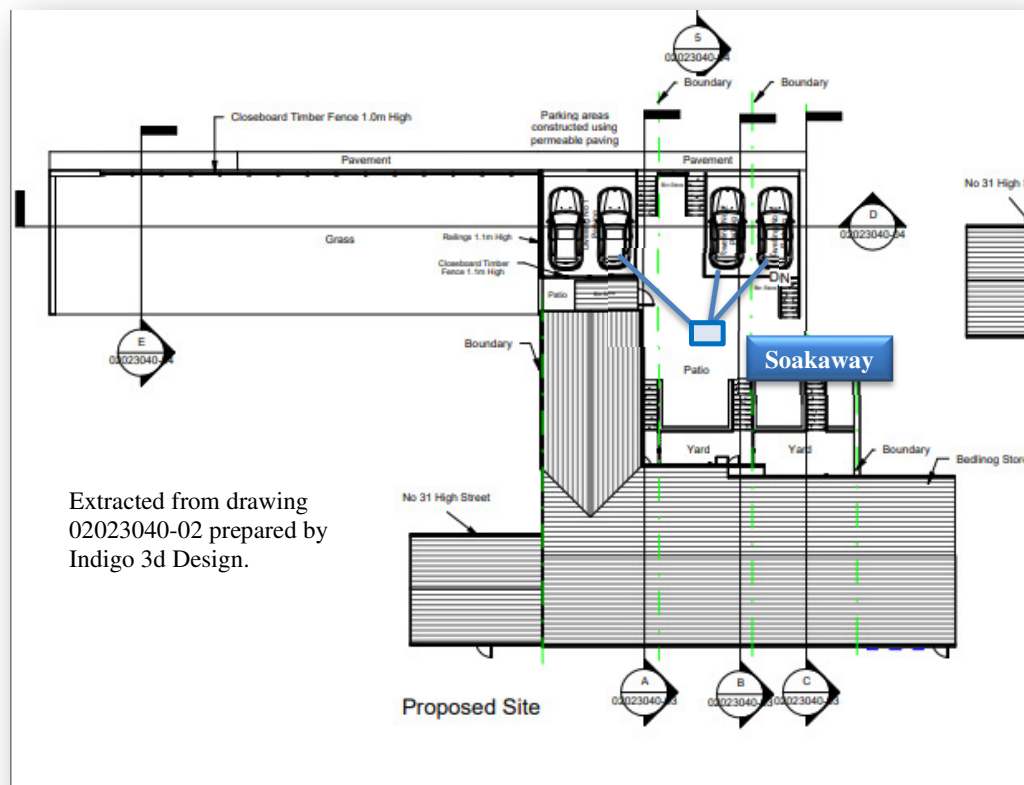


Figure 3
Trial Pit Location Plan

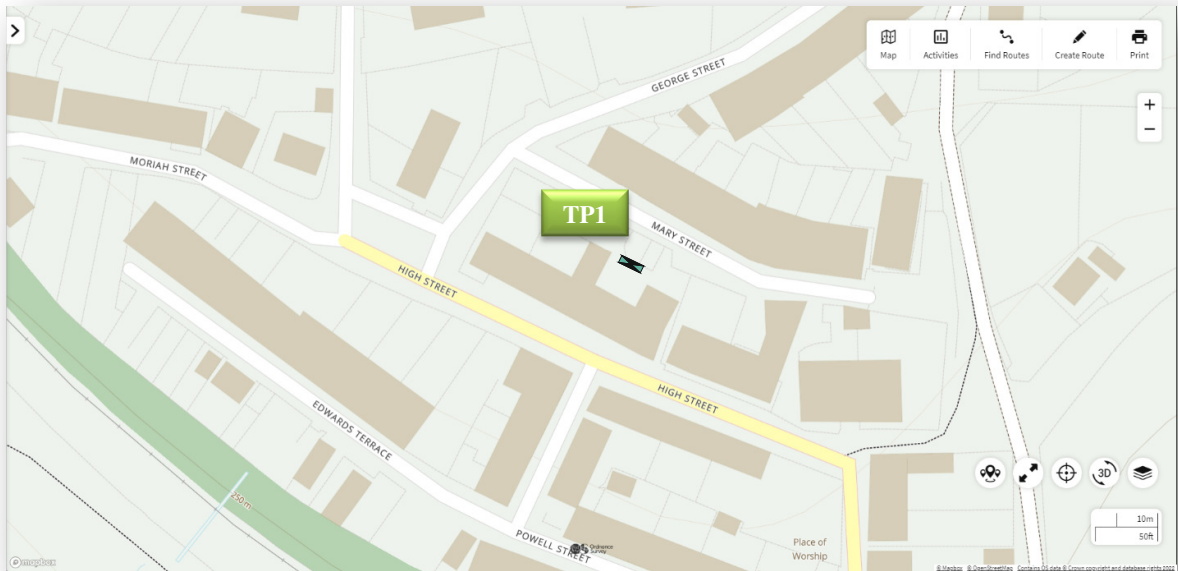
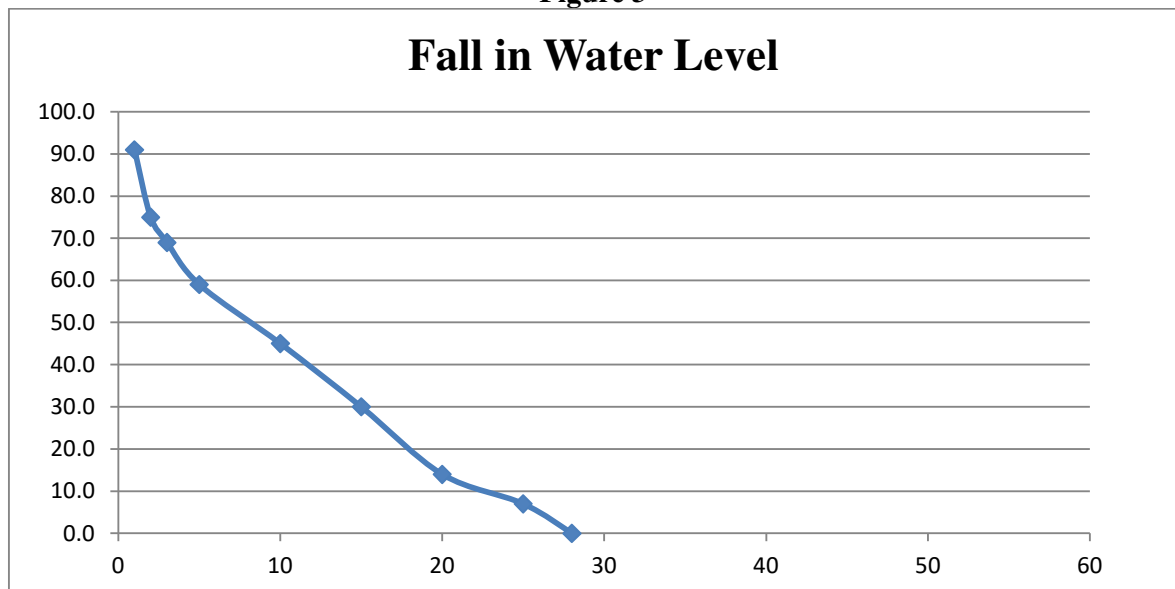


Figure 3
Fall in Water Level



Soakaway Calculations

Storm Duration D (mins)	Z1	M5-D (mm)	Z2 [M10]	M10-D min [R] (mm)	Z2 [M100]	M100-D min [R] (mm)	Inflow (m³)	Inflow +35% CC (m³)	Outflow (m³)	Required Storage Volume (m³)
5	0.29	5.80	1.20	6.96	1.84	10.67	0.85	1.15	0.098	1.05
10	0.43	8.60	1.22	10.49	1.91	16.43	1.31	1.77	0.196	1.58
15	0.54	10.80	1.23	13.28	1.91	20.63	1.65	2.23	0.294	1.93
30	0.73	14.60	1.24	18.10	1.95	28.47	2.28	3.07	0.588	2.49
60	1.00	20.00	1.20	24.00	2.00	40.00	3.20	4.32	1.176	3.14
120	1.33	26.60	1.17	31.12	2.03	54.00	4.32	5.83	2.351	3.48
240	1.77	35.40	1.17	41.42	1.99	70.45	5.64	7.61	4.703	2.91
360	2.12	42.40	1.17	49.61	1.97	83.53	6.68	9.02	7.054	1.97
600	2.62	52.40	1.17	61.31	1.94	101.66	8.13	10.98	11.756	-0.78

Soakaway Pit Volume, Crates at 95% Void (m³)	Area of Soakaway (m²)	Soakaway Pit Volume at 35% Void (m³)	Area of Soakaway (m²)	Design Depth (m)	Infiltration Rate (f factor)	Area of Hard Surfaces (m²)
1.00	1.00	3.01	3.01	1.00	0.00014637	80
1.50	1.50	4.51	4.51			
1.84	1.84	5.53	5.53			
2.36	2.36	7.11	7.11			
2.99	2.99	8.98	8.98			
3.31	3.31	9.94	9.94			
2.76	2.76	8.30	8.30			
1.87	1.87	5.62	5.62			
-0.74	-0.74	-2.22	-2.22			

Trial Pit Details	TP1
Length (m)	1.10
Width (m)	0.75
Depth (m)	1.24
Effective Depth	0.76
Test Volume	0.63
Effective Volume (V _{p75-25})	0.31
Internal Surface Area (a _{s50})	2.23
50% volume drop time (t _{p75-25})	16.00
Soil Infiltration Rate (f) [m³/sec]	0.0001464

PARTNERS: DR MALCOLM BLANDFORD, MR TIMOTHY BLANDFORD, MR DAVID BLANDFORD

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Trial Pit Geotechnical Log and Photographs

PROJECT: Former Railway Inn, Bedlinog		 THE ENTERPRISE CENTRE, MERTHYR INDUSTRIAL PARK, PENYREFACH, MERTHYR TYDFIL, SOUTH WALES, CF45 4DR. BLANDFORD CONSULTING <i>Geologists Working With The Environment...</i>	
CLIENT: Mr Kevin Jones			
Trial Pit: 1			
Equipment Used: Tracked Excavator			
Depth	Description	Legend	Backfill/ Installations
0.25m	MADE GROUND Compact very dark grey/black sandy fine medium and coarse GRAVEL and COBBLE of angular and tabular sandstone and sub-angular coal and coalsand. Very dense, brown sandy angular and mainly tabular medium and coarse GRAVEL and COBBLE of sandstone. (Weathered Bedrock).	 0.25m	
1 1.24m	Trial Pit completed at 1.24m.	>0.99m	
2			
3			
4			
Stability: No shoring installed Dimensions: Width: 0.75m, Length 1.10m, Depth 1.24m Samples Collected: None Groundwater: None encountered Comments: Orientation: 340 de grees Date: 9th October 2023 Engineer: Dr Malcolm Blandford Report No: BC/MB/10.23.03.			

Photo Plate 1, Trial Pit 1



Report No. BC/MB/10.23.02.
 Study on Land at
 Former Railway Inn, Bedlinog.



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