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Our Ref: mte/8398.02.4057 Letter Report
22nd February 2024

Max Collins
Spring Design
Unit 2,
Chapel Barns
Merthyr Mawr
Bridgend
CF32 0LS

BY EMAIL

Dear Max,

PROPOSED RESIDENTIAL DEVELOPMENT, TUDOR INN, CIMLA, NEATH ADDITIONAL SOAKAWAY INVESTIGATION

Further to your recent instruction, we are pleased to provide the results of the further soakaway testing undertaken at the former Tudor Inn site, in Cimla, Neath.

1.0 INTRODUCTION

We understand that Tai Tarian are considering the re-development of the site and a potential constraint on the development is the disposal of surface water run-off.

The Earth Science Partnership (ESP) have previously investigated the site, this was reported in January 2023, ref. Geotechnical and Geo-environmental Assessment ESP.8398.3830.

ESP were instructed to undertake five soakaway tests in accordance with BRE 365 in locations chosen by the drainage engineer for the scheme; this letter report provides a summary of the site works undertaken and the results of the testing.

2.0 EXPLORATORY WORKS

Five trial pits (TP01 to TP05) were excavated using a JCB 3CX on 6th February 2024. The test pit positions are shown on Figure 1.

The trial pits records are presented in Enclosure A, and the soakaway infiltration records are presented in Enclosures B.

The test pits were excavated with a plan area of approximately 0.6m width by 2.8m length and to depths of between 0.7m and 1.6m. The infiltration tests were undertaken in accordance with BRE

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365, i.e. water was added to the test pit from a towed bowser and the water depth monitored against time as infiltration into the soils took place. The test was repeated three times over the succeeding days. On completion of the testing, the test pits were backfilled with arisings compacted in layers.

3.0 GROUND CONDITIONS ENCOUNTERED

The strata identified in the test pits are presented in the trial pit logs in Enclosures A and summarised below:

- **Topsoil:** was encountered in the eastern pits, and comprised soft dark brown sandy gravelly clay/silt to depths of 0.5m with frequent roots and rootlets
- **Made Ground:** present in the central or eastern pits to depths of between 0.5m and 0.8m, as a soft dark brown gravelly sandy clay/silt with fragments of brick, plastic, concrete and glass.
- **Hughes Member:** encountered beneath the Topsoil or Made Ground generally comprising moderately weak, thinly to very thinly, tabular siltstone. The rock quickly became difficult to excavate with the excavator bucket.

No groundwater was recorded during the excavation of the test pit, or during the testing.

4.0 SOAKAWAY INFILTRATION TESTING

Following excavation, the pit sides were 'squared off' as far as practicable and water was added from a large capacity bowser and soakaway infiltration testing was undertaken in accordance with BRE 365 (2007). The fall in water level with time was measured from a static datum bar.

The results of the infiltration testing are presented in Enclosure B and summarised in Table 1 below:

Table 1: Summary of Soakaway Infiltration Test Results

SA Test	Test depth	Fill No	Measured Infiltration Rate	Infiltration Soils
TP01	1.0m	1	2.4×10^{-5} m/sec	Hughes Member - Siltstone
	1.0m	2	1.4×10^{-5} m/sec	Hughes Member - Siltstone
	1.0m	3	1.4×10^{-5} m/sec	Hughes Member - Siltstone
TP02	0.7m	1	7.5×10^{-6} m/sec	Hughes Member - Siltstone
	0.7m	2	5.3×10^{-6} m/sec	Hughes Member - Siltstone
	0.7m	3	5.4×10^{-6} m/sec	Hughes Member - Siltstone
TP03	1.6m	1	3.0×10^{-5} m/sec	Hughes Member - Siltstone
	1.6m	2	1.2×10^{-5} m/sec	Hughes Member - Siltstone
	1.6m	3	9.2×10^{-6} m/sec	Hughes Member - Siltstone
TP04	1.0m	1	6.5×10^{-6} m/sec	Hughes Member - Siltstone
	1.0m	2	6.0×10^{-6} m/sec	Hughes Member - Siltstone
	1.0m	3	6.2×10^{-6} m/sec	Hughes Member - Siltstone
TP05	0.7m	1	8.7×10^{-5} m/sec	Hughes Member - Siltstone
	0.7m	2	4.3×10^{-5} m/sec	Hughes Member - Siltstone
	0.7m	3	2.2×10^{-5} m/sec	Hughes Member - Siltstone

5.0 DISCUSSION

The soakaway infiltration rate is dependent on the fine fraction within the soils. The testing showed infiltration rates of between 10^{-5} m/s and 10^{-6} m/s and the testing has proved that citing of future soakaways will need to be done carefully to obtain the best soakage rate possible due to natural variations within the Weathered Bedrock.

In general, we would recommend that 10^{-6}m/s be used as a typical infiltration rate for design of soakaways placed within the weathered rock. However, a better rate could be used where this has been proved with a soakaway test.

Care should be taken in the siting of the soakaways, with in particular, soakaways constructed a minimum of 10m away from the crest of slopes.

We suggest that the soakaway design is discussed with the Local Authority and NRW prior to development to confirm it is suitable and conforms with requirements.

We trust the above and enclosed meets with your present requirements. Should you have any queries, or require further information, please do not hesitate to contact us.

Yours sincerely,



Matthew Elcock
Projects Manager

Enc Figure 1 – Site Location Plan
 Enclosure A – Trial Pit Records
 Enclosure B – Soakaway Infiltration Test Results – ESP, February 2024

References:

- BUILDING RESEARCH ESTABLISHMENT (BRE). 2016. Soakaway Design. BRE Digest 365. BRE, Garston.



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LEGEND:

 Investigation Points

 Site Boundary

NOTES:

1. Do not scale from drawing. This drawing should be read in conjunction with all other associated project information.

PROJECT NAME: Former Tudor Inn

REPORT REF: 8398.02.4057

CLIENT: Tai Tarian Ltd

FIGURE TITLE: Investigation Point Plan

FIGURE NO: 1 REV.: 00

DATE: 15/02/2024 SCALE: 1: 1,250

DRAWN BY: SW CHECKED BY: MTE

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Earth Science Partnership Consulting Engineers Geologists Environmental Scientists				Excavation method/plant: JCB 3CX		Shoring/support: None		TP01	
Project Name: Tudor Inn, Cimla			Excavation date: 06/02/2024			Groundwater observations: Groundwater not encountered.			
Site Location: Neath			Backfill date: 08/02/2024						
Client: Tai Tarian			Logged by: SW						
Project No: 8398.02			Plan details: 0.60 Face B Face A Face C 2.00						
Survey details: Ground Level: 117.0 mOD Easting: 276092 mOD Northing: 195998 mOD Bearing:			Face Stability: Stable						
Depth		Sample		Test Details		Strata Details			
m	Type	Class	Type	Result	Description	Depth (thickness)	mOD	Legend	
1.00	B				Soft, dark brown, gravelly, sandy CLAY/SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular and dark grey. (TOPSOIL)	(0.50)	116.50		
					Soft, light brown mottled orange, gravelly, sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular, crystalline and grey. (WEATHERED HUGHES MEMBER)	(0.20)			
					Moderately weak, thinly, grey, fine to medium grained SILTSTONE. (HUGHES MEMBER)	(0.30)			
					End of Trialpit at 1.000m	1.00.0			
Weather and environmental conditions:									
1. Rain and overcast									
Other comments:									
1. Co-ordinates of investigation points obtained by a GPS Survey undertaken upon completion of site works, ground level approximate for centre of site.									
2. Service plans reviewed and area CAT and Genny scanned prior to breaking ground.									
3. Trial pit terminated in hard digging conditions, rock with poor progress.									
4. Soakaway infiltration test undertaken and trial pit backfilled with arising upon completion.									

Excavation method/plant:

JCB 3CX

Shoring/support:

None

TP03

Project Name: Tudor Inn, Cimla

Site Location: Neath

Client: Tai Tarian

Project No: 8398.02

Excavation date: 06/02/2024

06/02/2024

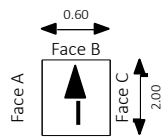
Backfill date: 08/02/2024

08/02/2024

Logged by: SW

SW

Plan details:



Face Stability:

Stable

Groundwater observations:

Groundwater not encountered.

Survey details:

Ground Level: 117.0 mOD

Easting: 276061 mOD

Northing: 196024 mOD

Bearing:

Depth	Sample		Test Details		Strata Details			
m	Type	Class	Type	Result	Description	Depth (thickness)	mOD	Legend
1.60	B				Soft, dark brown, gravelly, sandy CLAY/SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular and dark grey with brick, glass, concrete and plastic. (MADE GROUND)	(0.60)	116.40	
					Moderately weak, thinly to very thinly bedded, light grey, tabular SILTSTONE. (HUGHES MEMBER)	0.60		
					End of Trialpit at 1.600m	1.60	115.40	

Weather and environmental conditions:

1. Rain and overcast

Other comments:

1. Co-ordinates of investigation points obtained by a GPS Survey undertaken upon completion of site works, ground level approximate for centre of site.
2. Service plans reviewed and area CAT and Genny scanned prior to breaking ground.
3. Trial pit terminated in hard digging conditions, rock with poor progress.
4. Soakaway infiltration test undertaken and trial pit backfilled with arising upon completion.

Earth Science Partnership Consulting Engineers Geologists Environmental Scientists				Excavation method/plant: JCB 3CX		Shoring/support: None		TP04			
Project Name: Tudor Inn, Cimla			Excavation date: 06/02/2024			Plan details: 0.60 Face B Face A Face C 2.00			Backfill date: 08/02/2024		
Site Location: Neath			Logged by: SW								
Client: Tai Tarian			Face Stability: Stable								
Project No: 8398.02			Groundwater observations: Groundwater not encountered.								
Survey details: Ground Level: 117.0 mOD Easting: 276043 mOD Northing: 196043 mOD Bearing:											
Depth		Sample		Test Details		Strata Details					
m	Type	Class	Type	Result	Description	Depth (thickness)	mOD	Legend			
1.00	B				Soft, dark brown, gravelly, sandy CLAY/SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular and dark grey with brick, glass, concrete and plastic. (MADE GROUND)	(0.40)	116.60				
					Soft, light brown mottled orange, gravelly, sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, angular, crystalline and grey with fragments of brick and concrete. (MADE GROUND)	(0.40)					
					Moderately weak, thinly to very thinly bedded, light grey, tabular, fine grained SILTSTONE. (HUGHES MEMBER)	(0.20)	116.20				
					End of Trialpit at 1.000m	1.00.0	116.00				
Weather and environmental conditions:											
1. Rain and overcast											
Other comments:											
1. Co-ordinates of investigation points obtained by a GPS Survey undertaken upon completion of site works, ground level approximate for centre of site.											
2. Service plans reviewed and area CAT and Genny scanned prior to breaking ground.											
3. Trial pit terminated in hard digging conditions, rock with poor progress.											
4. Soakaway infiltration test undertaken and trial pit backfilled with arising upon completion.											

Earth Science Partnership Consulting Engineers Geologists Environmental Scientists				Excavation method/plant: JCB 3CX		Shoring/support: None		TP05				
Project Name: Tudor Inn, Cimla			Excavation date: 06/02/2024			Plan details: 0.60 Face B Face A Face C 2.00			Face Stability: Stable		Groundwater observations: Groundwater not encountered.	
Site Location: Neath			Backfill date: 07/02/2024									
Client: Tai Tarian			Logged by: SW									
Project No: 8398.02												
Survey details: Ground Level: 117.0 mOD Easting: 276007 mOD Northing: 196060 mOD Bearing:												
Depth		Sample		Test Details		Strata Details						
m	Type	Class	Type	Result	Description	Depth (thickness)	mOD	Legend				
0.70	B				Soft, dark brown, gravelly, sandy CLAY/SILT. Sand is fine to coarse. Gravel is fine to coarse, sub-angular and dark grey with brick, glass, concrete and plastic. (MADE GROUND)	(0.50)	116.50					
					Moderately weak, thinly to very thinly bedded, light grey, tabular SILTSTONE. (HUGHES MEMBER)	0.50 (0.20)						
					End of Trialpit at 0.700m	0.70						
						1.0	116.30					
Weather and environmental conditions:												
1. Rain and overcast												
Other comments:												
1. Co-ordinates of investigation points obtained by a GPS Survey undertaken upon completion of site works, ground level approximate for centre of site.												
2. Service plans reviewed and area CAT and Genny scanned prior to breaking ground.												
3. Trial pit terminated in hard digging conditions, rock with poor progress.												
4. Soakaway infiltration test undertaken and trial pit backfilled with arising upon completion.												

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP01	Soil Infiltration Rate	2.4E-05 m/sec
Fill Number:	1		

Test results:

Time (mins)	Water Level (m bgl)
0	0.20
1	0.22
2	0.25
3	0.28
4	0.30
5	0.32
10	0.37
15	0.44
20	0.47
30	0.51
40	0.58
50	0.60
60	0.66
90	0.77
120	0.81
180	0.90
210	0.95

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.00

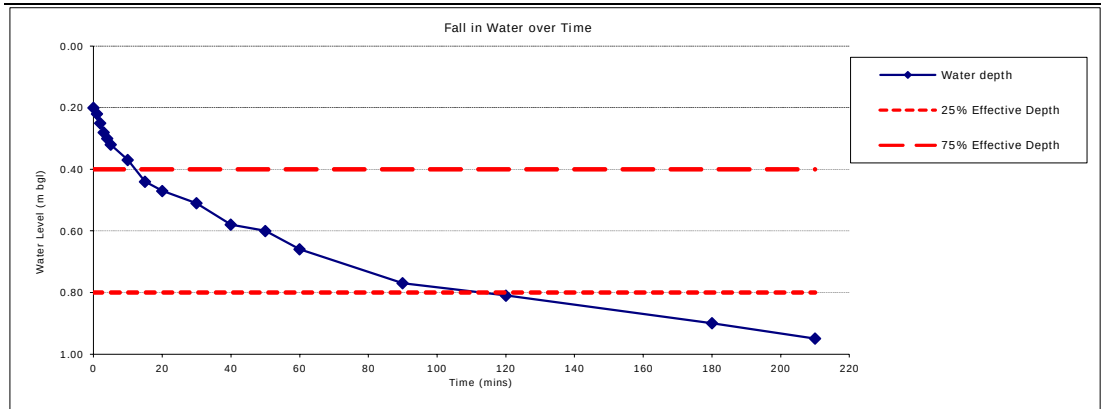
Assumed Invert Level (m bgl)	0.20
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Summary Ground Conditions:

GL - 0.7	Gravelly, sandy CLAY/SILT.
0.7 - 1.0	Thinly bedded SILTSTONE.

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.48 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	3.28 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	103 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.480}{20172}$$

$$= 2.38E-05 \quad \text{m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP01	Soil Infiltration Rate	1.4E-05 m/sec
Fill Number:	2		

Test results:

Time (mins)	Water Level (m bgl)
0	0.15
1	0.16
2	0.19
3	0.20
4	0.20
5	0.21
10	0.25
15	0.28
20	0.32
25	0.34
30	0.37
60	0.47
90	0.59
120	0.66
180	0.77
240	0.83

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.00

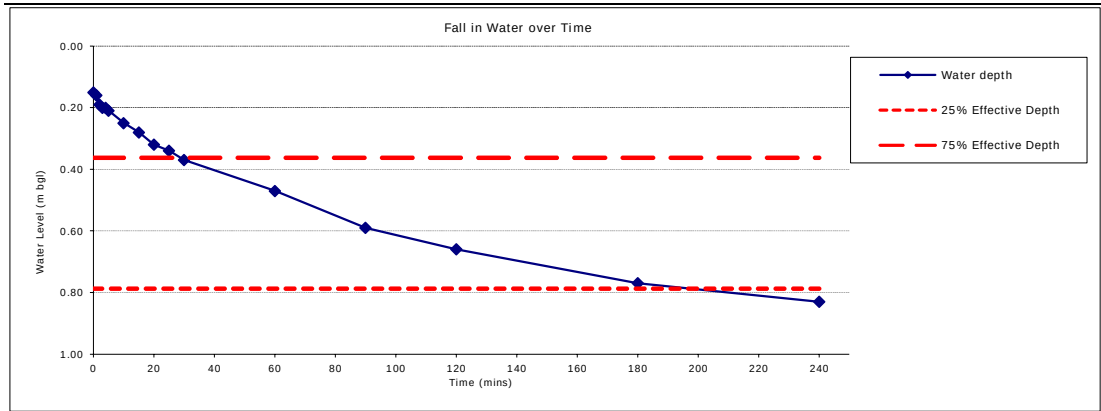
Assumed Invert Level (m bgl)	0.15
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Summary Ground Conditions:

GL - 0.7	Gravelly, sandy CLAY/SILT.
0.7 - 1.0	Thinly bedded SILTSTONE.

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.51 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	3.41 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	173 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.510}{35293.5}$$

$$= 1.45E-05 \quad \text{m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP02	Soil Infiltration Rate	5.3E-06 m/sec
Fill Number:	2		

Test results:

Time (mins)	Water Level (m bgl)
0	0.23
1	0.23
2	0.24
3	0.24
4	0.24
5	0.25
10	0.25
15	0.26
20	0.28
25	0.28
30	0.29
60	0.33
90	0.36
120	0.40
180	0.45
240	0.50
300	0.53
360	0.57
420	0.58
480	0.6

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	0.70

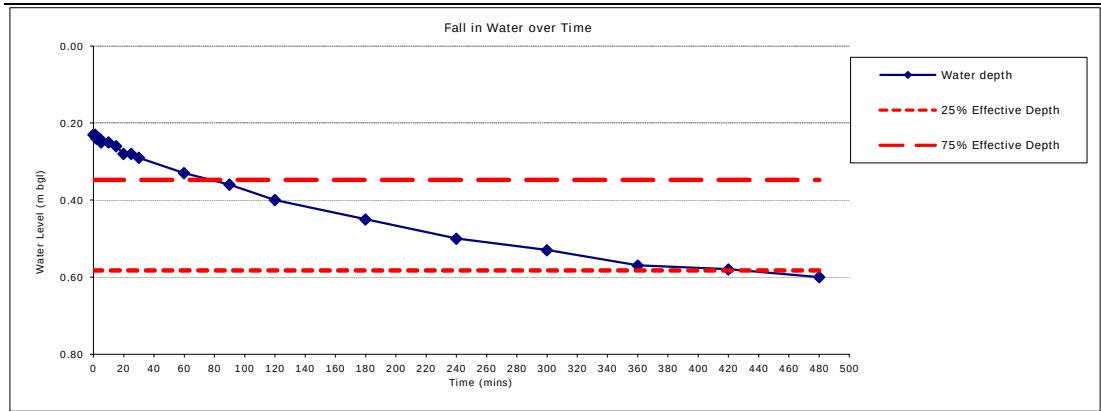
Assumed Invert Level (m bgl)	0.23
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Summary Ground Conditions:

GL - 0.5	Gravelly, sandy CLAY/SILT.
0.5 - 0.7	Thinly bedded SILTSTONE.

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.28 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	2.422 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	368 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.282}{53405.1}$$

$$= 5.28E-06 \quad \text{m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP02	Soil Infiltration Rate	5.4E-06 m/sec
Fill Number:	3		

Test results:

Time (mins)	Water Level (m bgl)
0	0.22
1	0.22
2	0.22
3	0.23
4	0.23
5	0.23
10	0.23
15	0.23
20	0.24
25	0.25
30	0.25
60	0.28
90	0.31
120	0.33
180	0.36
240	0.41
300	0.44
360	0.49
420	0.55
480	0.58
540	0.61

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	0.70

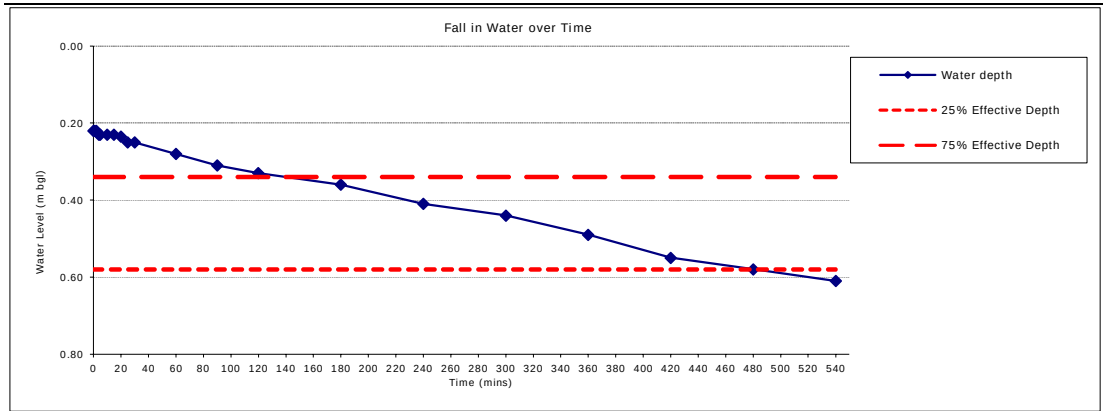
Assumed Invert Level (m bgl)	0.22
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Summary Ground Conditions:

GL - 0.5	Gravelly, sandy CLAY/SILT.
0.5 - 0.7	Thinly bedded SILTSTONE.

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.29 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	2.448 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	360 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.288}{52876.8}$$

$$= 5.45E-06 \quad \text{m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP03	Soil Infiltration Rate	3.0E-05 m/sec
Fill Number:	1		

Test results:

Time (mins)	Water Level (m bgl)
0	0.54
1	0.54
2	0.58
3	0.61
4	0.61
5	0.61
10	0.66
15	0.73
20	0.77
30	0.88
40	0.94
50	1.10
60	1.16
90	1.23
120	1.40
180	1.46

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.60

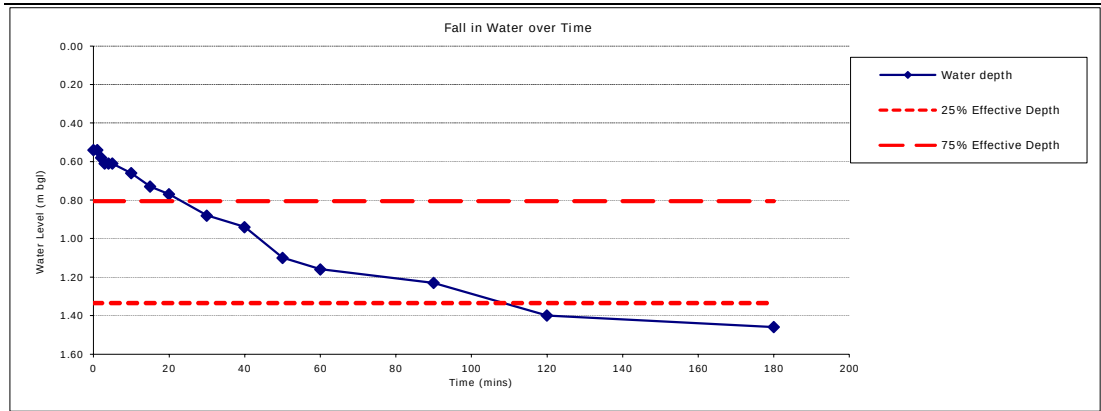
Assumed Invert Level (m bgl)	0.54
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Summary Ground Conditions:

GL - 0.6	Gravelly, sandy CLAY/SILT.
0.6 - 1.6	Thinly bedded SILTSTONE.

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.64 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	3.956 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	89 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.636}{21013.34118}$$

$$= 3.03E-05 \text{ m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP03	Soil Infiltration Rate	1.2E-05 m/sec
Fill Number:	2		

Test results:

Time (mins)	Water Level (m bgl)
0	0.43
1	0.43
2	0.45
3	0.46
4	0.48
5	0.49
10	0.51
15	0.55
20	0.57
25	0.60
30	0.63
60	0.73
90	0.83
120	0.96
180	1.12
240	1.26
300	1.36
360	1.47
420	1.52

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.60

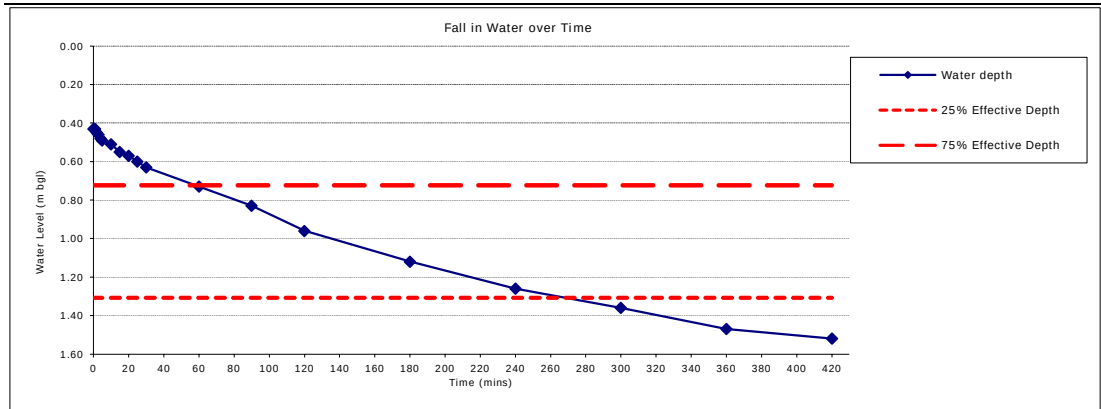
Assumed Invert Level (m bgl)	0.43
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Summary Ground Conditions:

GL - 0.6	Gravelly, sandy CLAY/SILT.
0.6 - 1.6	Thinly bedded SILTSTONE.

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.70 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	4.242 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	239 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.702}{60703.02}$$

$$= 1.16E-05 \text{ m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath
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Project Ref:	8398.02	Date of Testing:	06-Feb-24
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Test Location:	TP04
Fill Number:	1

Soil Infiltration Rate	6.5E-06 m/sec
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Test results:

Time (mins)	Water Level (m bgl)
0	0.42
1	0.42
2	0.43
3	0.44
4	0.45
5	0.45
10	0.50
15	0.54
20	0.58
30	0.61
40	0.65
50	0.69
60	0.70
90	0.71
120	0.74
180	0.80
240	0.83
300	0.84
360	0.86

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.00

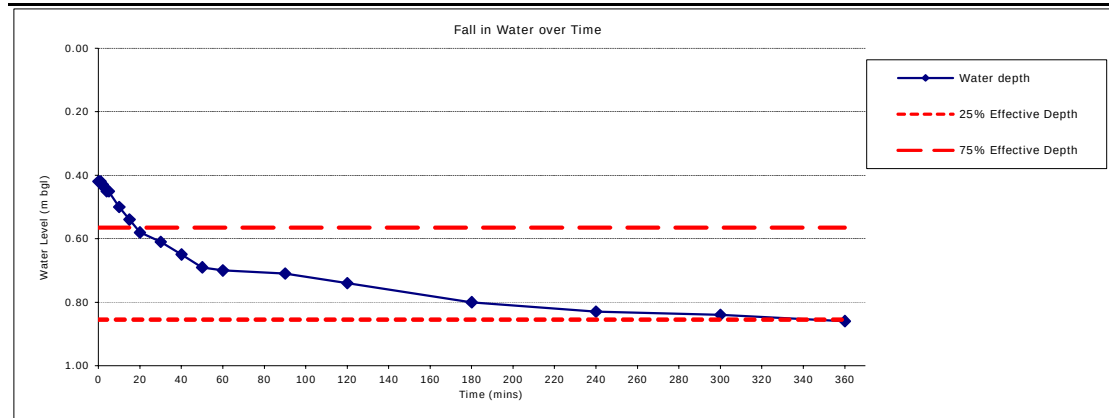
Assumed Invert Level (m bgl)	0.42
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Summary Ground Conditions:

GL - 0.8	Gravelly sandy clay/silt
0.8 - 1	Thinly bedded, siltstone

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.35 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	2.708 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	330 min

$$\begin{aligned} \text{Soil Infiltration Rate (m/sec)} &= \frac{0.348}{53618.4} \\ &= 6.49\text{E-}06 \quad \text{m/s} \end{aligned}$$

SOAKAWAY INFILTRATION TEST RESULTS

BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath
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Project Ref:	8398.02	Date of Testing:	06-Feb-24
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Test Location:	TP04
Fill Number:	2

Soil Infiltration Rate	6.0E-06 m/sec
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Test results:

Time (mins)	Water Level (m bgl)
0	0.40
1	0.41
2	0.42
3	0.43
4	0.44
5	0.44
10	0.47
15	0.49
20	0.52
25	0.54
30	0.54
60	0.57
90	0.62
120	0.66
180	0.71
240	0.79
300	0.80
360	0.84
420	0.86

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.00

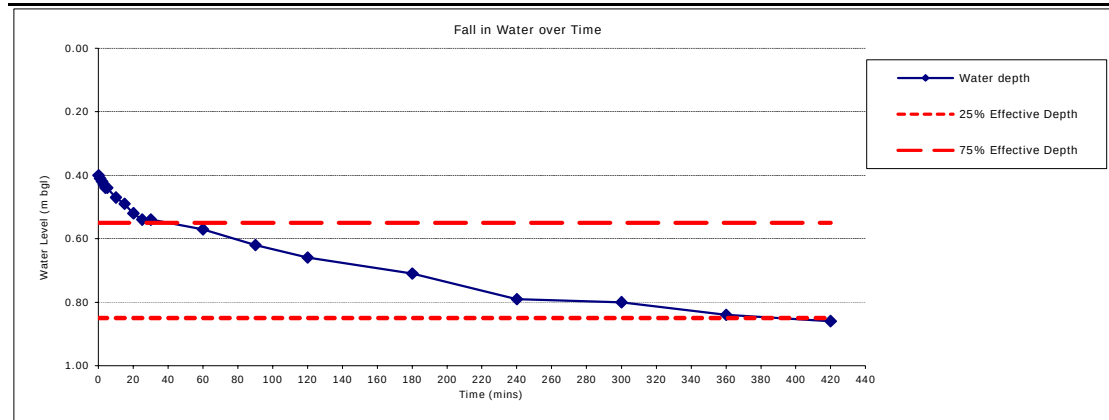
Assumed Invert Level (m bgl)	0.40
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Summary Ground Conditions:

GL - 0.8	Gravelly sandy clay/silt
0.8 - 1	Thinly bedded, siltstone

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.36 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	2.76 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	360 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.360}{59616}$$

$$= 6.04E-06 \text{ m/s}$$

SOAKAWAY INFILTRATION TEST RESULTS
BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP04	Soil Infiltration Rate	6.2E-06 m/sec
Fill Number:	3		

Test results:

Time (mins)	Water Level (m bgl)
0	0.48
1	0.50
2	0.51
3	0.51
4	0.51
5	0.52
10	0.54
15	0.55
20	0.56
25	0.56
30	0.57
60	0.61
90	0.70
120	0.71
180	0.77
240	0.80
300	0.83
360	0.86
420	0.88

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	1.00

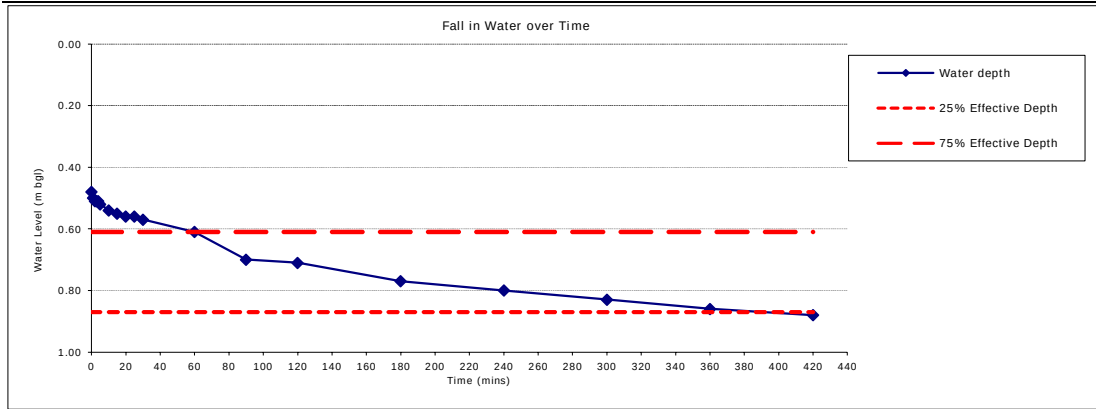
Assumed Invert Level (m bgl)	0.48
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Summary Ground Conditions:

GL - 0.8	Gravelly sandy clay/silt
0.8 - 1	Thinly bedded, siltstone

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec) $f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.31 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	2.552 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	330 min

Soil Infiltration Rate (m/sec) $= \frac{0.312}{50529.6}$

$= 6.17E-06 \text{ m/s}$

SOAKAWAY INFILTRATION TEST RESULTS BRE DG365 method

Project Name:	Tudor Inn, Cimla, Neath		
Project Ref:	8398.02	Date of Testing:	06-Feb-24
Test Location:	TP05	Soil Infiltration Rate	2.2E-05 m/sec
Fill Number:	3		

Test results:

Time (mins)	Water Level (m bgl)
0	0.22
1	0.23
2	0.24
3	0.25
4	0.25
5	0.26
10	0.27
15	0.28
20	0.30
25	0.30
30	0.31
60	0.38
90	0.45
120	0.58
180	0.70

Pit Dimensions (m)

Length	2.00
Width	0.60
Depth	0.70

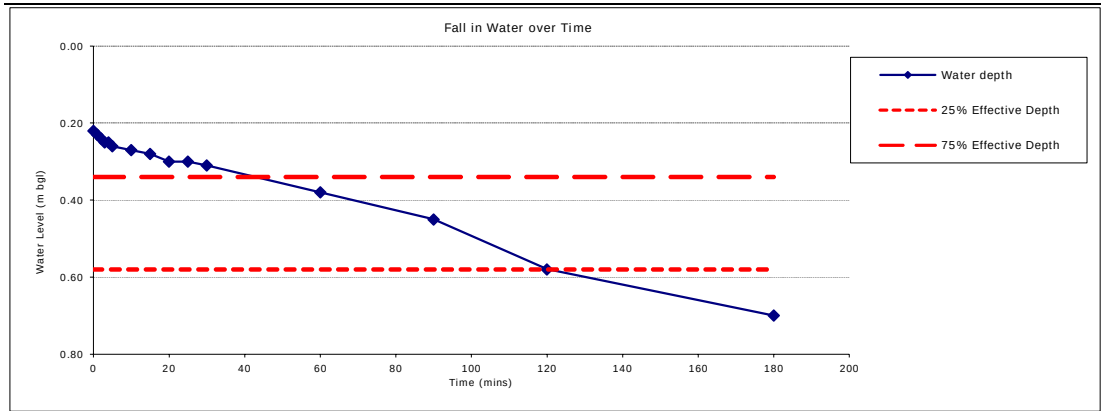
Assumed Invert Level (m bgl)	0.22
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Summary Ground Conditions:

GL-0.5	Gravelly, sandy CLAY/SILT
0.5 - 0.7	Siltstone

Remarks:

1. Testing undertaken in general accordance with BRE Digest DG365:2016 (Garvin, 2016).
2. Trial pit was not filled with aggregate for test.
3. Stability of pit sides was good.



Soil Infiltration Rate (m/sec)

$$f = \frac{V_{p75-25}}{\alpha_{p50} \times t_{p75-25}}$$

V_{p75-25}	Effective depth storage volume of water in the trial pit between 75% and 25% effective depth	0.29 m ³
α_{p50}	The internal surface area of the trial pit up to 50% effective depth and including the base area	2.448 m ²
t_{p75-25}	The time for the water level to fall from 75% to 25% effective depth	90 min

Soil Infiltration Rate (m/sec)

$$= \frac{0.288}{13219.2}$$

$$= 2.18E-05 \quad \text{m/s}$$