

**APPENDIX 2.4**  
**INFILTRATION CALCULATIONS**  
**- ALTERNATIVE CONSTRUCTION ACCESS ROAD**

Alternative Construction Access Roads - Infiltration Trench							
Duration (D)	Rainfall (R)	Impermeable Area (A)	Soil Infiltration Rate (r)	Soakaway Surface Area ( $a_{s50}$ )	Inflow (I)	Outflow (O)	$S_{Required} + 20\%$
Mins	mm	$m^2$	m/sec	$m^2$	$m^3$	$m^3$	$m^3$
5.00	11.70	350.00	2.00E-05	28.79	4.10	0.17	4.71
10.00	16.20	350.00	2.00E-05	28.79	5.67	0.35	6.39
15.00	19.10	350.00	2.00E-05	28.79	6.69	0.52	7.40
30.00	23.00	350.00	2.00E-05	28.79	8.05	1.04	8.42
60.00	27.70	350.00	2.00E-05	28.79	9.70	2.07	9.15
120.00	33.40	350.00	2.00E-05	28.79	11.69	4.15	9.05
180.00	37.30	350.00	2.00E-05	28.79	13.06	6.22	8.20
240.00	40.30	350.00	2.00E-05	28.79	14.11	8.29	6.98
360.00	45.00	350.00	2.00E-05	28.79	15.75	12.44	3.98
540.00	50.10	350.00	2.00E-05	28.79	17.54	18.65	-1.34
720.00	54.20	350.00	2.00E-05	28.79	18.97	24.87	-7.08
1080.00	60.40	350.00	2.00E-05	28.79	21.14	37.31	-19.40
1440.00	65.30	350.00	2.00E-05	28.79	22.86	49.75	-32.27
2880.00	78.40	350.00	2.00E-05	28.79	27.44	99.49	-86.46
4320.00	89.60	350.00	2.00E-05	28.79	31.36	149.24	-141.45
5760.00	99.60	350.00	2.00E-05	28.79	34.86	198.98	-196.95

Infiltration Trench Details	
Width (m)	0.60
Depth (m)	0.48
Length (m)	100.00
Voids (%)	33.00
$a_{s50}$ ( $m^2$ )	28.79
$S_{Required}$ ( $m^3$ )	9.15
$S_{Provided}$ ( $m^3$ )	9.50
$t_{s50}$ (hours)	2.29





<b>Machine :</b> 13T tracked excavator <b>Method :</b> Trial Pit	<b>Dimensions</b> 5.80m x 1.30m x 2.00m (L x W x D)	<b>Ground Level (mOD)</b> 54.66	<b>Client</b> Lumcloon Energy	<b>Job Number</b> 13999-07-24
	<b>Location</b> 582519.9 E 709164.1 N	<b>Dates</b> 12/09/2024	<b>Engineer</b> Kilgallen & Partners Consulting Engineers	<b>Sheet</b> 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	B			54.46	(0.20)	TOPSOIL		
					0.20	Firm brown slightly sandy slightly gravelly CLAY with rootlets		
					(0.30)			
2.00	B			54.16	0.50	Very stiff greyish brown slightly sandy gravelly CLAY with high cobble and low boulder content		
					(1.30)			
					1.80	Dense greyish brown slightly clayey sandy subangular to subrounded fine to coarse GRAVEL with high cobble and boulder content		
				52.86	(0.20)	Obstruction at 2.00m BGL due to possible Bedrock or Boulders		
				52.66	2.00	Complete at 2.00m		

**Plan**

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**Remarks**

No groundwater encountered  
 Trial pit stable  
 Trial pit backfilled upon completion

<b>Scale (approx)</b> 1:25	<b>Logged By</b> CMP	<b>Figure No.</b> 13999-07-24.TP-01
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**Coolpowra Galway – Trial Pit Photographs**

**SK-01**



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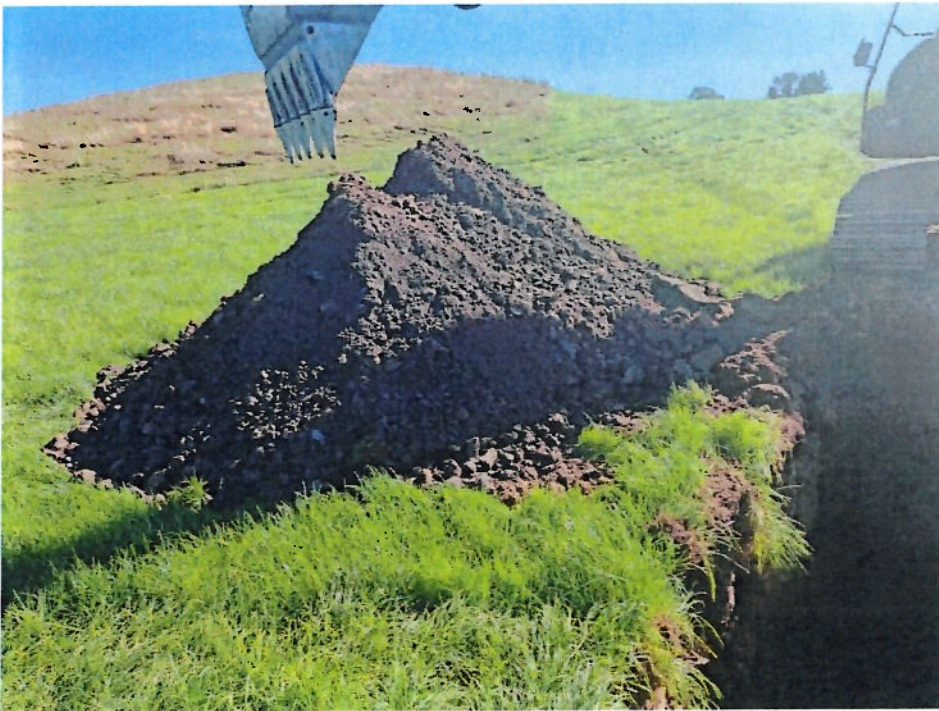


**Coolpowra Galway – Trial Pit Photographs**

**SK-02**

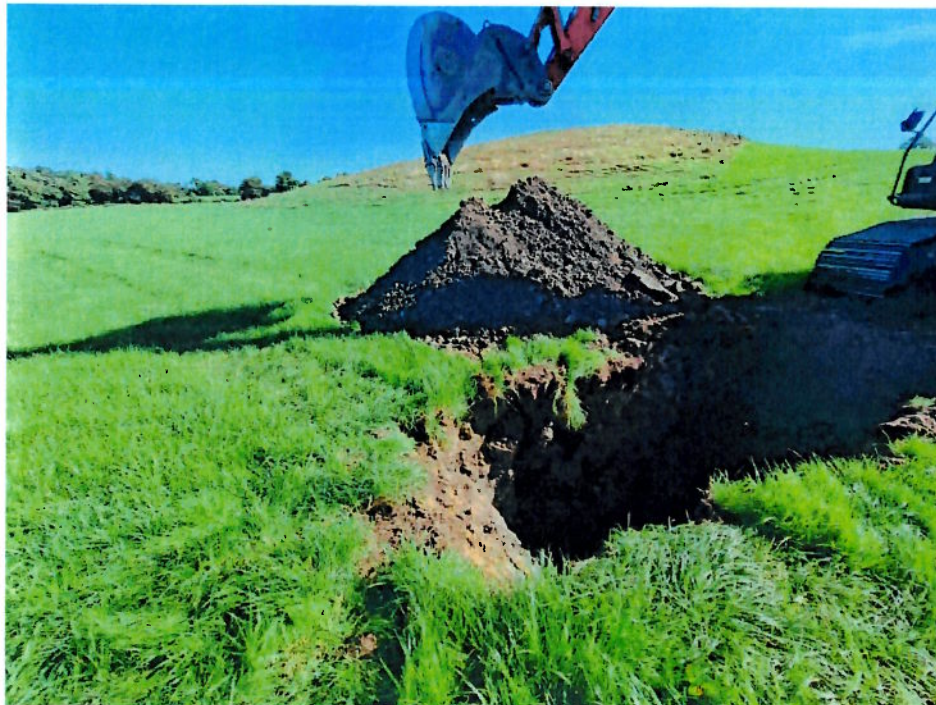


**SK-02**



**Coolpowra Galway – Trial Pit Photographs**

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**Coolpowra Galway – Trial Pit Photographs**

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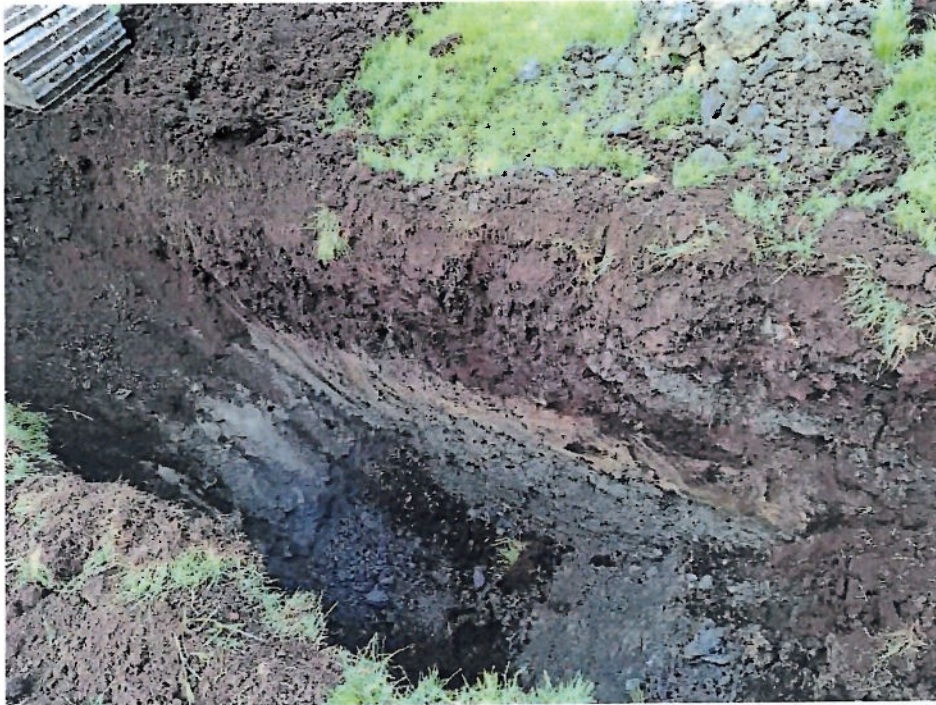


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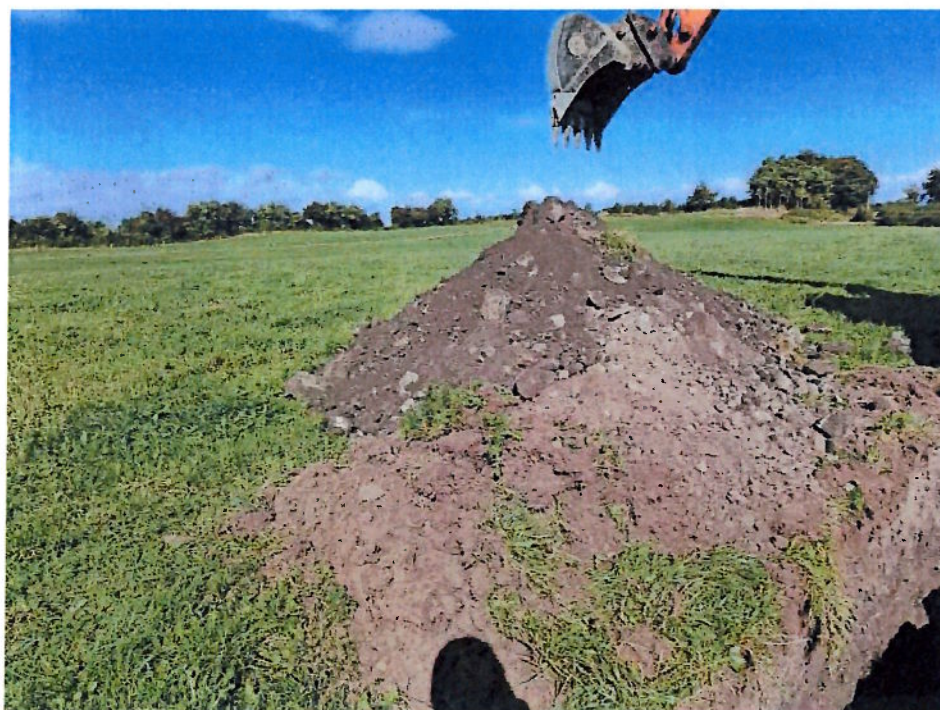


**Coolpowra Galway – Trial Pit Photographs**

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## **APPENDIX 3 – Soakaway Testing Results**





**GROUND INVESTIGATIONS IRELAND**  
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**SK-01**

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 3.70m x 1.30m x 2.00m (L x W x D)

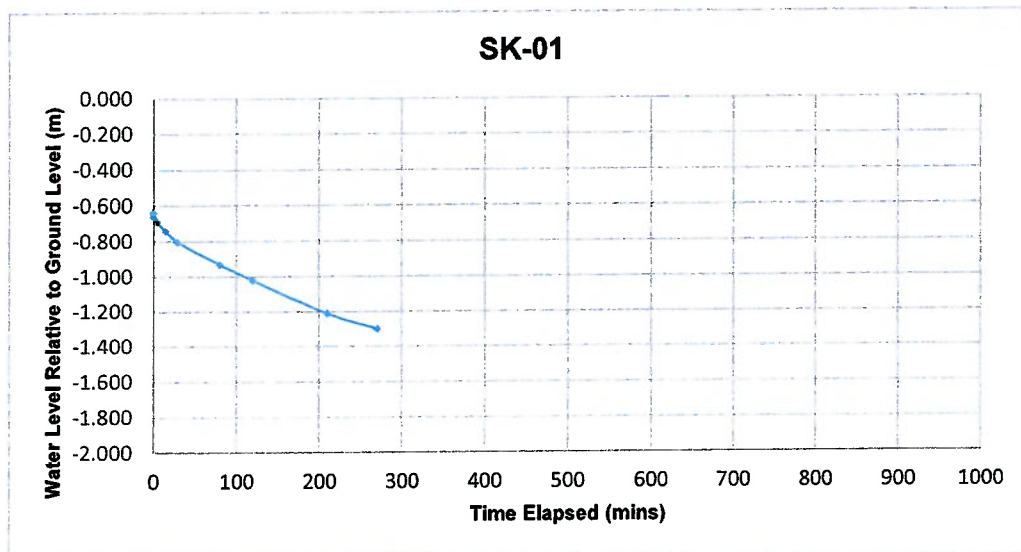
Date	Time	Water level (m bgl)
16/09/2024	0	-0.640
16/09/2024	1	-0.660
16/09/2024	5	-0.690
16/09/2024	15	-0.740
16/09/2024	30	-0.800
16/09/2024	80	-0.930
16/09/2024	120	-1.020
16/09/2024	210	-1.210
16/09/2024	270	-1.300

Start depth 0.64	Depth of Pit 2.000	Diff 1.360	75% full 0.98	25%full 1.66
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Length of pit (m) 3.700	Width of pit (m) 1.300	75-25Ht (m) 0.680	Vp75-25 (m3) 3.27
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Tp75-25 (from graph) (s) <b>f =</b>	<b>42000</b>	50% Eff Depth 0.680	ap50 (m2) 11.61
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**f = 6.708E-06 m/s**





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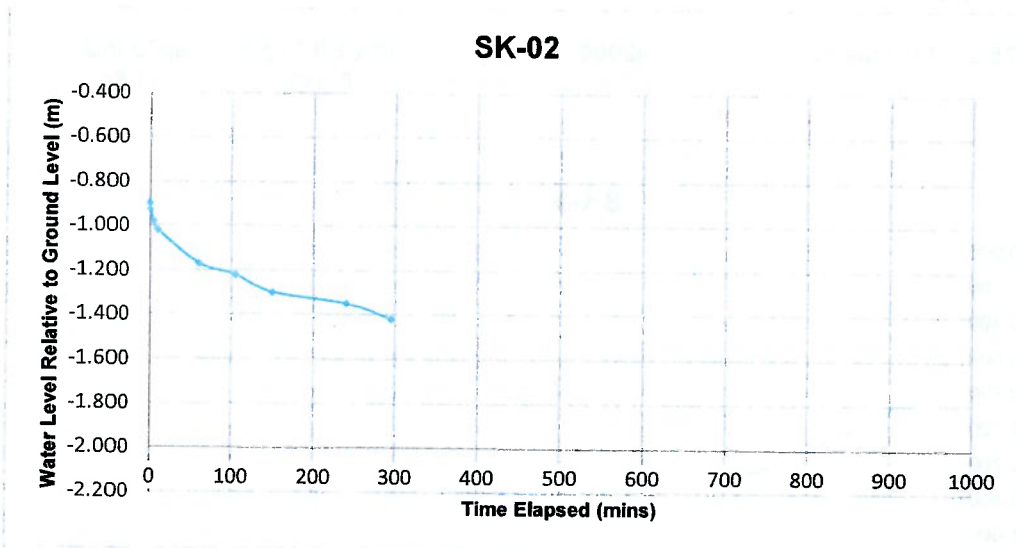
**SK-02**

**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 3.70m x 1.30m x 2.20m (L x W x D)**

Date	Time	Water level (m bgl)
16/09/2024	0	-0.900
16/09/2024	1	-0.930
16/09/2024	5	-0.980
16/09/2024	10	-1.020
16/09/2024	60	-1.170
16/09/2024	105	-1.220
16/09/2024	150	-1.300
16/09/2024	240	-1.350
16/09/2024	295	-1.420

Start depth	Depth of Pit	Diff	75% full	25% full
0.90	2.200	1.300	1.225	1.875





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**SK-03**

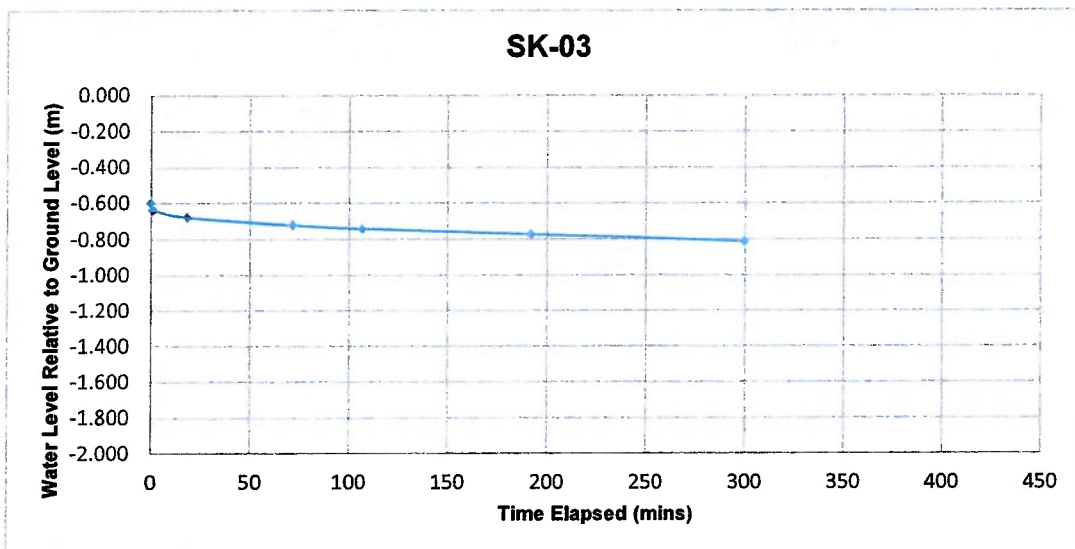
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 3.30m x 1.30m x 1.90m (L x W x D)

Date	Time	Water level (m bgl)
16/09/2024	0	-0.600
16/09/2024	1	-0.640
16/09/2024	18	-0.680
16/09/2024	72	-0.720
16/09/2024	107	-0.740
16/09/2024	192	-0.770
16/09/2024	300	-0.810

\*Soakaway failed - pit backfilled

Start depth	Depth of Pit	Diff	75% full	25%full
0.60	1.900	1.300	0.925	1.575





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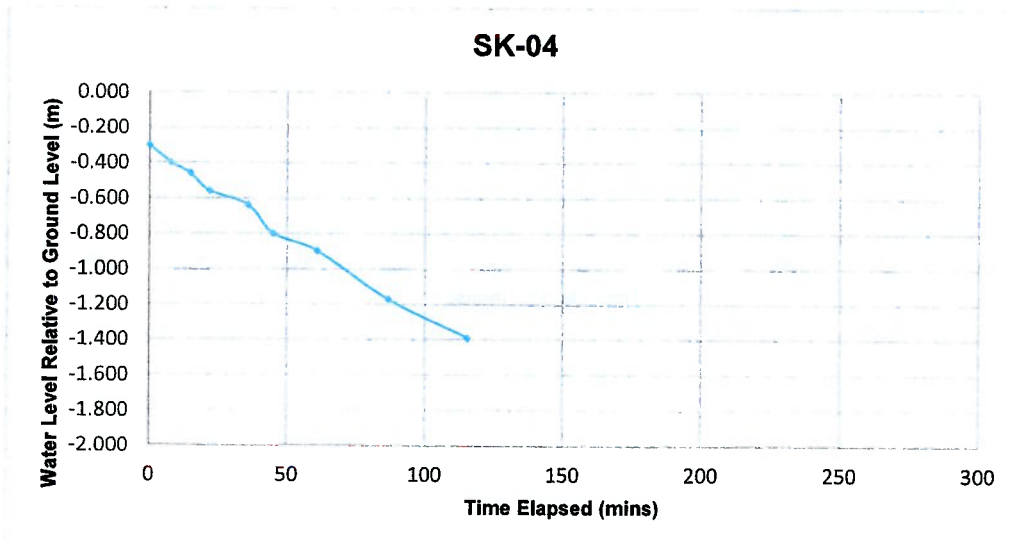
**SK-04**

**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 3.50m x 1.30m x 1.50m (L x W x D)**

Date	Time	Water level (m bgl)
17/09/2024	0	-0.300
17/09/2024	8	-0.400
17/09/2024	15	-0.460
17/09/2024	22	-0.560
17/09/2024	36	-0.640
17/09/2024	45	-0.800
17/09/2024	61	-0.900
17/09/2024	87	-1.170
17/09/2024	116	-1.390

<b>Start depth</b> 0.30	<b>Depth of Pit</b> 1.500	<b>Diff</b> 1.200	<b>75% full</b> 0.6	<b>25%full</b> 1.2
<b>Length of pit (m)</b> 3.500	<b>Width of pit (m)</b> 1.300		<b>75-25Ht (m)</b> 0.600	<b>Vp75-25 (m3)</b> 2.73
<b>Tp75-25 (from graph) (s)</b>	<b>3720</b>		<b>50% Eff Depth</b> 0.600	<b>ap50 (m2)</b> 10.31
<b>f =</b>	<b>7.118E-05</b>	<b>m/s</b>		





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**SK-05**

Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 4.20m x 1.30m x 1.50m (L x W x D)

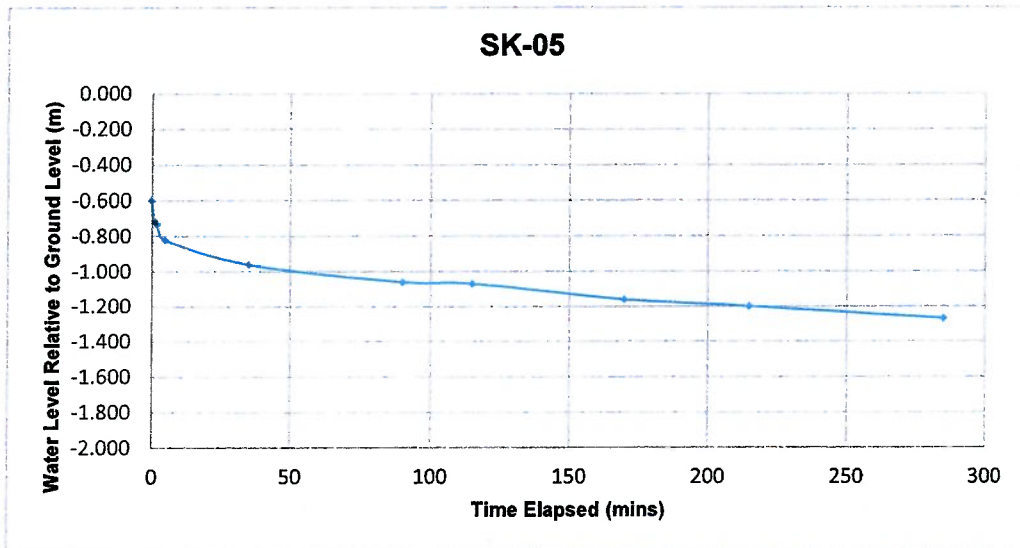
Date	Time	Water level (m bgl)
16/09/2024	0	-0.600
16/09/2024	1	-0.710
16/09/2024	2	-0.730
16/09/2024	5	-0.820
16/09/2024	35	-0.960
16/09/2024	90	-1.060
16/09/2024	115	-1.070
16/09/2024	170	-1.160
16/09/2024	215	-1.200
16/09/2024	285	-1.270

Start depth	Depth of Pit	Diff	75% full	25%full
0.60	1.500	0.900	0.825	1.275

Length of pit (m)	Width of pit (m)	75-25Ht (m)	Vp75-25 (m3)
4.200	1.300	0.450	2.46

Tp75-25 (from graph) (s)	17100	50% Eff Depth	ap50 (m2)
		0.450	10.41

$f = 1.380E-05 \text{ m/s}$





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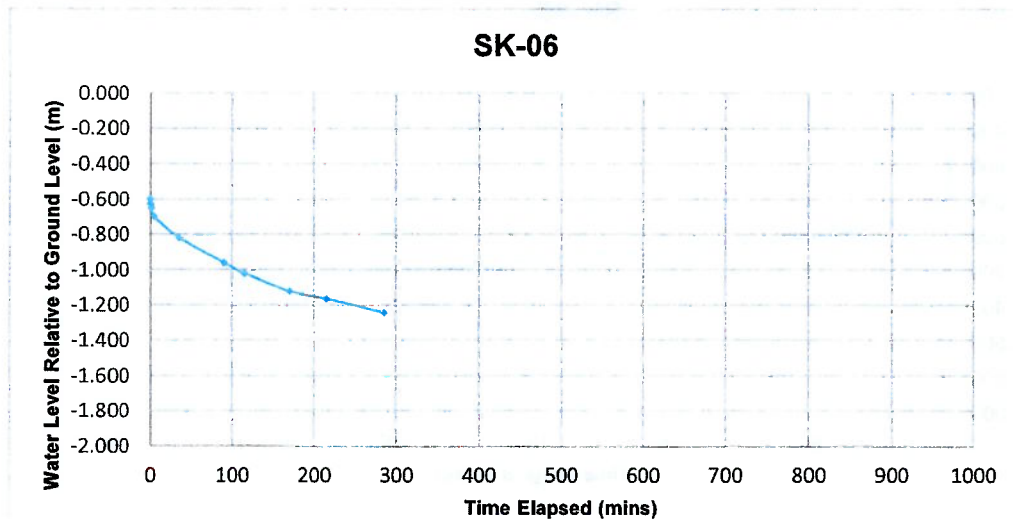
**SK-06**

**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 3.20m x 1.30m x 1.80m (L x W x D)**

Date	Time	Water level (m bgl)
16/09/2024	0	-0.600
16/09/2024	1	-0.630
16/09/2024	2	-0.650
16/09/2024	5	-0.700
16/09/2024	35	-0.820
16/09/2024	90	-0.960
16/09/2024	115	-1.020
16/09/2024	170	-1.120
16/09/2024	215	-1.160
16/09/2024	285	-1.240

<b>Start depth</b> 0.60	<b>Depth of Pit</b> 1.800	<b>Diff</b> 1.200	<b>75% full</b> 0.9	<b>25%full</b> 1.5
<b>Length of pit (m)</b> 3.200	<b>Width of pit (m)</b> 1.300		<b>75-25Ht (m)</b> 0.600	<b>Vp75-25 (m3)</b> 2.50
<b>Tp75-25 (from graph) (s)</b>	<b>43800</b>		<b>50% Eff Depth</b> 0.600	<b>ap50 (m2)</b> 9.56
<b>f =</b>	<b>5.961E-06</b>	<b>m/s</b>		





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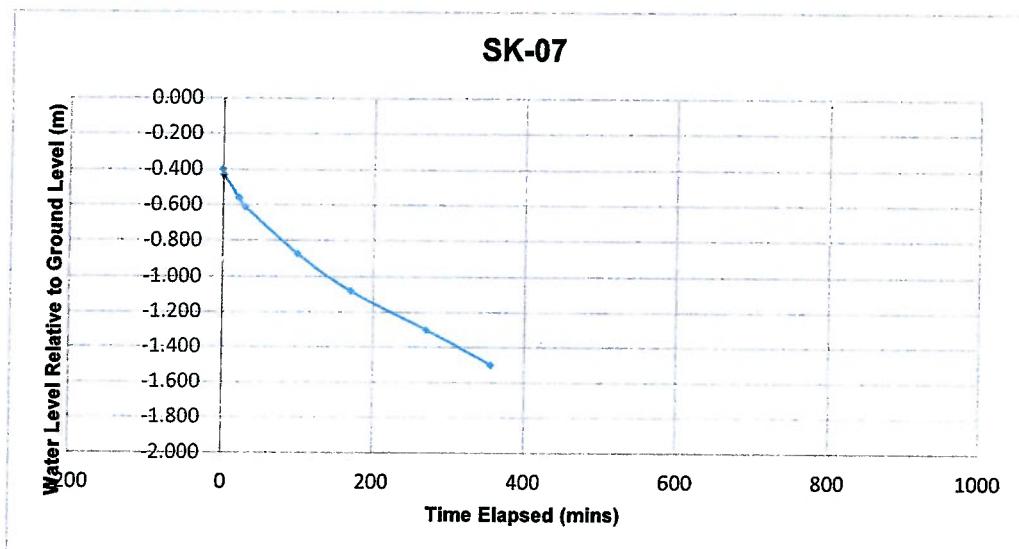
**SK-07**

**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 3.40m x 1.30m x 1.60m (L x W x D)**

Date	Time	Water level (m bgl)
17/09/2024	0	-0.400
17/09/2024	1	-0.430
17/09/2024	22	-0.560
17/09/2024	30	-0.610
17/09/2024	100	-0.870
17/09/2024	170	-1.080
17/09/2024	270	-1.300
17/09/2024	355	-1.500

<b>Start depth</b> 0.40	<b>Depth of Pit</b> 1.600	<b>Diff</b> 1.200	<b>75% full</b> 0.7	<b>25%full</b> 1.3
<b>Length of pit (m)</b> 3.400	<b>Width of pit (m)</b> 1.300		<b>75-25Ht (m)</b> 0.600	<b>Vp75-25 (m3)</b> 2.65
<b>Tp75-25 (from graph) (s)</b>	<b>12840</b>		<b>50% Eff Depth</b> 0.600	<b>ap50 (m2)</b> 10.06
<b>f =</b>	<b>2.053E-05</b>	<b>m/s</b>		





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**SK-08**

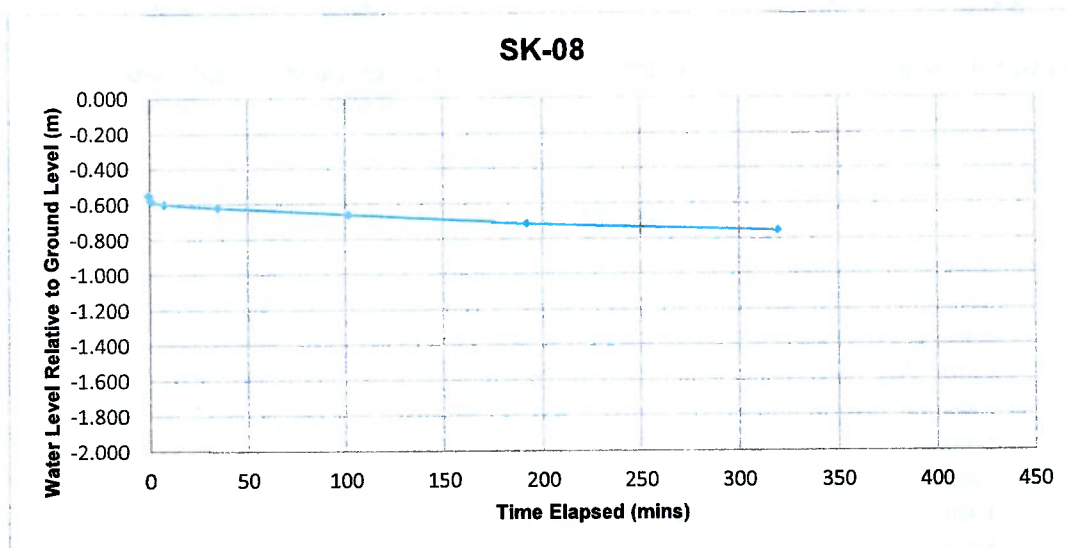
Soakaway Test to BRE Digest 365

Trial Pit Dimensions: 3.30m x 1.30m x 1.90m (L x W x D)

Date	Time	Water level (m bgl)
17/09/2024	0	-0.550
17/09/2024	1	-0.580
17/09/2024	8	-0.600
17/09/2024	35	-0.620
17/09/2024	102	-0.660
17/09/2024	192	-0.710
17/09/2024	320	-0.750

\*Soakaway failed - pit backfilled

Start depth	Depth of Pit	Diff	75% full	25%full
0.55	1.900	1.350	0.8875	1.5625





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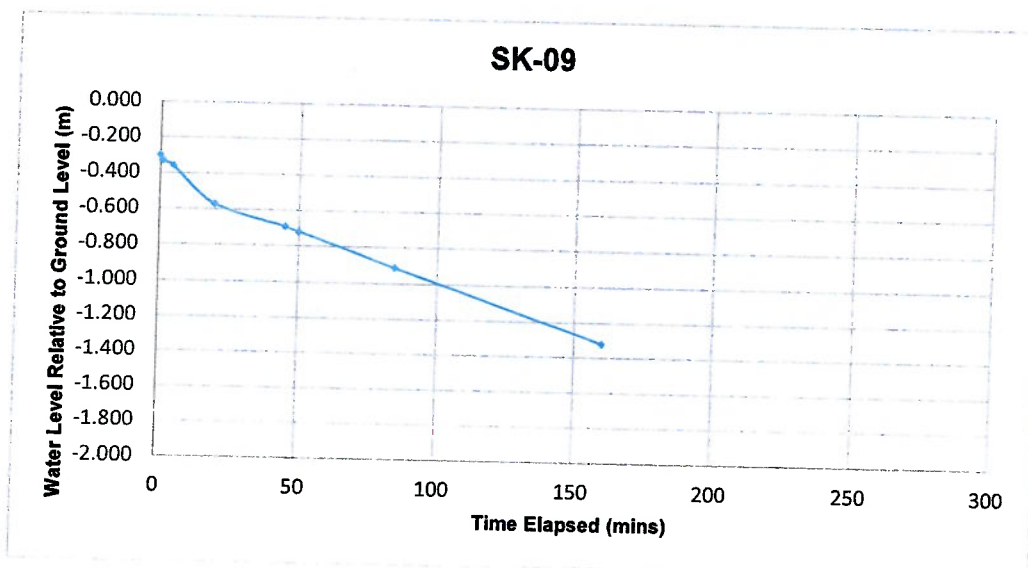
**SK-09**

**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 3.50m x 1.30m x 1.40m (L x W x D)**

Date	Time	Water level (m bgl)
17/09/2024	0	-0.300
17/09/2024	1	-0.330
17/09/2024	5	-0.360
17/09/2024	20	-0.570
17/09/2024	45	-0.690
17/09/2024	50	-0.720
17/09/2024	85	-0.910
17/09/2024	160	-1.320

<b>Start depth</b> 0.30	<b>Depth of Pit</b> 1.400	<b>Diff</b> 1.100	<b>75% full</b> 0.575	<b>25%full</b> 1.125
<b>Length of pit (m)</b> 3.400	<b>Width of pit (m)</b> 1.300		<b>75-25Ht (m)</b> 0.550	<b>Vp75-25 (m3)</b> 2.43
<b>Tp75-25 (from graph) (s)</b>	<b>6300</b>		<b>50% Eff Depth</b> 0.550	<b>ap50 (m2)</b> 9.59
<b>f =</b>	<b>4.024E-05</b>	<b>m/s</b>		





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**SK-10**

**Soakaway Test to BRE Digest 365**

**Trial Pit Dimensions: 3.30m x 1.30m x 1.80m (L x W x D)**

Date	Time	Water level (m bgl)
17/09/2024	0	-0.350
17/09/2024	1	-0.370
17/09/2024	5	-0.410
17/09/2024	75	-0.530
17/09/2024	150	-0.650
17/09/2024	255	-0.740
17/09/2024	350	-0.790

**\*Soakaway failed - pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.35	1.800	1.450	0.7125	1.4375

