

Macra Ltd
Unit 5, Yeomans Park
Test Lane
Nursling
Hampshire
SO16 9JX

18th February 2021

For the attention of Matt Allsopp

Dear Matt

Re: Walberton – In-situ Infiltration Testing

Following an email discussion with Paul Cann of Arun District Council Drainage Department we attended the above site on the 16th and 17th February 2021 and undertook two infiltration tests at locations in the vicinity of the existing monitoring boreholes WS2 and WS6, as shown on the attached plan.

Summary of Site Works

As the groundwater level in the boreholes during the winter monitoring had ranged from around 1m to 1.5mbgl the trial pits were limited to a depth of 1m with the following overall dimensions.

Test ref	Pit length	Pit width	Pit depth
SA1	1.6m	0.6m	1.0m
SA2	2.0m	0.6m	1.0m

The attached calculation sheets detail the strata encountered, which comprised below the layer of topsoil a band of silty clay over a sandy clayey gravel, which in SA1 was shallower and comprised less clay with a higher percentage of gravel some of which was finer than in SA2. Attached are some photographs showing the strata encountered.

Infiltration Results

The trial pits were filled with water to around 400-500mm bgl, as this is likely to be the base of any drainage crates, on three occasions over the two days so, in accordance with the procedures outlined in BRE Digest 365 Soakaway Design 1991, the time for the water level to drop from 25% to 75% could be recorded and used to calculate the corresponding infiltration rate. Attached are copies of the calculation sheets for each test but the results are also summarised in the table below.

Summary of the Calculated Infiltration Rates

Trial Pit	Depth to Base (m)	Depth to Standing Water (m)	Total Water Level Drop (m)	Total Time Taken (min)	Infiltration Rate (m/s)
SA31					
Round 1	1.000	Dry	0.57	25	2.52×10^{-4}
Round 2	1.000	Dry	0.62	20	3.97×10^{-4}
Round 3	1.000	Dry	0.68	30	2.48×10^{-4}

Summary of the Calculated Infiltration Rates (continued)

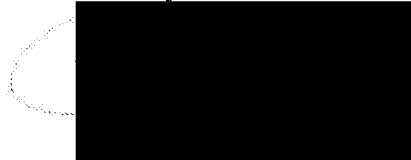
Trial Pit	Depth to Base (m)	Depth to Standing Water (m)	Total Water Level Drop (m)	Total Time Taken (min)	Infiltration Rate (m/s)
SA2					
Round 1	1.000	Dry	0.46	210	1.35×10^{-5}
Round 2	1.000	Dry	0.53	285	1.54×10^{-5}
Round 3	1.000	Dry	0.38	210	1.37×10^{-5}

Conclusion

As can be seen from the table above the soils in both locations were shown, in accordance with the BRE Digest 365 procedures, to have the potential to support soakaway drainage. Although the rates were variable ranging from 2.48×10^{-4} to 1.54×10^{-5} m/s, which is considered to be a reflection of the depth to and percentage of gravel within the shallow River Terrace Deposits.

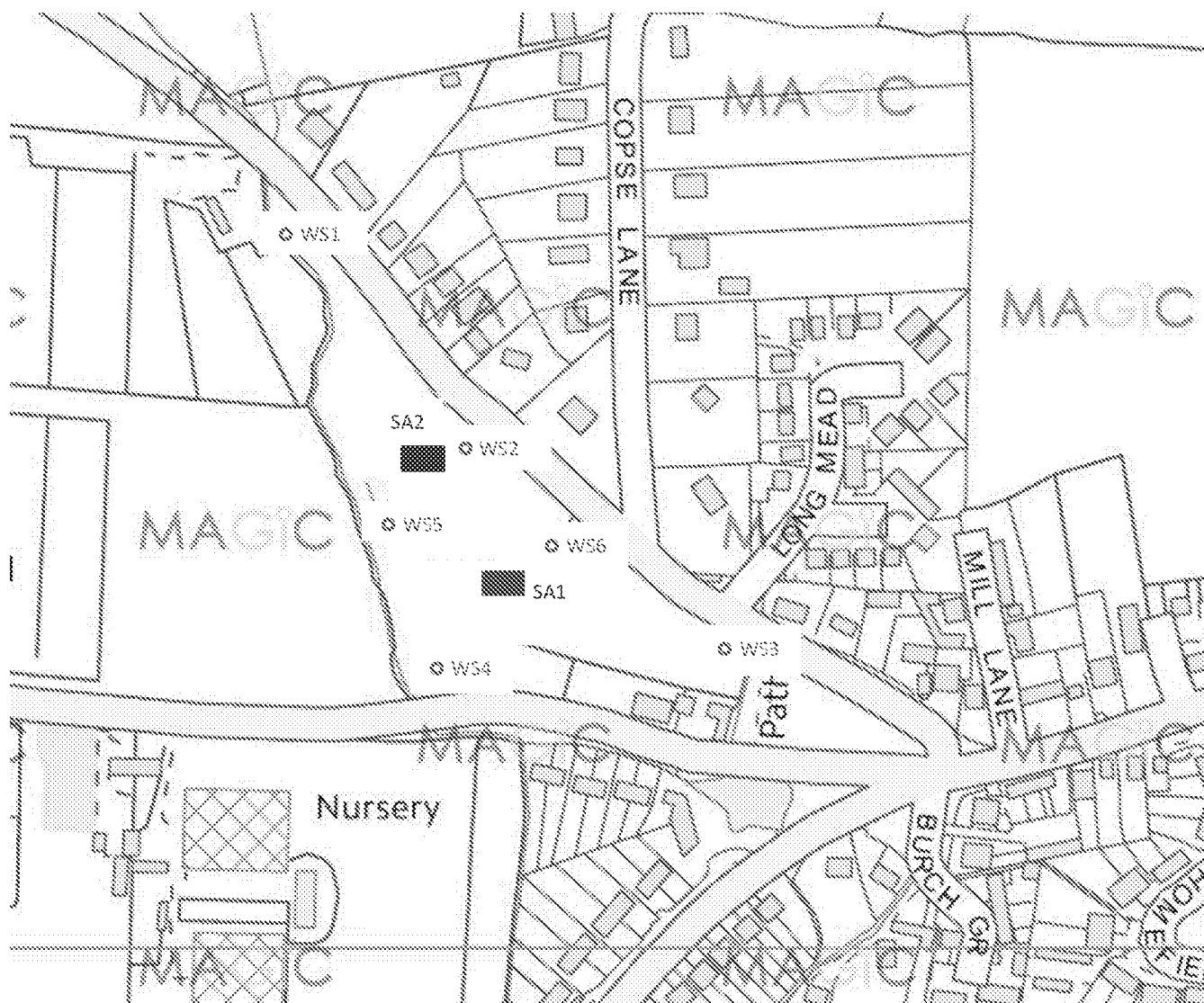
I hope the above and attached are sufficiently detailed but if you have any queries or would like to discuss the results further then please do not hesitate to contact me.

Yours sincerely



Richard Blaney
for Forge Environmental Management Ltd

encl.



KEY

- WS1 Window sample hole position
- SA1 Location of infiltration testing trial pit

PROJECT

**West Walberton Lane,
Walberton**

CLIENT

Macra Ltd

Date : 18th February 2020

Scale : Not To Scale



THE FORGE

DRAWING TITLE

Infiltration Testing Trial Pit Locations

DRAWING No.

WAL168/005

The Forge
Lower Vagg
Chillthorne Damer
Yeovil
Somerset
BA21 3PY
Tel : 01935 840 346



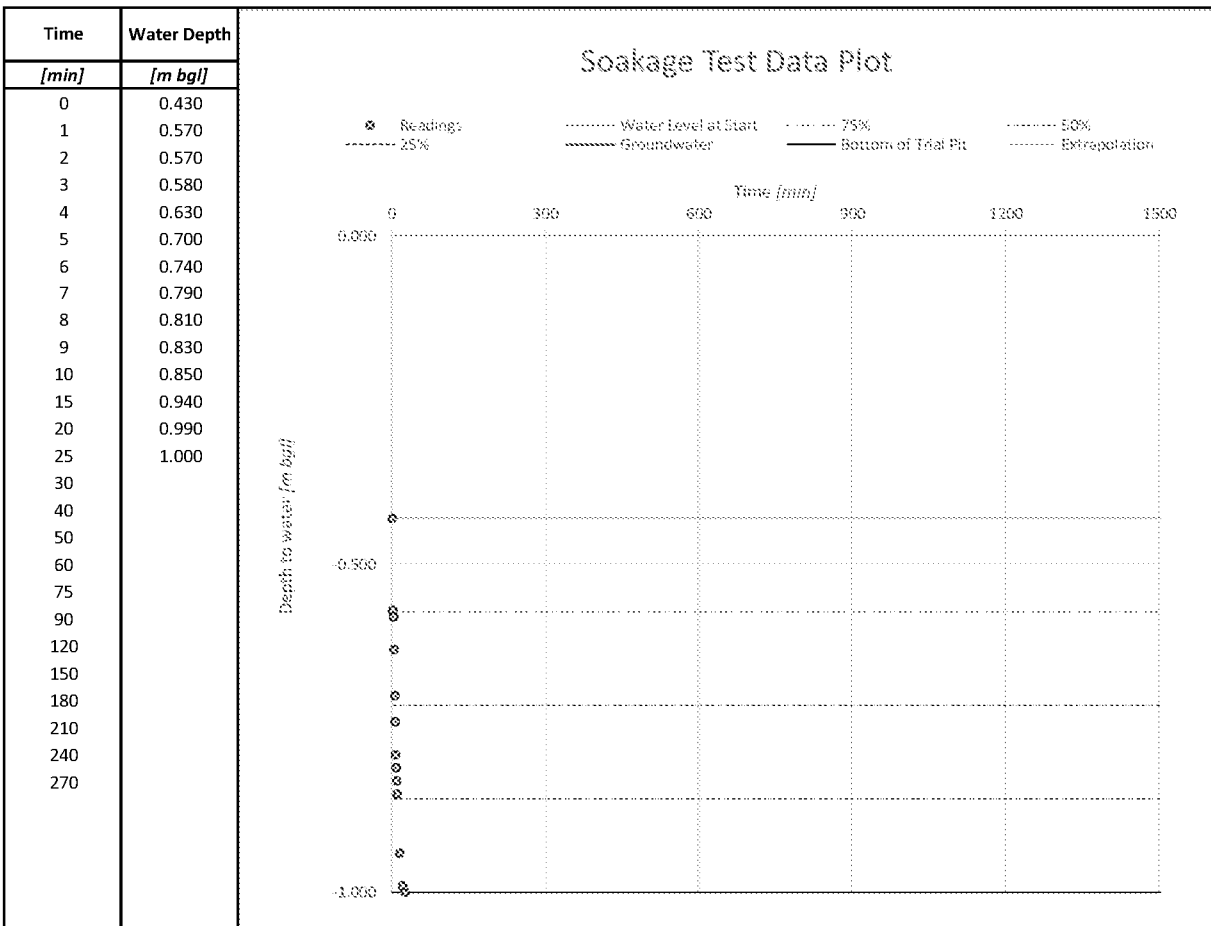
SOIL INFILTRATION RATE

Client: Macra Ltd
Project Title: West Walberton Lane, Walberton
Project No: WAL168.D

Borehole No: SA1
Test No: 1
Date: 16/02/2021
Logged by: RB

Length [m]: 1.60
Depth [m]: 1.00
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.125	brown silty clay with roots
		0.125	0.450	light brown soft silty CLAY
		0.450	1.000	sandy clayey GRAVEL. Gravel was fine to coarse sub-angular flint



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.27**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.21**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **4.9.E+02**

Soil Infiltration Rate [m/s]: 2.52E-04

Remarks:



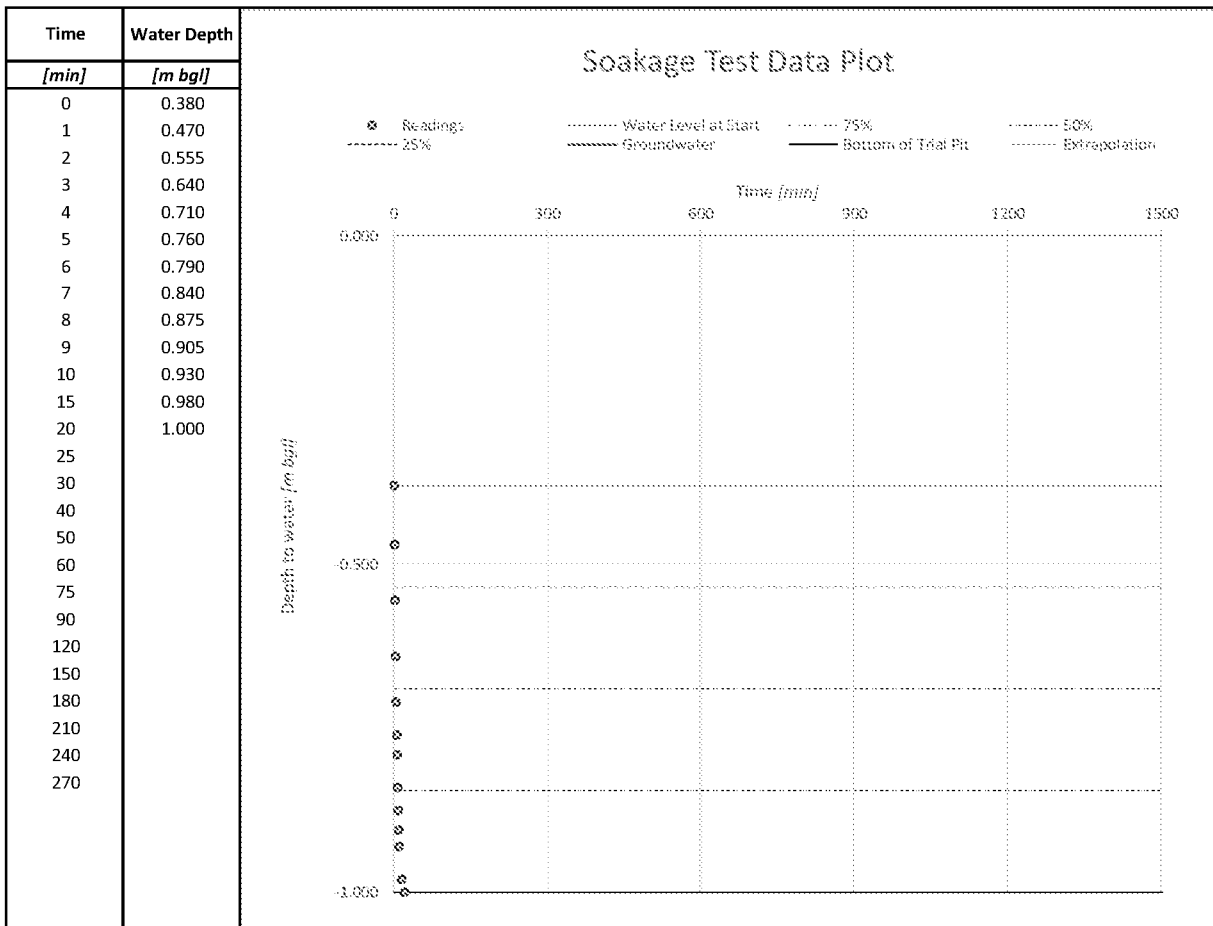
SOIL INFILTRATION RATE

Client: Macra Ltd
Project Title: West Walberton Lane, Walberton
Project No: WAL168.D

Borehole No: SA1
Test No: 2
Date: 16/02/2021
Logged by: RB

Length [m]: 1.60
Depth [m]: 1.00
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.125	brown silty clay with roots
		0.125	0.450	light brown soft silty CLAY
		0.450	1.000	sandy clayey GRAVEL. Gravel was fine to coarse sub-angular flint



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.30**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.32**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **3.2.E+02**

Soil Infiltration Rate [m/s]: 3.97E-04

Remarks:



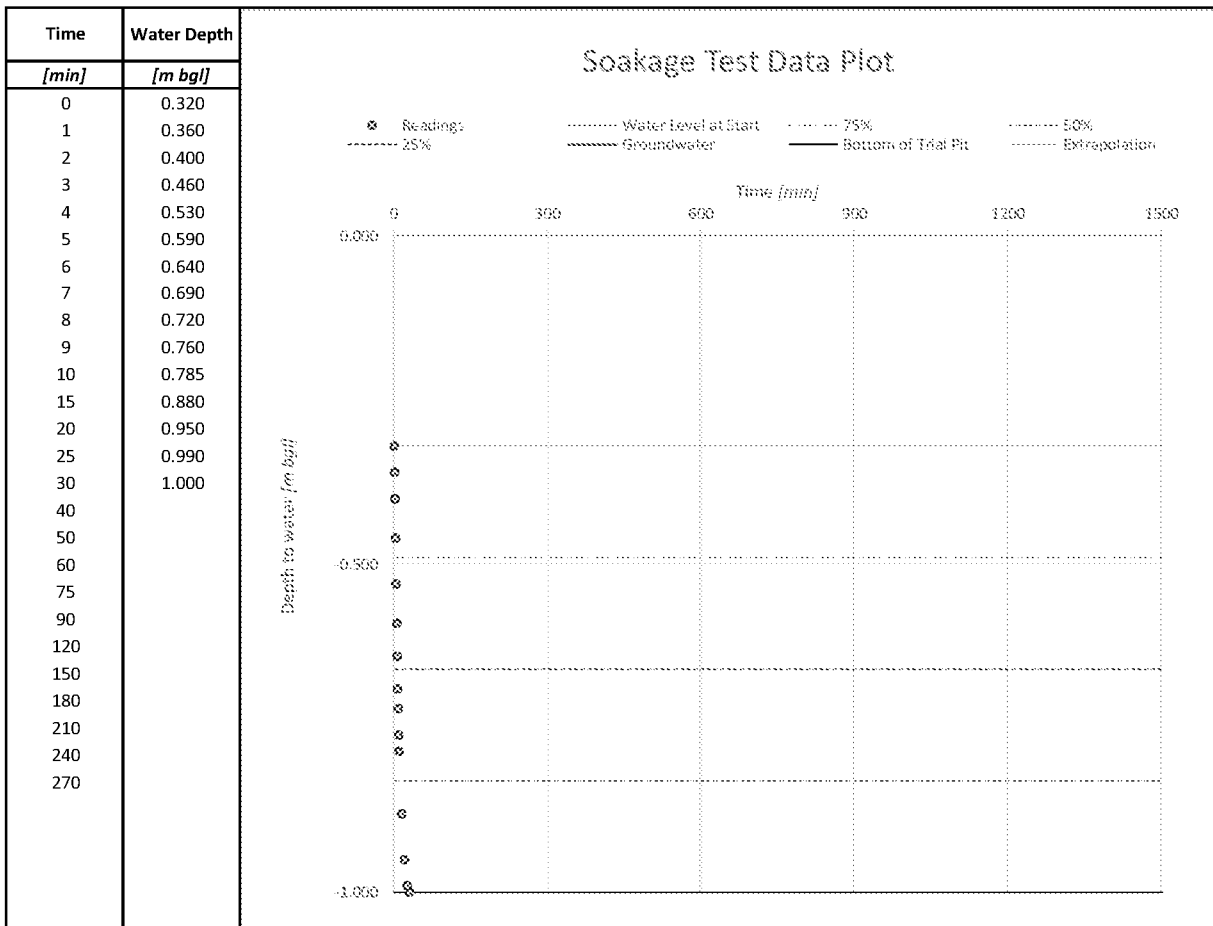
SOIL INFILTRATION RATE

Client: Macra Ltd
Project Title: West Walberton Lane, Walberton
Project No: WAL168.D

Borehole No: SA1
Test No: 3
Date: 16/02/2021
Logged by: RB

Length [m]: 1.60
Depth [m]: 1.00
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.125	brown silty clay with roots
		0.125	0.450	light brown soft silty CLAY
		0.450	1.000	sandy clayey GRAVEL. Gravel was fine to coarse sub-angular flint



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.33**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.46**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **5.4.E+02**

Soil Infiltration Rate [m/s]: 2.48E-04

Remarks:



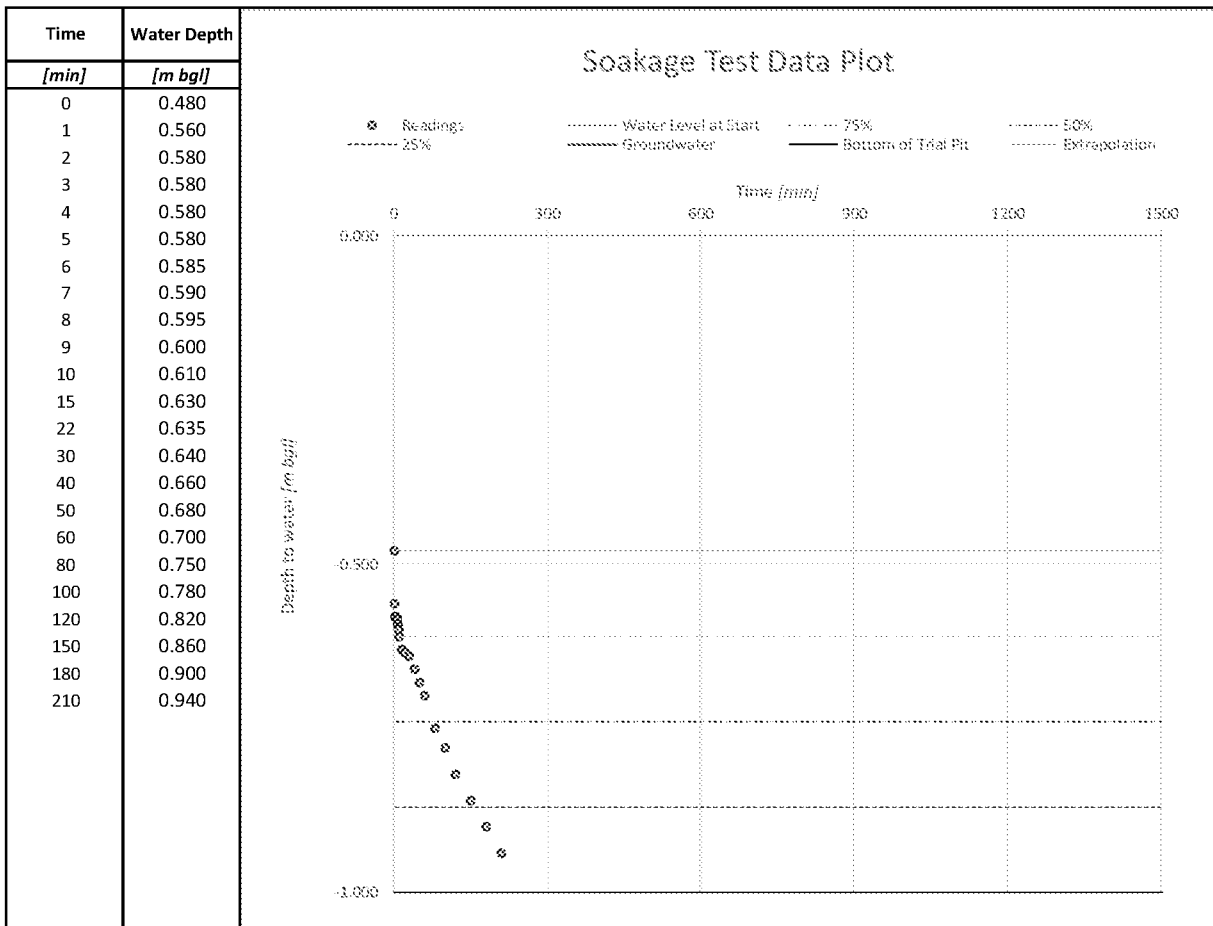
SOIL INFILTRATION RATE

Client: Macra Ltd
Project Title: West Walberton Lane, Walberton
Project No: WAL168.D

Borehole No: SA2
Test No: 1
Date: 16/02/2021
Logged by: RB

Length [m]: 2.00
Depth [m]: 1.00
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.150	brown silty clay with roots
		0.150	0.950	light brown soft to firm silty CLAY
		0.950	1.000	sandy very clayey GRAVEL. Gravel was medium to coarse sub-angular flint



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.31**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.55**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **8.8.E+03**

Soil Infiltration Rate [m/s]: 1.38E-05

Remarks:



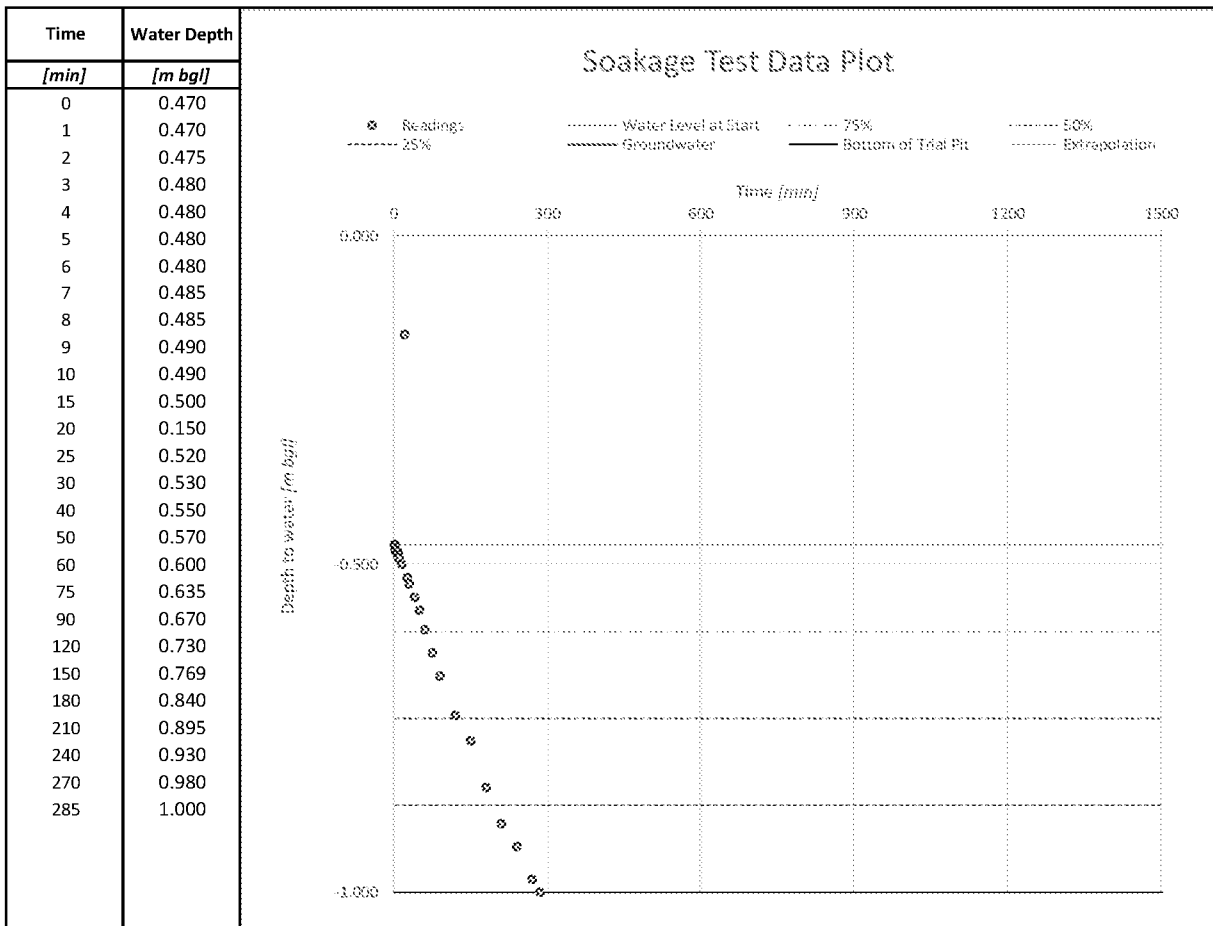
SOIL INFILTRATION RATE

Client: Macra Ltd
Project Title: West Walberton Lane, Walberton
Project No: WAL168.D

Borehole No: SA2
Test No: 2
Date: 17/02/2021
Logged by: RB

Length [m]: 2.00
Depth [m]: 1.00
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.150	brown silty clay with roots
		0.150	0.950	light brown soft to firm silty CLAY
		0.950	1.000	sandy very clayey GRAVEL. Gravel was medium to coarse sub-angular flint



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.32**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.58**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **8.0.E+03**

Soil Infiltration Rate [m/s]: 1.54E-05

Remarks:



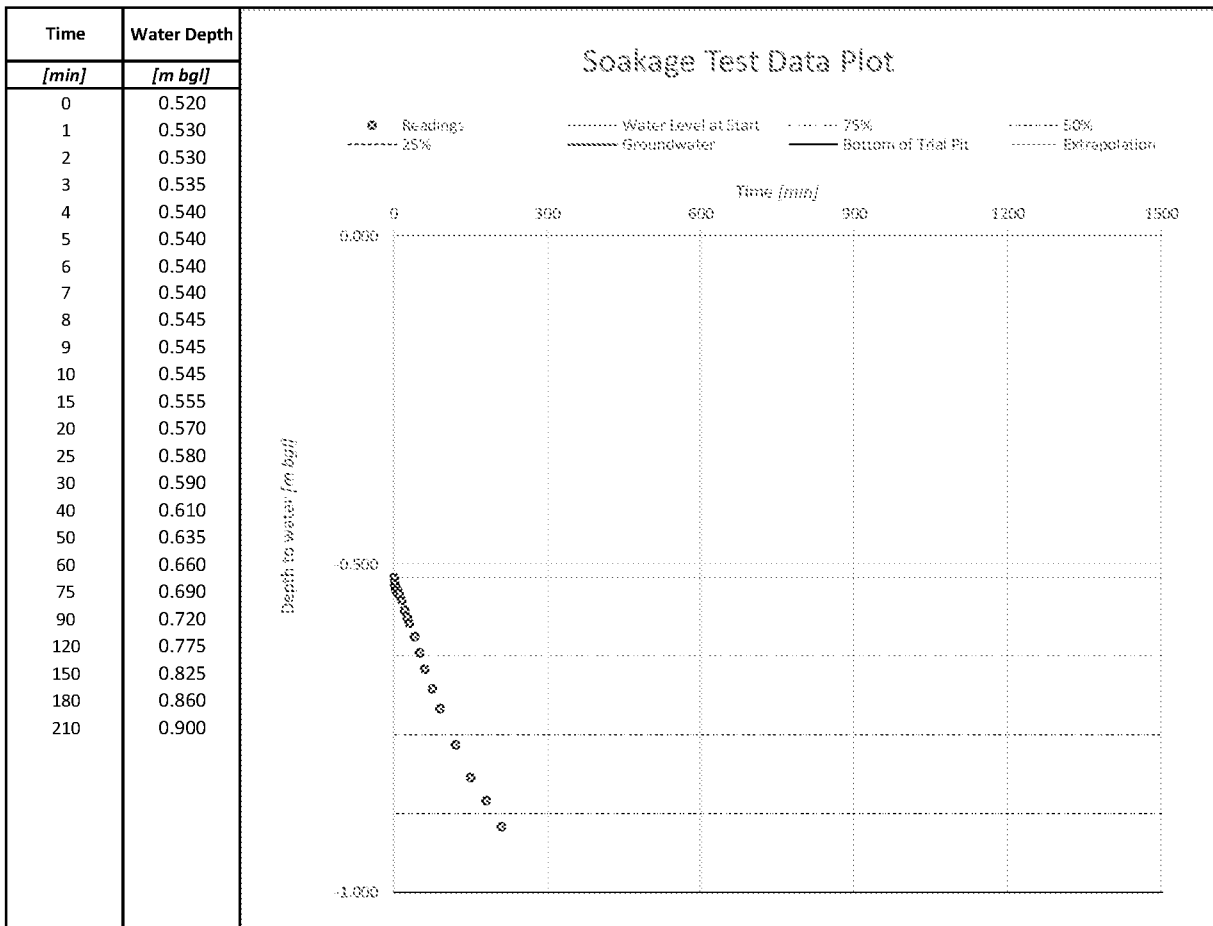
SOIL INFILTRATION RATE

Client: Macra Ltd
Project Title: West Walberton Lane, Walberton
Project No: WAL168.D

Borehole No: SA2
Test No: 3
Date: 17/02/2021
Logged by: RB

Length [m]: 2.00
Depth [m]: 1.00
Width [m]: 0.60
Groundwater [m bgl]:

Ground	Conditions	from - to [m bgl]		Description
		0.000	0.150	brown silty clay with roots
		0.150	0.950	light brown soft to firm silty CLAY
		0.950	1.000	sandy very clayey GRAVEL. Gravel was medium to coarse sub-angular flint



Soil Infiltration Rate [m/s]:

$$f = \frac{V_{p75-25}}{a_{s50} \times t_{p75-25}}$$

with:

V_{p75-25} as Effective Storage Volume of water between 75% and 25% effective storage depth [m³] **0.29**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.45**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **8.6.E+03**

Soil Infiltration Rate [m/s]: 1.37E-05

Remarks:



PLATE 1 – Soakaway SA1 – 1.6m long x 0.6m wide by 1.0m deep



PLATE 2 – Soakaway SA1 – Arisings



PLATE 3 – Soakaway SA2 – arisings