



Report
Title:

Soakaway Feasibility Report

Project
Name:

Land at Bilsham Road, Yapton



Report
Reference:

BRD2693-OR3-A

Date:

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BRD Environmental Ltd

Hawthorne Villa, 1 Old Parr Road,
Banbury, Oxfordshire, OX16 5HT

REPORT CONTROL SHEET

REPORT TITLE	SOAKAWAY FEASIBILITY REPORT
PROJECT	LAND AT BILSHAM ROAD, YAPTON
CLIENT	GLEESON DEVELOPMENTS

REPORT REFERENCE	ISSUE DETAIL	DATE	PREPARED BY	CHECKED BY
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BRD Environmental Limited

Geotechnical and Environmental Services

- Ground Investigation
- Japanese Knotweed Removal
- Soil, Water and Gas Testing
- Contamination Assessment
- Geotechnical Advice
- Remediation Solutions

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Soakaway Feasibility Report
Land at Bilsham Road, Yapton
BRD2693-OR3-A Soakage Report

REPORT LAYOUT

This report is divided into the following three sections: Technical Report, Supporting Information and Appendices.

TECHNICAL REPORT		
The main report section is intended to provide the technical detail of the investigation and is intended to provide the level of information required by current guidance documents and practice. The Technical Report is written in a language that, in part, assumes knowledge of subject matter so that it can be written in as concise a form as possible. Its intended audience is peers, regulators and other professionals in related disciplines.		
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SUPPORTING INFORMATION

This section of the report provides background details of a generic nature together with specific technical approaches adopted by BRD and details of the guidance documents that are commonly referenced in the report. The section also includes explanations of technical terms to assist non-specialist readers in understanding the Technical Report. It should be noted that not all the information within this section is necessarily applicable to this specific report.

APPENDICES

The final section of the report presents the factual data collected and employed as part of the investigation.

APPENDIX 1 SITE PLANS

Site Location Plan	Ref. BRD2693-OP1-A
Exploratory Point Plan	Ref. BRD2693-OD1-D

APPENDIX 2 EXPLORATORY HOLE & MONITORING RECORDS

Logs of soakage trial pits.	Ref. TP101 - TP118
Photographic records of trial pits.	Ref. BRD2693-OP7-A
BRE365 soakage test records.	18 x A4 pages



1. INTRODUCTION TO TECHNICAL REPORT

1.1. CONTRACT DETAILS

CLIENT	Gleeson Developments Limited trading as Gleeson Developments.
SITE	Land situated at Bilsham Road in the village of Yapton, West Sussex.
CLIENT'S ADVISORS	BRD Environmental Limited (BRD) has been commissioned directly by the Client.
REPORT CONTEXT	It is understood that the Client intends to develop the site with residential housing. This investigation was focused on providing additional shallow soakage test results for targeted areas of the development.
REPORT TYPE	Soakage feasibility report.
REPORT OBJECTIVES	The purpose of the report is to present the findings of a ground investigation and soakaway design advice based on the conditions revealed.

1.2. SCOPE OF WORKS

The agreed scope of works was:

- Mobilisation to site and production of health and safety documentation. Provision of safety fencing to go around soakage pits.
- Determination of the location of soakage test pits by topographic surveyor. The monitoring wells will also be accurately surveyed at this time.
- Trial pitting using a mechanical excavator to provide 18No. shallow trial pits to a nominal depth of between 0.6m and 1.2m, ground conditions dependent. All exploratory points will be logged and sampled in general accordance with BS5930:2015 and CIRIA C574 "Engineering in Chalk" by supervising Geo-Environmental Consultant.
- Undertake a soakage test in each of the trial pits, ground conditions permitting, in general accordance with BRE Digest 365. Water will be supplied by 4WD bowser unit. Within the budget total, we have assumed only one filling of each pit as infiltration is not anticipated. If this is not the case and repeat tests are required (in accordance with BRE365) then additional days will be required to complete the investigation. The pricing schedule includes the additional day rate for the soakage team. A Geo-Environmental Technician will attend site in order to monitor the soakage tests.
- Provision of a soakage investigation report including all exploratory point records and test results, together with commentary on the ground conditions encountered and the feasibility for adopting shallow infiltration systems together with likely design infiltration rates. Report to be supplied in an electronic Adobe pdf format.

1.3. REPORT LIMITATIONS

Any site boundary lines depicted on plans included within this report are approximate only and do not imply legal ownership of land. Any observations of tree species, asbestos containing materials within structures or invasive weeds, such as Japanese Knotweed, does not constitute a formal survey of such features. The identification of such features is therefore tentative only. The report does not consider whether sensitive ecology or archaeology is present as these require consideration by professionals specialising in these matters. It should be recognised that the collection of desk study information may not be exhaustive and that other information pertinent to the site may be available.

The recommendations, interpretations and conclusions of this report are based solely on the ground conditions found at the exploratory holes. Due to the variability in the nature of ground, conditions between exploratory holes can only be interpreted and not defined. The description of the site and the ground conditions is accurate only for the dates of the field works. In particular, groundwater levels can vary due to seasonal and other effects.

This report is restricted to a soakage feasibility assessment only and does not include any form of contamination or geotechnical assessment. Such assessments have been included in previous investigation reports covering the site.

2. SITE CHARACTERISTICS

2.1. SITE SETTING

SITE ADDRESS AND POST CODE	Land at Bilsham Road at the south western edge of the village of Yapton.
NATIONAL GRID REFERENCE	The site is centred on the approximate grid reference 497620E, 102800N.

2.2. SITE SUMMARY

SUBJECT	COMMENTS
CURRENT SITE DESCRIPTION	The site is currently an overgrown open field approximately rectangular in shape.
SURROUNDING LAND USE	The site consists of three adjoining agricultural fields separated by open drainage ditches. A second watercourse is aligned within an open ditch along the eastern boundary of the central 'L-shaped' section of the site. The watercourse then continues southwards within a culvert. The two larger fields are cropped /ploughed and the one to the south west is for grazing. The northern and eastern site boundaries are typically adjacent to residential properties whilst the southern and western boundaries are adjacent to other agricultural fields. The easternmost site boundary lies adjacent to Bilsham Road which affords access to the site as a whole. Along the northern and eastern boundaries, there were occasional areas of general garden waste which increases mid-way along the eastern boundary of the northern field towards the central 'L-shaped' section of the site. At these points, there was additional waste that included old tyres and more general domestic rubbish, although considered relatively minor in extent.
PROPOSED DEVELOPMENT	It is proposed that the site will be developed as residential housing.
HISTORICAL SUMMARY	The site has remained undeveloped throughout its mapped history. A stream formerly crossed part of the site and was diverted to a culvert at the end of the 19 th century. The residential area immediately to the east has been gradually developed from the 1930s through to the 1980s.
PUBLISHED GEOLOGY	The most recent published BGS information indicates the site is underlain by superficial deposits comprising silts with sand and clays of River Terrace Deposits that in turn are underlain by Raised Marine Deposits, although until recently the soils were assigned by the BGS as Aeolian Deposits (Brickearths). The superficial deposits are underlain by the Lewes Nodular Chalk Formation (Upper Chalk) comprising hard, nodular chalk with flint.

HYDROGEOLOGY	The site is situated upon superficial deposits designated a Secondary A Aquifer. The underlying bedrock geology is designated a Principal Aquifer The site is not located within a groundwater Source Protection Zone.
HYDROLOGY	The majority of the field boundaries within the western fields and central section of the southern field section comprise boundary ditches or streams. The watercourses comprise a mix of open ditches with culverted sections to allow agricultural machinery to cross. Surface water will infiltrate directly into the underlying soils, or will run-off into the neighbouring drainage ditches or watercourses. A watercourse runs along the eastern boundary of the central section of the site and flows within an open 2m deep ditch to cross the southern 'L-shaped' field within a culvert aligned due southwards. Separating the two western fields were shallow drainage ditches with intermittent standing water, but no obvious flow. A further section of culvert was identified as an overbridge crossing to allow agricultural equipment to pass from the eastern to the northern field. The central areas of the site in proximity to the watercourse and culvert are shown to be at risk from flooding. However, due to the size of the site, a detailed Flood Risk Assessment will be required regardless.

2.3. PREVIOUS INVESTIGATIONS

BRD is not aware of any previous third party ground investigations having been conducted at the site, however BRD has undertaken a desk study (report ref. BRD2693-OR1-C) and a geo-environmental ground investigation (report ref. BRD2693-OR2-C) at the site in 2017.

The previous desk study confirmed that the site has remained undeveloped throughout its mapped history. A stream formerly crossed part of the site and was diverted to a culvert at the end of the 19th century. The residential area immediately to the east has been gradually developed from the 1930s through to the 1980s.

The previous ground investigation comprised a combination of trial pits and windowless sampling boreholes undertaken across the site. These exploratory points confirmed a thin surface cover of Topsoil onto River Terrace Deposits which contain firm, stiff orange brown and light brown slightly gravelly slightly sandy silty clay. The gravel fraction comprised flint and occasional chalk. The bedrock Chalk Formation was generally encountered within the deeper boreholes and typically below the base of the trial pits. The Chalk was generally structureless silt or gravel, although locally was of rock quality near the base of the boreholes.

Soakaway tests were performed at 5No. of the trial pit locations. The results of soakage tests undertaken within the River Terrace Deposits show that this stratum has typically relatively low soil infiltration rates ranging between 1.86×10^{-6} m/s and 9.91×10^{-6} m/s.

Groundwater was encountered during the site works within each of the ten original deep exploratory holes (WS01 to WS12) at depths of between 3.4m and 4.0m. One of the exploratory holes (WS07) encountered groundwater within sand strata of the River Terrace Deposits whilst the remainder (WS01 to WS06, and WS08 to WS10) were recorded within the underlying Lewes Nodular Chalk Formation. The two additional boreholes (WS11 and WS12) encountered groundwater at a depth of 2.0m within the River Terrace Deposits, rising to 0.8m and 1.0m bgl respectively, which

likely reflects the difference in the time of year the boreholes were drilled, namely autumn (October 2017) compared to winter (January 2018) conditions.

5No. additional boreholes were drilled on October 2018 to replace the 4No. previous boreholes that were destroyed by the farmer ploughing right up to the field boundaries. As results of the ploughing, boreholes WS02 and WS07 to WS09 from 2017 investigation were lost.

Groundwater monitoring levels have been recorded in the range of between 1.70m to 3.80m bgl during the dry season months and between 0.90m to 1.90m bgl during wetter conditions.

3. GROUND INVESTIGATION

3.1. INVESTIGATION DESIGN

METHODOLOGY	18No. trial pits (TP101 to TP118) were excavated to depths between 0.60m to 1.20m bgl. One soakage test was completed at each test location.
DATES OF SITE WORKS	The site works were undertaken between 20 th and 22 nd of February 2019.
CONSTRAINTS TO EXPLORATORY HOLE LAYOUT	No constraints were recorded to any exploratory point.
EXPLORATORY HOLE SPACING	The soakage tests were undertaken in the locations for shallow infiltration testing as proposed by the Client.

3.2. BRD FIELDWORK

SOAKAGE PITS	
REFERENCES	TP101 to TP118.
DEPTH RANGE	0.60m - 1.20.0m bgl.
EXCAVATOR	JCB 3CX style wheeled backactor.
BACKFILL	The pits were backfilled with arisings upon completion and compacted with rams of the excavator bucket.

4. GROUND CONDITIONS

4.1. OVERVIEW

Ground conditions were as anticipated from the review of recent published BGS information with superficial deposits comprising River Terrace Deposits underlain by bedrock of the Lewes Nodular Chalk Formation.

Groundwater was not encountered during the site works within each of the 18No. exploratory holes (TP101 to TP118), however very wet sand was found at depths between 0.75m to 0.80m bgl in trial pits TP107 and TP108.

Details of the various stratigraphic units are given in the following sections.

4.2. ARTIFICIAL GROUND

4.2.1. Made Ground

Made Ground was not encountered in any exploratory points.

4.3. MADE GROUND TOPSOIL

These deposits were encountered across the site and generally recorded as ‘soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel of fine to coarse, subangular to angular flint’.

4.4. SUPERFICIAL DEPOSITS

4.4.1. River Terrace Deposits

The deposits were of variable composition although were generally recorded as ‘firm, brown to orangish brown, and orangish brown mottled light grey, locally slightly gravelly, silty clay. Gravel is fine to medium subangular chalk and angular flint’.

The gravel fraction comprised sub-angular coarse-sized flint. Locally, medium dense pale brown silty sand and gravel of sub-angular and sub-rounded fine- to coarse-sized flint were encountered.

4.5. BEDROCK

The bedrock geology was not encountered in any of the exploratory holes.

4.6. GROUNDWATER BEHAVIOUR

Groundwater was not encountered whilst forwarding the exploratory holes, however very wet sand was found at depths between 0.75m to 0.80m bgl in trial pits TP107 and TP108 which may suggest that the groundwater level was close to the bottom of the trial pits in both locations.



5. SOAKAWAYS

5.1. SOIL INFILTRATION RATES

The records of the soakage tests are presented in the Appendices that includes the calculation of the soil infiltration rate. A summary of results is presented in the table below:

TRIAL PIT	SOIL INFILTRATION RATE		STRATUM TESTED
TP101	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 1.60m: Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of flint.
TP102	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 0.85m: Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of flint. 0.80m - 1.30m Medium dense, light orange and light brown with some reddish, slightly gravelly, silty, fine SAND.
TP103	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m -1.25m: Firm, brown to orangish brown, silty CLAY. Occasional fine to coarse, subangular gravel of flint.
TP104	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 1.20m: Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of flint.
TP105	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 0.70m: Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of flint. 0.70m - 1.20m: Firm, brown to orangish brown, mottled light grey, silty CLAY. Occasional gravel is fine to coarse, angular flint.
TP106	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 1.20m: Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of flint.
TP107	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 0.40m: Firm, brown to orangish brown, silty CLAY. 0.40m - 0.85m: Firm, wet, brown and orangish brown mottled light grey, slightly gravelly, silty CLAY.
TP108	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 0.85m: Firm, wet, brown, yellowish brown and orangish brown mottled light grey, slightly gravelly, silty CLAY.

TRIAL PIT	SOIL INFILTRATION RATE		STRATUM TESTED
TP109	Test 1	Permeability too low to calculate soil infiltration rate although continuous drop in water level recorded.	0.25m - 0.50m: Firm, brown, slightly sandy, silty CLAY. 0.50m - 0.85m: Firm, brown, yellowish brown to orangish brown mottled light grey slightly gravelly, silty CLAY.
TP110	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 1.00m: Firm, brown to orangish brown, slightly gravelly silty CLAY.
TP111	Test 1	Permeability too low to calculate soil infiltration rate.	0.25m - 1.20m: Firm, brown to orangish brown with mottled light grey, slightly gravelly, silty CLAY.
TP112	Test 1	Permeability too low to calculate soil infiltration rate.	0.25m - 0.90m: Firm, brown orangish brown mottled light grey, slightly gravelly, silty, CLAY. 0.90m - 1.20m: Firm, wet, brown and yellowish brown mottled light grey ,slightly gravelly, silty CLAY.
TP113	Test 1	Permeability too low to calculate soil infiltration rate.	0.30m - 0.70m: Firm, light brown and yellowish brown mottled light grey, slightly gravelly, silty CLAY. 0.70m - 1.00m: Firm, yellowish brown and light grey, slightly gravelly, silty CLAY.
TP114	Test 1	Permeability too low to calculate soil infiltration rate.	0.25m - 1.20m: Firm, orangish brown mottled light grey and brown, silty CLAY.
TP115	Test 1	Permeability too low to calculate soil infiltration rate.	0.25m - 1.20m: Firm, orangish brown mottled light grey and brown, silty CLAY.
TP116	Test 1	Permeability too low to calculate soil infiltration rate.	0.25m -0.50m: Firm, brown, silty CLAY. 0.50m -1.20m: Firm, brown, silty CLAY with occasional fine to coarse, angular to subangular flint gravel.
TP117	Test 1	Permeability too low to calculate soil infiltration rate although continuous drop in water level recorded.	0.25m -0.50m: Firm, brown, silty CLAY. 0.50m - 0.85m: Firm, brown and orangish brown mottled light grey and occasional, yellowish brown, silty CLAY.

TRIAL PIT	SOIL INFILTRATION RATE		STRATUM TESTED
TP118	Test 1	Permeability too low to calculate soil infiltration rate although continuous drop in water level recorded.	0.25m - 0.60m: Firm, brown and orangish brown, silty CLAY. 0.60m - 0.80m: Firm, brown and orangish brown mottled light grey, silty CLAY.

5.2. SOAKAWAY DESIGN ADVICE

It was not possible to calculate an infiltration rate in any of the 18No. shallow soakage test pits. This is consistent with the nature of the ground.

Generally, the water introduced into the test pits remained static with effectively no infiltration recorded. In 3No. of the pits (TP109, TP117 and TP118) a slow drop in water levels were observed. Due to budgetary constraints the tests were of relatively short duration, but even with appropriate extrapolation the water level would not have dropped the required 50% within 24 hours.

It is also worth noting that shallow standing groundwater have been recorded on site during both the previous investigation and in the subsequent groundwater monitoring. Groundwater monitoring has also indicated the underlying deeper Chalk aquifer is saturated. Direct discharge to groundwater is not allowed by the Environment Agency.

It is therefore considered that the use of infiltration devices is not appropriate at the site due to poor infiltration and shallow groundwater.

REPORT SPECIFIC REFERENCES

- British Geological Survey, Research Report ICSO/87/2, published 1987, 'Applied geological mapping Southampton area'.
- British Geological Survey sheet 317/ 332, "Chichester and Bognor", Solid and Drift edition (1:50,000) published 1996.
- British Geological Survey, Open Research CR/06/160N, published 2006, 'Guide to Permeability Indices'.



SUPPORTING INFORMATION

GROUND INVESTIGATION

Exploratory holes are logged by an experienced Geo-Environmental Consultant in general accordance with 'Code of practice for site investigations' BS5930:2015, British Standards Institution, 2015. Soil samples for chemical and geotechnical analysis are taken from the exploratory holes at intervals dictated by the nature of the soils and the objectives of the investigation.

Where stated on the logs of inspection pits, trial pits or boreholes (where insitu testing has not been undertaken), the relative density of coarse (sand and gravel) soils is tentative only. Such assessments of density are on the basis of visual inspection only taking into consideration such factors as drilling rates, stability of pit side walls, appearance and behaviour under excavation.

Where Chalk strata is encountered it is logged and graded in general accordance with CIRIA guidance 'C574 - Engineering in Chalk'. It should be recognised that where percussive drilling methods are employed, the structure of the Chalk is destroyed and therefore the grading stated on such logs is either tentative or absent where it is not possible to assess the grade.

Hand Dug Inspection Pits

Hand tools are used to forward shallow inspection pits as a cost effective method of describing and sampling near surface soils. The technique is also used where exposure of existing footings is required. The depth reached by such techniques is a function of the nature of the ground and generally does not exceed 1.5m

Trial Pits

Mechanically excavated trial pits allow detailed inspection of near surface ground due to the large volume of soil exposed. A wheeled backhoe loader is the usual machine for digging trial pits that are typically 3 to 4.5m deep, 0.5m wide and 3m long.

Windowless Sampling Boreholes

This type of borehole is formed by a small tracked dynamic percussion drilling rig with samples retrieved in thin plastic liners within the narrow diameter steel sampling tubes. Borehole depths of up to 5m are typical, but in exceptional circumstances up to 15m depth can be achieved. This is the smallest type of rig that is capable of undertaking Standard Penetration Tests (SPTs).

Hand Held Window Sampling

Hand held window sampling is a useful method of drilling narrow diameter boreholes particularly where access is difficult. Hand held mechanical percussive hammers are used to drive the sampling tube into the ground. The soil samples are collected within the hollow metal sampling tubes and inspected via the open window along one side. Window sampling boreholes can be forwarded to depths of 3m to 6m depending upon ground conditions.

Cable Percussive Boreholes

This form of drilling involves repetitive dropping of a tube into the soil under its own weight from a tripod support. The sample is obtained from the clay cutter head in fine soils or a bailer for wet granular soils. As the borehole progresses SPTs can be undertaken and relatively undisturbed samples can be obtained. Typically these boreholes are 15 to 25m deep, but depths of double that can be achieved in soils, but only thin weak rock layers can be penetrated.



Rotary Boreholes

Where competent rock is required to be drilled then rotary drilling techniques are required. The drilling rigs can vary in size from small tracked units to larger units mounted on four wheel drive trucks. Rotary open hole drilling techniques break the rock into small fragments and so recovery of any samples is limited. In contrast, rotary coring retrieves excellent samples. Some rigs also allow windowless sampling to be undertaken through soil layers. There are no practical limits to the depths that this drilling method can achieve.

Dynamic Probing

Dynamic probing comprises a sectional rod with a sacrificial cone at the base of slightly larger diameter than the rod. The rod is driven into the ground by a constant mass falling through a set distance. The number of blows required to forward the rod per 100mm is then recorded and presented in a graph of N_{10} values. The standard applicable to dynamic probing is "BS EN ISO 22476-2:2005 Incorporating corrigendum no. 1, Geotechnical investigation and testing – Field testing – Part 2: Dynamic probing" BSi, February 2007.

Static Cone Penetration Tests

Cone Penetration Tests (CPT) consist of pushing a conical 60° cone into the ground at a constant rate and recording the force required to do this. Sensors in the cone record other information and this data can be correlated to a number of different geotechnical parameters.

Dynamic Penetrometer

The Transport Research Laboratory Dynamic Cone Penetrometer (TRL DCP) uses an 8 kg hammer dropping through a height of 575mm to drive a 60° cone of 20mm maximum diameter into the ground. The depth driven either per blow or per several blows is recorded. The strength of each of the soil layer encountered is then calculated by converting the penetration rate (mm per blow) into an approximate California Bearing Ratio (CBR) value employing the correlation proposed by TRL.

Gas Monitoring

Gas monitoring is undertaken with a portable gas monitor for oxygen, Methane, Carbon Dioxide, Hydrogen Sulphide and Carbon Monoxide together with recording of atmospheric pressure and any flow rate.

Vapour Monitoring

Headspace tests and monitoring for Volatile Organic Compounds (VOC) or Semi Volatile Organic Compounds (SVOC) is undertaken using a Photo Ionisation Detector (PID). The MiniRAE models used have a 10.6 eV lamp calibrated for isobutylene. The PID is useful tool to indicate the presence of a wide range of volatile compounds, but only provides semi-quantitative data as different compounds provide a different response and thus the reading is not a true reflection of the actual concentration present.

Low PID readings can be recorded in natural uncontaminated organic soils or even as a result of atmospheric pollution. It is generally accepted by consultants and regulators that recorded values in excess 50 parts per million (ppm) represents the presence of organic compound pollutants and in excess of 100 ppm such contamination may be significant.

The headspace test procedure involves the collection of a sample of suspected contaminated soils and placing within a sample bag. A tight seal to the bag is formed with a similar volume of air trapped to that of the soil and the sample is left for fifteen minutes to allow volatilisation of any contaminants. The bag is then pierced by, and sealed around, the sample probe of the PID and a reading taken.



Borehole well monitoring is undertaken by connecting the PID directly to the gas tap on the monitoring well installation.

Groundwater Level Monitoring

Groundwater levels are recorded with an electronic dip meter that has a detector end that is lowered into the borehole well. An audible signal is made when water is reached and the depth recorded from the graduated tape used to lower the detector. Where there is potential for a separate Light Non Aqueous Phase Liquid (LNAPL) to be present floating on the groundwater an oil/water interface meter is used in preference to a conventional dip meter so that any such floating product can be detected.

Geotechnical Sampling

BRD schedule a range of geotechnical testing as appropriate to the identified ground conditions, available budget and the proposed development. Different types of soil samples are obtained as appropriate to the ground conditions and planned testing.

SAMPLE TYPE	SYMBOL USED ON LOGS	DESCRIPTION
Disturbed	D	Small disturbed soil samples of about 1 to 2 kg are collected in plastic bags.
Bulk	B	Large disturbed bulk samples up to about 20 to 30 kg are collected in plastic bags
Undisturbed	U	'Undisturbed' samples generally collected in plastic or metal tubes within cable percussive boreholes of 100mm diameter for samples of fine soils of firm to stiff consistency. Can also be representative of samples taken by cutting plastic sample liners from windowless sampling drilling methods. It is recognised that such samples do not generally meet Eurocode sample quality requirements for the tests commonly employed. However, given the wealth of experience with these sampling methods this continues to be common in United Kingdom practice particularly for less sensitive developments where more expensive sampling techniques are not economically justifiable.
Undisturbed	UT	A thin walled steel sampler developed by Archway Engineering called a UT100 in an attempt to gain better quality samples of soft to firm fine soils when using cable percussive drilling methods.

Contamination Sampling

BRD schedule contamination testing as appropriate to the ground conditions, available budget, potential contaminants and the proposed development. Samples are collected in single use laboratory supplied containers.

Soil samples are retrieved in plastic containers and/or amber glass jars with a lined plastic cap. Contamination samples are indicated by a 'J' on exploratory hole logs.

Water samples are collected in plastic bottles and/or amber glass jars with a lined plastic cap then placed in cool boxes together with freezer packs. Water samples are indicated by a 'W' on exploratory hole records, but generally such samples are not tested as testing from dedicated monitoring wells is preferred for sample quality reasons.

Samples retrieved from the exploratory holes are dispatched to the laboratory by overnight courier. Where samples cannot be transported directly from site they are temporarily stored in the BRD dedicated sample storage facility which includes refrigeration where necessary. The individual accreditation of the test methods is detailed in the laboratory test report.

GEOTECHNICAL ASSESSMENT

Under Eurocode 7 (EC7) the following risk ranking is applied to geotechnical projects:

GEOTECHNICAL CATEGORY	DESCRIPTION
1	Small and relatively simple structures for which it is possible to ensure that the fundamental requirements will be satisfied on the basis of experience and qualitative geotechnical investigations with negligible risk. For example, straightforward ground conditions, local experience, no excavation below the water table unless this will be straight forward.
2	Conventional types of structures and foundations. No difficult soil or loading conditions. Quantitative geotechnical data and laboratory testing. Routine procedures for field and laboratory testing. Conventional structures and no exceptional geotechnical risk. For example, spread, raft and piled foundations, retaining walls, bridge piers and abutments, embankments, ground anchors, tunnels and excavations.
3	Those structures not in Categories 1 and 2 such as very large or unusual structures, structures involving abnormal risks, or unusual or exceptionally difficult ground or loading conditions. Structures in highly seismic areas. Structures in areas of probable site instability or persistent ground movements that require separate investigation or special measures.



GEOTECHNICAL PARAMETERS

Soakage Tests

Soakage tests comprise the filling of a test pit with water and recording the time taken for the water to drain away. The tests are undertaken in general accordance with 'Digest DG 365: Soakaway design' BRE, Revised 2016. The test pits are usually gravel filled for safety with a slotted vertical pipe through which water observations are made. Water is generally supplied by a tanker to allow fast filling of the pits with water. Compliant tests are filled and allowed to drain near empty three times.

Standard Penetration Tests

The standard penetration test (SPT) determines the resistance of soils at the base of a borehole to the dynamic penetration of a split barrel sampler and the recovering of disturbed samples for identification purposes. In gravelly soils and some soft rocks a solid cone is used in preference to the sampler.

The basis of the test consists in driving a sampler by dropping a hammer of 63.5 kg mass on from a height of 760 mm. The number of blows (N value) necessary to achieve a penetration of the sampler of 300 mm is recorded. The test is described in 'Geotechnical investigation and testing – Field testing – Part 3: Standard penetration test - BS EN ISO 22476-3:2005 Incorporating corrigendum no. 1', BSi, 2007.

The uncorrected N values of the SPT tests are recorded upon the borehole logs together with a record of blows for each 75mm test portion including the seating blows. Where the full test depth cannot be achieved due to refusal on hard stratum, the number of blows and the distance achieved is recorded and the N value given as >50. The abbreviation SPT(c) is used upon the logs indicates that the test was performed with a solid cone rather than a split spoon sampler.

It is necessary to apply a correction to the N values to account for the effects of energy delivery using the equation: $N_{60} = \frac{E_r}{60} N$ where E_r is the energy ratio of the specific test equipment.

In the case of tests in sand, for the effects of overburden and rod length the equation is modified to $N_{60} = \frac{E_r}{60} \times \lambda \times C_N \times N$ where λ is the correction factor for energy losses due to the rod length and C_N is the correction factor for vertical stress due to overburden of the soil.

Sulphate

In order to compare the laboratory soil test results with 'Concrete in aggressive ground. BRE Special Digest 1: 2005' (BRE, 2005) laboratory results are converted to SO_4 mg/l. Laboratory results expressed as SO_3 g/l and are multiplied by a factor of 1200 to express the results as SO_4 mg/l.

Index Property Tests

In accordance with National House Building Council (NHBC) Standards Chapter 4.2 - Building near trees, the laboratory plasticity indexes are assessed against their volume change potential. The Modified Plasticity Index is defined as the Plasticity Index of the soil multiplied by the percentage of particles with a nominal diameter of less than $425\mu\text{m}$. Whilst the NHBC Standards were developed for residential buildings, the advice is equally applicable to a large number of other types of low rise structures.



Hand Shear Vane

The undrained shear strength of the fine (i.e. clay) soils at the site can be established using hand shear vane apparatus. Usually three readings are taken at every depth tested and the uncorrected results recorded on the exploratory point log. Shear vane readings from depths below 1.2m depth in trial pits are from tests performed on excavated soil. In accordance with Eurocode 7 – Geotechnical design – Part 2: Ground investigation and testing EN 1997-2:2007 the results should be corrected. BRD employ only simple correction methods as the more complex correction methodologies imply undue accuracy to a test that has distinct disadvantages and limitations.

Pocket Penetrometers

The Pocket Penetrometer is a lightweight instrument for use by field personnel to check visual classification of soils. It is a simple test and there is inherent uncertainty related to the small volume of soil being tested and so the results should be used with appropriate caution. Pocket penetrometers are calibrated in terms of unconfined compressive strength and once converted to undrained shear strength (divide by two) the results are further reduced by a factor of 1.5 - 2.0 as the device tends to overestimate strengths.

<i>Instrument Reading (uncompressive strength in kg/cm²)</i>	<i>Indicative Undrained Shear Strength (kN/m²)</i>	<i>Indicative Consistency</i>	<i>Indicative strength</i>
1.0	25 - 33	Soft	Low
1.5	38 - 50	Soft to firm	Low to medium
2.0	50 - 67	Firm	Medium
2.5	63 - 83	Firm to stiff	Medium to high
3.5	88 - 116	Stiff	High
4.5	113 - 150	Stiff to very stiff	High to very high



APPENDIX 1

Site Location Plan



Not to scale.

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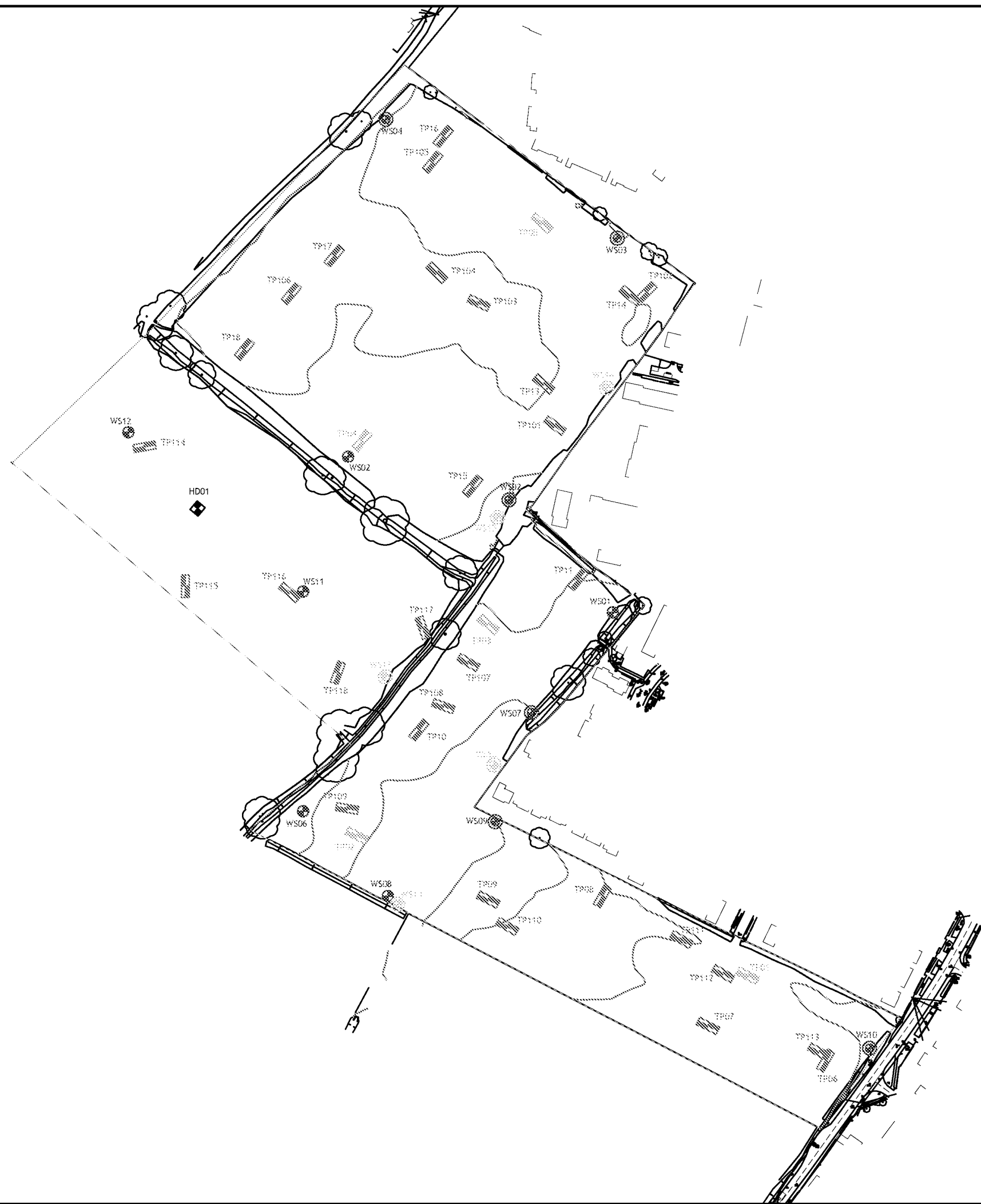
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Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP1-A
Date Issued: April 2016



01295 272244

info@brduk.com



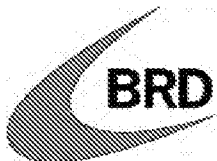
KEY:

- BRD Soakage Test Pit (February 2019)
- BRD Soakage Test Pit
- BRD Trial Pit
- BRD Hand Dug Pit
- BRD Windowless Sample Borehole with Monitoring Well Installation (October 2018)
- BRD Windowless Sample Borehole
- BRD Windowless Sample Borehole with Monitoring Well Installation
- Site Boundary

NOTES:

Drawing reproduced from Digital Terrain Surveys LLP 'Site Survey', Drawing ref. DTS170415-7Q0, Dated. April 2014.

D	25/02/19	Additional soakage investigation points added.	RM	JB
C	19/10/18	Additional investigation points added.	RM	JB
B	08/02/18	Additional investigation points and site boundary change.	HKA	BD
A	03/11/17	First Issue	HKA	BD
Revision	Date	Description	Drawn	Approved

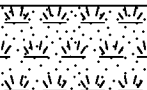
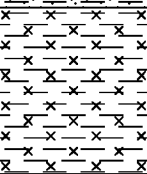
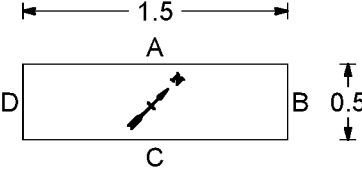
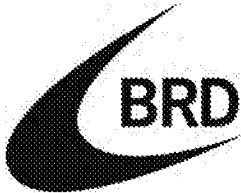
Drawing title			
EXPLORATORY POINT PLAN			
Project title			
LAND AT BILSHAM ROAD, YAPTON			
Client			
GLEESON DEVELOPMENTS			
Scale	Original drg. size/colour	Date	
1:2500	A3 / C	25/02/2019	
Drawn	Checked	Approved	
RM	JB	JB	
Drawing Number			Rev
BRD2693-OD1			D
 BRD Environmental Ltd 01295 272244 info@brduk.com www.brduk.com			

APPENDIX 2

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 20/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP101		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel is fine to coarse of angular flint.	0.30 0	TS	
			Firm brown to orangish brown, silty CLAY. Rare gravel is fine to coarse, subangular to angular flint.	0.60 0	RTD	
				1		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Trial Pit: 			General Remarks: Terminated at 0.60m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments			Trial Pit No. TP102			
Project Title: Land at Bilsham Road, Yapton						
Project No: BRD2693			Sheet 1 of 1			
Logged By: R Marina						
Date Completed: 20/02/2019						
Method Used: 180° Backhoe excavator (JCB 3CX type)						
Samples & Tests						
Depth	Type & No	Value	Description of Strata	Depth / (Level)	Geology	Legend
			TOPSOIL: Soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel is fine to coarse angular flint.	0.30 0	TS	
			Firm, brown to orangish brown, silty CLAY. Rare gravel is fine to coarse, angular to subangular flint.	0.85 0	RTD	
				1		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Trial Pit: 			General Remarks: Terminated at 0.85m bgl for soakage testing.			All dimensions in metres Log Scale 1:25
						

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 20/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP103		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel is fine to coarse angular flint.	0.30	TS	
			Firm, brown to orangish brown, silty CLAY. Occasional gravel is fine to coarse, angular to subangular flint.	1.25	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.25m bgl for soakage testing.		All dimensions in metres Log Scale 1:25	

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 20/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP104		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel is fine to coarse, angular flint.	0.30	TS	
			Firm, brown to orangish brown, silty CLAY. Rare gravel is fine to coarse, subangular to angular flint.	1.20	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 20/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP105		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel is fine to coarse, angular flint.	0.30	TS	
			Firm, brown to orangish brown, silty CLAY. Rare gravel is fine to coarse, angular to subangular flint.	0.70		
			Firm, brown to orangish brown, mottled light grey, silty CLAY. Occasional gravel is fine to coarse, angular flint.	1.20		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 20/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP106		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown to dark brown, silty clay topsoil with rootlets. Occasional gravel is fine to coarse, angular flint.	0.30	TS	
			Firm, brown to orangish brown, silty CLAY. Rare gravel is fine to coarse subangular to angular flint.	1.20	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.		All dimensions in metres Log Scale 1:25	

TRIAL PIT RECORD

[illegible]

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 21/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP108		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown, firm slightly wet, silty clay topsoil with rootlets. Occasional gravel is fine to coarse subrounded to subangular, flint. Rare chalk clasts.	0.30 0	TS	
			Firm, wet, brown, yellowish brown and orangish brown mottled light grey, slightly gravelly, silty CLAY. Gravel is fine to medium, subangular chalk and angular flint.	0.85 0	RTD	
			0.75 m: very wet sand with occasional fine sand pockets.	1 0		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Trial Pit: 			General Remarks: Terminated at 0.85m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 21/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP109		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, brown, firm slightly wet, silty clay topsoil with rootlets. Occasional gravel is fine to coarse, subrounded to subangular flint. Rare chalk clasts.	0.25	TS	
			Firm, brown, slightly sandy silty CLAY with occasional rootlets. Occasional gravel is fine to coarse, subangular to angular flint.	0		
			Firm, brown, yellowish brown to orangish brown mottled light grey slightly gravelly, silty CLAY. Gravel is fine to coarse, subangular to angular flint with occasional chalk and rare flint cobbles.	0.50		
				0.85	RTD	
				1		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 0.85m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 21/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP110		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, dark brown to dark grey, silty topsoil with rootlets. Occasional gravel is fine to coarse, angular to subangular flint and rare chalk clasts.	0.30	TS	
			Firm, brown to orangish brown, slightly gravelly, silty CLAY with occasional rootlets. Gravel is fine to coarse, angular to subangular flint and occasionally chalk.	1.00	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.00m bgl for soakage testing.		All dimensions in metres Log Scale 1:25	

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 21/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP111		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, dark brown to dark grey, silty topsoil with rootlets. Occasional gravel is fine to coarse, angular to subangular flint and rare chalk clasts. Firm, brown to orangish brown with mottled light grey, slightly gravelly, silty CLAY. Gravel is fine to medium, subangular chalk and angular flint.	0.25 0	TS	
				1.12 0	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 21/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP112		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, dark brown, dark grey, silty topsoil with rootlets. Occasional gravel fine to coarse, angular to subangular flint and rare chalk clasts. Firm, brown orangish brown mottled light grey, slightly gravelly, silty CLAY. Gravel is fine to medium, subangular chalk and angular flint.	0.25 0	TS	
			Firm, wet, brown and yellowish brown mottled light grey, slightly gravelly, silty CLAY. Gravel is fine to medium, subangular to subrounded flint and chalk. 1.00 m: occasional fine sand pockets.	0.90 0 1.11 0	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Trial Pit: 			General Remarks: Terminated at 1.10m bgl for soakage testing.		All dimensions in metres Log Scale 1:25 	

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 21/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP113		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Soft, dark brown and dark grey, silty topsoil with rootlets. Occasional gravel is fine to coarse, angular to subangular flint and rare chalk clasts.	0.30	RTD	
			Firm, light brown and yellowish brown mottled light grey, slightly gravelly, silty CLAY with occasional rootlets. Gravel is fine to medium, subangular to subrounded flint and rare chalk.	0.70		
			Firm, yellowish brown and light grey, slightly gravelly, silty CLAY. Gravel is fine to medium, subrounded chalk.	1.00		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.00m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 22/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP114		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Grass over, dark brown, silty clay with rootlets. Occasional gravel of subangular to subrounded flint. Rare chalk clasts.	0.25	TS	
			Firm, orangish brown mottled light grey and brown, silty CLAY. Occasional gravel is fine to coarse, angular to subangular flint.	0	RTD	
				1		
				1.20		
				0		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 22/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP115		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Grass over, dark brown, silty clay with rootlets. Occasional gravel of subangular to subrounded flint. Rare chalk clasts.	0.25	TS	
			Firm, orangish brown mottled light grey and brown, silty CLAY. Occasional gravel is fine to coarse, angular to subangular flint.	0	RTD	
				1		
				1.20		
				0		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.		All dimensions in metres Log Scale 1:25	

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 22/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP116		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Grass over, dark brown, silty clay with rootlets. Occasional gravel of subangular to subrounded flint. Rare chalk clasts.	0.25	TS	
			Firm, brown, silty CLAY with occasional rootlets. Gravel is fine to coarse, subangular to angular flint.	0.50		
			Firm, brown, silty CLAY with occasional gravel is fine to coarse, angular to subangular flint.	1.20		
				1	RTD	
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 1.20m bgl for soakage testing.		All dimensions in metres Log Scale 1:25	

TRIAL PIT RECORD

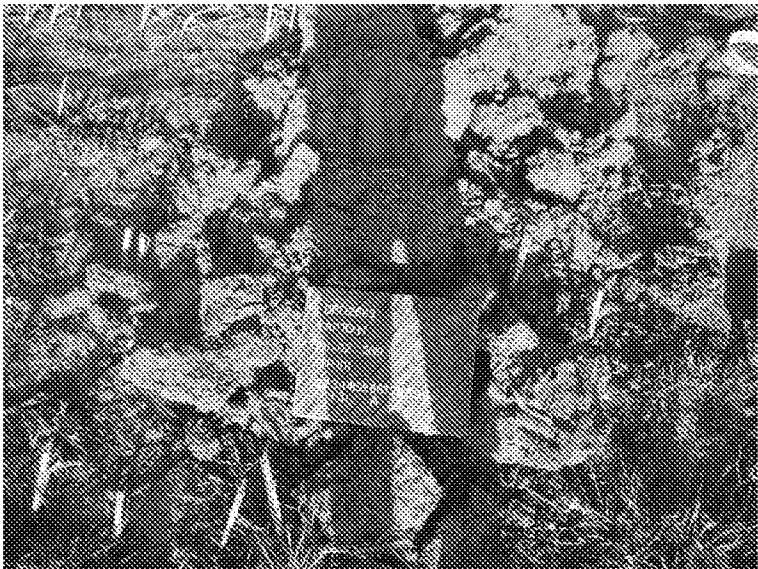
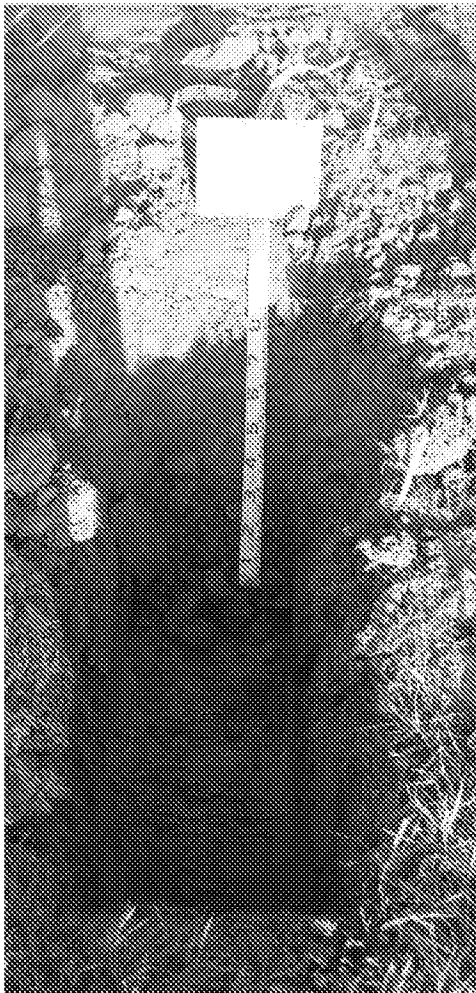
Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 22/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP117		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Grass over, dark brown, silty clay with rootlets. Occasional gravel of subangular to subrounded flint. Rare chalk clasts.	0.25	TS	
			Firm, brown, silty CLAY with occasional rootlets. Gravel is fine to coarse, subangular to angular flint.	0.50		
			Firm, brown and orangish brown mottled light grey and occasional yellowish brown, silty CLAY. Occasional gravel is fine to coarse, angular to subangular flint.	0.85		
				1		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered					Surface Elevation Level:	
Plan of Trial Pit: 			General Remarks: Terminated at 0.85m bgl for soakage testing.		All dimensions in metres Log Scale 1:25 	

TRIAL PIT RECORD

Client: Gleeson Developments Project Title: Land at Bilsham Road, Yapton Project No: BRD2693 Logged By: R Marina Date Completed: 22/02/2019 Method Used: 180° Backhoe excavator (JCB 3CX type)				Trial Pit No. TP118		
				Sheet 1 of 1		
Samples & Tests			Description of Strata	Depth / (Level)	Geology	Legend
Depth	Type & No	Value				
			TOPSOIL: Grass over, soft brown, slightly sandy silty clay with rootlets. Occasional gravel is fine to coarse, subangular to angular flint.	0.25	TS	
			Firm, brown and orangish brown, silty CLAY. Occasional gravel is fine to coarse, subangular to angular flint.	0		
			Firm, brown and orangish brown mottled light grey, silty CLAY. Occasional gravel is fine to coarse, angular to subangular flint.	0.60		
						0.80
				1		
				2		
				3		
				4		
Pit Stability: Generally stable throughout Groundwater: Not encountered				Surface Elevation Level:		
Plan of Trial Pit: 			General Remarks: Terminated at 0.80m bgl for soakage testing.			
			All dimensions in metres Log Scale 1:25 			

Trial Pit Photographs

TP101



Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP102

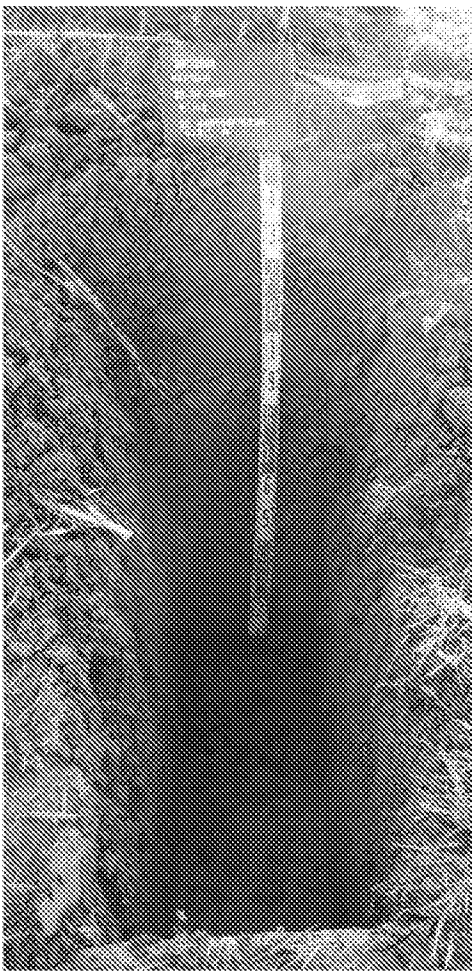


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP103

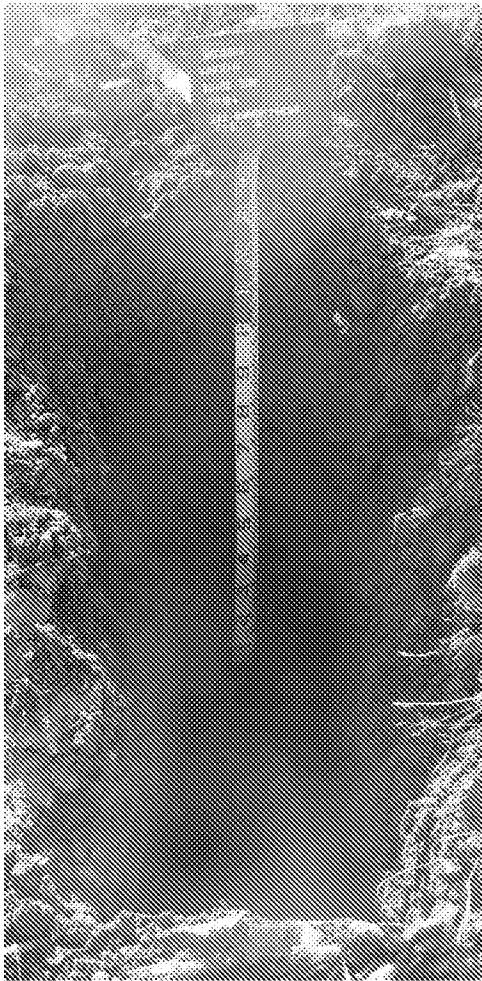


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP104

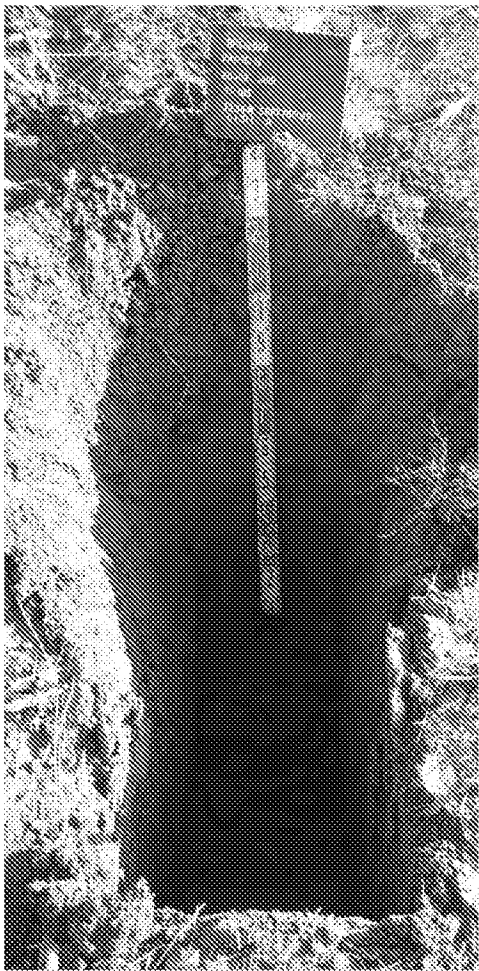


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP105

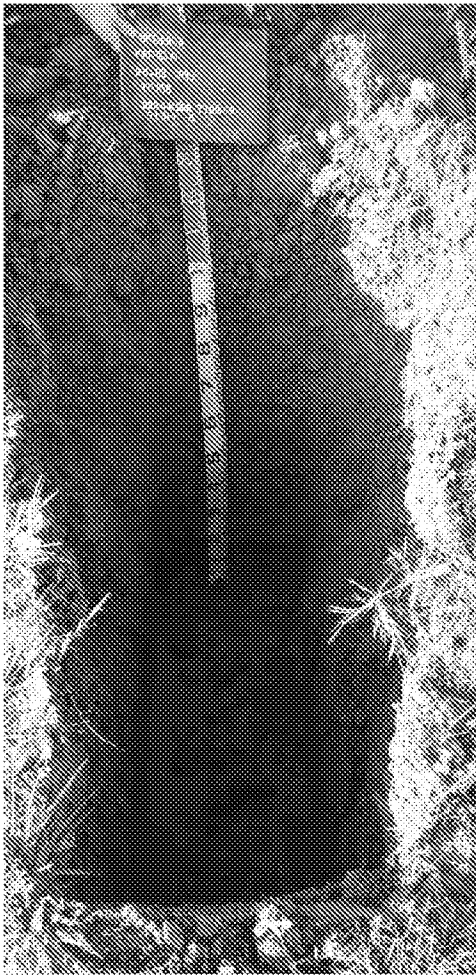


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP106

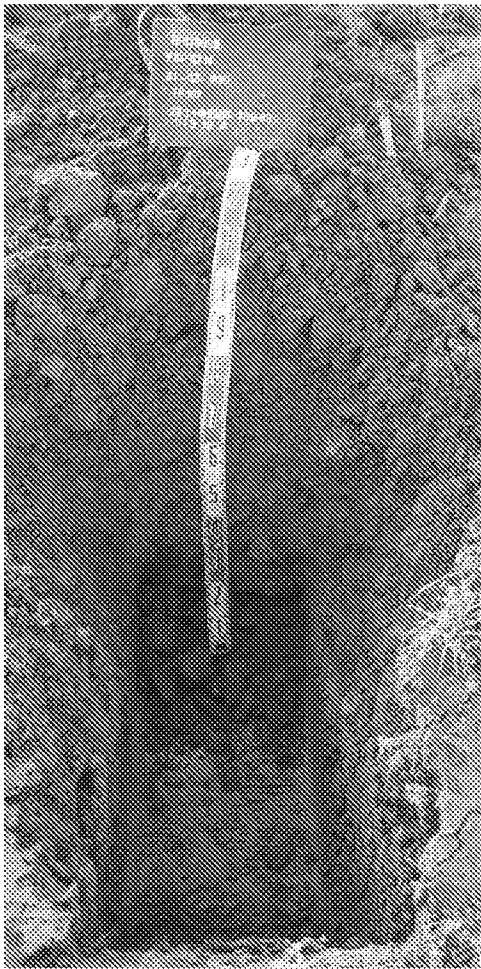


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP107



Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP108

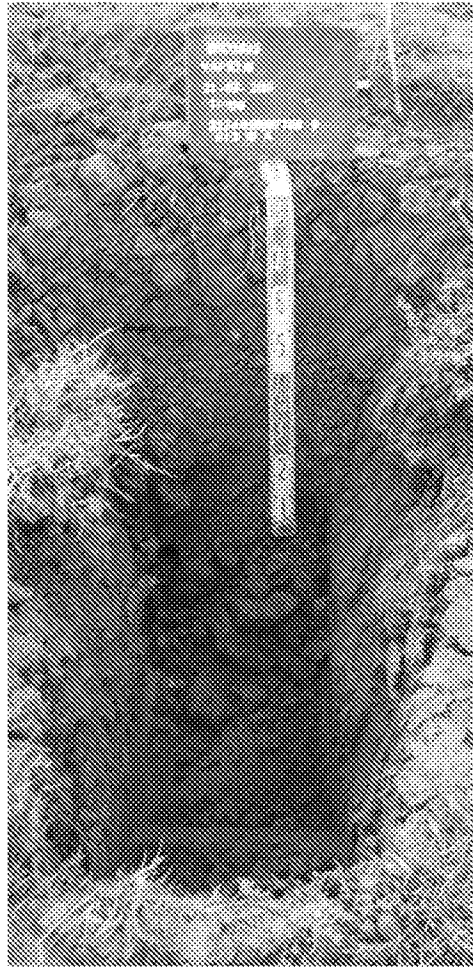


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP109



Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP110



Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

TP111

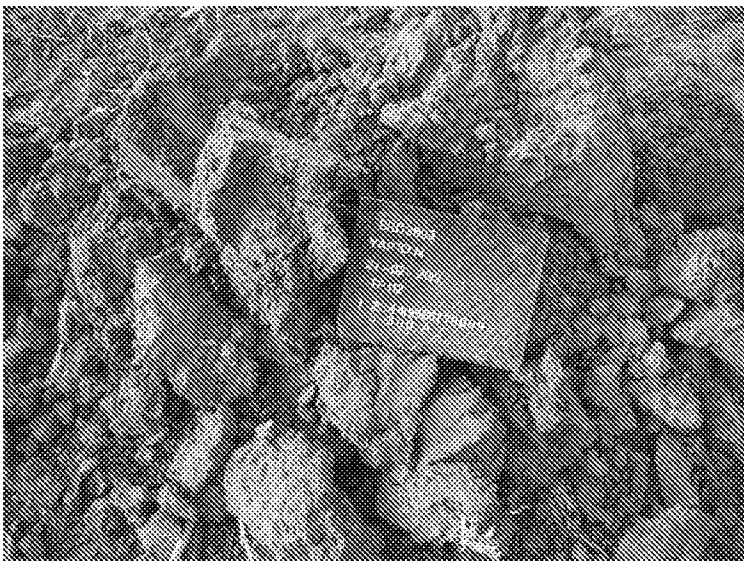
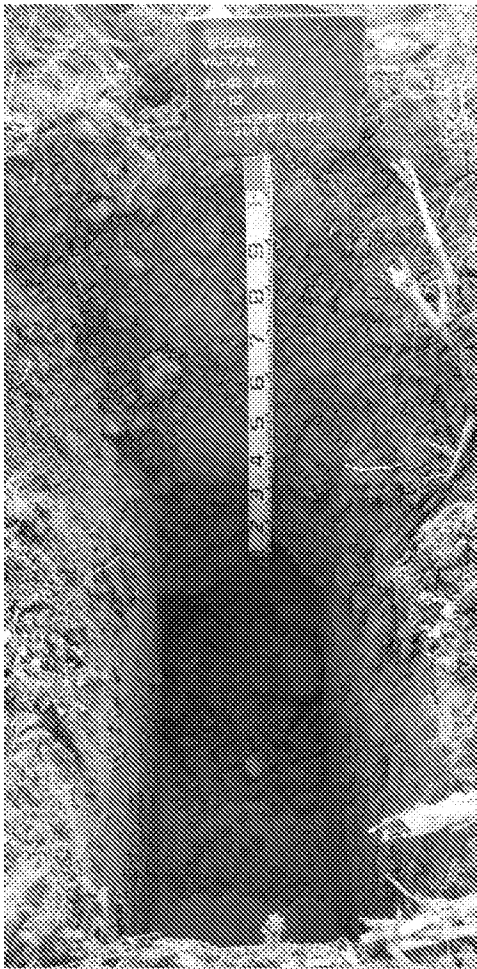


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

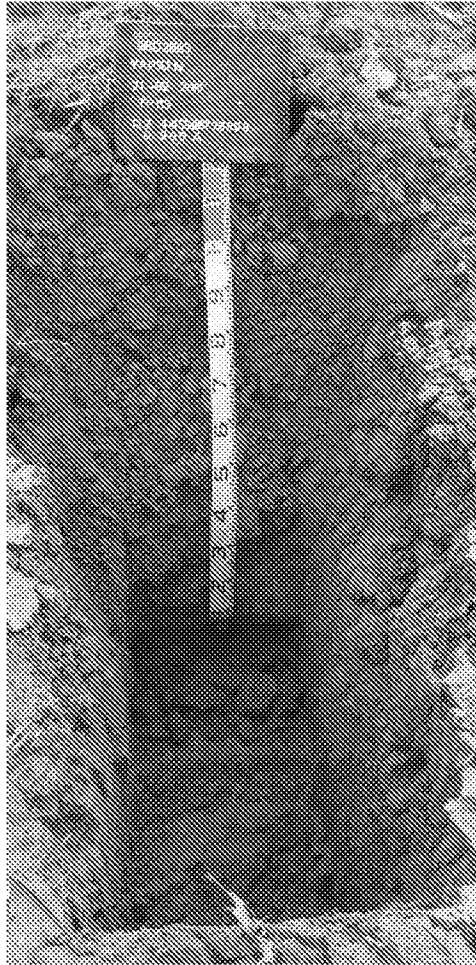
TP112



Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019

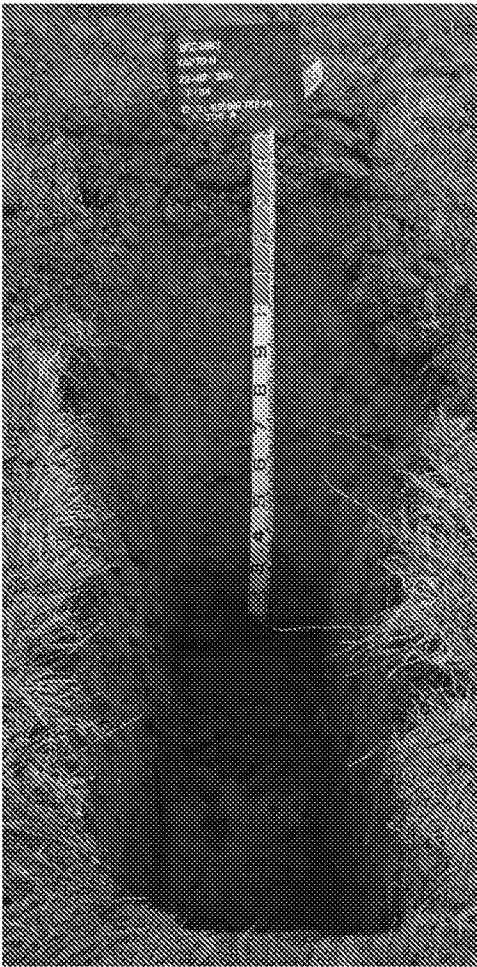


TP113



Trial Pit Photographs

TP114

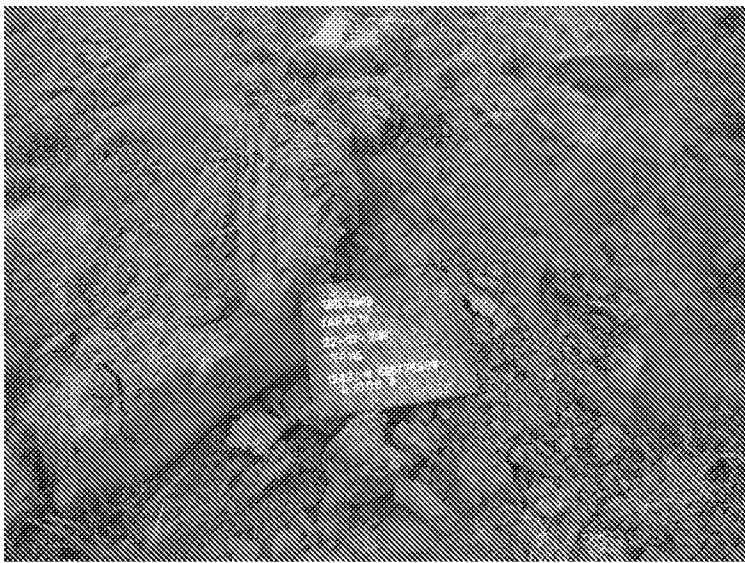
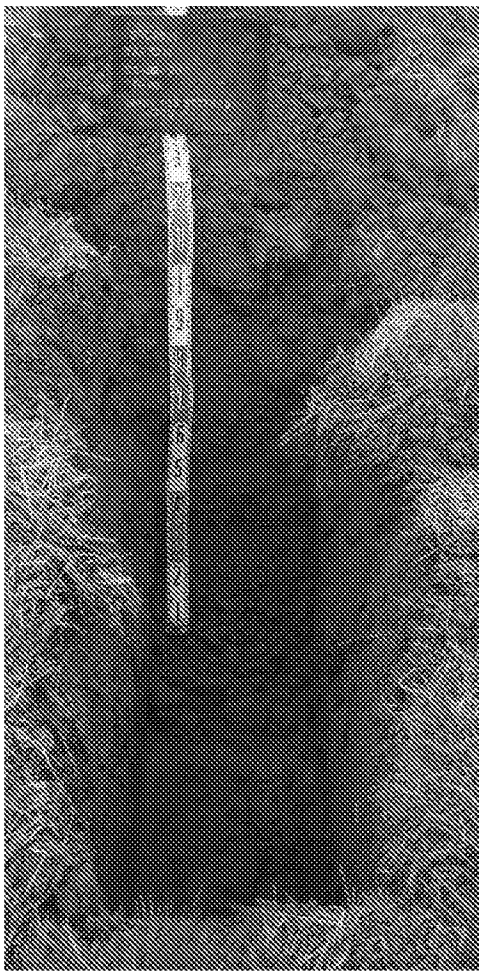


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



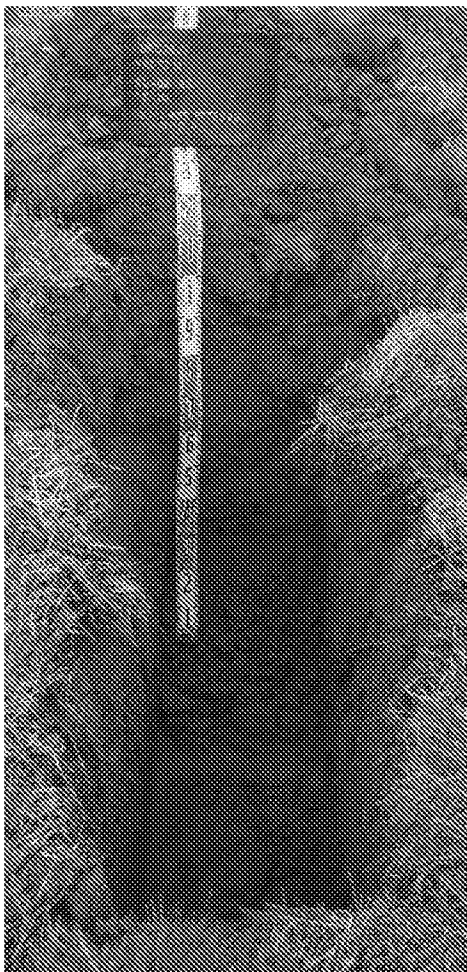
Trial Pit Photographs

TP115



Trial Pit Photographs

TP116

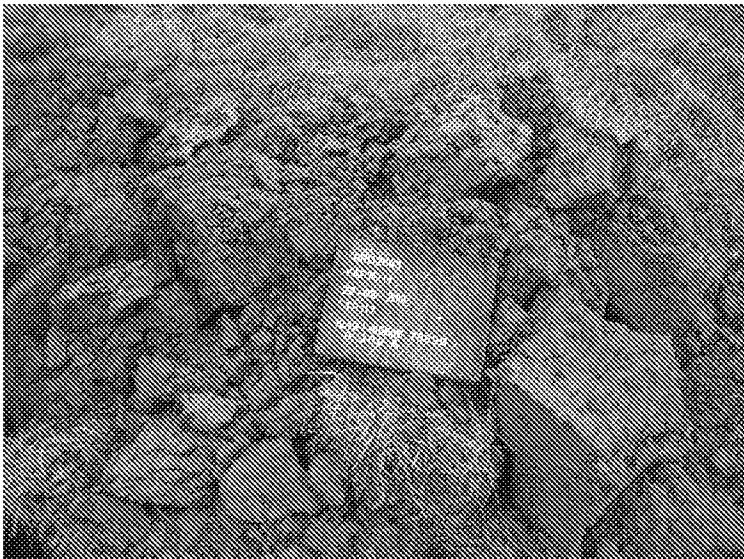
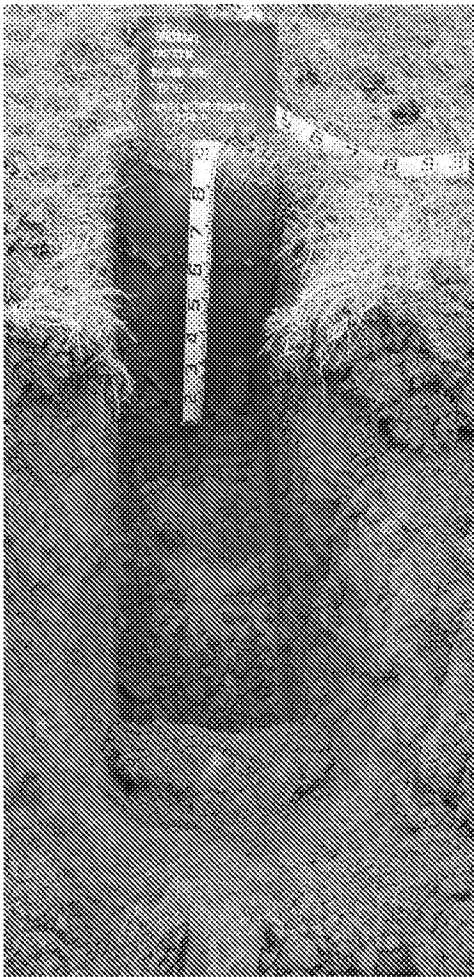


Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



Trial Pit Photographs

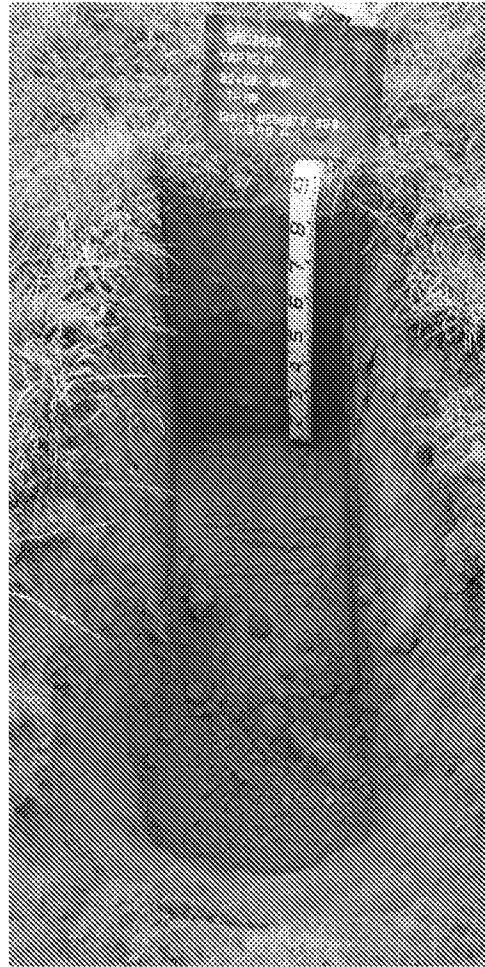
TP117



Project Title: Land at Bilsham Road, Yapton
Client: Gleeson Developments
BRD Reference: BRD2693-OP7-A
Date Issued: March 2019



TP118





SOIL INFILTRATION RATE

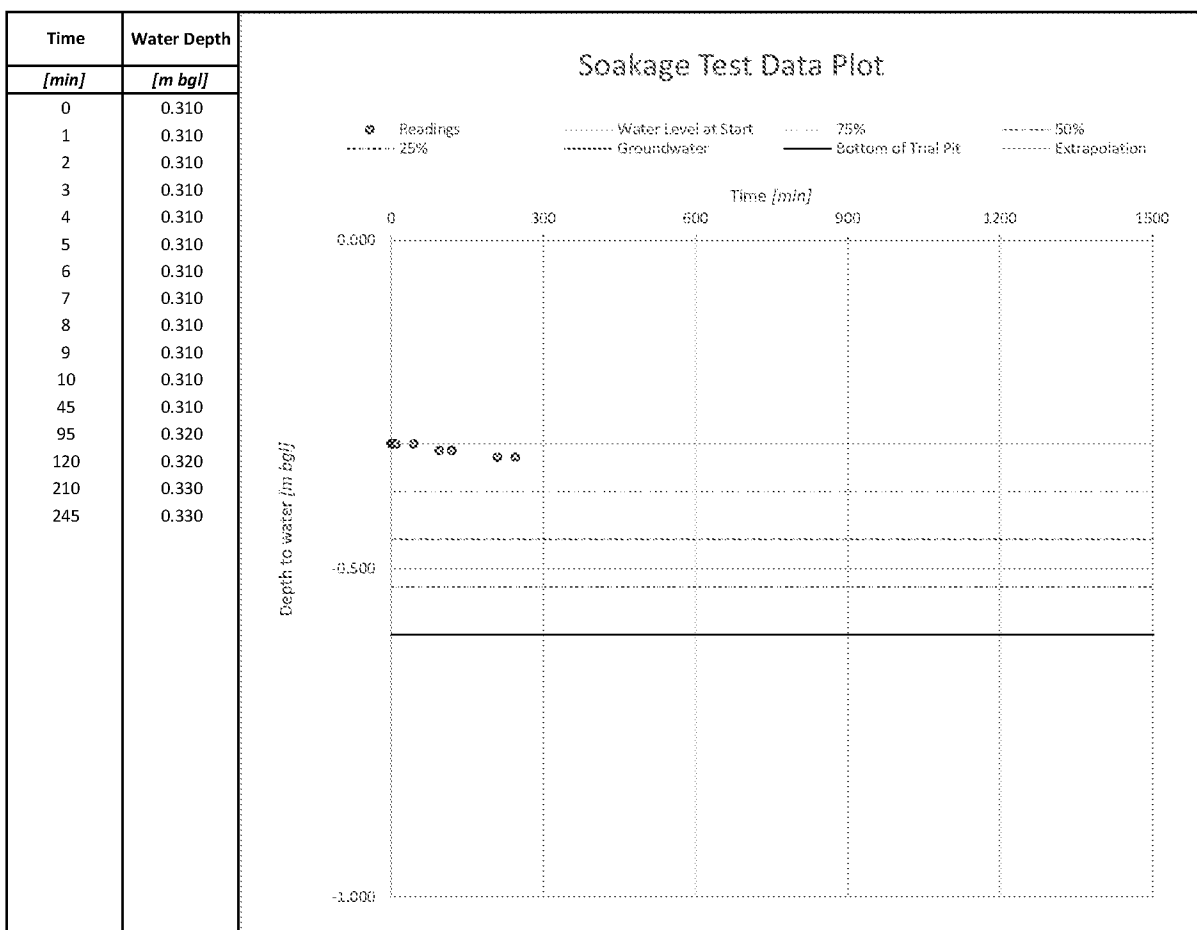
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP101
Test No: 1
Date: 20/02/2019
Logged by: RM

Length [m]: 1.50
Depth [m]: 0.60
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	0.60	Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of 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 [m^3] **0.11**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m^2] **1.33**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

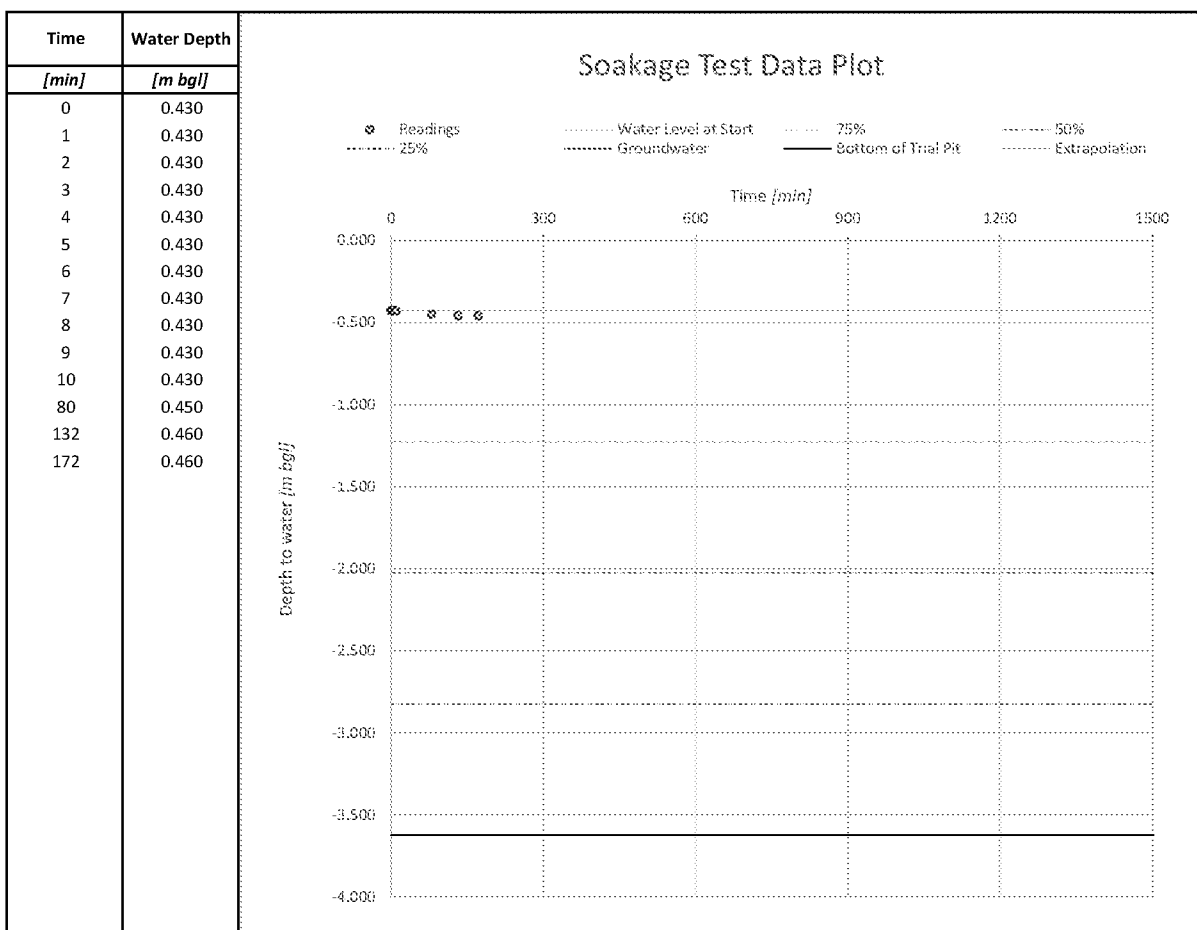
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP102
Test No: 1
Date: 20/02/2019
Logged by: RM

Length [m]: 1.50
Depth [m]: 0.85
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	0.85	Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of 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] **1.51**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **9.08**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

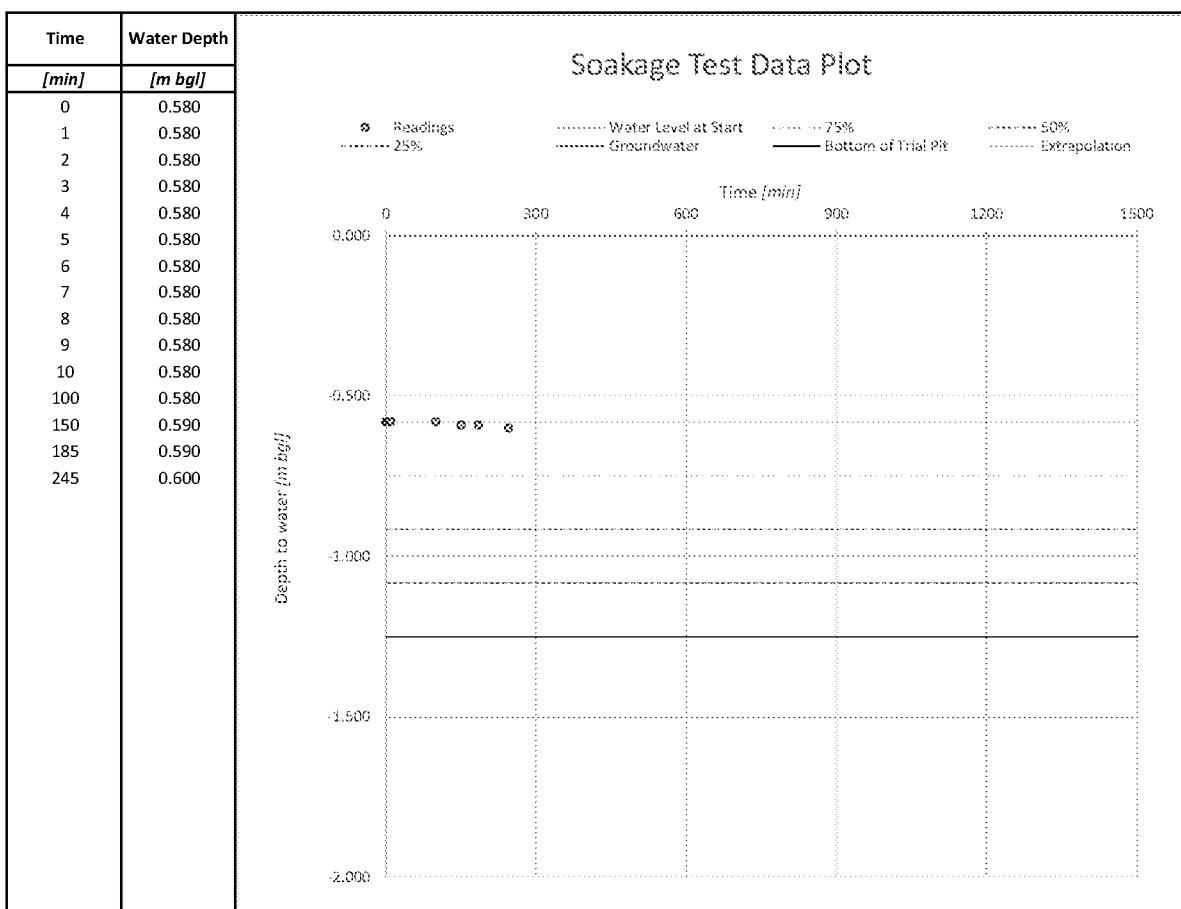
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP103
Test No: 1
Date: 20/02/2019
Logged by: RM

Length [m]: 1.60
Depth [m]: 1.25
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	1.25	
				Firm, brown to orangish brown, silty CLAY. Occasional fine to coarse, subangular gravel of 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] **n/a**

Soil Infiltration Rate [m/s]: n/a

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

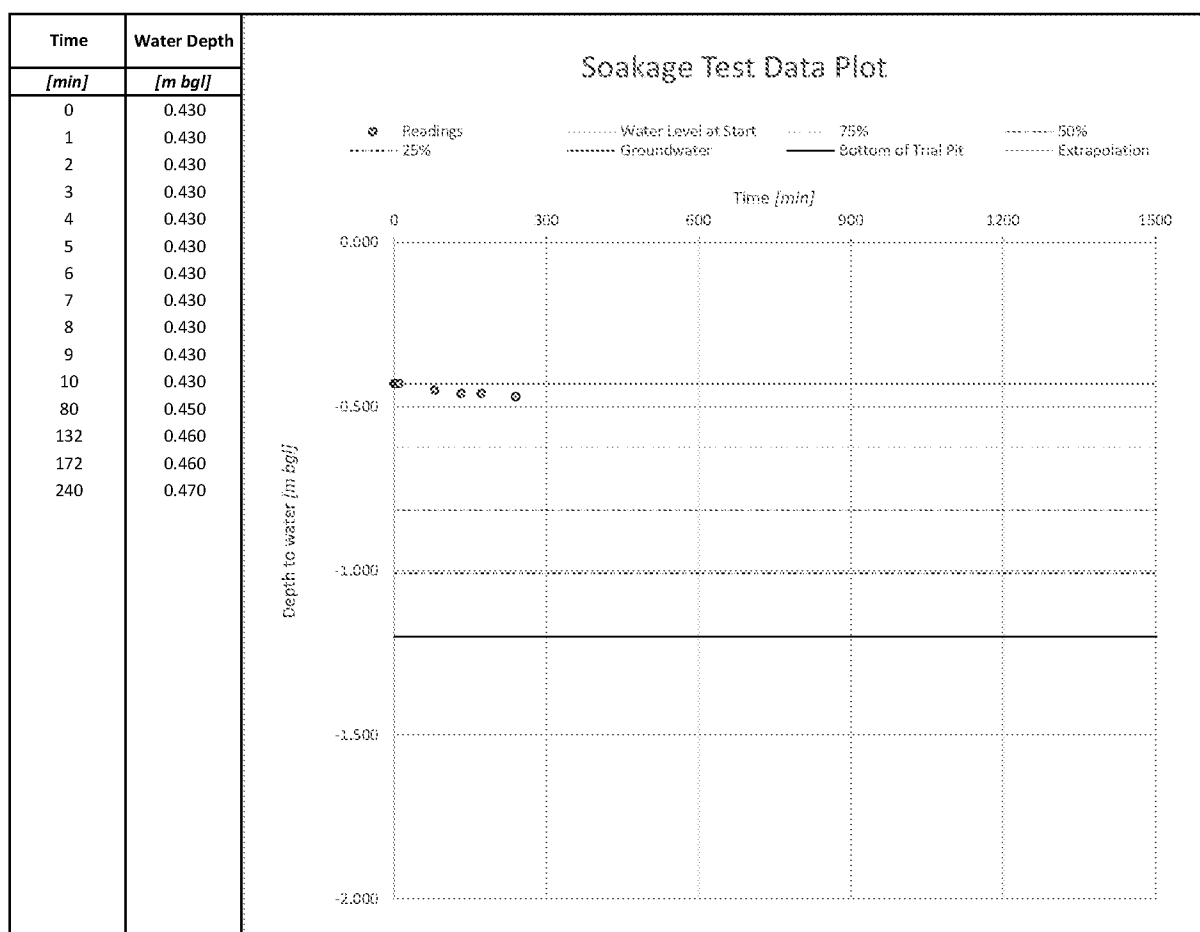
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP104
Test No: 1
Date: 20/02/2019
Logged by: RM

Length [m]: 1.60
Depth [m]: 1.20
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	1.20	Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of 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] **2.42**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

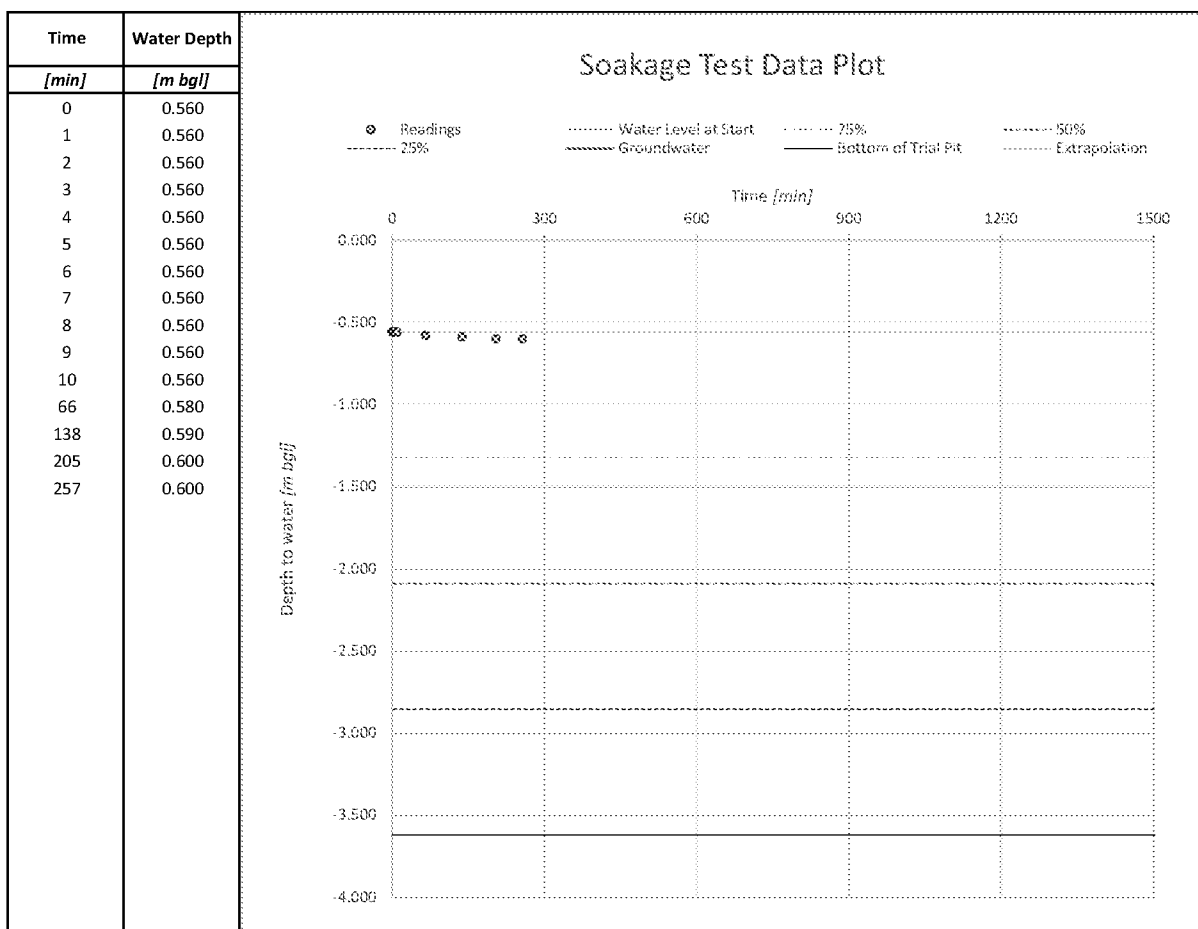
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP105
Test No: 1
Date: 20/02/2019
Logged by: RM

Length [m]: 1.60
Depth [m]: 1.20
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	0.70	Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of flint.
		0.70	1.20	Firm, brown to orangish brown, mottled light grey, silty CLAY. Occasional gravel is fine to coarse, 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] **1.45**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **8.75**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

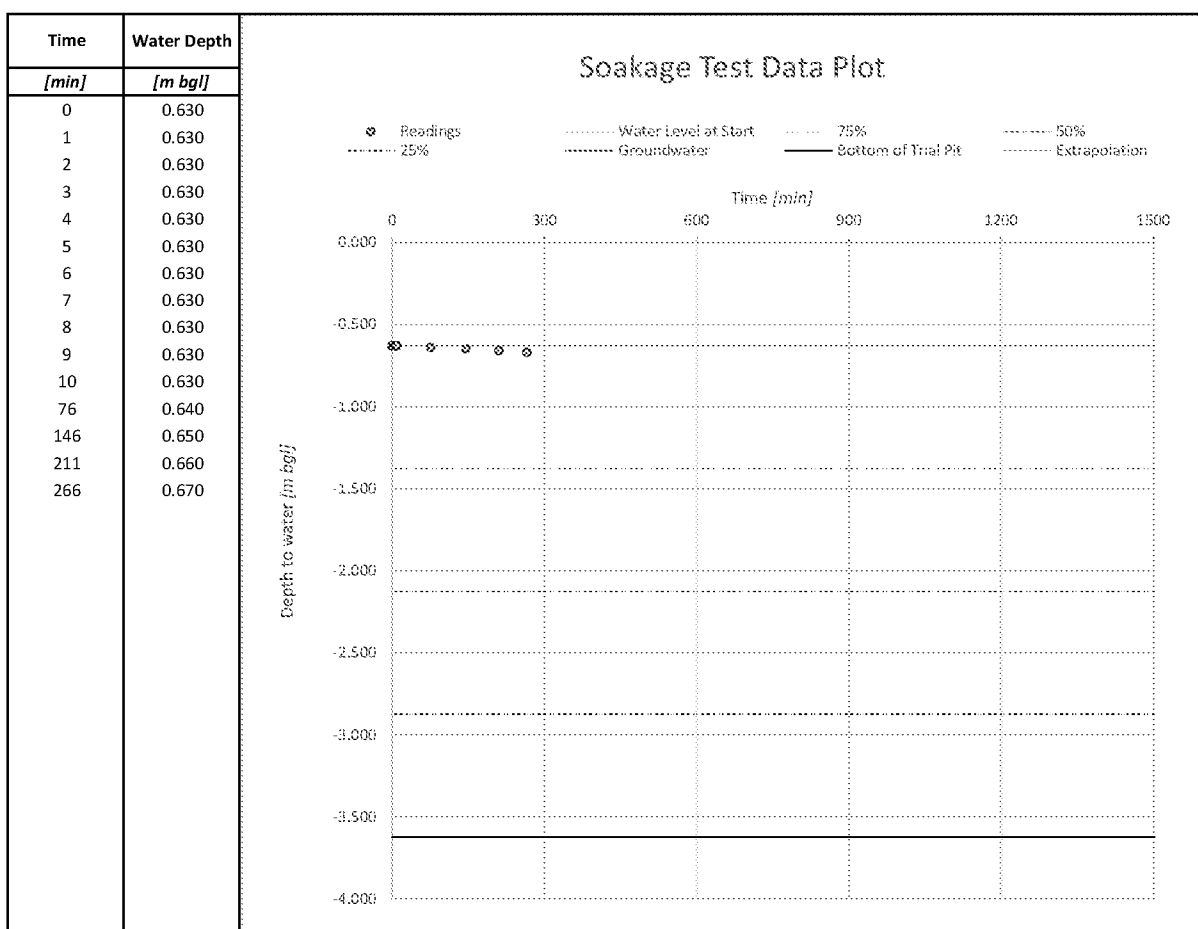
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP106
Test No: 1
Date: 20/02/2019
Logged by: RM

Length [m]: 1.50
Depth [m]: 1.20
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	1.20	Firm, brown to orangish brown, silty CLAY with rare fine to coarse, subangular gravel of 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] **1.41**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **8.57**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

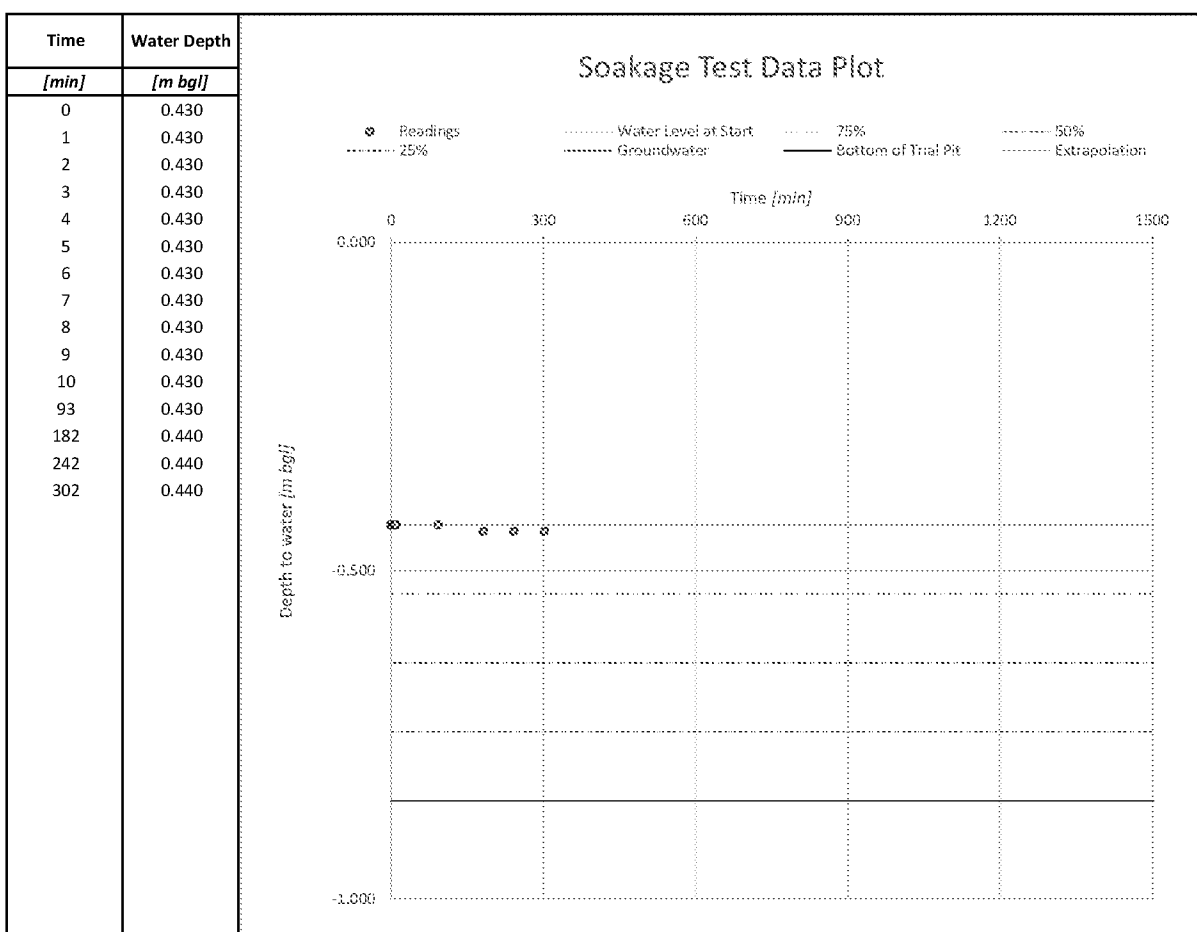
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP107
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.20
Depth [m]: 0.85
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	0.40	Firm, brown to orangish brown, silty CLAY.
		0.40	0.85	Firm, wet, brown and orangish brown mottled light grey, slightly gravely, silty CLAY.



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] **0.13**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.31**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

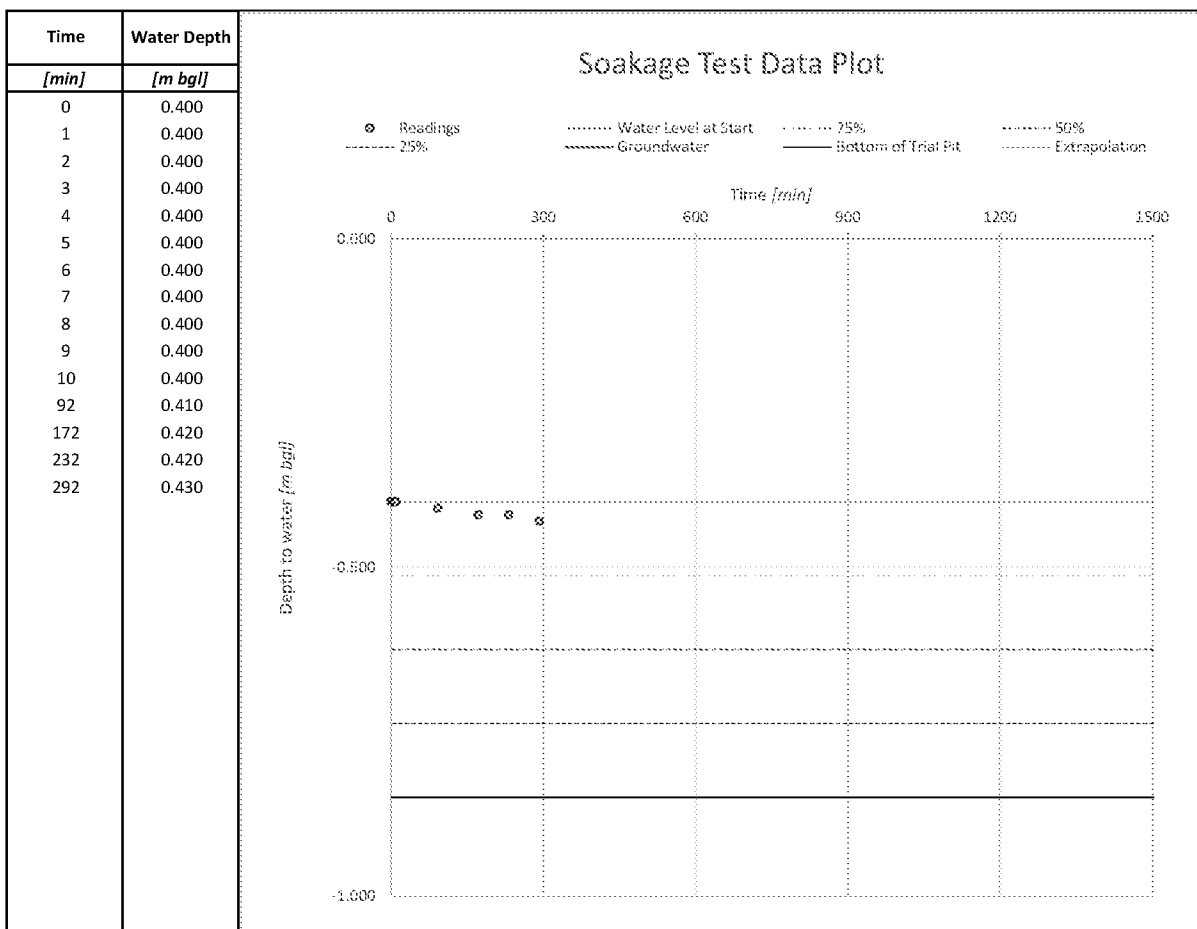
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP108
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.20
Depth [m]: 0.85
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	0.85	
				Firm, wet, brown, yellowish brown and orangish brown mottled light grey, slightly gravelly, silty CLAY.



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] **0.14**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.37**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: n/a

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

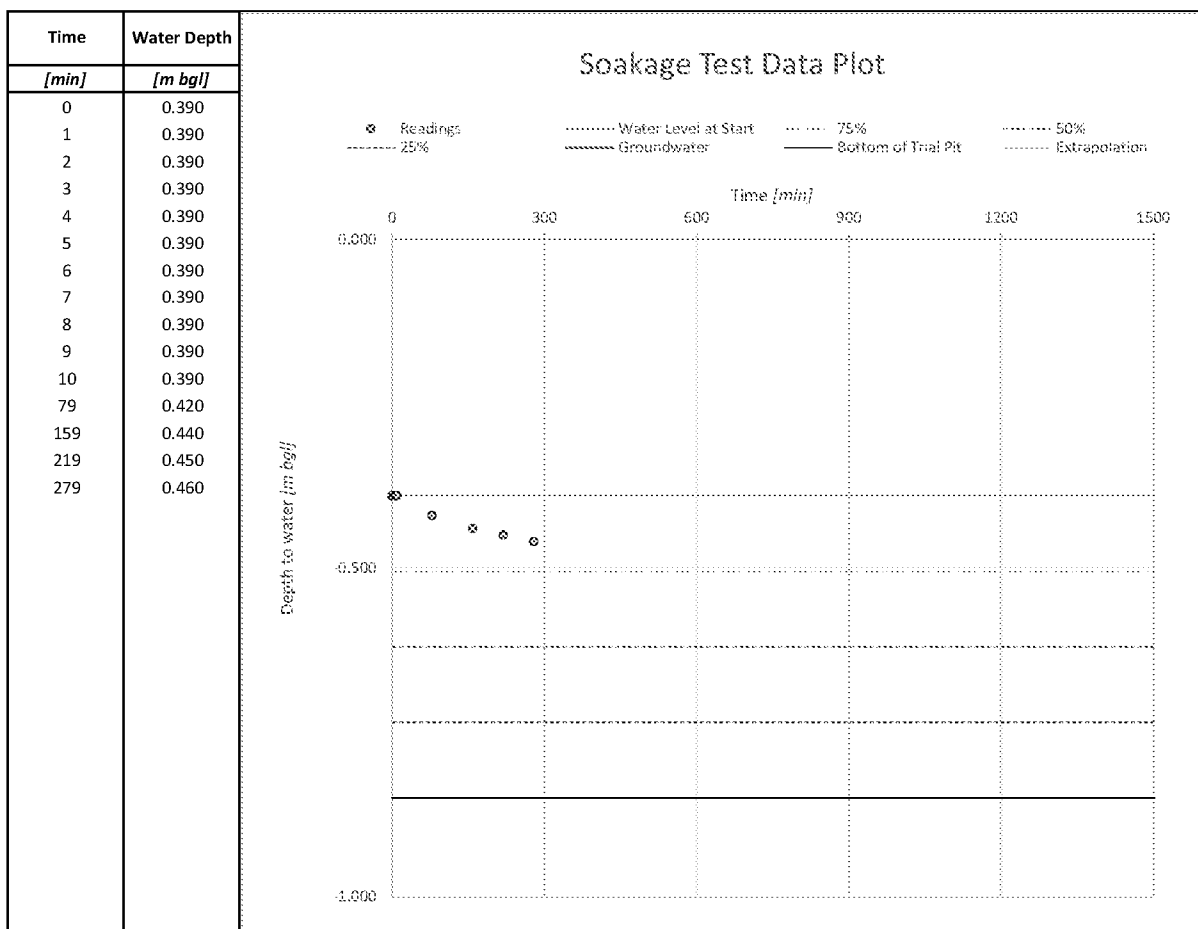
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP109
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.20
Depth [m]: 0.85
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	0.50	Firm, brown, slightly sandy, silty CLAY with occasional rootlets.
		0.50	0.85	Firm, brown, yellowish brown to orangish brown mottled light grey slightly gravelly, silty CLAY.



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] **0.14**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.38**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: n/a

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

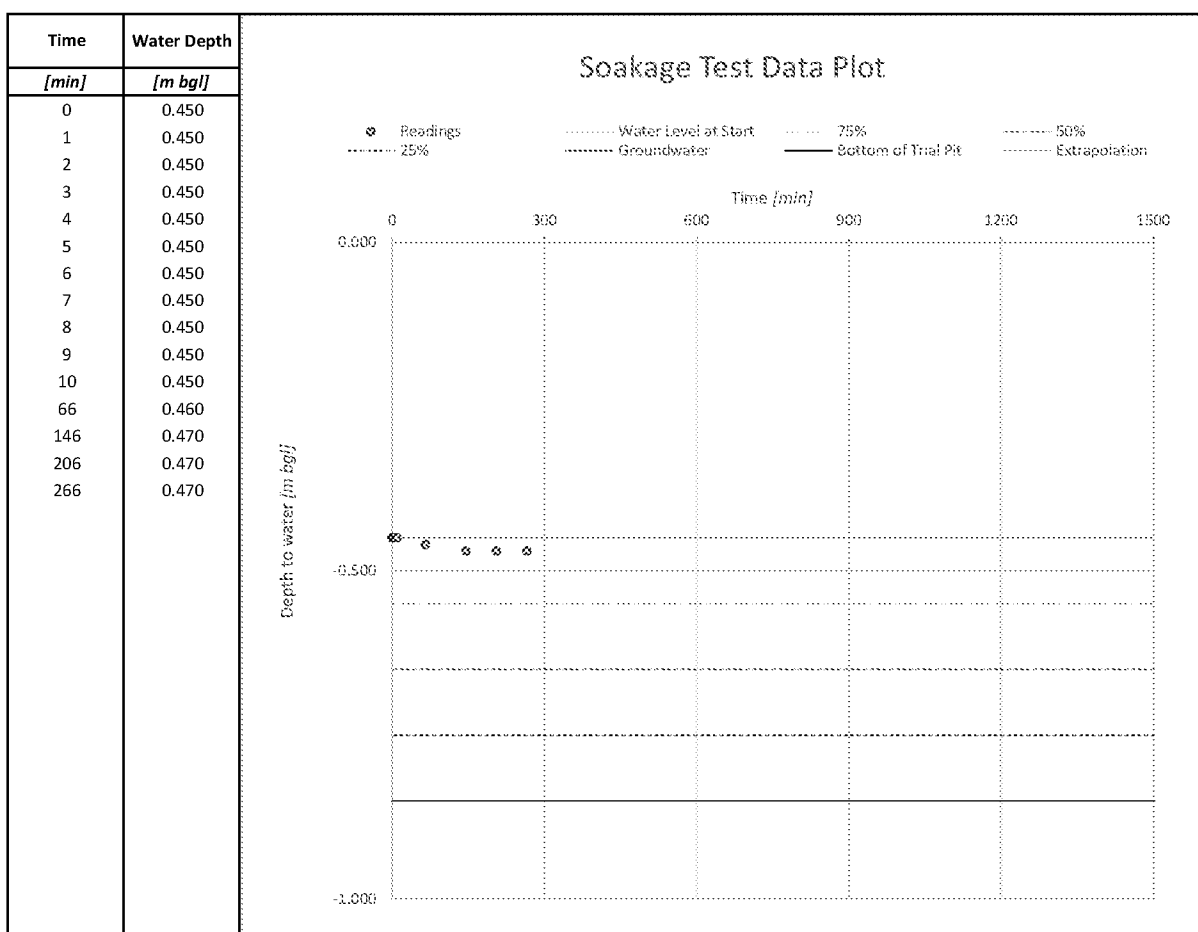
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP110
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.30
Depth [m]: 0.85
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	1.00	Firm, brown to orangish brown, slightly gravelly silty CLAY with occasional rootlets.



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] **0.13**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.37**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

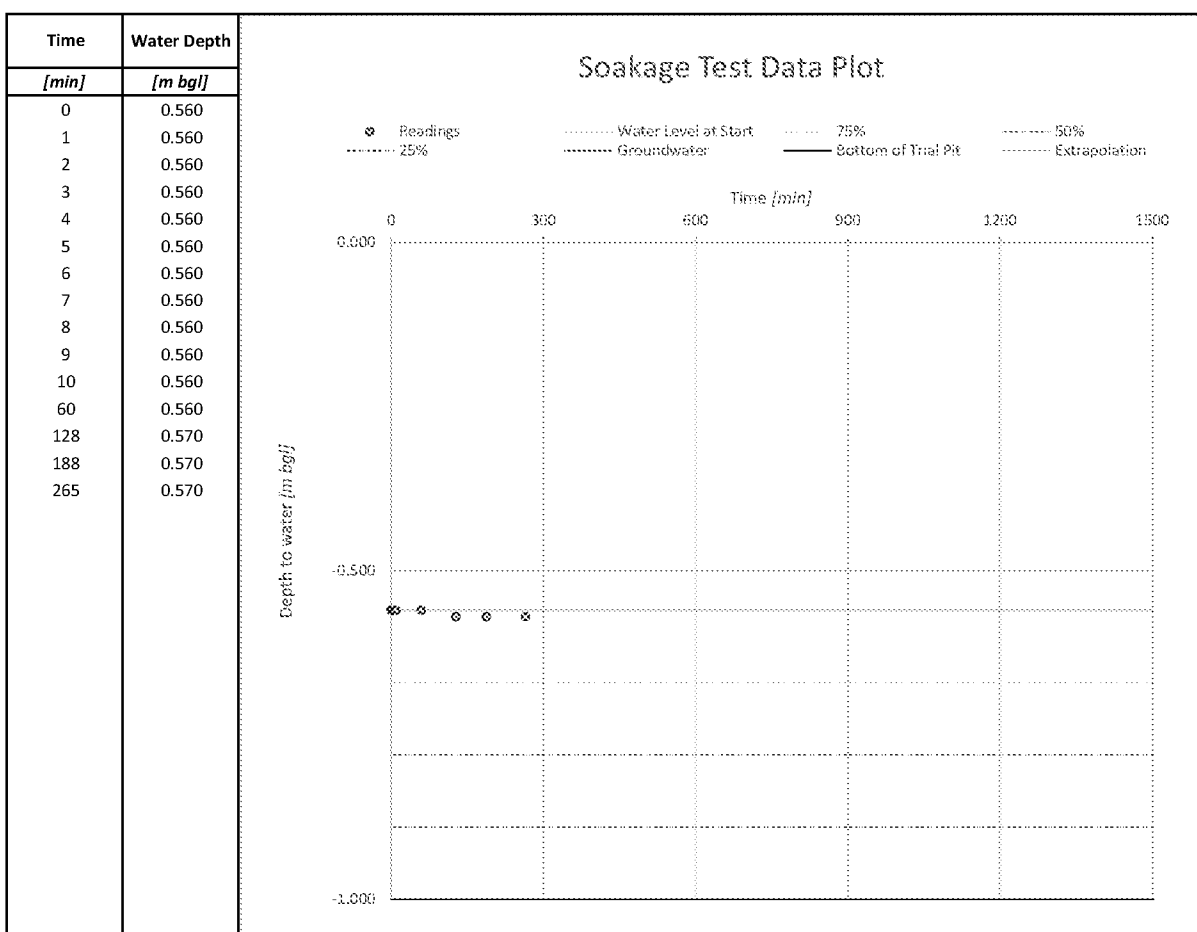
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP111
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.40
Depth [m]: 1.00
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]	Description
		0.25 1.20	Firm, brown to orangish brown with mottled light grey, slightly gravelly, silty CLAY.



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] **0.15**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.54**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

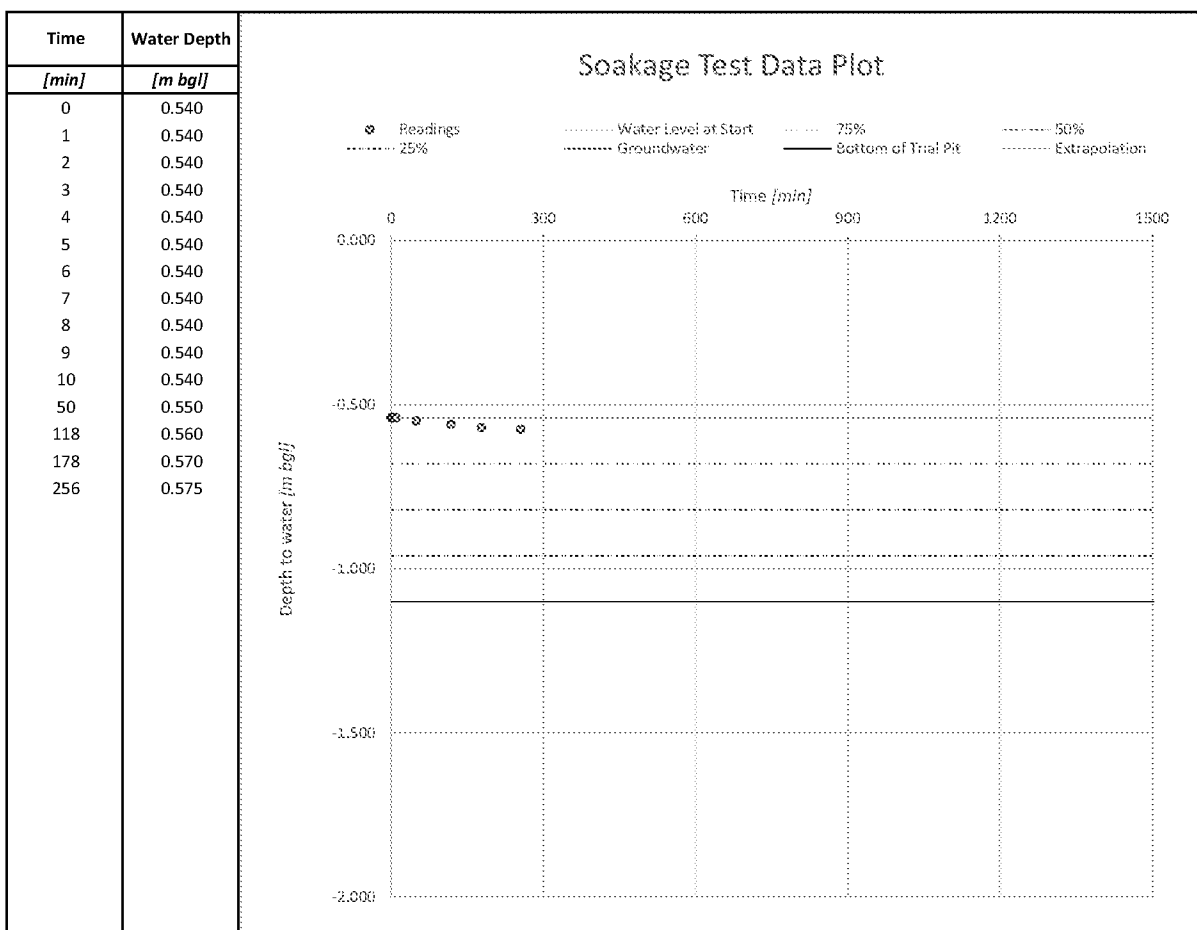
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP112
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.20
Depth [m]: 1.10
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	0.90	Firm, brown orangish brown mottled light grey, slightly gravelly, silty, CLAY.
		0.90	1.10	Firm, wet, brown and yellowish brown mottled light grey, slightly gravelly, silty CLAY.



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] **0.17**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.55**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

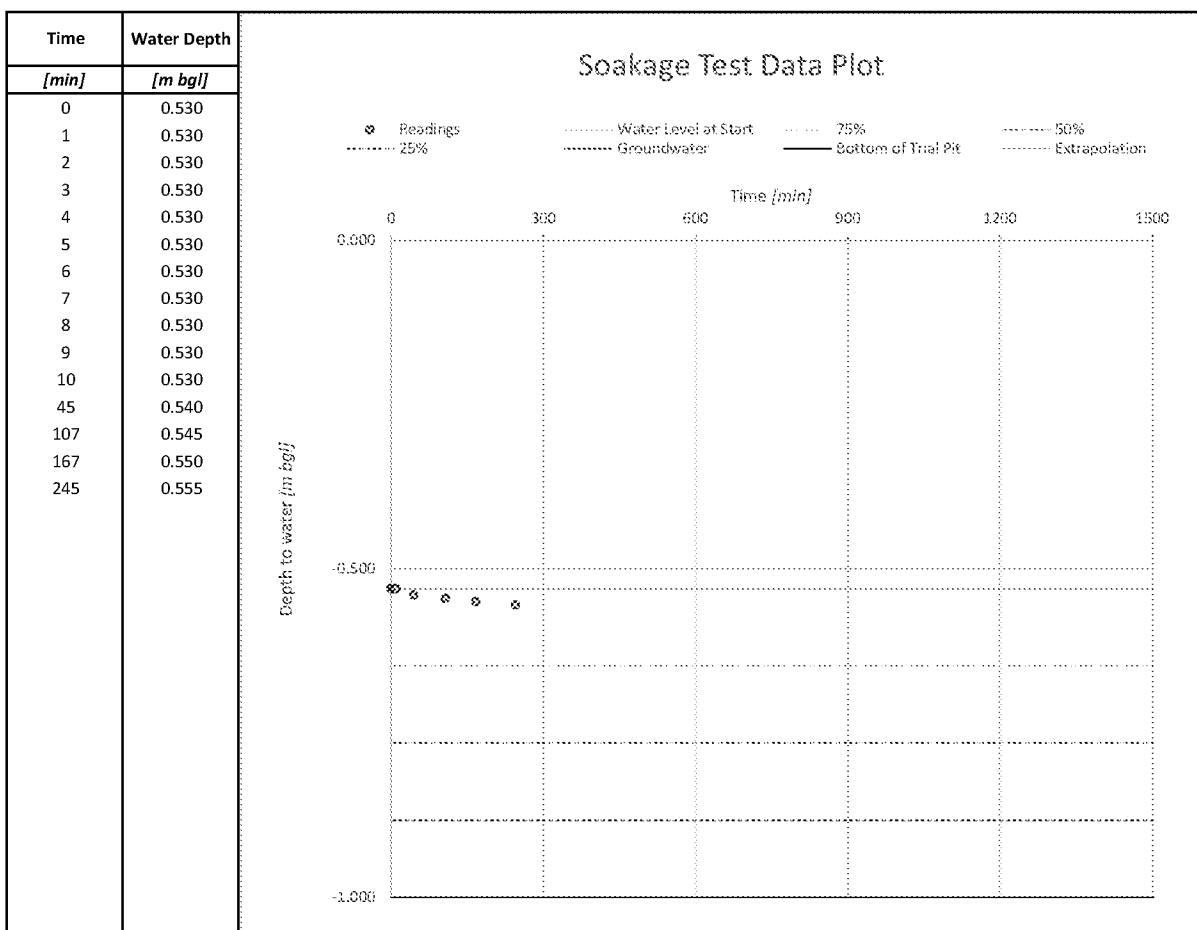
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP113
Test No: 1
Date: 21/02/2019
Logged by: RM

Length [m]: 1.30
Depth [m]: 1.00
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.30	0.70	Firm, light brown and yellowish brown mottled light grey, slightly gravelly, silty CLAY.
		0.70	1.00	Firm, yellowish brown and light grey, slightly gravelly, silty CLAY.



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 [m^3] **0.15**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m^2] **1.50**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

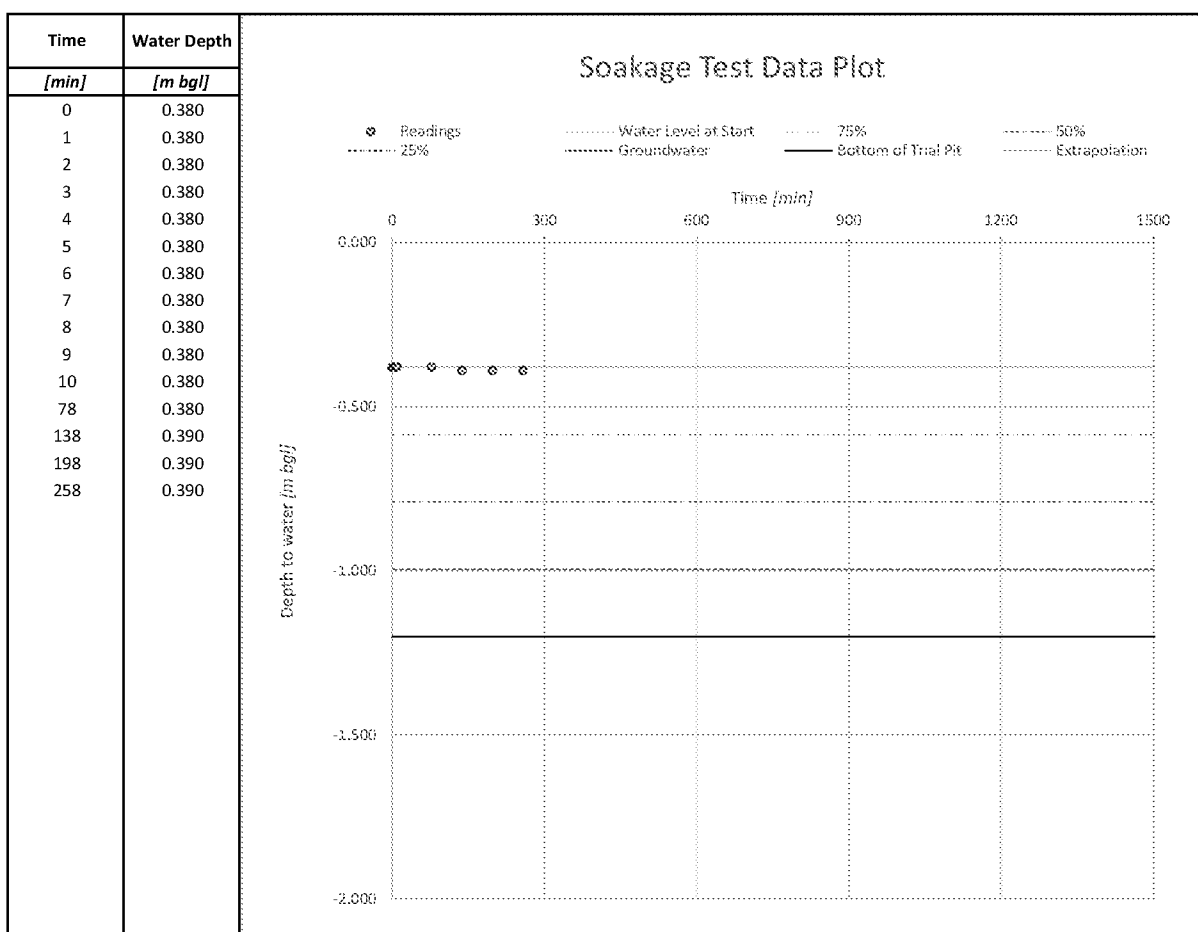
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP114
Test No: 1
Date: 22/02/2019
Logged by: RM

Length [m]: 1.30
Depth [m]: 1.20
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	1.20	Firm, orangish brown mottled light grey and brown, silty CLAY.



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] **2.13**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

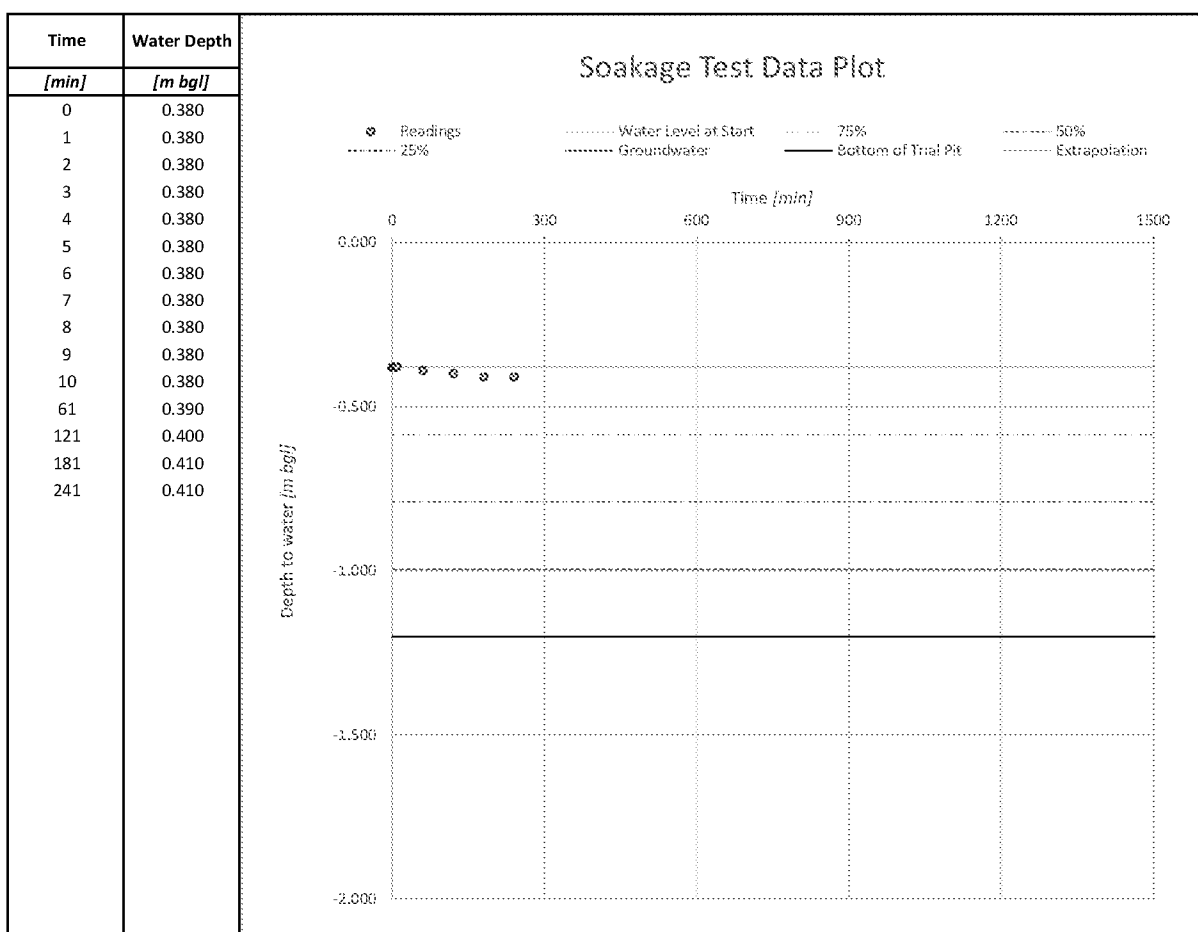
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP115
Test No: 1
Date: 22/02/2019
Logged by: RM

Length [m]: 1.30
Depth [m]: 1.20
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	1.20	Firm, orangish brown mottled light grey and brown, silty CLAY.



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] **2.13**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

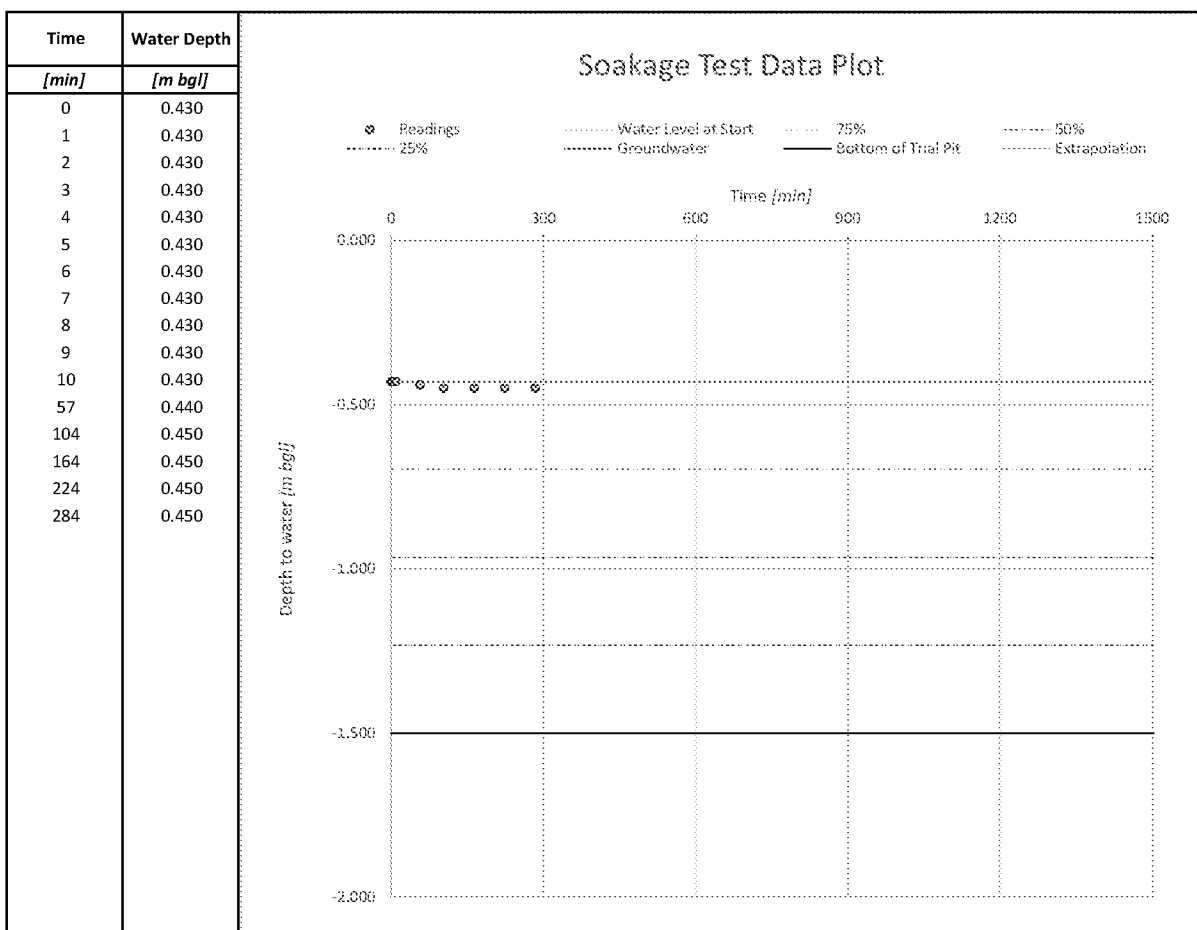
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP116
Test No: 1
Date: 22/02/2019
Logged by: RM

Length [m]: 1.40
Depth [m]: 1.50
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	0.50	Firm, brown, silty CLAY with occasional rootlets.
		0.50	1.20	Firm, brown, silty CLAY with occasional fine to coarse, angular to subangular flint gravel.



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] **0.37**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **2.73**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

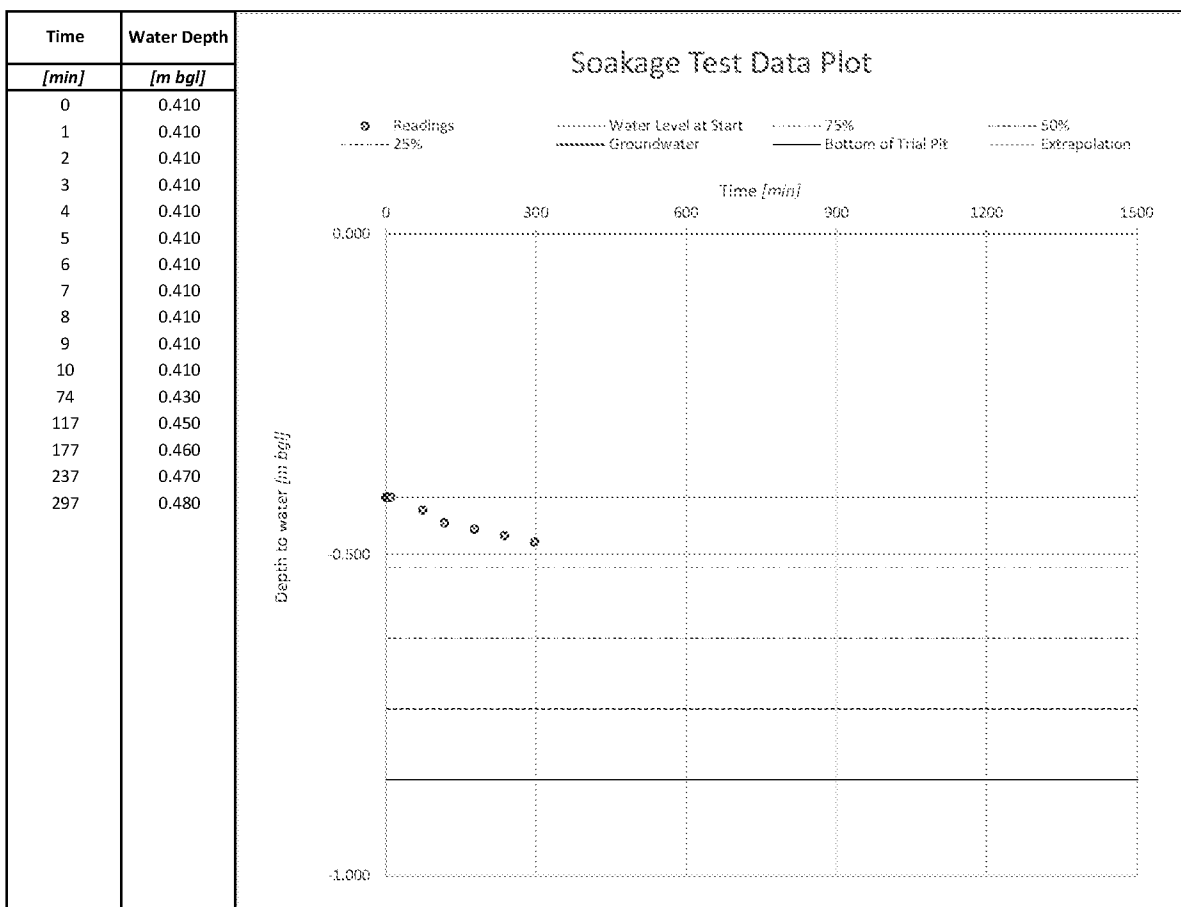
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP117
Test No: 1
Date: 22/02/2019
Logged by: RM

Length [m]: 1.40
Depth [m]: 0.85
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	0.50	Firm, brown, silty CLAY with occasional rootlets.
		0.50	0.85	Firm, brown and orangish brown mottled light grey and occasional, yellowish brown, silty CLAY.



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 [m^3] **0.15**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m^2] **1.54**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.



SOIL INFILTRATION RATE

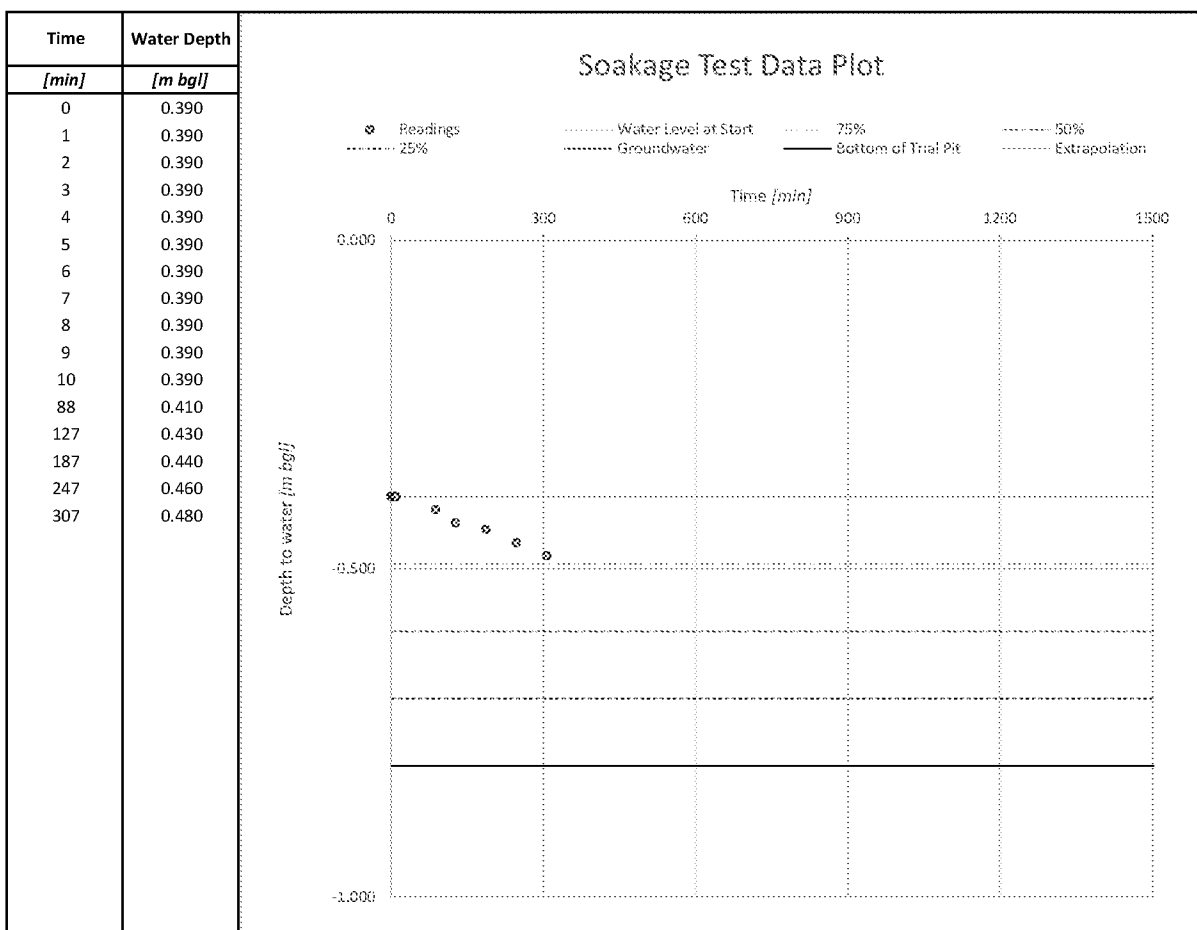
In accordance with BRE Digest 365:2016 - Soakaway Design

Client: Gleeson Developments
Project Title: Blisham Road, Yapton
Project No: BRD2693

Trial Pit No: TP118
Test No: 1
Date: 22/02/2019
Logged by: RM

Length [m]: 1.40
Depth [m]: 0.80
Width [m]: 0.50
Groundwater [m bgl]: Dry

Ground	Conditions	from - to [m bgl]		Description
		0.25	0.60	Firm, brown and orangish brown, silty CLAY.
		0.60	0.80	Firm, brown and orangish brown mottled light grey, silty CLAY.



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] **0.14**

a_{s50} as Internal Surface Area of the soakage trial pit up to 50% storage depth including the base area [m²] **1.48**

t_{p75-25} as Time for the water level to fall from 75% to 25% effective storage depth [s] **n/a**

Soil Infiltration Rate [m/s]: **n/a**

Remarks: Result could not be calculated. Soakage test failed.