GIA GROUND INVESTIGATION ASSOCIATES

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Client Name:	KCS Development Ltd			Plate No.	**P1-3**
Project Name:	Briggs Meadow, Park Row, Louth				
Title	Photographs of Excavation & Arisings at TP3			GIA Contacts:	office@giassociates.co.uk
Date Drawn:	12/10/2023	Drawn By:	DH	Phil Anelay	phil@giassociates.co.uk
Project No.	22069	Approved By:	PA	Dave Hooton	dave@giassociates.co.uk

APPENDIX 6

Infiltration Rate Calculation Sheets

GIA GROUND INVESTIGATION ASSOCIATES

Web: www.giassociates.co.uk Email: office@giassociates.co.uk

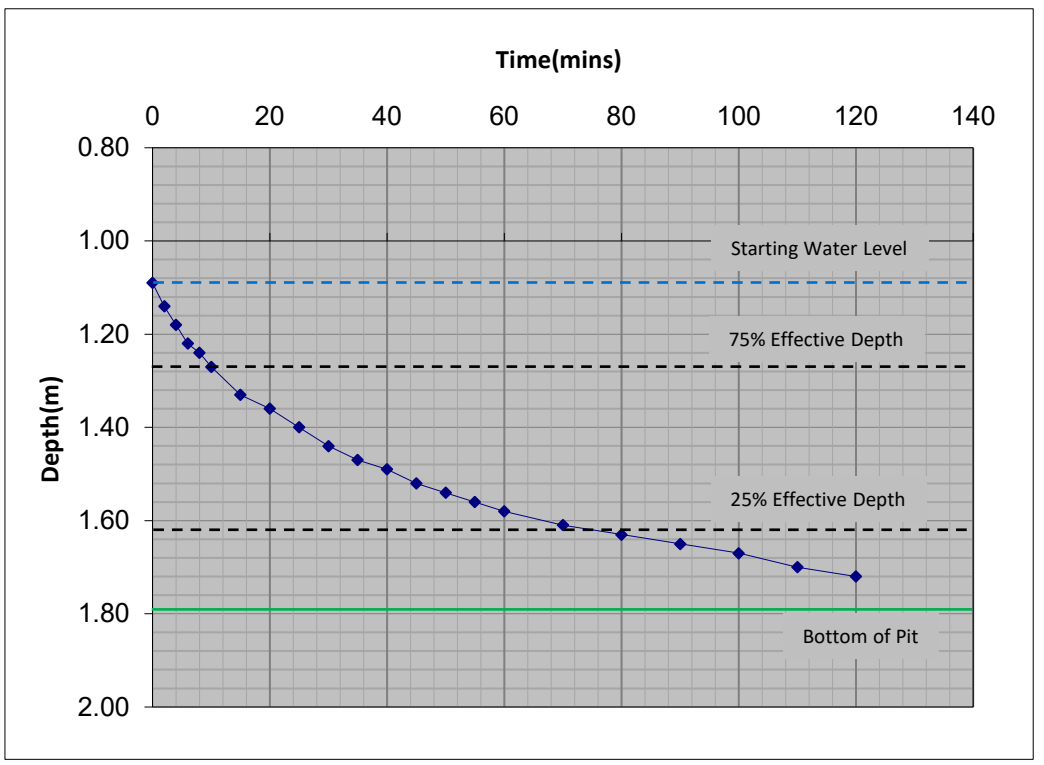
Client Name:	KCS Development Ltd		
Project Name:	Briggs Meadow, Park Row, Louth		
Title:	Soakaway Test Pit TP1		
Project Number:	22069	Created By:	DH
Gravel Filled Pit:	No	Approved By:	PA
Test Number:		**1**	

Trial Pit Depth (m) =	1.79
Trial Pit Width (m) =	0.45
Trial Pit Length (m) =	1.40
Water Level to Base of Pit at Start of Test (m) =	0.70
Void Ratio = (assume 0.3 for gravel filled or 1 for open pit - unless void ratio testing undertaken on gravel)	1

Time (mins)	Water Level (m)
0	1.09
2	1.14
4	1.18
6	1.22
8	1.24
10	1.27
15	1.33
20	1.36
25	1.40
30	1.44
35	1.47
40	1.49
45	1.52
50	1.54
55	1.56
60	1.58
70	1.61
80	1.63
90	1.65
100	1.67
110	1.70
120	1.72

Soakaway Calculations	
75% Effective Depth (m) =	1.27
Corresponding Time (mins) =	10.0
25% Effective Depth (m) =	1.62
Corresponding Time (mins) =	75.0
Infiltration Volume =	0.221
Area of Infiltration =	1.93
Time Period =	65
INFILTRATION RATE (m/s) =	**2.94E-05**

Comments: If the test is incomplete (i.e. 25% effective depth is not achieved) it will be necessary to derive an infiltration rate based on the drop in head of water only. Use alternative sheet for calculation.



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Client Name:	KCS Development Ltd		
Project Name:	Briggs Meadow, Park Row, Louth		
Title:	Soakaway Test Pit TP1		
Project Number:	22069	Created By:	DH
Gravel Filled Pit:	No	Approved By:	PA
Test Number:		**2**	

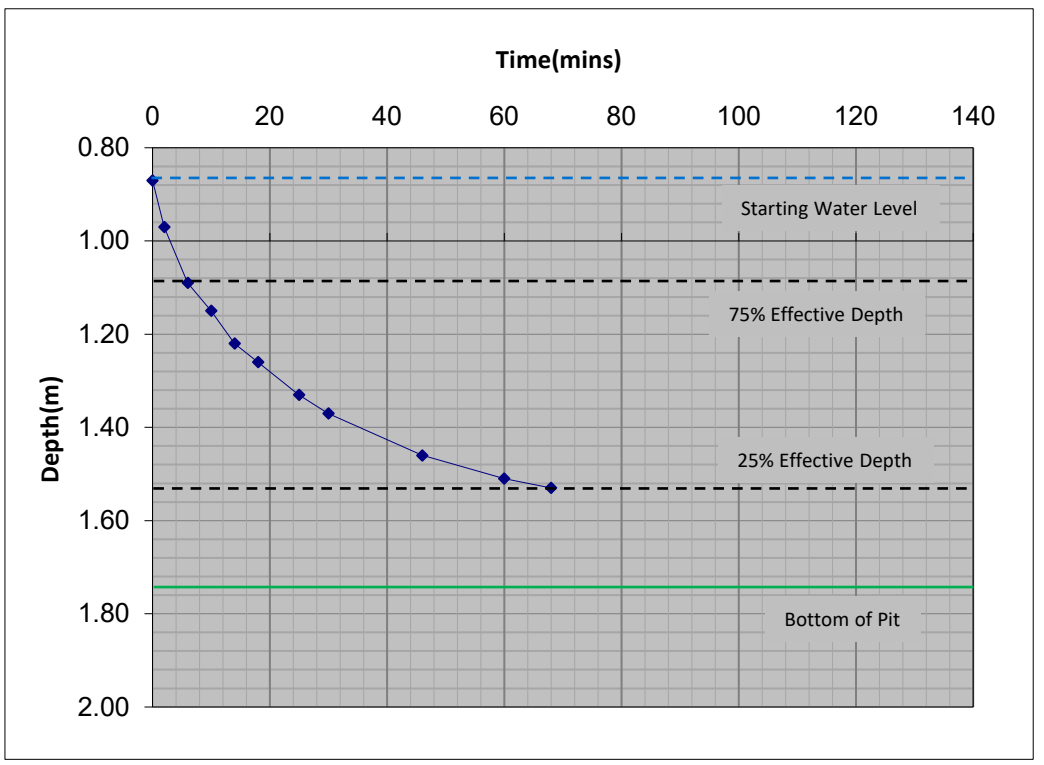
Trial Pit Depth (m) =	1.75
Trial Pit Width (m) =	0.45
Trial Pit Length (m) =	1.40
Water Level to Base of Pit at Start of Test (m) =	0.88
Void Ratio = (assume 0.3 for gravel filled or 1 for open pit - unless void ratio testing undertaken on gravel)	1

Time (mins)	Water Level (m)
0	0.87
2	0.97
6	1.09
10	1.15
14	1.22
18	1.26
25	1.33
30	1.37
46	1.46
60	1.51
68	1.53

Soakaway Calculations	
75% Effective Depth (m) =	1.09
Corresponding Time (mins) =	6.0
25% Effective Depth (m) =	1.53
Corresponding Time (mins) =	68.0
Infiltration Volume =	0.277
Area of Infiltration =	2.26
Time Period =	62
INFILTRATION RATE (m/s) =	**3.30E-05**

Comments: If the test is incomplete (i.e. 25% effective depth is not achieved) it will be necessary to derive an infiltration rate based on the drop in head of water only. Use alternative sheet for calculation.

Some silting up of base of pit occurred between tests 1 and 2.



GIA GROUND INVESTIGATION ASSOCIATES

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Client Name:	KCS Development Ltd		
Project Name:	Briggs Meadow, Park Row, Louth		
Title:	Soakaway Test Pit TP1		
Project Number:	22069	Created By:	DH
Gravel Filled Pit:	No	Approved By:	PA
Test Number:		**3**	

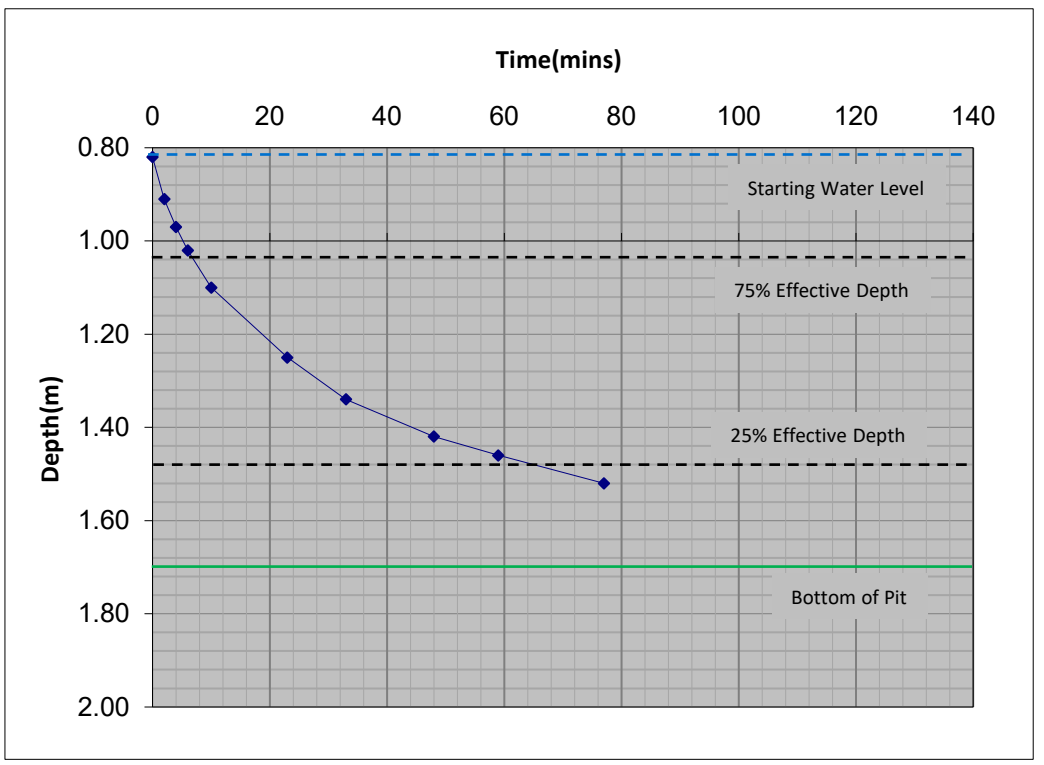
Trial Pit Depth (m) =	1.70
Trial Pit Width (m) =	0.45
Trial Pit Length (m) =	1.40
Water Level to Base of Pit at Start of Test (m) =	0.88
Void Ratio = (assume 0.3 for gravel filled or 1 for open pit - unless void ratio testing undertaken on gravel)	1

Time (mins)	Water Level (m)
0	0.82
2	0.91
4	0.97
6	1.02
10	1.10
23	1.25
33	1.34
48	1.42
59	1.46
77	1.52

Soakaway Calculations	
75% Effective Depth (m) =	1.04
Corresponding Time (mins) =	7.0
25% Effective Depth (m) =	1.48
Corresponding Time (mins) =	65.0
Infiltration Volume =	0.277
Area of Infiltration =	2.26
Time Period =	58
INFILTRATION RATE (m/s) =	**3.53E-05**

Comments: If the test is incomplete (i.e. 25% effective depth is not achieved) it will be necessary to derive an infiltration rate based on the drop in head of water only. Use alternative sheet for calculation.

Some silting up of base of pit occurred between tests 2 and 3.



GIA GROUND INVESTIGATION ASSOCIATES

Web: www.giassociates.co.uk Email: office@giassociates.co.uk

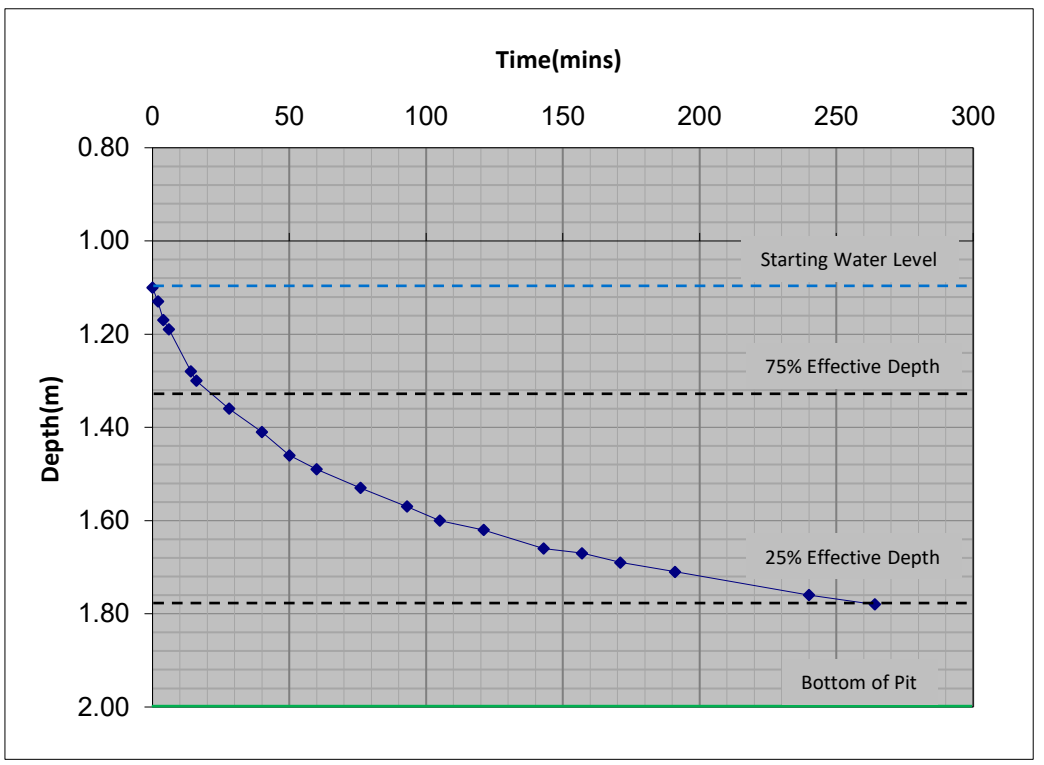
Client Name:	KCS Development Ltd		
Project Name:	Briggs Meadow, Park Row, Louth		
Title:	Soakaway Test Pit TP3		
Project Number:	22069	Created By:	DH
Gravel Filled Pit:	No	Approved By:	PA
Test Number:		**1**	

Trial Pit Depth (m) =	2.00
Trial Pit Width (m) =	0.45
Trial Pit Length (m) =	1.50
Water Level to Base of Pit at Start of Test (m) =	0.90
Void Ratio = (assume 0.3 for gravel filled or 1 for open pit - unless void ratio testing undertaken on gravel)	1

Time (mins)	Water Level (m)
0	1.10
2	1.13
4	1.17
6	1.19
14	1.28
16	1.30
28	1.36
40	1.41
50	1.46
60	1.49
76	1.53
93	1.57
105	1.60
121	1.62
143	1.66
157	1.67
171	1.69
191	1.71
240	1.76
264	1.78

Soakaway Calculations	
75% Effective Depth (m) =	1.33
Corresponding Time (mins) =	22.0
25% Effective Depth (m) =	1.78
Corresponding Time (mins) =	264.0
Infiltration Volume =	0.304
Area of Infiltration =	2.43
Time Period =	242
INFILTRATION RATE (m/s) =	**8.61E-06**

Comments: If the test is incomplete (i.e. 25% effective depth is not achieved) it will be necessary to derive an infiltration rate based on the drop in head of water only. Use alternative sheet for calculation.



APPENDIX 7

GIA Limitations

Limitations

- Ground Investigation Associates Limited (GIA) has prepared this report for the sole use of the Client, showing reasonable skill and care, for its intended purpose and in accordance with our Quotation, Terms and Conditions and instruction. This report may not be relied upon by any third party without the express agreement of the Client and GIA. No other warranty, expressed or implied, is made as to the professional advice included in this report.
- The scope of the investigation was designed based on the development proposed by the Client and taking into account the indicated site boundary. The scope is inappropriate for any other form of development or land not included in the site boundary as originally supplied.
- The report should be read in its entirety, including all associated drawings and appendices. GIA cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.
- Although every reasonable effort has been made to gather relevant and available information, not all potential geotechnical or environmental constraints or liabilities associated with the site may have been revealed by the works undertaken.
- Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.
- GIA disclaim any responsibility to the Client and others in respect of any matters outside the scope of this report.
- This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.
- The findings and opinions conveyed in any Desk Study section of the report (including review of any third party reports) are based on information obtained from the sources listed, which GIA understand are reliable. Reasonable skill, care and diligence has been applied in examining the information obtained. However, GIA accept no responsibility for inaccuracies in the data supplied or for opinions based on any such inaccurate data.
- A Phase I Desk Study collates available information to generate a preliminary Conceptual Site Model (pCSM). The actual geotechnical and environmental considerations can only be quantified by intrusive investigation works to confirm the accuracy of the pCSM.
- Where chemical analysis was carried out, this was targeted to identified key contaminants of potential concern based on our understanding of the available information. It should not be inferred that other chemical species are not present.
- Groundwater observations relate to conditions encountered at the time of investigation. It must be understood that groundwater levels may vary as a result of recent climatic conditions, tidal influence, seasonal variation and longer-term trends.
- Comments relating to ground conditions between, and below the base of, those encountered by GIA in exploratory holes are for guidance purposes only. No liability can be given for the accuracy of those comments.
- The works completed may be limited by the timeframe available and any restrictions associated with access, services, obstructions, and safe working practices.
- GIA is a geo-environmental consultancy. The scope of our works specifically excludes formal surveys relating to archaeological sites, asbestos-containing materials, invasive weeds, radioactive substances or Unexploded Ordnance.
- Drawings included in this report do not comprise an accurate base plan and are used to present the general relative locations of features on and in the immediate vicinity of the site. Such features should not be used for setting out and should be considered indicative only.
- This report has been prepared in accordance with our understanding of industry good practice guidance at the time of report production. Changes to good practice, guidance or legislation after the report date will necessitate a review and amendment of our report.
- Should any new information be provided to GIA relating to the environmental or geotechnical site conditions it will be necessary to review our report to assess whether it remains applicable.
- The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of GIA.

Appendix M

Drainage Asset Maintenance Schedule

Surface Foul

Maintenance Activity	Drainage Component	Required Action	Typical Frequency
Visual Inspection	Gully, Catch pit / silt trap, Flow control chamber, Swale, Basin. Pipework	Inspect for sediment and debris	Monthly for first year and twice yearly thereafter, after severe storm Twice yearly
Litter and Debris Removal	Basin, Swale, Existing Ditch, All sump units (gullies, channel drains and catch pits) Flow control chamber	Remove all litter and debris	Twice yearly or after severe storm Twice yearly (spring, start of winter), or as required
Grass Cutting	Basin and Swales Existing ditch	Grass should be cut to retain grass height within specified design range (typically 75-150mm) Grassed & vegetation to be strimmed and removed	Monthly (during growing season), or as required Every 3-4 months
Jet Wash	Pipework	High pressure jet-wash any pipe work which has silt accumulation. Care must be taken that any silts within the pipework are not unnecessarily flushed into the attenuation structures (use of bungs and jet-vac of chamber prior to removal of bungs)	Twice yearly, or as required
Aquatic and Shoreline Vegetation Management	Basin	Build-up of dead vegetation from previous seasons should be removed to reduce organic silt accumulation Emergent vegetation may need to be harvested to maintain flood volumes	Convenient intervals e.g. every three years at the end of landscape contract periods

	Aquatic and Shoreline Vegetation Management			Every two – ten years, or as required
	Sediment Management and Removal	ALL SUDS	Sediment accumulation should be monitored as part of the inspection regime, rate of sediment accumulation noted	Appropriate frequencies determined upon inspection
	Inspection	Pipework Manhole	Check if functioning correctly	Once site is fully operational: twice yearly for 1st year, annually after

Additional notes:

- Any defects (broken/misaligned pipes, root infestation, damage to chambers, missing parts, etc.) that are identified during inspections/maintenance should be reported back to the property/site owner so that remedial actions can be undertaken promptly to repair these defects.
- SuDS maintenance based on CIRIA 2015 chapter 32 where further information can also be found.
- Refer to manufacturer guidance for maintenance schedules of all proprietary treatment systems.