



**CAUSEWAY**  
GEOTECH

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<b>Project:</b>	<b>24-0213</b>
<b>Site:</b>	<b>Coolaghknock Glebe Soakaway Testing</b>
<b>Report Date:</b>	<b>20<sup>th</sup> February 2024</b>
<b>Prepared by:</b>	<b>Rachel White</b> B.A. (Mod.) Geoscience

## Introduction

At the request of the Malone O'Regan Consulting Engineers, ground investigation works were carried out on the 19<sup>th</sup> and 20<sup>th</sup> February 2024 to facilitate the design and construction of a proposed residential development. The works consisted of four soakaway tests.

The exploratory hole location plan in Appendix A shows the locations of the soakaway pits excavated.

## Soakaway tests

Four soakaway tests (SA01- SA04) were carried out in accordance with BRE Digest 365 - Soakaways (BRE, 2016). The pits were excavated using a 3t tracked excavator fitted with a 600mm wide bucket, to depths of 1.50m.

The stability of the trial pit walls was noted on completion.

The results are summarized in Table 1 below:



**Table 1 Summary of soakaway tests**

<b>GI Ref</b>	<b>Depth (m)</b>	<b>Strata</b>	<b>Infiltration Rate (m/hr)</b>	<b>Comments</b>
SA01	1.50	MADE GROUND: GRAVEL	0.36	
SA02	1.50	SILT	n/a	Water level did not drop sufficiently in 3 hours to derive a result
SA03	1.50	SAND	0.21	
SA04	1.50	SILT	0.11	

Appendix B presents the soakaway pit logs followed by the results and analysis of the infiltration test with photographs of the pits and arising provided in Appendix C.

## **REFERENCES**

BS 1377: 1990: Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930: 2015+A1:2020: Code of practice for ground investigations. British Standards Institution.

BS EN 1997-2: 2007: Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.

BS EN ISO 14688-1: 2002: Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.

Building Research Establishment (2007), BRE Digest 365: Soakaways.





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**APPENDIX A**  
**SITE AND EXPLORATORY HOLE LOCATION PLANS**








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Legend Key	
Project No.	24-0213
Client	NDFA
Client's Rep	Malone O'Regan Consulting Engineers
Site Location Plan	
Coolaghknock Glebe Soakaway Testing	
	
Last Revision	20/02/2024
Scale	1:10000





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<b>Legend Key</b> ▣ Locations By Type - TP	
<b>Project No.</b>	24-0213
<b>Client</b>	NDFA
<b>Client's Rep</b>	Malone O'Regan Consulting Engineers
<b>Exploratory Hole Location Plan</b>	
<b>Coolaghknock Glebe Soakaway Testing</b>	
	
<b>Last Revision</b>	20/02/2024
<b>Scale</b>	1:2000










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## APPENDIX B

### SOAKAWAY TEST LOGS AND RESULTS



<div><div>CAUSEWAY GEOTECH</div></div>			Project No. 24-0213		Project Name: Coolaghknock Glebe Soakaway Testing			Trial Pit ID  SA01			
			Coordinates 674053.01 E 712984.41 N		Client: NDFA  Client's Representative: Malone O'Regan Consulting Engineers						
Method: Soakaway Testing			Elevation 103.50 mOD		Date: 19/02/2024			Logger: RW		Sheet 1 of 1 Scale: 1:25	
Plant: 3t Tracked Excavator								FINAL			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description			Water		
			103.30	0.20		TOPSOIL					
			103.10	0.40		MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse.				0.5	
						MADE GROUND: Greyish brown very sandy very clayey subangular fine to coarse GRAVEL with low cobble content and fragments of concrete, wires, red brick, rope, plastic, ceramics and timber. Sand is fine to coarse. Cobbles are subangular.				1.0	
			102.00	1.50		End of trial pit at 1.50m				1.5	
										2.0	
										2.5	
										3.0	
										3.5	
										4.0	
										4.5	
Water Strikes			Depth: 1.50		Remarks: Concrete encountered at western edge of pit at 0.50mbgl. No groundwater encountered.						
Struck at (m)	Remarks		Width: 0.60								
			Length: 2.10								
			Stability: Stable		Termination Reason Terminated at scheduled depth.			Last Updated 20/02/2024			

## Soakaway Infiltration Test

**Project No.:** 24-0213  
**Site:** Clloughknock Glebe Soakaway Testing  
**Test Location:** SA01  
**Test Date:** 19 February 2024



*Analysis using method as described in BRE Digest 365  
and CIRIA Report C697-The SUDS Manual*

	width (m)	length (m)
test pit top dimensions	0.60	2.10
test pit base dimensions	0.60	1.50
test pit depth (m)	1.50	

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.72	0.78
1	0.76	0.74
2	0.80	0.70
3	0.86	0.64
4	0.89	0.61
5	0.92	0.58
6	0.93	0.57
8	0.97	0.53
10	1.01	0.49
15	1.09	0.41
20	1.15	0.35
25	1.19	0.31
30	1.30	0.20
45	1.50	0.00

### RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.59 m  
depth to water surface (target) 0.92 m  
time to reach target depth 5.0 mins

Test end








25% head of water at 0.20 m  
depth to water surface (target) 1.31 m  
time to reach target depth 30.0 mins

**test infiltration rate (q) = 0.36 m/h**

### TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m <sup>3</sup> )	Area of walls and base at 50% drop (m <sup>2</sup> )	q (m/min)	q (m/h)
5	0.92	0.59	25	0.39	2.61	5.9E-03	0.356
30	1.31	0.20					



<div><div>CAUSEWAY GEOTECH</div></div>			Project No. 24-0213		Project Name: Coolaghknock Glebe Soakaway Testing			Trial Pit ID  SA02			
			Coordinates 674140.23 E 712959.27 N		Client: NDFA  Client's Representative: Malone O'Regan Consulting Engineers						
Method: Soakaway Testing			Elevation 101.97 mOD		Date: 19/02/2024			Logger: RW		Sheet 1 of 1 Scale: 1:25	
Plant: 3t Tracked Excavator								FINAL			
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description			Water		
			101.77	0.20		TOPSOIL					
						MADE GROUND: Brownish grey sandy silty subangular fine to coarse GRAVEL with low cobble content and fragments of brick, ceramics and timber. Sand is fine to coarse. Cobbles are subangular.				0.5	
			101.37	0.60							
			101.27	0.70		MADE GROUND: Reddish brown sandy very silty subrounded fine to coarse GRAVEL with fragments of red brick. Sand is fine to coarse. Reddish brown sandy very silty subrounded fine to coarse GRAVEL. Sand is fine to coarse.					
			100.97	1.00		Soft reddish brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is rounded fine to coarse.				1.0	
			100.47	1.50		End of trial pit at 1.50m				1.5	
										2.0	
										2.5	
										3.0	
										3.5	
										4.0	
										4.5	
Water Strikes			Depth: 1.50		Remarks: No groundwater encountered.						
Struck at (m)			Width: 0.60								
Remarks			Length: 2.00								
			Stability: Stable		Termination Reason Terminated at scheduled depth.			Last Updated 20/02/2024			

## Soakaway Infiltration Test

**Project No.:** 24-0213  
**Site:** Coolaghknock Glebe Soakaway Testing  
**Test Location:** SA02  
**Test Date:** 19 February 2024



width (m)      length (m)  
 test pit top dimensions      0.60      2.00  
 test pit base dimensions      0.60      1.80  
 test pit depth (m)      1.50

*Analysis using method as described in BRE Digest 365  
and CIRIA Report C697-The SUDS Manual*

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.68	0.82
1	0.69	0.81
2	0.69	0.81
3	0.70	0.80
4	0.71	0.79
5	0.72	0.78
6	0.73	0.78
8	0.75	0.75
10	0.77	0.73
15	0.79	0.71
20	0.81	0.69
30	0.87	0.63
60	1.00	0.50
90	1.10	0.40
120	1.20	0.30
150	1.25	0.25
180	1.25	0.25

### RESULTS (FROM GRAPH BELOW)

Test start

75% head of water at 0.62 m  
 depth to water surface (target) 0.89 m  
 time to reach target depth 33.0 mins

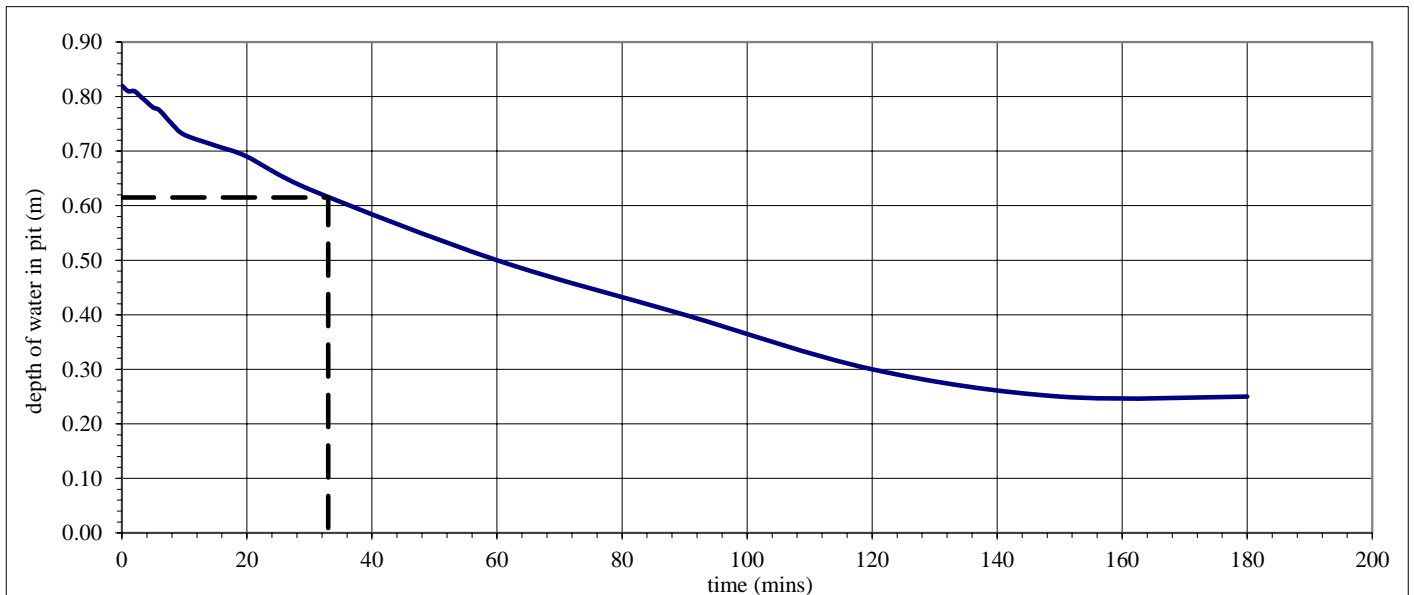
Test end

25% head of water at 0.21 m  
 depth to water surface (target) 1.30 m  
 time to reach target depth not reached

**infiltration rate (q) is very low**

### TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m <sup>3</sup> )	Area of walls and base at 50% drop (m <sup>2</sup> )	q (m/min)	q (m/h)
33	0.89	0.62	N/A				





24-0213

## Coolaghknock Glebe Soakaway Testing

**SA03**

574156.24 E

## NDFA

Malone O'Regan Consulting Engineers

Scale: 1:25

## Soakaway Testing

### 3t Tracked Excavator


101.95 mOD

19/02/2024

RW

FINAL

Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description	Water
			101.85	0.10		TOPSOIL	
			101.05	0.90		MADE GROUND: Brown very gravelly very clayey fine to coarse SAND. Gravel is subrounded fine to coarse.	
			100.45	1.50		End of trial pit at 1.50m	

Water Strikes		<b>Depth:</b> 1.50 <b>Width:</b> 0.60 <b>Length:</b> 2.10	<b>Remarks:</b> No groundwater encountered.		
Struck at (m)	Remarks				
		<b>Stability:</b> Moderately Stable	<b>Termination Reason</b> Terminated at scheduled depth.	<b>Last Updated</b> 20/02/2024	

## Soakaway Infiltration Test

**Project No.:** 24-0213  
**Site:** Coolaghknock Glebe Soakway Testing  
**Test Location:** SA03  
**Test Date:** 19 February 2024



width (m)      length (m)  
 test pit top dimensions      0.60      2.10  
 test pit base dimensions      0.60      1.90  
 test pit depth (m)      1.50

Analysis using method as described in BRE Digest 365  
 and CIRIA Report C697-The SUDS Manual

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.69	0.81
1	0.70	0.80
2	0.72	0.78
3	0.74	0.76
4	0.76	0.74
5	0.78	0.72
6	0.80	0.70
8	0.82	0.68
10	0.84	0.66
15	0.88	0.62
20	0.92	0.58
30	1.00	0.50
60	1.30	0.20
90	1.46	0.04

### RESULTS (FROM GRAPH BELOW)

#### Test start

75% head of water at 0.61 m  
 depth to water surface (target) 0.89 m  
 time to reach target depth 17.0 mins

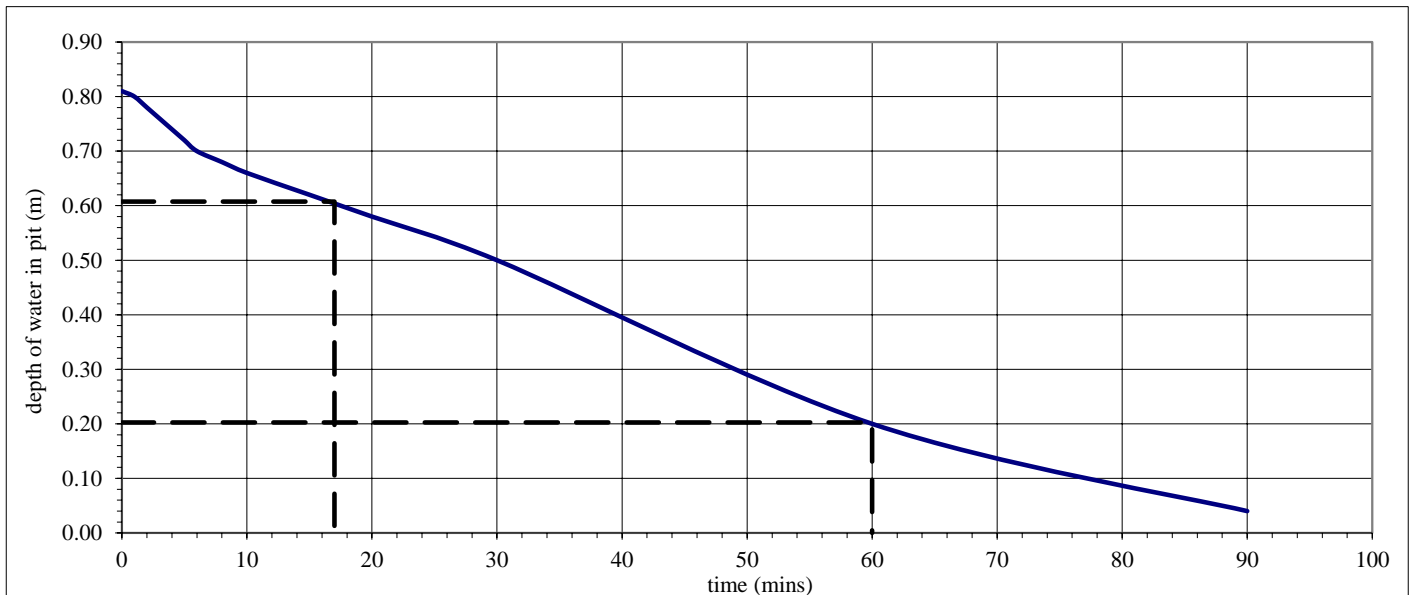
#### Test end







25% head of water at 0.20 m  
 depth to water surface (target) 1.30 m  
 time to reach target depth 60.0 mins

**test infiltration rate (q) = 0.21 m/h**

### TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m <sup>3</sup> )	Area of walls and base at 50% drop (m <sup>2</sup> )	q (m/min)	q (m/h)
17	0.89	0.61	43	0.47	3.19	3.5E-03	0.208
60	1.30	0.20					



<div><div>CAUSEWAY GEOTECH</div></div>			Project No. 24-0213		Project Name: Coolaghknock Glebe Soakaway Testing			Trial Pit ID  SA04				
			Coordinates 674252.24 E 712770.34 N		Client: NDFA  Client's Representative: Malone O'Regan Consulting Engineers							
Method: Soakaway Testing			Elevation 97.43 mOD		Date: 20/02/2024			Logger: RW		Sheet 1 of 1 Scale: 1:25		
Plant: 3t Tracked Excavator								FINAL				
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (m)	Legend	Description			Water			
			97.23	0.20		TOPSOIL						
			96.93	0.50		MADE GROUND: Soft brown slightly sandy gravelly CLAY with low cobble and boulder content and fragments of concrete, red brick and cloth. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular. Boulders are subangular up to 1200mm. Brown sandy very clayey subrounded fine to coarse GRAVEL. Sand is fine to coarse.				0.5		
			96.53	0.90		Soft brown slightly gravelly sandy SILT. Sand is fine to coarse. Gravel is subrounded fine to medium.				1.0		
			95.93	1.50		End of trial pit at 1.50m				1.5		
										2.0		
										2.5		
										3.0		
										3.5		
										4.0		
										4.5		
Water Strikes		Depth: 1.50		Remarks: No groundwater encountered.								
Struck at (m)	Remarks	Width: 0.60										
		Length: 2.10										
		Stability: Unstable		Termination Reason Terminated at scheduled depth.					Last Updated 20/02/2024			

## Soakaway Infiltration Test

**Project No.:** 23-0213  
**Site:** Coolaghknock Glebe Soakaway Testing  
**Test Location:** SA04  
**Test Date:** 20 February 2024



*Analysis using method as described in BRE Digest 365 and CIRIA Report C697-The SUDS Manual*

width (m)      length (m)  
 test pit top dimensions      0.60      2.10  
 test pit base dimensions      0.60      1.90  
 test pit depth (m)      1.50

depth to groundwater before adding water (m) = Dry

Time (mins)	Depth to water surface (m)	Head of water in pit (m)
0	0.66	0.84
1	0.69	0.81
2	0.70	0.80
3	0.72	0.78
4	0.73	0.77
5	0.74	0.76
6	0.76	0.74
8	0.78	0.72
10	0.80	0.70
15	0.85	0.65
20	0.89	0.61
25	0.93	0.57
45	1.05	0.45
60	1.10	0.40
90	1.21	0.29
120	1.40	0.10
150	1.45	0.05

### RESULTS (FROM GRAPH BELOW)

#### Test start

75% head of water at 0.63 m  
 depth to water surface (target) 0.87 m  
 time to reach target depth 17.0 mins

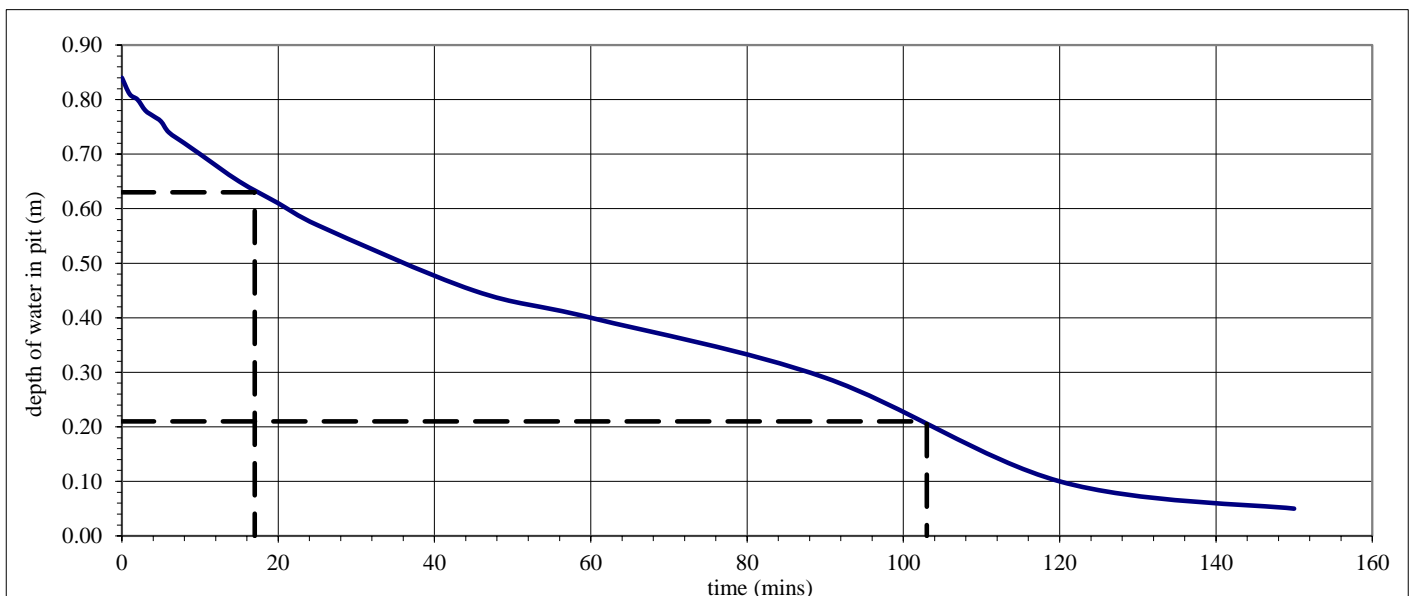
#### Test end

25% head of water at 0.21 m  
 depth to water surface (target) 1.29 m  
 time to reach target depth 103.0 mins

**test infiltration rate (q) = 0.11 m/h**

### TARGET DEPTHS AND CALCULATED VALUES

time (mins)	depth to water surface (m)	head of water in pit (m)	time elapsed (mins)	volume of water lost (m <sup>3</sup> )	Area of walls and base at 50% drop (m <sup>2</sup> )	q (m/min)	q (m/h)
17	0.87	0.63	86	0.49	3.27	1.8E-03	0.105
103	1.29	0.21					







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**APPENDIX C**  
**PIT PHOTOGRAPHS**







SA01





SA01





SA01





SA01





SA01





SA01





**SA01**





SA02





SA02





SA02





SA02





**SA02**





SA02





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SA03





SA03





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SA04





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SA04





**SA04**