

BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC3

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 05/12/2005

End date: 06/12/2005

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN no recovery		11							
OVERBURDEN recovery consists of gravel fragments.		14.65						3	14.65
OVERBURDEN recovery consists of grey sandy gravelly clay.		16.15						37	16.15
		17						79	17.15
		18							
		19							
		20						83	18.65

Continued next sheet

Remarks:

Rotary openhole borehole to 14.65mBGL then continued by rotary coring.

KEY

- TCR Total Core Recovery.
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC3

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 05/12/2005

End date: 06/12/2005

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN recovery consists of grey sandy gravelly clay.		21						86	20.15
OVERBURDEN recovery consists of brown sandy gravelly clay.		21.65						47	21.65
		22							
		23						60	23.15
		24							
OVERBURDEN recovery consists of clay and cobble fragments		24.65						20	24.65
		25							
		26							
OVERBURDEN recovery consists of cored cobbles and gravel.		26.15						13	26.15
		27							
		27.65							
Strong dark grey and black silty LIMESTONE slightly weathered.		28		Fractures extremely closely to medium spaced 20 to 30 degrees, smooth, planar, open. and medium spaced 70 to 80 degrees, smooth, planar, tight.		27	27	30	27.65
		29							
		29.15				9	37	97	29.15
		30			12				

Continued next sheet

Remarks:

Rotary openhole borehole to 14.65mBGL then continued by rotary coring

KEY

- TCR Total Core Recovery
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC3

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 05/12/2005


End date: 06/12/2005

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
Strong dark grey and black silty LIMESTONE slightly weathered.			31			38	90	100	30.85
End of Borehole Log at 31.65 m		31.65							
			32						
			33						
			34						
			35						
			36						
			37						
			38						
			39						
			40						

Remarks:

Rotary openhole borehole to 14.65mBGL then continued by rotary coring.

KEY

- TCR Total Core Recovery.
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC4

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
OVERBURDEN	[Pattern]	0					
		1					
		2					
		3					
		4		SPT-C	4.15	50/95mm	
		5					
		6					
		7		SPT-C	7.15	50/150mm	
		8					
		9					
		10					

Continued next sheet

Remarks:

Openhole borehole to 11.65mBGL then continued by rotary coring.
Cased to NQ size at 24.00mBGL.

KEY

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- W Water level 20mins after strike.

Bulk disturbed sample.
Small disturbed sample
Undisturbed sample
Standard Penetration Test, split spoon.
Standard Penetration Test, solid cone.
Groundwater strike
Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC4

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
OVERBURDEN	[Pattern]	11		SPT-C	10.15	50/160mm	
OVERBURDEN recovery consists of gravel and cobble fragments	[Pattern]	11.65					
OVERBURDEN recovery consists of dark grey sandy gravelly Clay.	[Pattern]	16.10		SPT-C	17.15	50/60mm	
Continued next sheet		20					

Remarks:

Rotary openhole borehole to 11.65mBGL then continued by rotary coring.
 Reduced to NQ size at 24.00mBGL.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- GW Groundwater strike
- WL Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC4

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /



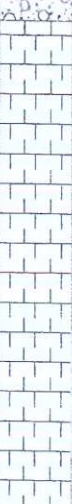
End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
OVERBURDEN recovery consists of dark grey sandy gravelly Clay.		21						
OVERBURDEN recovery consists of gravel and cobble fragments.		22 23 24 25 26						
Very strong to strong dark grey and black silty LIMESTONE. Fresh to slightly weathered.		26.60 27 28 29						
Continued next sheet								

Remarks:

1ry openhole borehole to 11.65mBGL then continued by rotary coring.
uced to NQ size at 24.00mBGL.

KEY

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- W Water level 20mins after strike.



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC4

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /


End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN	
OVERBURDEN		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1</div> <div style="margin-bottom: 10px;">2</div> <div style="margin-bottom: 10px;">3</div> <div style="margin-bottom: 10px;">4</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">6</div> <div style="margin-bottom: 10px;">7</div> <div style="margin-bottom: 10px;">8</div> <div style="margin-bottom: 10px;">9</div> <div style="margin-bottom: 10px;">10</div> </div>								

Continued next sheet

Remarks:

Rotary openhole borehole to 11.65mBGL then continued by rotary coring.
Reduced to NQ size at 24.00mBGL.

KEY

TCR Total Core Recovery
 SCR Solid Core Recovery
 RQD Rock Quality Designation
 FSI Fracture Spacing Index



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC4

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter:

mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN									
OVERBURDEN recovery consists of gravel and cobble fragments		11.65						43	11.65
OVERBURDEN recovery consists of dark grey sandy gravelly Clay.		16.10						60	13.10
								28	14.60
								40	16.10
								66	17.80
								17	18.10

Continued next sheet

Remarks:

Rotary openhole borehole to 11.65mBGL then continued by rotary coring.
Reduced to NQ size at 24.00mBGL.

KEY

TCR Total Core Recovery
SCR Solid Core Recovery
RQD Rock Quality Designation
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BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC4

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: / /




End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN		
OVERBURDEN recovery consists of dark grey sandy gravelly Clay.											
		21						50	20.60		
OVERBURDEN recovery consists of gravel and cobble fragments.											
		22	22.10					9	22.10		
		23									
		24						28	23.60		
		25									
		26						35	25.10		
		26.60									
Very strong to strong dark grey and black silty LIMESTONE. Fresh to slightly weathered.				Fractures extremely closely to medium spaced 20 to 25 degrees, smooth, planar, tight to open. And medium spaced sub vertical rough, tight to open.		17	77	87	26.60		
		27									
		28									
		29									
		30						87	93	97	29.10

Continued next sheet

Remarks:

Rotary openhole borehole to 11.65mBGL then continued by rotary coring. Reduced to NQ size at 24.00mBGL.

KEY

- TCR Total Core Recovery
- SCR Solid Core Recovery
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BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC4

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level	mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
Very strong to strong dark grey and black silty LIMESTONE. Fresh to slightly weathered.	[Pattern]	31					69	100	100	30.60
		32								
End of Borehole Log at 32.10 m		32.10								
		33								
		34								
		35								
		36								
		37								
		38								
		39								
		40								

Remarks:

Rotary openhole borehole to 11.65mBGL then continued by rotary coring.
Reduced to NQ size at 24.00mBGL.

KEY

TCR Total Core Recovery
SCR Solid Core Recovery
RQD Rock Quality Designation
FSI Fracture Spacing Index



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC5

Client: J.J. Rhatigan & Co Ltd

Consultant: Byrne Looby,

Location:

Start date: / /

End date: / /

Type of drilling: RO + RC

Hole diameter: mm

Co-ordinates: -

Elevation: -

Project no.: 1032-11-05

Drilled by: P Sheils

Logged by: F McNamara

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
OVERBURDEN.	[Pattern]	0 1 2 3 4 5 6 7 8 9 10						
		4.15		SPT-C	4.15	50/165mm		
		7.15		SPT-C	7.15	80/110mm		

Continued next sheet

Remarks:

Rotary openhole borehole to 16.15mBGL then continued by rotary casing.

KEY

- BB Bulk disturbed sample
- OD Small disturbed sample
- UC Undisturbed sample
- SPT-S Standard Penetration Test, split spoon
- SPT-C Standard Penetration Test, solid cone
- ▽ Groundwater strike
- ▽ Water level 20mins after strike

Bulk disturbed sample.
Small disturbed sample
Undisturbed sample
Standard Penetration Test, split spoon.
Standard Penetration Test, solid cone.
Groundwater strike
Water level 20mins after strike.



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BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC5

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Loby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /


End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
<p>OVERBURDEN recovery consists of cobble and large boulder fragments. Driller notes clay wash return.</p> <hr style="border: 1px dashed black;"/> <p style="text-align: center;">End of Borehole at 22.05 m</p>		<p>21</p> <p>22.05</p> <p>23</p> <p>24</p> <p>25</p> <p>26</p> <p>27</p> <p>28</p> <p>29</p>		<p>SPT-C</p> <p>20.05</p>	<p>53/5mm</p>			

Remarks:

Rotary openhole borehole to 16.15mBGL then continued by rotary coring.

KEY

- B Bulk disturbed sample.
- CU Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- W Water level 20mins after strike.



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BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC5

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level	mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN.	[Pattern]	0 1 2 3 4 5 6 7 8 9 10								

Continued next sheet

Remarks:

Rotary openhole borehole to 16.15mBGL then continued by rotary coring.

KEY

- TCR Total Core Recovery
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC5

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level m AOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN.	[Pattern]								
		11							
		12							
		13							
		14							
		15							
		16							
		17							
OVERBURDEN recovery consists of gravel cobble and boulder fragments	[Pattern]		16.15					26	16.15
		17							
		18						53	17.05
		19							
OVERBURDEN recovery consists of cobble and large boulder fragments. Driller notes clay wash return.	[Pattern]		18.55					73	18.55
		19							
		20							

Continued next sheet

Remarks:

Rotary openhole borehole to 16.15mBGL then continued by rotary coring.

KEY

- TCR Total Core Recovery.
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC5

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /


End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
<p>OVERBURDEN recovery consists of cobble and large boulder fragments. Driller notes clay wash return.</p>		21						17	20.05
<p>End of Borehole Log at 22.05 m</p>		22	22.05						
		23							
		24							
		25							
		26							
		27							
		28							
		29							
		30							

Remarks:

Rotary openhole borehole to 10.15mBGL then continued by rotary coring.

KEY

TCR Total Core Recovery.
 SCR Solid Core Recovery
 RQD Rock Quality Designation
 FSI Fracture Spacing Index



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC6

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
OVERBURDEN		1						
OVERBURDEN recovery consists of gravel and cobble fragments.		4	4.15	SPT-C	4.15	50/95mm		
		7		SPT-C	7.15	50/10mm		
Continued next sheet		8						
		9						
		10						

Remarks:

Rotary openhole borehole to 4.15mBGL then continued by rotary coring.
 Had to openhole with hammer to 10.15 and core again.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test - split spoon.
- SPT-C Standard Penetration Test - solid cone.
- GW Groundwater strike
- W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC6

Client: J.J. Rhatigan & Co Ltd

Consultant: Byrne Looby,

Location:

Start date: / /

End date: / /

Type of drilling: RO + RC

Hole diameter: mm


Co-ordinates: -

Elevation: -

Project no.: 1032-11-05

Drilled by: P Sheils

Logged by: F McNamara

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
OVERBURDEN recovery consists of gravel and cobble fragments.		11		SPT-C	10.15	50/40mm		
OVERBURDEN recovery consists of dark grey sandy gravelly clay.		12						
		13	13.15	SPT-C	13.15	50/120mm		
		14						
	15							
	16	16		SPT-C	16.15	50/50mm		
	17							
	18							
	19			SPT-C	19.15	50/25mm		
Continued next sheet	20							

Remarks:

Rotary openhole borehole to 4.15mBGL then continued by rotary coring. Had to openhole with hammer to 10.15 and core again.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- Groundwater strike
- Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: RC6

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /


Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
<p>OVERBURDEN recovery consists of dark grey sandy gravelly clay.</p> <p style="text-align: center;">End of Borehole at 21.30 m</p>		21.30	21.30	SPT-C	21.30	50/100mm	
		21					
		22					
		23					
		24					
		25					
		26					
		27					
		28					
		29					
		30					

Remarks:

Rotary openhole borehole to 4.15mBGL then continued by rotary coring.
 Had to openhole with hammer to 10.15 and core again.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- Groundwater strike
- Water level 20mins after strike.



BOREHOLE RECORD (Rotary core)

Project Name: Westgate

Hole ID: RC6

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter:

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN		1							
OVERBURDEN recovery consists of gravel and cobble fragments.	4.15	2							
	5	3							
	6	4	4.15					8	4.15
	7	5							
	8	6							
	9	7						16	7.15
	10	8						12	6.55
	11	9							
	12	10							

Continued next sheet

Remarks:

Rotary openhole borehole to 4.15mBGL, then continued by rotary coring.
 Hard to openhole with hammers to 10.15 and core again.

KEY

- TCR Total Core Recovery
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



BOREHOLE RECORD (Rotary core)

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Hole ID: RC6

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN	
OVERBURDEN recovery consists of gravel and cobble fragments.		11						10	10.15	
		12						29	11.65	
OVERBURDEN recovery consists of dark grey sandy gravelly clay.		13	13.15					30	13.15	
		14								
		15						23	14.05	
		16								
		17								
		18							86	17.85
		19								
		20							86	19.15

Continued next sheet

Remarks:

Rotary openhole borehole to 4.15mBGL then continued by rotary coring. Had to openhole with hammer to 10.15 and core again.

KEY

- TCR Total Core Recovery
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BOREHOLE RECORD (Rotary core)

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Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: / /

End date: / /

Drilled by: P Sheils

Type of drilling: RO + RC

Hole diameter: mm

Logged by: F McNamara

Strata Description	Legend	Depth	Level	mAOD	Discontinuities	FSI	RQD	SCR	TCR	CORE RUN
OVERBURDEN recovery consists of dark grey sandy gravelly clay.	[Pattern]									
End of Borehole Log at 21.30 m		21.30								55 20.65
		21								
		22								
		23								
		24								
		25								
		26								
		27								
		28								
		29								
		30								

Remarks:

Rotary openhole borehole to 4.15mBGL, then continued by rotary coring.
Had to openhole with hammer to 10.15 and core again.

KEY

- TCR Total Core Recovery
- SCR Solid Core Recovery
- RQD Rock Quality Designation
- FSI Fracture Spacing Index



Appendix C

Borehole Logs

BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH1

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 14/12/2005

End date: 15/12/2005

Drilled by: R. Rowlands

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth Level (mOD)	Samples / tests		Water Depth	Date
			Type	Depth		
Backfill of SAND		0.00 - 1.70				
Stiff/hard brown sandy gravelly CLAY with cobbles		1.70 - 2.00	SPT-C B	2.00	50/300mm	
		2.00 - 3.00	SPT-C B	3.00	50/135mm	
		3.00 - 3.70	SPT-C B	4.00	50/300mm	
Hard grey sandy gravelly CLAY		3.70 - 4.80	SPT-C B	5.00	50/200mm	
		4.80 - 6.70	SPT-C B	6.00	50/135mm	
BOULDERS in sandy gravel		6.70 - 7.00	SPT-C	6.80	50/60mm	
		7.00 - 7.00				
End of Borehole at 7.00 m						

Remarks:

Chiselling 1 hour from 1.7 to 4.8mBGL. Chiselling 2 1/2 hours from 4.8 to 6.7mBGL and chiselling 1 hour from 6.7 to 7.0mBGL. Installed standpipe to 6.0mBGL with pea gravel surround, bentonite seal and raised cover

KEY

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon
- SPT-C Standard Penetration Test, solid cone
- GW Groundwater strike
- W Water level 20mins after strike



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH2

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 06/12/2005




End date: 08/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Backfill of SAND		0					
Very dense sandy GRAVEL with cobbles and boulders		2.70		B	2.70		
		3.10		SPT-C	3.10	50/145mm	
		3.10		B			
		4.00		SPT-C	4.00	50/210mm	
		4.00		B			
End of Borehole at 7.50 m		5.00		SPT-C	5.00	50/300mm	
		5.00		B			
		6.00		SPT-C	6.00	50/200mm	
		6.00		B			
		7.00		SPT-C	7.00	50/135mm	
		7.00		B			

Remarks:

Rate to 2.7m and backfilled with sand.
 Logging 2 hours from 2.9 to 3.5m, chiselling 7 hours from 3.5m to 6.5mBGL and
 logging 4 hours from 6.5 to 7.5mBGL.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH2A

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 08/12/2005



End date: 12/12/2005

Drilled by: R. Rowlands

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfilled with SAND		0 to 2.70						
Very dense sandy GRAVEL with cobbles and boulders.		2.70		B	2.70			
		3.00		SPT-C	3.00	50/210mm		
		3.00		B	3.00			
		4.10		SPT-C	4.10	50/135mm		
		4.10		B	4.10			
		5.00		SPT-C	5.00	50/300mm		
		5.00		B	5.00			
		6.00		SPT-C	6.00	50/125mm		
		6.00		B	6.00			
		6.50						
End of Borehole at 6.50 m		6.50 to 10.00						

Remarks:

Drill to 2.7m and backfilled with sand.
 Chiselling 2 hours from 2.9 to 3.6m, chiselling 4.5 hours from 3.6m to 5.6mBGL and
 3 hours from 5.6 to 6.6mBGL.
 Installed 50mm diameter standpipe to 6.5m with pea gravel surround, bentonite seal and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- GW Groundwater strike
- W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH3

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 06/12/2005

End date: 08/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of SAND.		1						
Medium dense sandy GRAVEL.		3.60						
Stiff brown sandy gravelly CLAY		4		SPT-C B	4.00 4.00	N=23		
Hard grey sandy gravelly CLAY with cobbles and boulders.		4.50		5				
Hard grey sandy gravelly CLAY with cobbles and boulders.		5.70		SPT-C B	5.00 5.00	N=34		
Hard grey sandy gravelly CLAY with cobbles and boulders.		6		SPT-C B	6.00 6.00	50/300mm		
Hard grey sandy gravelly CLAY with cobbles and boulders.		7		SPT-C B	7.00 7.00	50/60mm		
Hard grey sandy gravelly CLAY with cobbles and boulders.		8		SPT-C B	8.00 8.00	50/54mm		
Hard grey sandy gravelly CLAY with cobbles and boulders.		9		SPT-C B	9.00 9.00	50/111mm	8.80	
Very dense sandy GRAVEL with cobbles and Continued next sheet		9.50					9.50	06/12/05

Remarks:

Excavated to 3.6m and backfilled with sand. Chiselling 3.5 hours from 5.7 to 9.5m, sur from 9.5 to 10.5m and 11/2 hours from 10.5 to 10.8mBGL. Filled 50mm diameter standpipe to 10.8m with pea gravel surround, bentonite seal and raised cover.

KEY

B Bulk disturbed sample.
D Small disturbed sample.
U Undisturbed sample.
SPT-S Standard Penetration Test, split spoon.
SPT-C Standard Penetration Test, solid cone.
GW Groundwater strike.
W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH3

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 06/12/2005




End date: 08/12/2005

Drilled by: J. Quinn








Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
boulders				SPT-C B	10.00 10.00	50/17mm		
BOULDERS with sandy gravel.		10.50						
End of Borehole at 10.80 m		10.80						
		11						
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						

Remarks:
 Excavated to 3.6m and backfilled with sand. Chiselling 3.5 hours from 5.7 to 9.5m, hour from 9.5 to 10.5m and 1 1/2 hours from 10.5 to 10.8mBGL.
 installed 50mm diameter standpipe to 10.8m with pea gravel surround, bentonite seal and raised cover.

- KEY**
-  Bulk disturbed sample.
 -  Small disturbed sample
 -  Undisturbed sample
 -  Standard Penetration Test, split spoon.
 -  Standard Penetration Test, solid cone.
 -  Groundwater strike
 -  Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH4

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 17/11/2005


End date: 17/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Brown sandy gravelly CLAY with cobbles and boulders		1	1.00	SPT-C B	1.00	50/18mm		
End of Borehole at 1.80 m		1.80						
		2						
		3						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

Groundwater encountered, filling 1 hour from 1.3 to 1.5mBGL. Relocated to BH4A due to boulders

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ▽ Groundwater strike
- ▽ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH4A

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 18/11/2005


End date: 18/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Brown sandy gravelly CLAY with cobbles and boulders		1	1.00	SPT-C B	1.00	50/18mm		
End of Borehole at 2.00 m		2.00						
		3						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

*** Groundwater encountered.
 ...elling 2 hour from 1.4 to 2.0mBGL
 ...gging out cobbles and boulders 1/2 hour

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- GW Groundwater strike
- W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH4B

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Start date: 08/12/2005

End date: 11/12/2005




Type of drilling: CP

Hole diameter: 200 mm

Project no. 1032-11-05

Drilled by: J. Quinn

Logged by: J. Lombard








Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Backfill of sand		0 - 3.80					
Medium dense sandy GRAVEL		3.80 - 4.20		SPT-C B	4.00 4.00	N=19	
Stiff/hard grey sandy gravelly CLAY with cobbles and boulders.		4.20 - 10.00		SPT-C B	5.00 5.00	50/75mm	
				SPT-C B	6.00 6.00	50/75mm	
				SPT-C B	7.00 7.00	50/117mm	
				SPT-C B	8.00 8.00	50/31mm	
				SPT-C B	9.00 9.00	50/42mm	

Continued next sheet

Remarks:

Reduced to 150mm at 12.0mBGL. Excavated to 3.8m and backfilled with sand. Chiselling 5 1/4 hours from 5.5 to 3.8mBGL. 1 1/2 hours from 13.0 to 18.0mBGL and 5 1/2 hours from 18.0 to 20.5mBGL. Installed 50 diameter standpipe to 20.5m with pea gravel surround, bentonite seal and raised cover.

KEY

-  Bulk disturbed sample.
-  Small disturbed sample.
-  Undisturbed sample.
-  SPT-S Standard Penetration Test, split spoon.
-  SPT-C Standard Penetration Test, solid cone.
-  Groundwater strike.
-  Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH4B

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 08/12/2005

End date: 11/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Stiff/hard grey sandy gravelly CLAY with cobbles and boulders.		10.00	10.00	SPT-C B	10.00	50/61mm		
		11.00	11.00	SPT-C B	11.00	50/70mm		
Very dense sandy GRAVEL with cobbles and boulders.		11.80	12.00	SPT-C B	12.00	50/98mm		
		13.00	13.00	SPT-C B	13.00	50/38mm		
		14.00	14.00	SPT-C B	14.00	50/52mm		
		14.50	15.00	SPT-C B	15.00	50/93mm		
Hard grey sandy gravelly CLAY with cobbles and boulders.		16.00	16.00	SPT-S B	16.00	50/47mm		
		17.00	17.00	SPT-C B	17.00	50/24mm		
		18.00	18.00	SPT-C B	18.00	50/25mm		
		19.00	19.00	SPT-C B	19.00	50/19mm		
		20.00	20.00					

Continued next sheet

Remarks:

Reduced to 150mm at 12.0mBGL. Excavated to 3.8m and backfilled with sand. Chiselling 5 1/4 hours from 5.5 to 3.0mBGL. 7/2 hours from 13.0 to 18.0mBGL and 5 1/2 hours from 18.0 to 20.5mBGL. Installed 50 diameter standpipe to 20.5m with pea gravel surround, bentonite seal and raised cover.

KEY

Bulk disturbed sample.
 Small disturbed sample.
 Undisturbed sample.
 Standard Penetration Test, split spoon.
 Standard Penetration Test, solid cone.
 Groundwater strike
 Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH4C

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 08/12/2005

End date: 08/12/2005

Drilled by: R. Rowlands

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of SAND		1						
Dense sandy GRAVEL with cobbles and boulders		2.70						
End of Borehole at 3.50 m		3		SPT-C B	3.00 3.00	50/15mm		
		3.50						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

Excavated to 2.7m and backfilled with sand.
 Dispersed 1.5 hours from 2.7 to 3.5mBGL.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ▽ Groundwater strike
- ▽ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH5

Contractor: J.J. Rhatigan & Co Ltd
 Consultant: Byrne Looby,

Co-ordinates: -
 Elevation: -

Location:

Start date: 02/12/2005

End date: 02/12/2005

Project no. 1032-11-05

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of sand	[Pattern]	1						
Dense sandy GRAVEL with cobbles and boulders	[Pattern]	1.50 2						
End of Borehole at 3.20 m	[Pattern]	3 3.20		SPT-C	3.00	50/15mm		
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

Excavated to 1.5m and backfilled with sand. Chiselling 2 hours from 2.8 to 3.2mBGL.
 Sampled forward to 5A.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH5A

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 02/12/2005

End date: 02/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of sand	[Pattern]	0	0					
Dense sandy GRAVEL with cobbles and boulders.	[Pattern]	1.50	1.50					
End of Borehole at 3.50 m	[Pattern]	3.50	3.50	SPT-C B	3.00 3.00	50/17mm		

Remarks:

*excavated to 1.5m and backfilled with sand. Chiselling 2 hours from 3.2 to 3.5mBGL

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- Groundwater strike
- Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH6

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 03/12/2005



End date: 03/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of sand		1	2.60					
Dense sandy GRAVEL with cobbles and Boulders.		2.60	3.00					
End of Borehole at 3.00 m		3.00						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

Water level measured to 2.60mBGL and backfill with sand. Backfilling 2 hours from 2.6 to 3.0mBGL.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon
- SPT-C Standard Penetration Test, solid cone.
- ☒ Groundwater strike
- ☒ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH6A

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Start date: 03/12/2005

End date: 05/12/2005

Project no.: 1032-11-05

Type of drilling: CP

Hole diameter: 200 mm

Drilled by: J. Quinn

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Sand backfill		1 2 3 4						
Dense sandy GRAVEL with cobbles and Boulders.		4.80 5		SPT-C B	5.00 5.00	N=49		
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		5.10 6		SPT-C B	6.00 6.00	50/52mm		
		7		SPT-C B	7.00 7.00	50/42mm		
		8		SPT-C B	8.00 8.00	50/48mm		
		9		SPT-C B	9.00 9.00	50/19mm		
		10						

Continued next sheet

Remarks:

Excavated to 4.80mBGL and backfill with sand.
 Chiselling 2.5 hours from 5.6 to 6.5mBGL, 4.75 hours from 6.5 to 12.7mBGL
 and 2 hours from 12.70 to 13.00mBGL.
 Reduced to 150mm diameter casing at 10.80mBGL.
 Standpipe installed to 13.00mBGL with pea gravel surround, bentonite seal
 and cover.
 Water depth end day 04/12/05 11.10mBGL and 5/12/05 9.1mBGL installed
 standpipe to 13.9mBGL with pea gravel surround, bentonite seal and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ☒ Groundwater strike
- ☒ Water level 20mins after strike.



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BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH6A

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 03/12/2005


End date: 05/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		10.00	10.00	SPT-C B	10.00	50/44mm	
Very dense sandy GRAVEL and cobbles.		11.00	11.00	SPT-C B	11.00	50/18mm	10.80
BOULDER		12.00	12.00	SPT-C B	12.00	50/22mm	11.70 <small>03/12/2005</small>
End of Borehole at 13.00 m		13.00					
		14.00					
		15.00					
		16.00					
		17.00					
		18.00					
		19.00					
		20.00					

Remarks:

- cased to 4.800mBGL and backfill with sand.
 - installed 2.5 hours from 5.8 to 6.5mBGL, 4.75 hours from 6.5 to 12.7mBGL.
 - installed 2 hours from 12.70 to 13.00mBGL.
 - Reduced to 150mm diameter casing at 10.80mBGL.
 - Standpipe installed to 13.00mBGL with pea gravel surround, bentonite seal and cover.
 - Water depth end day 04/12/05 11.10mBGL and 5/12/05 9.1mBGL.
 - Standpipe to 13.0mBGL with pea gravel surround, bentonite seal and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ▽ Groundwater strike
- Water level 20mins after strike.



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BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH7

Contract: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 18/11/2005


End date: 19/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Brown sandy gravelly CLAY with cobbles and boulders.		1		SPT-C B	1.00 1.00	50/22mm	
Dense fine to coarse sandy GRAVEL with cobbles and boulders		2		SPT-C B	2.00 2.00	50/17mm	
		3		SPT-C B	3.00 3.00	50/27mm	
		4		SPT-C B	4.00 4.00	50/14mm	
End of Borehole at 4.30 m		4.30					
		5					
		6					
		7					
		8					
		9					
		10					

Remarks:

No groundwater encountered. Chiselling 3.5 hours from 0.4 to 2.0mBGL. Chiselling 5 hours from 2.0 to 4.3mBGL.

KEY

B Bulk disturbed sample
 D Small disturbed sample
 C Undisturbed sample
 SPT-S Standard Penetration Test, split spoon.
 SPT-C Standard Penetration Test, solid cone.
 GW Groundwater strike
 W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH7A

Contract: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 05/12/2005

End date: 06/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of SAND.		1						
Medium dense/dense sandy GRAVEL with cobbles and boulders.		3.70					2.95	
		4		SPT-C B	4.00 4.00	N=29		05/12/2005
		5		SPT-C B	5.00 5.00	50/70mm		
		6		SPT-C	6.00	50/22mm		
End of Borehole at 6.50 m		6.50						
		7						
		8						
		9						
		10						

Remarks:

Excavated to 3.7m and backfilled with sand.
 Sealing 11/4hours from 3.7 to 5.5m and 3 hours 5.5 to 6.5mBGL.
 Installed 50mm standpipe to 6.5mBGL with pea gravel surround, bentonite seal and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ~ Groundwater strike
- Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH8

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 29/11/2005

End date: 01/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Sand backfill	[Cross-hatch pattern]	1						
Dense sandy GRAVEL with cobbles and Boulders.	[Gravel pattern]	2 3 3.40 4 5 6 7 8 9		SPT-C B	4.00 4.00	N=35		
				SPT-B	5.00 5.00	50/35mm		
				SPT-C B	6.00 6.00	50/53mm		
				SPT-C B	7.00 7.00	50/42mm		
				SPT-C B	8.00 8.00	50/59mm	8.40	
				SPT-B	9.00 9.00	50/37mm	9.70	01/12/2005

Continued next sheet

Remarks:

Excavated to 3.40mBGL and backfilled with sand.
 Chiselling 4 hours from 3.4 to 7.5mBGL, 3.5 hours from 7.5 to 9.0mBGL, and 4 hours from 9.0 to 10.20mBGL.
 Reduced to 150mm diameter casing at 9.0mBGL.
 Installed 50mm diameter standpipe to 10.00mBGL with pea gravel surround,
 bentonite seal 0.0 to 1.0mBGL and raised cover.

KEY

B Bulk disturbed sample.
 D Small disturbed sample
 U Undisturbed sample
 SPT-S Standard Penetration Test, split spoon.
 SPT-C Standard Penetration Test, solid cone.

Groundwater strike
 Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH8

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 29/11/2005


End date: 01/12/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Dense sandy GRAVEL with cobbles and Boulders. End of Borehole at 10.20 m		10.20		SPT-C B	10.00 10.00	50/15mm		
		11						
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						

Remarks:

Excavated to 3.40mBGL and backfilled with sand.
 Casing 4 hours from 3.4 to 7.5mBGL, 3.5 hours from 7.5 to 9.0mBGL, and 4 hours from 9.0 to 10.20mBGL.
 Moved to 150mm diameter casing at 9.0mBGL.
 Installed 50mm diameter standpipe to 10.00mBGL with pea gravel surround,
 bentonite seal 0.0 to 1.0mBGL, and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ⚡ Groundwater strike
- ⬇ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH13

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 15/11/2005

End date: 15/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
TARMAC		0.00						
FILL of broken rock		0.30						
Brown sandy gravelly CLAY		0.80						
End of Borehole at 1.00 m		1.00						
		2						
		3						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

> Groundwater encountered.
 Chiselling 11/2 hours 0.4 to 0.8mBGL.
 Break out tarmac 3/4hour.
 Moved to BH13A as casing not straight due to obstruction.

KEY

B Bulk disturbed sample.
 D Small disturbed sample
 U Undisturbed sample
 SPT-S Standard Penetration Test, split spoon.
 SPT-C Standard Penetration Test, solid cone.
 W Groundwater strike
 W Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH13A

Contract: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 15/11/2005

End date: 15/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
TARMAC							
FILL of broken rock		0.30					
Firm stiff brown sandy gravelly CLAY		0.80					
		1.00		SPT-C B	1.00	N=12	
		2.00		SPT-C B	2.00	N=19	
		3.00		SPT-C B	3.00	N=28	
Medium dense fine to coarse sandy GRAVEL		3.40					
		4.00		SPT-C B	4.00	N=28	
		5.00		SPT-C B	5.00	50/27mm	
Stiff brown sandy gravelly CLAY with cobbles		5.30					
		5.70		SPT-C B	6.00	50/53mm	
Stiff/hard grey sandy gravelly CLAY with cobbles and boulders		6.00					
		7.00		SPT-C B	7.00	50/18mm	
End of Borehole at 7.50 m		7.50					
		8.00					
		9.00					
		10.00					

Remarks:

No groundwater encountered.
 Logging 1 hour 0.4 to 0.8mBGL, 1 hour 5.4 to 5.6mBGL,
 3/2 hours 6.8 to 7.5mBGL.
 Break out tarmac 3/4hour.
 Installed 50mm diameter standpipe to 7.5mBGL with pea gravel surround, 1.0m bentonite seal and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ☑ Groundwater strike
- ☐ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH14

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 23/11/2005

End date: 23/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Backfill of sand	[Pattern]	1						
Dense fine to coarse sandy GRAVEL with cobbles some boulders	[Pattern]	2.80 3		SPT-C B	3.00 3.00	50/300mm		
End of Borehole at 3.50 m		3.50						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

Remarks:

Excavated to 2.8m and backfilled with sand.
Chiselling 1 hour from 3.3 to 3.5mBGL.
Moved to BH14A

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ☒ Groundwater strike
- ☒ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH14A

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 23/11/2005








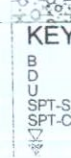
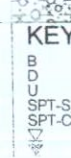
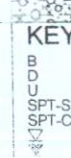
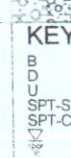
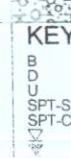
End date: 24/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Sand Backfill.		1					
Medium dense fine to coarse sandy GRAVEL		3.70					
Stiff brown sandy gravelly CLAY		4		SPT-C B	4.00 4.00	N=23	
Stiff brown sandy gravelly CLAY		4.80		SPT-C B	5.00 5.00	50/300mm	
Stiff brown sandy gravelly CLAY		5		SPT-C B	5.00 5.00	50/300mm	
Stiff/Hard grey brown sandy gravelly CLAY with boulders.		6		SPT-C B	6.00 6.00	50/58mm	
Stiff/Hard grey brown sandy gravelly CLAY with boulders.		7		SPT-C B	7.00 7.00	N=43	
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		7.30		SPT-C B	8.00 8.00	50/53mm	
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		8		SPT-C B	8.00 8.00	50/53mm	
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		8.50		SPT-C B	9.00 9.00	50/29mm	
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		9		SPT-C B	9.00 9.00	50/29mm	
Continued next sheet		9.5					

Remarks:

Excavated to 3.70mBGL and backfilled with sand.
 Cased to 150mm diameter casing at 8.50mBGL.
 Grouting 1 hour from 8.2 to 8.5mBGL, 1 hour from 8.5 to 12.20mBGL, 1 hour from 12.20 to 14.30, and 2 hours from 14.30 to 15.0mBGL.
 Installed 50mm diameter standpipe to 15.00mBGL with pea gravel surround and bentonite seal from 0.0 to 1.0mBGL and raised cover.
 Water depth start day 24/11/05 8.5mBGL.

KEY

-  B
-  D
-  U
-  SPT-S
-  SPT-C

Bulk disturbed sample.
 Small disturbed sample
 Undisturbed sample
 Standard Penetration Test, split spoon.
 Standard Penetration Test, solid cone.
 Groundwater strike
 Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH14A

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 23/11/2005


End date: 24/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Stiff/Hard grey sandy gravelly CLAY with cobbles and boulders.		10.00	10.00	SPT-C B	10.00 10.00	50/37mm	
		11.00	11.00	SPT-C B	11.00 11.00	50/28mm	10.90
Dry dense sandy GRAVEL with cobbles and boulders.		12.20	12.20	SPT-C B	12.00 12.00	50/49mm	12.20 ^{23/11/2005}
		13.00	13.00	SPT-C B	13.00 13.00	50/39mm	
		14.00	14.00	SPT-C B	14.00 14.00	50/39mm	
Stiff/Hard grey brown sandy gravelly CLAY with cobbles and boulders.		14.30					
End of Borehole at 15.00 m		15.00					
		16.00					
		17.00					
		18.00					
		19.00					
		20.00					

Remarks:

Excavated to 3.70mBGL and backfilled with sand.
 Reduced to 150mm diameter casing at 8.50mBGL.
 Chiselling 1 hour from 8.2 to 8.5mBGL, 1 hour from 8.5 to 12.20mBGL, 1 hour from 12.20 to 14.30, and 2 hours from 14.30 to 15.0mBGL.
 Installed 50mm diameter standpipe to 15.00mBGL with pea gravel surround and bentonite seal from 0.0 to 1.0mBGL and raised cover.
 Water depth start day 24/11/05 8.5mBGL

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- 20 Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH15

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 16/11/2005

End date: 16/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
HARDCORE		0.40						
Brown sandy CLAY		1.10		SPT-C B	1.00 1.00	50/295mm		
Stiff brown sandy gravelly CLAY with cobbles and boulders		2.70		SPT-C B	2.00 2.00	50/45mm		
End of Borehole at 2.70 m								

Remarks:

Groundwater encountered, falling 2 hour from 2.0 to 2.7mBGL. Drilled to BH15A due to boulders

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ⚡ Groundwater strike
- ⌵ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH15A

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 17/11/2005




End date: 17/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (MOD)	Samples / tests		Water Depth	Date
				Type	Depth		
HARDCORE							
Brown slightly gravelly sandy CLAY with cobbles.		0.40					
Stiff brown sandy gravelly CLAY with cobbles and boulders.		1.00		SPT-C B	1.00 1.00	N=45	
		2.00		SPT-C B	2.00 2.00	50/49mm	
		3.00		SPT-C B	3.00 3.00	50/37mm	
End of Borehole at 3.50 m		3.50					
		4.00					
		5.00					
		6.00					
		7.00					
		8.00					
		9.00					
		10.00					

Remarks:

> Groundwater encountered.
 Uniselling 2.5 hours from 2.3 to 3.5 mBGL
 Moved to BH15B due to boulders

KEY

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ▽ Groundwater strike
- ☼ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH15B

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 17/11/2005

End date: 17/11/2005




Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
HARDCORE								
Stiff brown sandy gravelly CLAY with cobbles and boulders.		0.40						
		1	SPT-C B	1.00 1.00	50/59mm			
		2	SPT-C B	2.00 2.00	50/15mm			
		2.50	End of Borehole at 2.50 m					
		3						
		4						
		5						
		6						
		7						
		8						
		9						
		10						

DCC PLAN NO: 4610/22
RECEIVED: 04/08/2022

Remarks:

Groundwater encountered.
Logging 1.5 hours from 2.0 to 2.5mBGL.
Cut boulders 45mins

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ☼ Groundwater strike
- ☼ Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH15C

Client: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no.: 1032-11-05

Start date: 19/11/2005

End date: 21/11/2005

Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description	Legend	Depth	Level (mOD)	Samples / tests		Water Depth	Date
				Type	Depth		
Backfill of sandy gravelly CLAY.		1					
Stiff brown sandy gravelly CLAY.		2					
Dense fine to coarse sandy GRAVEL and COBBLES.		3					
Hard grey sandy gravelly CLAY with cobbles and boulders.		4.00					
		4.30					
		5		SPT-C B	5.00 5.00	50/290mm	
		5.50					
		6		SPT-C B	6.00 6.00	50/230mm	
		7		SPT-C B	7.00 7.00	50/40mm	
		8		SPT-C B	8.00 8.00	50/23mm	
		9		SPT-C B	9.00 9.00	N=45	
Stiff/hard brown sandy gravelly CLAY with cobbles.		9.20					
Continued next sheet		10					

Remarks:

cavated to 4.00mBGL and backfilled with loose sandy gravelly CLAY.
 reduced to 150mm diameter casing at 11.8mBGL. Chiselling 5 hours from 5.5 to 9.2mBGL
 and 3 hours from 11.8 to 15.00mBGL.
 Installed 50mm diameter standpipe to 15.00mBGL with pea gravel surround and bentonite seal
 from 0.0 to 1.0mBGL and raised cover.

KEY

- B Bulk disturbed sample
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- ▽ Groundwater strike
- ∇ Water level 20mins after strike.

Bulk disturbed sample.
 Small disturbed sample
 Undisturbed sample
 Standard Penetration Test, split spoon.
 Standard Penetration Test, solid cone.
 Groundwater strike
 Water level 20mins after strike.



BOREHOLE RECORD

Project Name: Westgate

Hole ID: BH15C

Contractor: J.J. Rhatigan & Co Ltd

Co-ordinates: -

Consultant: Byrne Looby,

Elevation: -

Location:

Project no. 1032-11-05

Start date: 19/11/2005

End date: 21/11/2005




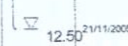
Drilled by: J. Quinn

Type of drilling: CP

Hole diameter: 200 mm

Logged by: J. Lombard

Strata Description

Strata Description	Legend	Depth	Level (mOD)	Samples / tests			Water Depth	Date
				Type	Depth	Result		
Stiff/hard brown sandy gravelly CLAY with cobbles.		10.00	10.00	SPT-C B	10.00	50/28mm		
		10.50		W	10.50			
		11.00	11.00	SPT-C B	11.00	50/38mm		
		11.80						
Very dense sandy GRAVEL with cobbles and boulders.		12.00	12.00	SPT-C B	12.00	50/24mm		
		13.00	13.00	SPT-C B	13.00	50/15mm		
		14.00	14.00	SPT-C B	14.00	50/19mm		
		15.00						
End of Borehole at 15.00 m		15.00						
		16.00						
		17.00						
		18.00						
		19.00						
		20.00						

Remarks:

Excavated to 4.00mBGL and backfilled with loose sandy gravelly CLAY.
 Cased to 150mm diameter casing at 11.8mBGL. Chiselling 5 hours from 5.5 to 9.2mBGL
 3 hours from 11.8 to 15.00mBGL
 Installed 50mm diameter standpipe to 15.00mBGL with pea gravel surround and bentonite seal
 from 0.0 to 1.0mBGL and raised cover.

KEY

- B Bulk disturbed sample.
- D Small disturbed sample
- U Undisturbed sample
- SPT-S Standard Penetration Test, split spoon.
- SPT-C Standard Penetration Test, solid cone.
- W Groundwater strike
- Water level 20mins after strike.



Appendix D

Trial Pit Logs



BYRNE LOOBY PARTNERS
 22 Canal Walk
 Park West
 Dublin 12
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TRIAL PIT LOG

Project B462 Westgate Development				TRIAL PIT No 1	
Job No B462	Date	Ground Level (m)	Co-Ordinates ()		
Contractor					Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Result/Ref		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
						0.10	TARMAC	
						(0.40)	Made ground consisting of black very sandy GRAVEL with some cobbles with roots	
						0.50	Stiff brown very sandy very gravelly CLAY with occasional cobbles	
						(0.50)		
						1.00		
							Very dense fine to coarse very sandy gravelly clayey angular to sub rounded GRAVEL with many cobbles and occasional boulders	
						(3.40)		
							3.9 Becoming more fine with some cobbles	
						4.40		
						(0.60)	Hard black very gravelly slightly sandy CLAY with occasional cobbles	
						5.00		
							Trial Pit ends @ 5.0m bgl	

Water Observations			GENERAL REMARKS
Date	Comments	Depth (m)	
			1, No groundwater 2, Sides stable

All dimensions in metres Scale 1:50	Client O'CONNORS SUTTON CRONIN	Method/ Plant Used 13 TONNE CAT Excavator	Logged By MB
--	--	--	------------------------

TP_B462-TPLOG 01.12.05.GPJ AGSS_ALL.GDT 3/2/06



TRIAL PIT LOG

Project B462 Westgate Development				TRIAL PIT No 2	
Job No B462	Date	Ground Level (m)	Co-Ordinates ()		
Contractor					Sheet 1 of 1

SAMPLES & TESTS			STRATA				Instrument/ Backfill	
Depth	Type No	Result/Ref	Water	Reduced Level	Legend	Depth (Thickness)		DESCRIPTION
						0.10	TARMAC	
						(1.30)	MADE GROUND consisting of gravelly CLAY and clayey GRAVEL	
						1.40	Medium dense to dense fine very sandy very clayey GRAVEL with occasional cobbles	
						(1.80)		
						3.20	Very stiff brown very sandy gravelly CLAY with occasional cobbles	
						(1.00)		
						4.20	Trial Pit ends @ 4.2m bgl	

Water Observations			GENERAL REMARKS
Date	Comments	Depth (m)	
			1, No groundwater 2, Sides stable

All dimensions in metres Scale 1:50	Client O'CONNORS SUTTON CRONIN	Method/ Plant Used 13 TONNE CAT Excavator	Logged By MB
--	--	--	------------------------

TP_B462-TPLOG.01.12.05.GPJ AGS3_ALL_GDT_3/2/06



BYRNE LOOBY PARTNERS
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TRIAL PIT LOG

Project B462 Westgate Development				TRIAL PIT No ST1	
Job No B462	Date	Ground Level (m)	Co-Ordinates ()		
Contractor				Sheet 1 of 1	

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Result/Ref		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
						0.30	MADE GROUND consisting of black clayey sandy GRAVEL	
						(0.60)	Stiff brown very gravelly CLAY with roots	
						0.90	Very dense very sandy fine to coarse angular GRAVEL	
						(0.60)		
						1.50	Slit Trench ends @ 1.5m bgl	

Water Observations			Date	Comments	Depth (m)	GENERAL REMARKS

All dimensions in metres Scale 1:50	Client O'CONNORS SUTTON CRONIN	Method/ Plant Used 13 TONNE CAT Excavator	Logged By MB
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TP_B462-TPLOG-01.12.05.GPJ_AGS3_ALL.GDT_3/2/06

Appendix E

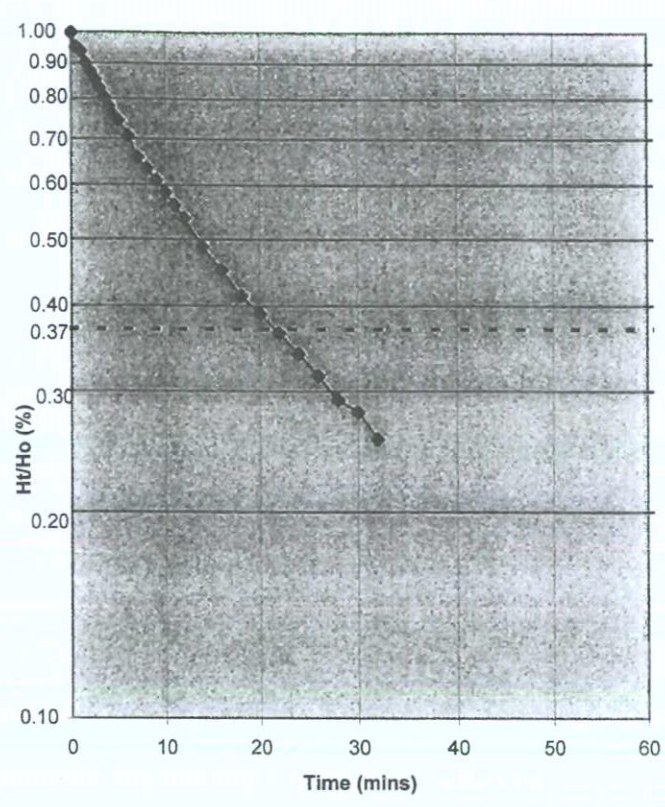
Rising Head Tests



Byrne Looby Partners
Rising Head Permeability Test

Height of datum (relative to GL), H_d :	0.40
Initial ground water level, H_i (m bd):	12.11
Job Title:	Westgate
Test No:	1
Diameter at test location, D (m):	0.20
Client:	O'Connor Sutton Cronin
Test by:	MB
Depth to response zone top (m bd):	
Job No:	B462
Date:	13/12/2005
Depth to response zone base (m bd):	
Hole No:	RC1
Start Time:	
Length of response zone, L (m):	


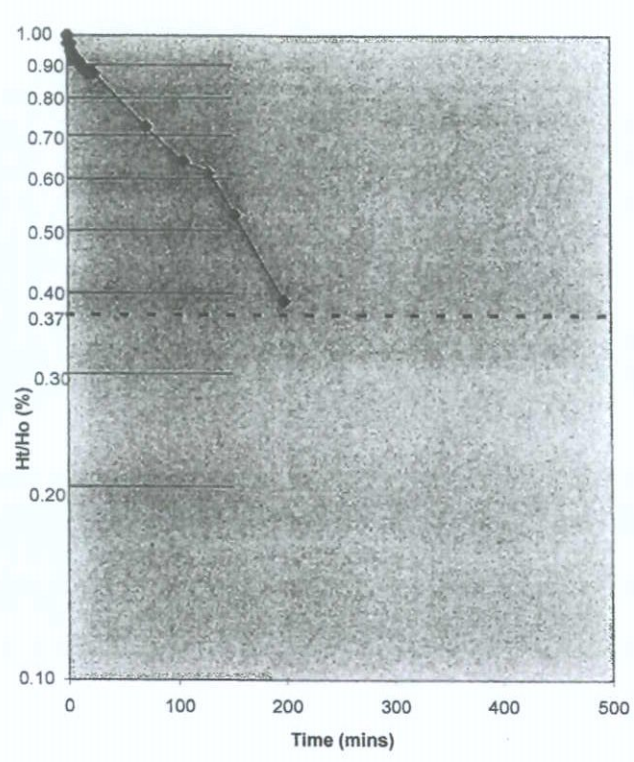
Time, t (mins)	Water Level,		H_t/H_o
	H (m bd)	H_t (m)	(%)
0	12.520	0.410	1.000
0.5	12.500	0.390	0.951
1.0	12.495	0.385	0.939
1.5	12.480	0.370	0.902
2	12.470	0.360	0.878
2.5	12.460	0.350	0.854
3	12.450	0.340	0.829
3.5	12.440	0.330	0.805
4	12.430	0.320	0.780
4.5	12.420	0.310	0.756
5	12.415	0.305	0.744
6	12.400	0.290	0.707
7	12.380	0.270	0.659
8	12.370	0.260	0.634
9	12.360	0.250	0.610
10	12.350	0.240	0.585
11	12.340	0.230	0.561
12	12.330	0.220	0.537
14	12.310	0.200	0.488
16	12.295	0.185	0.451
18	12.280	0.170	0.415
20	12.270	0.160	0.390
22	12.260	0.150	0.366
24	12.250	0.140	0.341
26	12.240	0.130	0.317
28	12.230	0.120	0.293
30	12.225	0.115	0.280
32	12.215	0.105	0.256
36			
40			
44			
48			
52			
56			
60			
65			
70			
75			
80			
90			
100			
105			



Calculation of Results

H_o , Initial Head = $H_{i@0} - H_i =$	0.41 m
$k = A/FT$ (m/s) Ref: BS5930:1981 21.4.6 (b)	
A, Cross sectional area of borehole/standpipe ($\pi d^2/4$)=	0.03142 m ²
F, Shape Factor (BS 5930 Fig 8)	
$F = 2.75D$	
$F = 2.75D$	F = 0.55
T, Basic Time Factor (BS 5930 Fig 9) = Time corresponding to value of $H_o/h_t = 0.37$	
Interpolated from Graph	T = 23 mins
k, Permeability of soil =	k = 4.1E-05 m/s

Comments

		Byrne Looby Partners Rising Head Permeability Test		Height of datum (relative to GL), H_0 :	
				0.35	
				Initial ground water level, H_i (m bd):	
				4.49	
Job Title:	Westgate	Test No:	1	Diameter at test location, D (m):	
Client:	O'Connor Sutton Cronin	Test by:	MB	0.20	
Job No:	B462	Date:	13/12/2005	Depth to response zone top (m bd):	
Hole No:	BH3	Start Time:		Depth to response zone base (m bd):	
				Length of response zone, L (m):	
				1.66	
Time, t	Water Level,		H_t/H_0		
(mins)	H (m bd)	H_t (m)	(%)		
0	4.850	0.360	1.000		
0.5	4.840	0.350	0.972		
1.0	4.840	0.350	0.972		
1.5	4.840	0.350	0.972		
2					
2.5	4.840	0.350	0.972		
3					
3.5	4.830	0.340	0.944		
4					
4.5					
5	4.825	0.335	0.931		
6	4.825	0.335	0.931		
7	4.820	0.330	0.917		
8	4.820	0.330	0.917		
9	4.820	0.330	0.917		
10	4.820	0.330	0.917		
11					
12	4.815	0.325	0.903		
14	4.810	0.320	0.889		
16	4.810	0.320	0.889		
18	4.805	0.315	0.875		
20	4.805	0.315	0.875		
22	4.805	0.315	0.875		
24	4.805	0.315	0.875		
26					
28					
30					
32					
36					
40					
44					
48					
52					
56					
60					
65					
70	4.75	0.260	0.722		
100					
105	4.720	0.230	0.639		
128	4.710	0.220	0.611		
152	4.680	0.190	0.528		
198	4.630	0.140	0.389		
					
Calculation of Results					
H_0 , Initial Head = $H_{i@0} - H_i =$				0.36 m	
$k = A/FT$ (m/s) Ref: BS5930:1981 21.4.6 (b)					
A , Cross sectional area of borehole/standpipe ($\pi d^2/4$)=				0.03142 m ²	
F , Shape Factor (BS 5930 Fig 8)					
				$F = 2.75D$	
				$F = 2.75D$ $F =$ 0.55	
T , Basic Time Factor (BS 5930 Fig 9) = Time corresponding to value of $H_0/h_t = 0.37$					
Interpolated from Graph				$T =$ 210 mins	
k , Permeability of soil =				$k =$ 4.5E-06 m/s	
Comments					

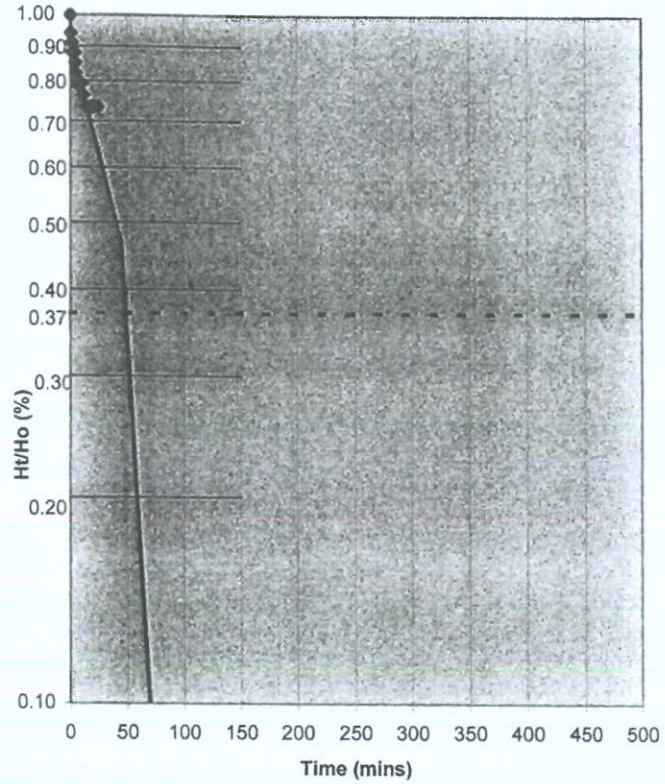


Byrne Looby Partners
Rising Head Permeability Test

Height of datum (relative to GL), H_d :	0.14
Initial ground water level, H_i (m bd):	7.66
Diameter at test location, D (m):	0.20
Depth to response zone top (m bd):	10.80
Depth to response zone base (m bd):	12.70
Length of response zone, L (m):	1.90

Job Title:	Westgate	Test No:	1
Client:	O'Connor Sutton Cronin	Test by:	MB
Job No:	B462	Date:	13/12/2005
Hole No:	BH6	Start Time:	


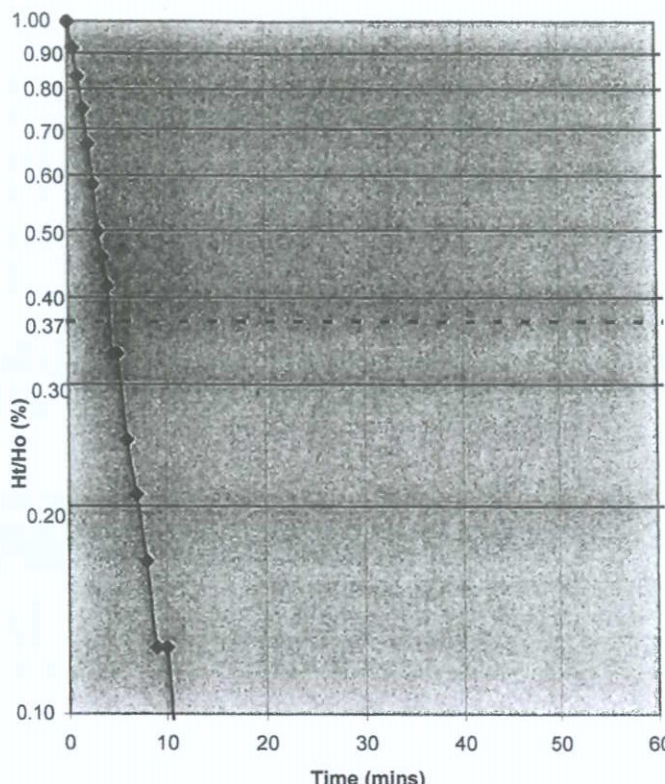
Time, t (mins)	Water Level,		H_t/H_o (%)
	H (m bd)	H_t (m)	
0	7.830	0.170	1.000
0.5	7.820	0.160	0.941
1.0	7.815	0.155	0.912
1.5	7.815	0.155	0.912
2	7.810	0.150	0.882
2.5	7.810	0.150	0.882
3	7.810	0.150	0.882
3.5	7.810	0.150	0.882
4	7.810	0.150	0.882
4.5	7.805	0.145	0.853
5	7.800	0.140	0.824
6	7.795	0.135	0.794
7	7.795	0.135	0.794
8	7.795	0.135	0.794
9	7.795	0.135	0.794
10	7.795	0.135	0.794
11	7.790	0.130	0.765
12			
14	7.785	0.125	0.735
16			
18	7.785	0.125	0.735
20	7.785	0.125	0.735
22			
24	7.785	0.125	0.735
26			
28			
30			
32			
36			
40			
44			
48			
52			
56			
60			
65			
70			
75			
80			
90			
100			
105			



Calculation of Results

H_o , Initial Head = $H_{i@0} - H_i =$	0.17 m
$k = A/FT$ (m/s) Ref: BS5930:1981 21.4.6 (b)	
A, Cross sectional area of borehole/standpipe ($\pi d^2/4$)=	0.03142 m ²
F, Shape Factor (BS 5930 Fig 8)	
	$F = 2.75D$
	$F = 2.75D$ $F =$ 0.55
T, Basic Time Factor (BS 5930 Fig 9) = Time corresponding to value of $H_o/h_t = 0.37$	
Interpolated from Graph	$T =$ 150 mins
k, Permeability of soil =	$k =$ 6.3E-06 m/s

Comments

		Byrne Looby Partners Rising Head Permeability Test		Height of datum (relative to GL), H_d :					
				0.00					
				Initial ground water level, H_i (m bd):					
				1.87					
Job Title:	Westgate	Test No:	1	Diameter at test location, D (m):					
				0.20					
Client:	O'Connor Sutton Cronin	Test by:	MB	Depth to response zone top (m bd):					
				1.87					
Job No:	B462	Date:	13/12/2005	Depth to response zone base (m bd):					
				3.09					
Hole No:	BH7	Start Time:		Length of response zone, L (m):					
				1.22					
Time, t	Water Level,		H_t/H_o						
(mins)	H (m bd)	H_t (m)	(%)						
0	1.990	0.120	1.000						
0.5	1.980	0.110	0.917						
1.0	1.970	0.100	0.833						
1.5	1.960	0.090	0.750						
2	1.950	0.080	0.667						
2.5	1.940	0.070	0.583						
3	1.930	0.060	0.500						
3.5	1.925	0.055	0.458						
4	1.920	0.050	0.417						
4.5	1.910	0.040	0.333						
5	1.910	0.040	0.333						
6	1.900	0.030	0.250						
7	1.895	0.025	0.208						
8	1.890	0.020	0.167						
9	1.885	0.015	0.125						
10	1.885	0.015	0.125						
11	1.880	0.010	0.083						
12	1.880	0.010	0.083						
14	1.880	0.010	0.083						
16	1.880	0.010	0.083						
18									
20									
22									
24									
26									
28									
30									
32									
36									
40									
44									
48									
52									
56									
60									
65									
70									
75									
80									
90									
100									
110									
							Calculation of Results		
							H_o , Initial Head = $H_{t@0} - H_i =$ 0.12 m		
							$k = A/FT$ (m/s) Ref: BS5930:1981 21.4.6 (b)		
							A, Cross sectional area of borehole/standpipe ($\pi d^2/4$)= 0.03142 m ²		
							F, Shape Factor (BS 5930 Fig 8)		
Comments							F = 2.75D		
							F = 2.75D F = 0.55		
							T, Basic Time Factor (BS 5930 Fig 9) = Time corresponding to value of $H_o/h_i = 0.37$		
							Interpolated from Graph T = 4.25 mins		
							k, Permeability of soil = k = 2.2E-04 m/s		

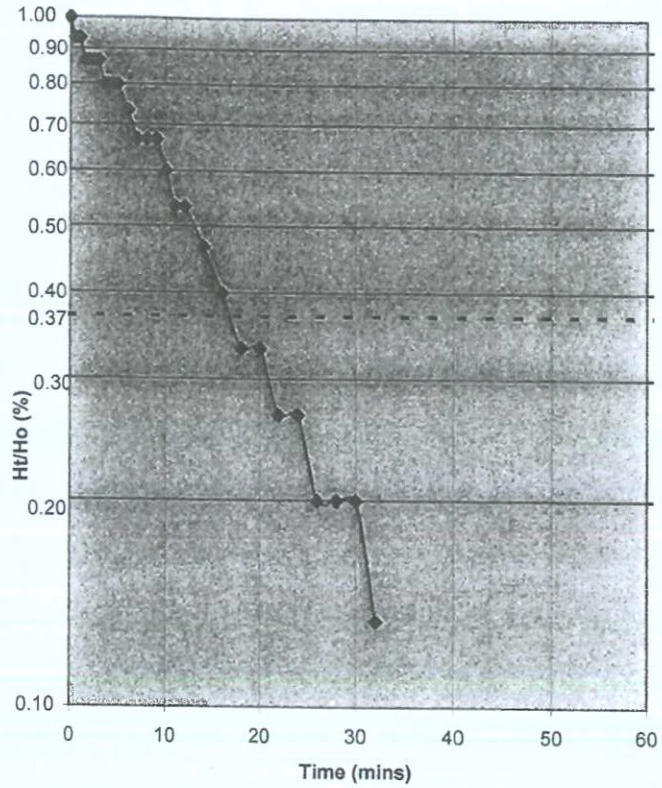


Byrne Looby Partners
Rising Head Permeability Test

Height of datum (relative to GL), H_d :	0.18
Initial ground water level, H_i (m bd):	8.11
Diameter at test location, D (m):	0.20
Depth to response zone top (m bd):	7.65
Depth to response zone base (m bd):	9.99
Length of response zone, L (m):	2.34

Job Title:	Westgate	Test No:	1
Client:	O'Connor Sutton Cronin	Test by:	MB
Job No:	B462	Date:	13/12/2005
Hole No:	BH8	Start Time:	

Time, t (mins)	Water Level,		H_t/H_o (%)
	H (m bd)	H_t (m)	
0	8.185	0.075	1.000
0.5	8.180	0.070	0.933
1.0	8.180	0.070	0.933
1.5	8.175	0.065	0.867
2	8.175	0.065	0.867
2.5	8.175	0.065	0.867
3	8.175	0.065	0.867
3.5	8.170	0.060	0.800
4	8.170	0.060	0.800
4.5	8.170	0.060	0.800
5	8.170	0.060	0.800
6	8.165	0.055	0.733
7	8.160	0.050	0.667
8	8.160	0.050	0.667
9	8.160	0.050	0.667
10	8.155	0.045	0.600
11	8.150	0.040	0.533
12	8.150	0.040	0.533
14	8.145	0.035	0.467
16	8.140	0.030	0.400
18	8.135	0.025	0.333
20	8.135	0.025	0.333
22	8.130	0.020	0.267
24	8.130	0.020	0.267
26	8.125	0.015	0.200
28	8.125	0.015	0.200
30	8.125	0.015	0.200
32	8.120	0.010	0.133
36			
40			
44			
48			
52			
56			
60			
65			
70			
75			
80			
90			
100			
105			



Calculation of Results

H_o , Initial Head = $H_{t@0} - H_i =$ 0.075 m

$k = A/FT$ (m/s) Ref: BS5930:1981 21.4.6 (b)

A, Cross sectional area of borehole/standpipe ($\pi d^2/4$)= 0.03142 m²
 F, Shape Factor (BS 5930 Fig 8)

$F = 2.75D$

$F = 2.75D$ F = 0.55

T, Basic Time Factor (BS 5930 Fig 9) = Time corresponding to value of $H_o/h_t = 0.37$

Interpolated from Graph T = 16 mins

k, Permeability of soil = k = 5.9E-05 m/s

Comments

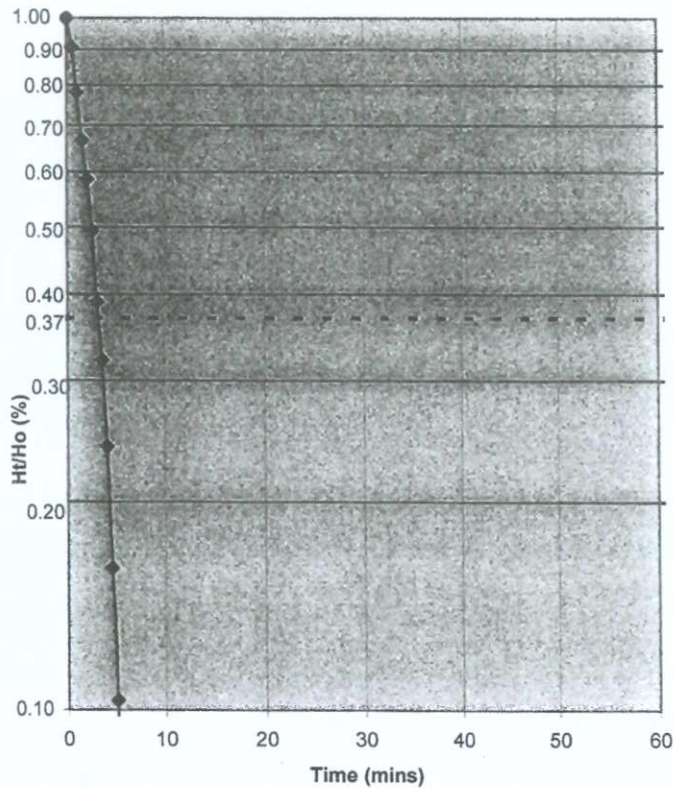


Byrne Looby Partners
Rising Head Permeability Test

Height of datum (relative to GL), H_d :	0.48
Initial ground water level, H_i (m bd):	8.87
Diameter at test location, D (m):	0.20
Depth to response zone top (m bd):	11.80
Depth to response zone base (m bd):	15.00
Length of response zone, L (m):	3.20

Job Title:	Westgate	Test No:	1
Client:	O'Connor Sutton Cronin	Test by:	MB
Job No:	B462	Date:	13/12/2005
Hole No:	BH15	Start Time:	

Time, t (mins)	Water Level,		H_t/H_o
	H (m bd)	H_t (m)	(%)
0	9.740	0.870	1.000
0.5	9.660	0.790	0.908
1.0	9.550	0.680	0.782
1.5	9.450	0.580	0.667
2	9.380	0.510	0.586
2.5	9.300	0.430	0.494
3	9.210	0.340	0.391
3.5	9.150	0.280	0.322
4	9.080	0.210	0.241
4.5	9.010	0.140	0.161
5	8.960	0.090	0.103
6	8.880	0.010	0.011
7	8.840	-0.030	-0.034
8	8.750	-0.120	-0.138
9	8.700	-0.170	-0.195
10	8.600	-0.270	-0.310
11	8.570	-0.300	-0.345
12	8.590	-0.280	-0.322
14			
16			
18	8.470	-0.400	-0.460
20	8.460	-0.410	-0.471
22			
24	8.420	-0.450	-0.517
26			
28	8.440	-0.430	-0.494
30			
32	8.330	-0.540	-0.621
36	8.220	-0.650	-0.747
40	8.220	-0.650	-0.747
44			
48			
52			
56			
60	8.13	-0.740	-0.851
65			
70			
75			
80			
90			
100			
105	8.210	-0.660	-0.759



Calculation of Results

H_o , Initial Head = $H_{i@0} - H_d = 0.87$ m

$k = A/FT$ (m/s) Ref: BS5930:1981 21.4.6 (b)

A , Cross sectional area of borehole/standpipe ($\pi d^2/4$) = 0.03142 m²

F , Shape Factor (BS 5930 Fig 8)

$F = 2.75D$

$F = 2.75D$ $F = 0.55$

T , Basic Time Factor (BS 5930 Fig 9) = Time corresponding to value of $H_o/h_t = 0.37$

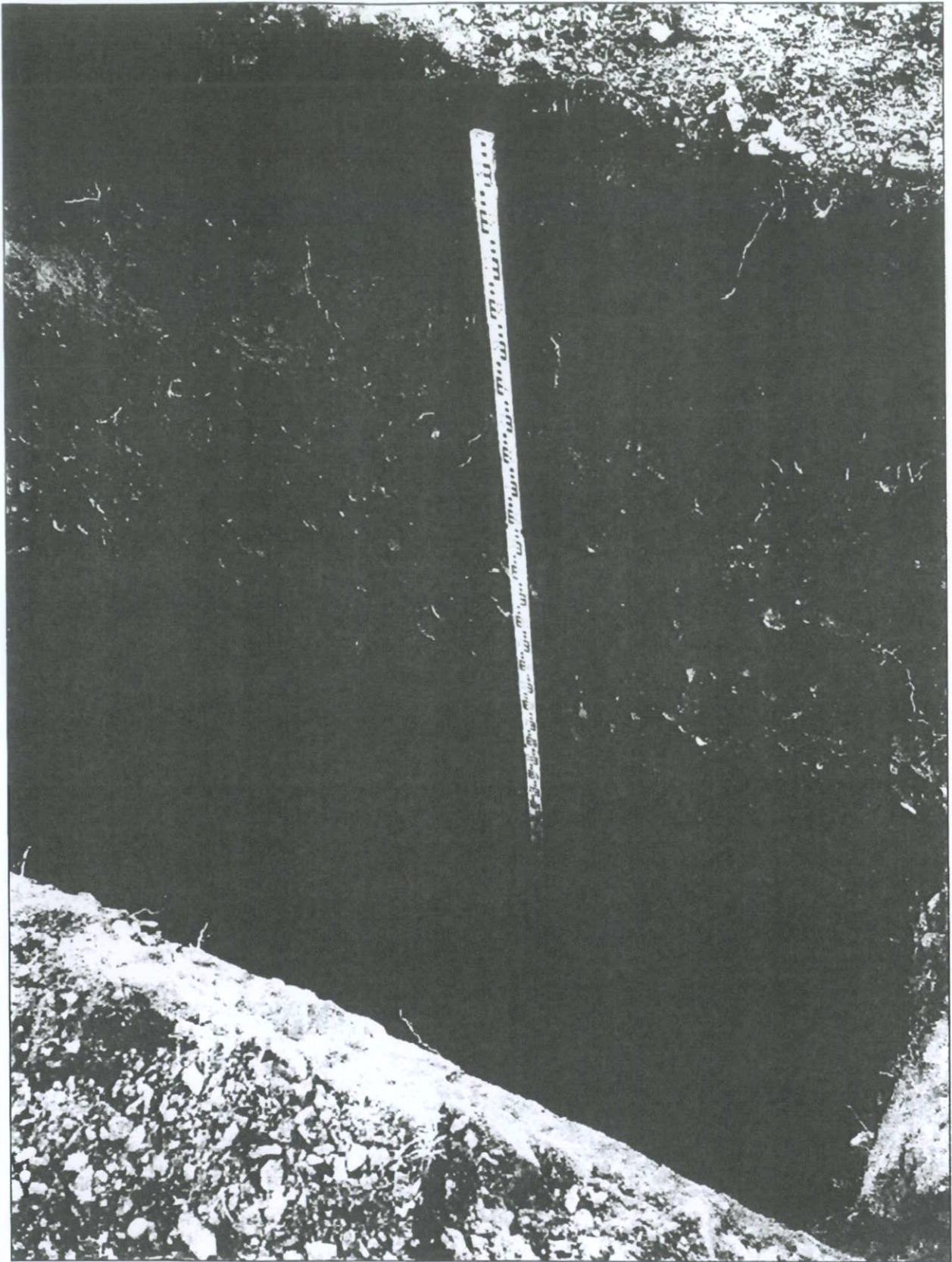
Interpolated from Graph $T = 3.25$ mins

k , Permeability of soil = $k = 2.9E-04$ m/s

Comments

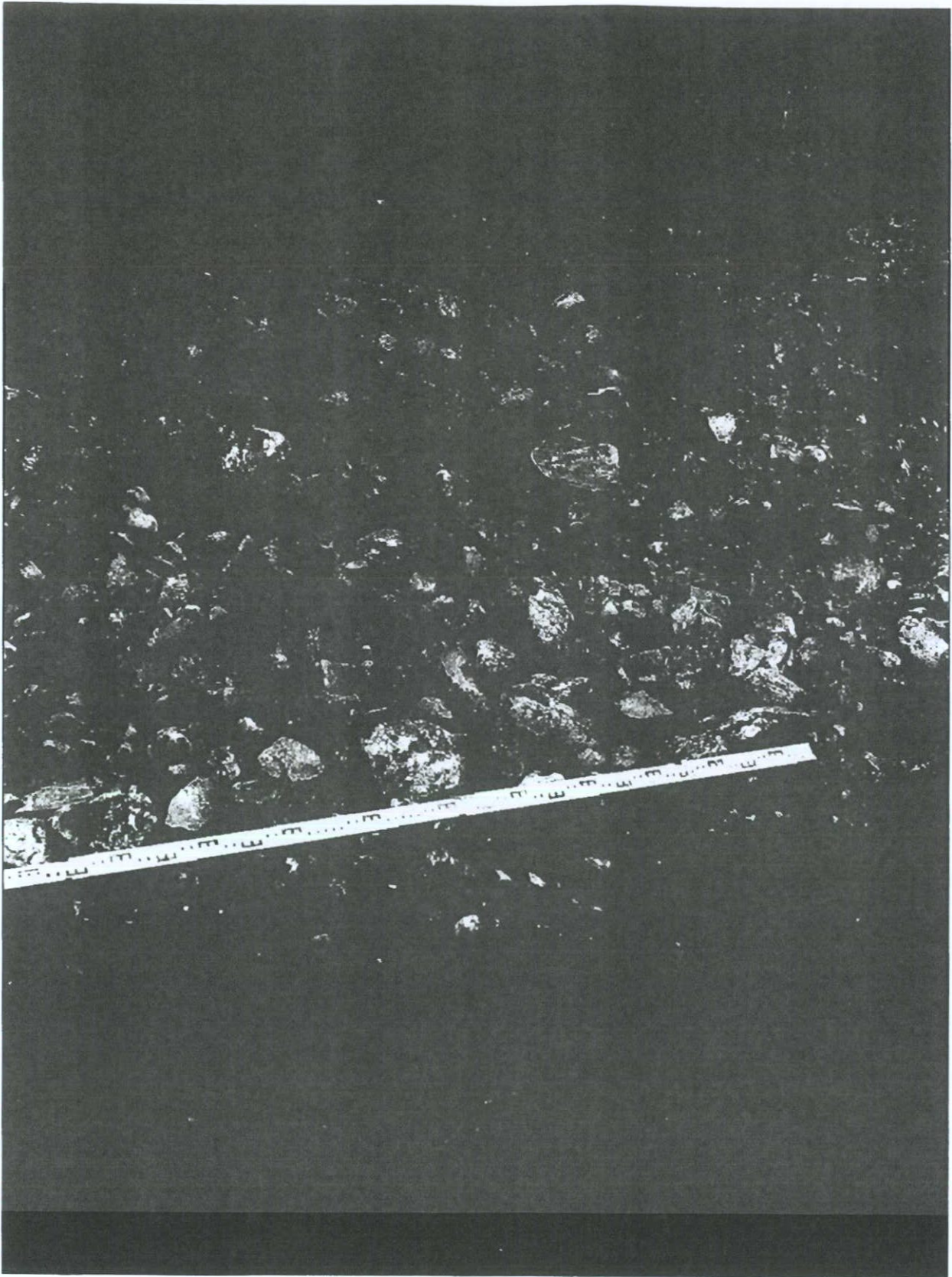
Appendix F

Trial Pit Photographs



BYRNE LOOBY PARTNERS
CONSULTING ENGINEERS
22 CANAL WALK
PARK WEST
DUBLIN 12
TEL : 01-6301593
FAX : 01-6301594
E-MAIL : info@blp.ie

Client	O'CONNORS SUTTON CRONIN	
Project	B462 - WESTGATE DEVELOPMENT	
Drawing Title	TRIAL PIT 1	
Date	12.12.05	Scale NTS
Drawing number	PHOTO A	Revision



BYRNE LOOBY PARTNERS
CONSULTING ENGINEERS
22 CANAL WALK
PARK WEST
DUBLIN 12
TEL : 01-6301593
FAX : 01-6301594
E-MAIL : info@blp.ie

Client		O'CONNORS SUTTON CRONIN	
Project		B462 - WESTGATE DEVELOPMENT	
Drawing Title		TRIAL PIT 1	
Date	12.12.05	Scale	NTS
Drawing number	PHOTO B	Revision	



BYRNE LOOBY PARTNERS
CONSULTING ENGINEERS
22 CANAL WALK
PARK WEST
DUBLIN 12
TEL : 01-6301593
FAX : 01-6301594
E-MAIL : info@blp.ie

Client O'CONNORS SUTTON CRONIN

Project B462 - WESTGATE DEVELOPMENT

Drawing Title
TRIAL PIT 2

Date 12.12.05

Scale
NTS

Drawing number
PHOTO D

Revision



BYRNE LOOBY PARTNERS
 CONSULTING ENGINEERS
 22 CANAL WALK
 PARK WEST
 DUBLIN 12
 TEL : 01-6301593
 FAX : 01-6301594
 E-MAIL : info@bip.ie

Client		O'CONNORS SUTTON CRONIN	
Project		B462 - WESTGATE DEVELOPMENT	
Drawing Title		TRIAL PIT 3	
Date	12.12.05	Scale	NTS
Drawing number	PHOTO E	Revision	