



Appendix 1 – Borehole logs.

Borehole: BH1

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.687"

Easting: 153d34.892'

RL (m):

Depth: 3.00

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						ASS Interpretation			Assays						Depth NSL(m)		
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	TPA	Depth NSL(m)
0.5			CLAY LOAM, Dark reddish brown. Rocky on surface. Good structure. Medium clay.		5YR3/4														0.5
1.0			MEDIUM CLAY/HEAVY CLAY, Olive black, Disturbed. Organics & gravel mixed throughout.		5Y3/1							5.17	2.73						1.0
1.5			SILTY CLAY LOAM. Very dark reddish brown, Fine gravelly. Massive. Disturbed.		5YR2/3							5.88	3.98	0.05		7.90			1.5
2.0			PEAT, Black, Hemic peat. Organics present.		2.5Y2/1							5.87	1.45						2.0
2.5			SILTY CLAY, Black, Orange mottles. Leaf material with organics throughout.		7.5YR2/1														2.5
3.0			SILTY CLAY, Dark reddish grey, Organics throughout. Less mottling.		2.5YR3/1														3.0
3.5			SANDY SILTY CLAY, Dark reddish grey, Fine to medium.		2.5YR3/1							6.51	1.71	0.32		220.00			3.5
4.0			CLAYEY SILTY SAND, Brownish black, Fine to medium.		5YR3/1							6.70	1.98						4.0
4.5			SANDY SILTY CLAY, Dark reddish grey, Fine to medium.		2.5YR3/1														4.5
			SILTY CLAY, Brownish black, Shell fragments. Some fine sand present at 2.6m. and decreasing with depth.		5YR3/1							6.86	2.16	1.03		428.00			

Borehole: BH2

Project: GJ0090

Cifient: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.693'

Easting: 153d34.950'

RL (m):

Depth: 3.00

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						ASS Interpretation		Assays							Depth NSL(m)		
Method	Depth RL(m)	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	TPA	Depth NSL(m)
																			2000
																			1600
																			1200
																			800
																			400

Borehole: BH3

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Sighting: 28d48.636'

Easting: 153d34.929'

RL (m):

Depth: 3.00

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description							ASS Interpretation		Assays							Depth NSL(m)	
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	TPA	Depth NSL(m)
																			0.5
																			1.0
																			1.5
																			2.0
																			2.5
																			3.0
																			3.5
																			4.0
																			4.5

Borehole: BH4

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.614'

Easting: 153d34.884'

RL (m):

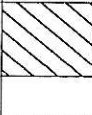
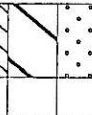
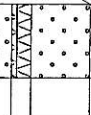
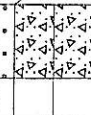
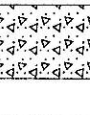
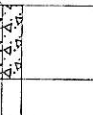
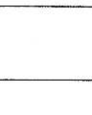
Depth: 3.00

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						ASS Interpretation		Assays							Depth NSL(m)		
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al.1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	TPA	Depth NSL(m)
.5			MEDIUM CLAY/HEAVY CLAY, Yellowish grey, Orange mottles. Stiff. Grey clay with orange mottles. Fine organics.	2.5Y4/1	2.5Y4/1							6.42	4.14	0.01		2.00			.5
1.0			MEDIUM CLAY/HEAVY CLAY, Yellowish grey, Orange mottles. Stiff. Grey clay with orange mottles. Fine organics throughout.	2.5Y4/1	2.5Y4/1							6.55	4.50						1.0
1.5			LIGHT CLAY/MEDIUM CLAY, Yellowish grey, Soft and friable.	2.5Y4/1	2.5Y4/1							6.56	4.32						1.5
2.0			SILTY SAND, Grey, Fine to medium. Some fine organics.	5Y5/1	5Y5/1														2.0
2.5			CLAY, Dark greyish yellow. Fine to medium. Soft.	2.5Y4/2	2.5Y4/2														2.5
3.0			SILTY SAND, Dark greyish yellow. Fine to medium silty sand.	2.5Y5/1	2.5Y5/1							6.24	3.27	0.00		0.00			3.0
3.5			SILTY SAND/SILTY CLAY, Grey and Grey, and Olive black. Silty clay lenses throughout. Fine to medium.	7.5Y5/1	7.5Y5/1														3.5
4.0			CLAYEY SAND, Yellowish brown. Clayey	2.5Y5/4	2.5Y5/4							6.40	2.21						4.0
4.5			CLAYEY SAND, Yellowish grey. Some silty clay lenses throughout.	2.5Y4/1	2.5Y4/1							6.84	3.28						4.5
			CLAYEY SAND, Yellowish grey. Some shell content.	2.5Y4/1	2.5Y4/1														

Borehole: BH5

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.635'

Easting: 153d34.857'

RL (m):

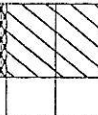
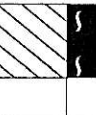
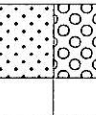
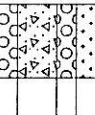
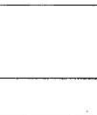
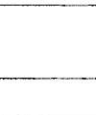
Depth: 3.00

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						ASS Interpretation		Assays							Depth NSL(m)		
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust Soil Class	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	TPA	Depth NSL(m)
0.5			CLAY LOAM, Dark reddish brown and Brownish grey, Disturbed.		5YR3/6														0.5
1.0			MEDIUM CLAY, Bright yellowish brown and Dark greyish yellow, Good structure.		10YR6/8							5.23	3.07						1.0
1.5			MEDIUM CLAY/LIGHT CLAY, Brownish Grey, Good structure.		10YR5/1							5.65	3.43						1.5
2.0			SILTY CLAY, Brownish grey, Stiff clay with increasing organics throughout.		7.5YR4/1							5.36	3.37	0.01		2.00			2.0
2.5			SAND/SILTY CLAY, Grey and Grey, Silty clay lenses.		7.5Y5/1							6.10	3.64						2.5
2.5			COARSE SAND, Dark greyish yellow		2.5Y5/1							6.19	1.89	0.21		108.00			2.5
2.5			CLAYEY SAND, Yellowish brown		2.5Y5/4														2.5
2.5			COARSE SAND, Yellowish brown		2.5Y5/4														2.5
3.0			SAND, Dark greyish yellow		2.5Y5/1							6.09	1.77	0.26		144.00			3.0
3.5																			3.5
4.0																			4.0
4.5																			4.5

Borehole: BH6

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.639'

Easting: 153d34.900'

RL (m):

Depth: 3.10

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						ASS Interpretation		Assays						Depth NSL(m)		
Method	Depth RL(m)	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	Depth NSL(m)
			SILTY CLAY LOAM, Dark brown, Fill.		7.5YR3/4							5.72	3.83	0.01		8.00		.5
			MEDIUM CLAY/HEAVY CLAY, Brownish black, Silty, getting lighter in colour with depth.		10YR3/1							5.96	3.14					1.0
			MEDIUM CLAY/HEAVY CLAY, Dark greyish yellow and bright yellowish brown, Silty, fibric organics throughout.		2.5Y5/1							6.25	3.36					1.5
			SILTY CLAY LOAM, Yellowish grey, Soft.		2.5Y4/1													2.0
			CLAYEY SAND, Yellowish grey and Grey, Silty clay lenses scattered throughout.		2.5Y6/1							6.86	3.63	0.00		0.00		2.5
			CLAYEY SAND, Grey and Olive black, Silty clay lenses throughout, increased clay with depth.		5Y4/1							6.71	2.34					3.0
			SANDY SILTY CLAY, Grey and Olive black, Transition zone between sand and silty clay layer.		7.5Y4/1													3.5
			SILTY CLAY, Black, Fine sand present. Shell lens @ 3.05m and scattered throughout.		7.5Y2/1							6.70	2.43					4.0
																		4.5

Borehole: BH7

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.669'

Easting: 153d34.924'

RL (m):

Depth: 3.00

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						ASS Interpretation		Assays							Depth NSL(m)	
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(Fieldox)	S(pos) %	S(pos) %	TPA	TPA	Depth NSL(m)
0.5			SILTY CLAY LOAM, Dark brown, Fill.		7.5YR3/4													0.5
1.0			MEDIUM CLAY/HEAVY CLAY, Brownish black and Brownish black, Silty, getting lighter in colour with depth.		10YR3/1							6.48	2.93					1.0
1.5			MEDIUM CLAY/HEAVY CLAY, Dark greyish yellow and Bright yellowish brown, Silty, fibric organics throughout.		2.5Y5/1							6.39	2.85	0.01		4.00		1.5
2.0			CLAYEY SAND, Yellowish grey and Grey, Silty clay lenses throughout.		2.5Y6/1							5.45	2.73	0.01		0.00		2.0
2.5			SAND, Yellowish grey		2.5Y4/1							5.56	2.79					2.5
3.0			SANDY SILTY CLAY, Olive black and Yellowish grey, Silty clay lenses throughout, clay increasing with depth.		5Y3/1							5.53	1.61	0.70		468.00		3.0
3.5			CLAYEY SAND, Olive black and Olive black		5Y3/1							5.59	1.66					3.5
4.0			SANDY SILTY CLAY, Olive black		5Y3/1													4.0
4.5																		4.5

Borehole: BH8
Project: GJ0090
Client: David Ardill and Associates

Gilbert & Sutherland
Specialist Soil & Water Scientists

Southing: 28d48.665'
Easting: 153d34.895'
RL (m):
Depth: 3.00
Drilled By: TBD
Start Date: 20.10.00
Completion Date: 20.10.00
Logged By: AKS

Drilling		Soil Description						ASS Interpretation		Assays							Depth NSL(m)		
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	TPA	Depth NSL(m)
0.5			SILTY CLAY LOAM, Dark brown, Fill.		7.5YR3/4							4.86	3.57						0.5
1.0			MEDIUM CLAY/HEAVY CLAY, Brownish black and Brownish black, Stiff, getting lighter in colour with depth.		10YR3/1														1.0
1.5			MEDIUM CLAY/HEAVY CLAY, Dark greyish yellow and Bright yellowish brown, Stiff, fibric organics throughout.		2.5Y5/1							5.77	3.63						1.5
2.0			CLAYEY SAND, Dark greyish yellow and Yellowish grey, Silty clay lenses scattered throughout.		2.5Y5/1							5.01	2.86	0.00		4.00			2.0
2.5			SAND, Yellowish grey and Olive black, Silty clay lenses.		2.5Y6/1							4.91	1.66						2.5
3.0			SANDY SILTY CLAY, Olive black, Small sand pockets.		5Y3/1							5.58	1.54			456.00			3.0
3.5												5.21	1.74	0.61					3.5
4.0																			4.0
4.5																			4.5

Borehole: BH9

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.657'

Easting: 153d34.864'

RL (m):

Depth: 3.50

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

[illegible]

Borehole: BH10

Project: GJ0090

Client: David Ardill and Associates

Gilbert & Sutherland

Specialist Soil & Water Scientists

Southing: 28d48.672'

Easting: 153d34.860'

RL (m):

Depth: 3.20

Drilled By: TBD

Start Date: 20.10.00

Completion Date: 20.10.00

Logged By: AKS

Drilling		Soil Description						Ass Interpretation		Assays							Depth NSL(m)	
Depth RL(m)	Method	Graphic Log	Soil Description (as per McDonald et al 1990)	Aust. Soil Class.	Revised Standard Colour	Depositional Environment	Accessories	Additional Comments	Assigned Category	Representative Strata	Sample ID	pH(Field)	pH(FieldOx)	S(pos) %	S(pos) %	TPA	TPA	Depth NSL(m)
			SILTY CLAY LOAM, Dark brown, Fill.		7.5YR3/4							4.83	3.37					0.5
			MEDIUM CLAY/HEAVY CLAY, Brownish black and Brownish black, Stiff, getting lighter in colour with depth.		10YR3/1							5.54	3.34	0.08		48.00		1.0
			MEDIUM CLAY, Dark greyish yellow and Yellowish grey, Soft. Fibric organics throughout.		2.5Y5/1							6.70	3.79					1.5
			COARSE SAND, Dark greyish yellow and Yellowish grey		2.5Y5/1							5.96	1.92					2.0
			CLAYEY SAND, Dark greyish yellow and Yellowish grey, Silty clay lenses throughout		2.5Y5/1							6.11	1.94	0.03		76.00		2.5
			SANDY SILTY CLAY, Grey, Evidence of ironstone cementation @ 3.2m		5Y4/1							6.58	3.03					3.0
																		3.5
																		4.0
																		4.5



Appendix 2 – Screening analysis.

Job Number: GJ0011
Date: 10.02.00
H₂O₂ pH: 5.76
Bath Temp: 54

Identification	Van Beers Screening				Petrographic Screening							
	Borehole	Depth (m)	Initial pH	Oxid. pH	Peak Temp (oC)	Rxn during oxidation	Pyrite presence	Degree of rxn with peroxide	Pyrite grade	Shell presence	Degree of rxn with HCl	Shell grade
BH1		0.5-1.0	5.17	2.73	46	Slight - Medium	Nil	Slight				
		1.0-1.2	5.88	3.98	46	Slight - Medium	Nil	Slight				
		1.2-1.8	5.87	1.45	86	Violent	Yes	Slight	fine			
		1.8-2.3	6.51	1.71	90	Violent	Yes	Slight	fine			
		2.3-2.5	6.7	1.98	85	Violent	Yes	Slight	fine			
		2.5-3.0	6.86	2.16	86	Violent	Yes	Slight - Moderate	fine			
BH2		0.25-0.5	6.03	4.4	44	Slight-Medium	Nil	Slight				
		0.5-1.0	6.27	4.98	44	Slight-Medium	Nil	Slight	fine			
		1.1-1.4	6.01	3.22	44	Slight-Medium	?	Slight	fine			
		1.7-2.0	6.33	2.19	86	Violent	Yes	Slight		yes	violent	coarse
		2.0-2.5	5.98	3.4	44	Medium	Nil	Slight		yes	moderate	medium
		2.5-3.0	6.09	2.67	44	Slight-Medium	Nil	Slight				
BH3		0.0-0.75	5.8	3.1	44	Slight	Nil					
		0.75-1.0	6.2	3.57	44	Slight	Nil					
		1.0-1.4	6.55	2.19	44	Slight	Nil					
		1.75-2.0	6.08	1.59	89	Violent	Yes	Very Slight	fine			
		2.15-2.7	6.04	1.65	87	Violent	Yes	Slight				
		2.7-3.0	6.13	1.74	88	Violent	Nil					
BH4		0.5-0.75	6.42	4.14	44	Slight	Yes	Slight	fine			
		1.0-1.25	6.55	4.5	44	Slight	Yes	Slight	fine			
		1.25-1.5	6.56	4.32	44	Slight-Medium	Yes	Very Slight	fine			
		1.9-2.0	6.24	3.27	44	Slight	Nil					
		2.2-2.9	6.4	2.21	85	Violent	Yes	Slight	fine			
		2.9-3.0	6.84	3.28	44	Slight-Medium	Yes	Very slight	fine	yes	violent	medium
BH5		0.5-0.75	5.23	3.07	43	Nil	Yes	Very Slight	fine			
		0.75-1.3	5.65	3.43	44	Very Slight	Nil					
		1.3-1.7	5.36	3.37	44	Very Slight	Yes	Moderate	fine			
		1.7-2.2	6.1	3.64	44	Slight	Nil					
		2.2-2.7	6.19	1.89	89	Violent	Yes	Slight	fine			

Job Number: GJ0011 H₂O₂ pH: 5.76
 Date: 10.02.00 Bath Temp: 54

Identification	Van Beers Screening				Peak Temp (°C)	Rxn during oxidation	Petrographic Screening					
	Borehole	Depth (m)	Initial pH	Oxid. pH			Pyrite presence	Degree of rxn with peroxide	pyrite grade	shell presence	Degree of rxn with HCl	shell grade
		2.7-3.0	6.09	1.77	85	Violent	Yes	Slight	fine			
BH6		0.0-0.5	5.72	3.83	45	Moderate-Violent	Yes	Moderate	fine			
		0.5-1.0	5.96	3.14	44	Very Slight	Nil					
		1.0-1.5	6.25	3.36	44	Very Slight	Yes	Very Slight	fine			
		1.7-2.2	6.86	3.63	44	Slight-Moderate	Yes	Very Slight	fine			
		2.2-2.7	6.71	2.34	85	Violent	Yes	Slight	fine			
		2.85-3.1	6.7	2.43	88	Violent	Yes	Slight	fine	moderate		medium
BH7		0.5-1.0	6.48	2.93	44	Slight-Moderate	Nil					
		1.0-1.5	6.39	2.85	44	Slight	Yes	Very Slight	fine			
		1.5-1.7	5.45	2.73	44	Slight	Yes	Slight	fine			
		1.7-2.0	5.56	2.79	44	Slight	Nil					
		2.2-2.6	5.53	1.61	84	Violent	Yes	Slight-Moderate	fine			
		2.6-3.0	5.59	1.66	89	Violent	Yes	Slight-Moderate	fine			
BH8		0.0-0.5	4.86	3.57	35	Moderate	?	Moderate	?			
		1.0-1.5	5.77	3.63	24	Slight	Nil					
		1.5-2.0	5.01	2.86	25	Slight	Nil					
		2.0-2.2	4.91	1.66	27	Slight	Nil					
		2.2-2.4	5.58	1.54	85	Violent	Yes	Slight	fine			
		2.4-3.0	5.21	1.74	87	Violent	Yes	Slight	fine			
BH9		1.0-1.6	5.27	3.38	32	Slight	Nil					
		1.6-2.0	6.1	2.99	28	Slight	Nil					
		2.0-2.5	6.04	1.67	84	Violent	Yes	Slight	fine			
		2.5-3.0	5.5	1.75	84	Violent	Yes	Very Slight	fine			
		3.0-3.5	5.8	1.38	87	Violent	Yes	Slight-Moderate	fine			
BH10		0.0-0.5	4.83	3.37	40	Moderate	?	Slight-Moderate	?			
		0.75-1.5	5.54	3.34	24	Nil	Nil					
		1.5-1.7	6.7	3.79	28	Very Slight	Yes	Slight	fine			
		1.7-2.2	5.96	1.92	86	Violent	Yes	Slight	fine			

Job Number: GJ0011 H₂O₂ pH: 5.76
 Date: 10.02.00 Bath Temp: 54

Identification		Van Beers Screening			Petrographic Screening						
Borehole	Depth (m)	Initial pH	Oxid. pH	Peak Temp (oC)	Rxn during oxidation	Pyrite presence	Degree of rxn with peroxide	Pyrite grade	Shell presence	Degree of rxn with HCl	Shell grade
	2.2-2.8	6.11	1.94	88	Violent	Yes	Very Slight	fine			
	2.8-3.0	6.58	3.03	45	Moderate	Yes	Slight	fine			