TEST PIT LOG

Network Geotechnics Pty Ltd
ACN 069 211 561
6/6 Morton Close
TUGGERAH NSW 2259
TEL: (02) 43516200
FAX: (02) 43516300

Job No.	G23085/1
Pit No.	TPG9 (SLOPE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	29/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	29/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56285894E 6116183N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None Encountered	Dynamic Cone Penetrometer (blows/150mm): 4, 6, 7, 13, 9, 10	0.0		SM/ SP	Silty SAND/SAND, fine to medium grained, grey-brown becoming red-brown with depth, trace roots	M	D	TOPSOIL
		D	0.5		CL	Sandy CLAY, medium plasticity, orange-brown, fine sand, trace of fine to coarse gravel, some tree roots	M ≥ Wp	VSt	RESIDUAL
		D	1.0			Silty CLAY, low to medium plasticity, pale grey mottled orange-brown	M ≤ Wp		
		D	1.5			SILTSTONE, extremely to moderately weathered, red-brown/orange-brown, interbedded Clayey SILT, pale grey, est very low rock strength	D-M	—	ROCK/RESIDUAL
						SILTSTONE, moderately weathered, red-brown/orange -brown, est low rock strength	D		ROCK
			2.0			TPG9 terminated at 1.9m depth – nearing refusal on rock			
			2.5						
			3.0						
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

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Job No.	G23085/1
Pit No.	TPH1 (RIDGE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Project:	FEASIBILITY FOR DEVELOPMENT
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286335E 6116336N
Started:	30/7/03
Finished:	30/7/03
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	Dynamic Cone Penetrometer (blows/150mm)	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None Encountered	D	3	0.0		SM/ SP	SAND/Silty SAND, fine to medium grained, pale brown, tree roots	M	L	TOPSOIL
			2			CL	Silty CLAY, low to medium plasticity, pale grey mottled yellow-brown	≥ Wp	F	RESIDUAL
			2						↓	
			3	0.5					St	
			5							
		D	5			CL/ ML	Silty CLAY/Clayey SILT, medium plasticity, pale grey	< Wp	VSt	
			11	1.0						
			17+				Silty CLAY/Clayey SILT, medium to high plasticity, pale grey, interbedded SANDSTONE increasing with depth, fine grained, red-brown	< Wp		
		D		1.5						
		D		2.0						
				2.5			SANDSTONE, extremely weathered, fine grained, red-brown	D	—	ROCK
				3.0			TPH1 terminated at 2.8m depth			
				3.5						
				4.0						

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Job No.	G23085/1
Pit No.	TPH2 (RIDGE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	30/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	30/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286193E 6116239N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	Dynamic Cone Penetrometer (blows/150mm)	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None Encountered		3			SM	Silty SAND, fine grained, grey-brown, tree roots	M	MD	TOPSOIL
			4							
		B & D U 50	4			CL	Silty CLAY, low to medium plasticity, yellow-brown mottled pale grey	> Wp	St/ VSt	RESIDUAL
			6	0.5						
			10						VSt	
			11							
			11	1.0		CL/ ML	Silty CLAY/Clayey SILT, low to medium plasticity, pale grey/yellow-brown	< Wp		
		D	12							
			15							
			19	1.5			SANDSTONE, extremely to moderately weathered, fine grained, pale yellow-brown/pale grey, some Clayey SILT decreasing with depth	D	—	ROCK
		D								
				2.0			TPH2 terminated at 1.8m depth			
				2.5						
				3.0						
				3.5						
				4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

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Job No.	G23085/1
Pit No.	TPH3 (RIDGE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	30/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	30/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286059E 6116113N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None Encountered	D	0.0		SM	Silty SAND, fine grained, grey-brown, grass & tree roots	M		TOPSOIL
		D Dynamic Cone Penetrometer (blows/150mm): 4, 5, 5, 4, 13, 15+	0.5		CL	Sandy CLAY, low to medium plasticity, yellow-brown, fine sand, some roots above 0.4m depth	> Wp	St VSt	RESIDUAL
		D	1.0			SANDSTONE, extremely to moderately weathered, fine grained, pale grey/yellow-brown, some Clayey SILT decreasing with depth	D-M	—	ROCK
			1.5			TPH3 terminated at 1.3m depth			
			2.0						
			2.5						
			3.0						
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

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Job No.	G23085/1
Pit No.	TPH4 (RIDGE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Project:	FEASIBILITY FOR DEVELOPMENT
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56285971E 6116016N
Started:	30/7/03
Finished:	30/7/03
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None Encountered	Dynamic Cone Penetrometer (blows/150mm): 3, 4, 4, 5, 7, 11, 15R	0.5		SM	Silty SAND, fine grained, brown, roots	M	MD	TOPSOIL
		D			CL	Sandy CLAY, low to medium plasticity, yellow-brown, fine sand	≥ Wp	St → VSt	RESIDUAL
		D	1.0		CL/ ML	Silty CLAY/Clayey SILT, low plasticity, pale grey/yellow-brown	< Wp	H	
		D	1.5			SANDSTONE, extremely to moderately weathered, fine to medium grained, pale grey mottled yellow-brown, some interbedded Silty CLAY decreasing with depth, est very low to low rock strength	D	—	ROCK
			2.0			TPH4 terminated at 1.8m depth			
			2.5						
			3.0						
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

TEST PIT LOG

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Job No.	G23085/1
Pit No.	TPF1 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	30/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	30/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56285844E 6116213N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None Encountered	D D D D Dynamic Cone Penetrometer (blows/150mm): 2, 4, 3, 4, 7, 11, 20+	0.5 1.0 1.5 2.0		SM	Silty SAND, fine grained, brown, tree roots	M-W	L	TOPSOIL
					SM-SC	Clayey Silty SAND, fine to medium grained, pale-grey mottled orange-brown, low plasticity, some tree roots	M	MD	SLOPEWASH
					CL	Sandy CLAY, low to medium plasticity, orange-brown mottled pale grey, fine sand, some silt fines	> Wp	VSt	RESIDUAL
						SANDSTONE, extremely to moderately weathered, fine grained, orange-brown, interbedded Clayey SAND, fine grained, pale grey, est low to medium rock strength; becoming moderately weathered and est. low to medium rock strength from 1.8m depth	D-M	—	ROCK
			2.5 3.0 3.5 4.0			TPF1 terminated at 2.0m depth ~ nearing refusal on rock			

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

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Job No.	G23085/1
Pit No.	TPF2 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	30/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	30/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56285995E 6116386N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH		Dynamic Cone Penetrometer (blows/150mm): 1, 2, 3, 3, 4, 4, 11, 22	0.0		SM-SC	Clayey Silty SAND, fine grained, brown, low plasticity, tree roots	W	L	TOPSOIL
		D	0.5		CL/CH	CLAY, medium to high plasticity, yellow-brown grey, some fine sand, tree roots above 1m depth	> Wp	F/St	RESIDUAL
	▼		1.0					VSt	groundwater seepage along 10mm dia. tree roots
		D	1.5		SC	Clayey SAND, fine grained, pale grey mottled orange-brown, low plasticity	≥ Wp	(D)	
		D	2.0						
			2.5		CL	Sandy Silty CLAY, low to medium plasticity, orange-brown mottled pale grey and green, fine sand, trace fine to medium sandstone gravel		(VSt)	
			3.0			TPF2 terminated at 3.0m depth			
			3.5						
			4.0						

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Job No.	G23085/1
Pit No.	TPF3 (VALLEY)
Sheet	1/1
Started:	30/7/03
Finished:	30/7/03
Logged	GP/GV
Checked:	RJK
RL surface:	
Datum	

Client: FORBES RIGBY PTY LTD

Project: FEASIBILITY FOR DEVELOPMENT

Location: NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA
GPS (AUS 66) AMG: 56286157E 6116555N

Equipment type: EXCAVATOR 7 TONNE

Bucket Size: 450mm

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description (Soil type, particle characteristics or fines plasticity, colour, secondary and minor components)	Moisture condition	Consistency/ relative density	comments (notes, structure and additional observations)
BH		Dynamic Cone Penetrometer (blows/150mm): 1, 2, 3, 12, 22	0.0		SM	Silty SAND, fine grained, grey-brown, roots	M-W	L	TOPSOIL
		D	0.5		SM	Silty SAND, fine grained, pale grey, tree roots above 0.4m depth	W	MD / D	SLOPEWASH
		D	1.0		SM-SC	Clayey Silty SAND, fine to medium grained, orange-brown/pale grey, low plasticity fines	M-W		RESIDUAL
	▼	D	1.5						
			2.0		CL	Sandy Silty CLAY, low to medium plasticity, pale grey/ orange-brown, fine sand, trace fine to medium gravel	> Wp	(VSt)	
			2.5						
			3.0						
						TPF3 terminated at 3.0m depth			
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

TEST PIT LOG

Network Geotechnics Pty Ltd
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Job No.	G23085/1
Pit No.	TPF4 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Project:	FEASIBILITY FOR DEVELOPMENT
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286485E 6116651N
Started:	30/7/03
Finished:	30/7/03
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None encountered	Dynamic Cone Penetrometer (blows/150mm): 1, 3, 3, 6, 8, 11	0.0		SM/ML	Silty SAND/Sandy SILT, fine grained, brown, root matter, some low plasticity clay fines	W	L	TOPSOIL
		D	0.5		SM/CL	Clayey Silty SAND/Sandy Silty CLAY, low to medium plasticity, grey, fine to medium sand, some tree roots	> Wp	MD	SLOPEWASH
		D	1.0		CL	Sandy CLAY, low to medium plasticity, pale grey mottled orange-brown/red-brown becoming orange-brown mottled red-brown/pale grey below about 1.8m depth, some fine to medium gravel, some silt		VSt	RESIDUAL
		D	2.5		CH	Silty CLAY, high plasticity, pale grey			
						TPF4 terminated at 2.7m depth			
			3.0						
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

TEST PIT LOG

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Job No.	G23085/1
Pit No.	TPF5 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	30/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	30/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286564E 6116457N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH		D	0.5		SM/ SP	Silty SAND, fine grained, grey-brown, tree roots	W	L	TOPSOIL
		D	1.0		SP/ SC	SAND/Clayey SAND, fine to medium grained, pale grey mottled, yellow-brown	W	MD D	ALLUVIUM
		D	2.5		CL	Sandy Silty CLAY, medium plasticity, pale grey mottled, orange-brown/red-brown, some fine to medium gravel	> Wp	(VSt)	RESIDUAL
			3.0			TPF5 terminated at 3.0m depth			

Dynamic Cone Penetrometer (blows/150mm): 1, 2, 3, 4, 7, 10

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

TEST PIT LOG

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Job No.	G23085/1
Pit No.	TPF6 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Project:	FEASIBILITY FOR DEVELOPMENT
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286502E 6116157N
Started:	30/7/03
Finished:	30/7/03
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None encountered	D	0.5		SM/ SP	Silty SAND/SAND, fine to medium grained, yellow-brown, roots to 0.2m	M-W	MD	SLOPEWASH
		D D Dynamic Cone Penetrometer (blows/150mm): 3, 5, 3, 3, 5, 10	1.0 1.5 2.0 2.5		CL	Sandy Silty CLAY, low to medium plasticity, pale grey mottled yellow-brown, becoming grey mottled red-brown/orange-brown below 1-2m depth	> Wp	F/St VSt	RESIDUAL
			3.0			Sandy Silty CLAY, low to medium plasticity, red-brown/pale grey, some fine to medium gravel			
			3.5 4.0			TPF6 terminated at 3.0m depth			

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

TEST PIT LOG

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Job No.	G23085/1
Pit No.	TPF7 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Project:	FEASIBILITY FOR DEVELOPMENT
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286422E 611029N
Started:	30/7/03
Finished:	30/7/03
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH	None encountered	D Dynamic Cone Penetrometer (blows/150mm): 2, 3, 6, 9, 15, 17+	0.5		SM	Silty SAND, fine grained, yellow-brown, shrub roots to 0.3m depth	W	L D	SLOPEWASH
		D	1.0		CL	Sandy Silty CLAY, medium plasticity, pale grey mottled red-brown, fine sand	> Wp	VSt	RESIDUAL
		D	1.5		CH	Silty CLAY, high plasticity, pale grey mottled yellow-brown			
			2.0						
			2.5						
			3.0			TPF7 terminated at 2.8m depth			
			3.5						
			4.0						

TEST PIT LOG

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Job No.	G23085/1
Pit No.	TPF8 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	30/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	30/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286305E 6115940N
Logged	GP/GV
Checked:	RJK
Equipment type:	EXCAVATOR 7 TONNE
RL surface:	
Bucket Size:	450mm
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
BH		Dynamic Cone Penetrometer (blows/150mm): 1, 2, 4, 7, 9, 12, 15, 20			SM	Silty SAND, fine grained, brown, grass and shrub roots	W	L	TOPSOIL
		D	0.5		SM-SC	Silty Clayey SAND, fine to mediumgrained, pale grey mottled yellow-brown, low plasticity		D	PROBABLE SLOPEWASH
		D	1.0		CL/CH	Sandy CLAY, medium to high plasticity, grey mottled red-brown, fine sand, some fine to medium gravel	> Wp	(VSt)	RESIDUAL
		D	1.5		SP	SAND, fine to medium grained, pale grey mottled yellow-brown/red-brown, some low plasticity clay fines	D	(D)	
			2.0			becoming			
			2.5		SC	Clayey SAND, fine to medium grained, pale grey mottled orange-brown/red-brown, some fine to coarse gravel	D-M ↓ M-W		
			3.0			TPF8 terminated at 3.0m depth			
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

BOREHOLE LOG

Network Geotechnics Pty Ltd
ACN 069 211 561
6/6 Morton Close
TUGGERAH NSW 2259
TEL: (02) 43516200
FAX: (02) 43516300

Job No.	G23085/1
Pit No.	BHF9 (VALLEY)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	31/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	31/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286574E 6116276N
Logged	GP/GV
Checked:	RJK
Equipment type:	SKID STEER DRILL 100MM DIA. SOLID FLIGHT AUGERS
RL surface:	
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
AD		D			SP/ SC	SAND/Clayey SAND, fine to medium grained, pale brown/grey, low plasticity	M-W	L	RECENT SLOPEWASH
			0.5		ML	Sandy SILT, low to medium plasticity, dark grey, roots to about 0.5m depth	> Wp		ESTURINE SEDIMENT
		D							
		D	1.0			----- becoming grey below 1m depth -----			
			1.5						
		D			CL	Sandy CLAY, high plasticity, dark grey becoming pale grey with depth, fine to medium	> Wp	(VSt)	
		D	2.0		SP/ SC	SAND/Clayey SAND, fine to medium grained, pale grey/grey becoming grey/dark grey below 2.5m depth	W	(L/ MD)	
		D	2.5						
			3.0						
						BHF9 terminated at 3.0m depth Slotted (approx. 0.5 to 3M) Piezometer installed			
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

BOREHOLE LOG

Network Geotechnics Pty Ltd
ACN 069 211 561
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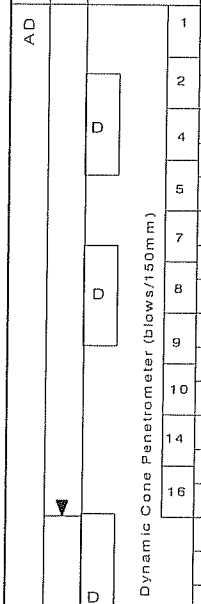
TUGGERAH NSW 2259
TEL: (02) 43516200
FAX: (02) 43516300

Job No.	G23085/1
Pit No.	BHI1 (LOWER SLOPE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	31/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	31/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286616E 6116088N
Logged	GP/GV
Checked:	RJK
Equipment type:	SKID STEER DRILL 100mm DIA. SOLID FLIGHT AUGERS
RL surface:	
Datum	



method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
AD		D	0.5		SM-SC	Clayey Silty SAND, fine to medium grained, dark grey-dark brown, low to medium plasticity, root matter to about 0.2m depth	W	L MD	TOPSOIL
	▼	D	1.0		CL	Sandy CLAY, low plasticity, pale grey, fine to medium sand	> Wp	St/ VSt VSt	RESIDUAL
		D	1.5						
		D	2.0			Silty CLAY, medium plasticity, pale grey		(H)	
			2.5						
			3.0			BHI1 terminated at 3.0m depth Slotted Piezometer (0.5 to 3m depth) installed			
			3.5						
			4.0						

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

BOREHOLE LOG

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Job No.	G23085/1
Pit No.	BH12 (LOWER SLOPE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	31/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	31/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286520E 6115903N
Logged	GP/GV
Checked:	RJK
Equipment type:	SKID STEER DRILL 100mm DIA SOLID FLIGHT AUGERS
RL surface:	
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
AD	None encountered	D	0.5		SM-SC	Clayey Silty SAND, fine to medium grained, dark yellow-brown, low plasticity, roots to about 0.2m	M	L ↓ MD	TOPSOIL
		D	1.0		CL	Sandy CLAY, low plasticity, yellow-brown mottled red-brown/pale grey, fine sand, some silt fines	> Wp	St/ VSt VSt/ H	RESIDUAL
		D	1.5		CL	Silty CLAY, low to medium plasticity, pale grey mottled yellow-brown	< Wp		
						SANDSTONE, extremely to moderately weathered, pale grey becoming red-brown/pale grey, est very low to low rock strength	D	—	ROCK
			2.0			BH12 terminated at 1.65m depth – Auger tungsten bit refusal on rock			
			2.5						
			3.0						
			3.5						
			4.0						

Dynamic Cone Penetrometer (blows/150mm): 3, 3, 5, 5, 6, 8, 10, 16, 20

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

BOREHOLE LOG

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Job No.	G23085/1
Pit No.	BHI3 (LOWER SLOPE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	31/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	31/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286364E 6115707N
Logged	GP/GV
Checked:	RJK
Equipment type:	SKID STEER DRILL 100mm DIA SOLID FLIGHT AUGERS
RL surface:	
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
AD		D Dynamic Cone Penetrometer (blows/150mm): 2, 3, 4, 4	0.5		SM	Silty SAND, fine grained, yellow-brown, roots to about 0.25m	M-W	L/MD	SLOPEWASH
	▼	D 5, 7, 8	1.0		SC	Clayey SAND, fine grained, pale grey mottled yellow-brown, low plasticity	W	D	RESIDUAL
		D 8, 10, 12, 16	1.5		SC/ CL	Sandy CLAY/Clayey SAND, fine to medium grained, red-brown/pale grey, low plasticity clay increasing with depth, some fine to medium gravel	M		
		D	2.0 2.5 3.0		CL/ ML	Silty CLAY/Clayey SILT, low plasticity, pale grey	< Wp	(VSt)	
			3.5 4.0			BHI3 terminated at 3.0m depth ~ Slotted piezometer (0.5 to 3m depth range) installed			

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Job No.	G23085/1
Pit No.	BHJ1 (UPPER SLOPE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	31/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	31/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 56286697E 6115930N
Logged	GP/GV
Checked:	RJK
Equipment type:	SKID STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS
RL surface:	
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
AD					SM	Silty SAND, fine grained,grey, grass roots to 0.15m	W	L/ MD	TOPSOIL
		D	0.5			Silty SAND, fine grained,pale grey	W		SLOPEWASH
		D	1.0		SC	Clayey SAND, fine to medium grained, pale grey	M-W		
	▼	D	1.5			Clayey SAND, fine to medium grained, pale grey mottled red-brown, low plasticity, some fine to medium gravel	W	D	RESIDUAL
		D	2.0		CL	Sandy CLAY, medium plasticity, pale grey mottled pale red-brown	≥ Wp	St/ VSt ↓ (VSt/ H)	
		D	2.5			SANDSTONE, extremely to moderately weathered, fine to medium grained, red-brown, some low plasticity clay fines	D	—	ROCK
			3.0			BHJ1 terminated at 2.7m depth – auger tungsten bit refusal on rock – Slotted piezometer (0.5 to 2.7m depth range) installed			
			3.5						
			4.0						

Dynamic Cone Penetrometer (blows/150mm): 2, 5, 3, 2, 4, 2, 3, 4, 7, 10, 16, 15

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

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Job No.	G23085/1
Pit No.	BHJ2 (UPPER SLOPE)
Sheet	1/1
Client:	FORBES RIGBY PTY LTD
Started:	31/7/03
Project:	FEASIBILITY FOR DEVELOPMENT
Finished:	31/7/03
Location:	NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: 286542E 6115721N
Logged	GP/GV
Checked:	RJK
Equipment type:	SKID STEER DRILL 100mm DIA. SOLID FLIGHT AUGERS
RL surface:	
Datum	

method	water	samples, tests etc	depth (m)	graphic log	USCS symbol	Material description Soil type, particle characteristics or fines plasticity, colour, secondary and minor components	Moisture condition	Consistency/ relative density	comments notes, structure and additional observations
AD	None encountered	D Dynamic Cone Penetrometer (blows/150mm): 2, 4, 4, 12	0.5		SM/ SP	Silty SAND/SAND, fine grained, yellow-brown, some roots to about 0.2m	M-W	MD	SLOPEWASH
		D Dynamic Cone Penetrometer (blows/150mm): 2, 5, 8	1.0		CL/ SC	Sandy CLAY/Clayey SAND, low plasticity clay increasing with depth, orange-brown mottled pale grey, fine to medium sand	≈Wp	F/ St	RESIDUAL
		D Dynamic Cone Penetrometer (blows/150mm): 14, 21			CL	Sandy CLAY, medium plasticity, red-brown mottled pale grey, fine sand		VSt	
		D	1.5			SANDSTONE, extremely to moderately weathered, fine grained, red-brown, some low plasticity clay fines	D	—	ROCK
			2.0			BHJ2 terminated at 1.7m depth			
			2.5						
			3.0						
			3.5						
			4.0						

APPENDIX B

LABORATORY TEST RESULTS

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPE3 0.4-0.45m 29/7/03

Sample No: 75662

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.04	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPE3 0.7-0.8m 29/7/03

Sample No: 75663

Date Received 31/07/2003 Total No Pages: 45

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Tests are performed under a quality system certified as complying with ISO 9002.
Results & Conclusions assume that sampling is representative. **This document shall not be reproduced except in full**

TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.14	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
ECEC					
Ca/Mg					

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003 N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPE3 1.05-1.15m 29/7/03
Sample No: 75664
Date Received 31/07/2003 Total No Pages: 45
CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.08	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.27		.44	3.80	low
Potassium	.03		.09	0.80	very low
Calcium	< 0.08		< 0.20	0.30	very low
Magnesium	.09		2.72	23.60	OK
Aluminium			8.25	71.60	high - available
		ECEC	11.53		
		Ca/Mg	0.00		unbalanced ratio

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	358
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPE6 0.35-0.4m 29/7/03

Sample No: 75665

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.03	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
ECEC					
Ca/Mg					

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPE6 1.2-1.3m 29/7/03

Sample No: 75666

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.05	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.18		.25	2.40	low
Potassium	.02		.07	0.70	very low
Calcium	< 0.08		< 0.20	0.40	very low
Magnesium	.06		1.47	14.20	slighly low
Aluminium			8.55	82.40	high - available
		ECEC	10.38		
		Ca/Mg	0.00		unbalanced ratio

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	95
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5)
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPE6 1.5-1.55m 29/7/03
Sample No: 75667
Date Received 31/07/2003 Total No Pages: 45
CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.06	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPD2 0.0-0.1m 30/7/03

Sample No: 75668

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.04	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPD2 0.4-0.5m 30/7/03

Sample No: 75669

Date Received 31/07/2003 Total No Pages: 45

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Email: sesl@sesl.com.au

TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.05	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPD2 1.4-1.5m 30/7/03

Sample No: 75670

Date Received 31/07/2003 Total No Pages: 45

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Email: sesl@sesl.com.au

TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.06	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.2		.33	2.00	low
Potassium	.03		.14	0.80	very low
Calcium	< 0.08		< 0.20	0.10	very low
Magnesium	.02		1.08	6.50	low
Aluminium			15.15	90.70	high - available
		ECEC	16.71		
		Ca/Mg	0.00		unbalanced ratio

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	214
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPD4 0.1-0.15m 30/7/03

Sample No: 75671

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.05	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPD4 0.65-0.7m 30/7/03
Sample No: 75672
Date Received 31/07/2003 Total No Pages: 45
CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.16	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.53		.51	2.70	low
Potassium	.02		.12	0.60	very low
Calcium	< 0.08		< 0.20	0.30	very low
Magnesium	.04		2.14	11.30	slightly low
Aluminium			16.2	85.20	high - available
		ECEC	19.02		
		Ca/Mg	0.00		unbalanced ratio

mg/kg	
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	79
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPD4 1.6-1.7m 30/7/03

Sample No: 75673

Date Received 31/07/2003 Total No Pages: 45

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Results & Conclusions assume that sampling is representative. This document shall not be reproduced except in full

TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.46	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5)
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPC4 0.25-0.45m 29/7/03
Sample No: 75674
Date Received 31/07/2003 Total No Pages: 45
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.03	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPC4 0.8-0.85m 29/7/03

Sample No: 75675

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.04	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPC4 1.9-1.95m 29/7/03
Sample No: 75676
Date Received 31/07/2003 Total No Pages: 45
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.07	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.23		.43	2.80	low
Potassium	.03		.09	0.60	very low
Calcium	< 0.08		< 0.20	0.10	very low
Magnesium	.06		1.34	8.80	low
Aluminium			13.35	87.70	high - available
		ECEC	15.22		
		Ca/Mg	0.00		unbalanced ratio

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	150
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1986). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
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Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPB1 0.65-0.75m 30/7/03
Sample No: 75677
Date Received 31/07/2003 Total No Pages: 45
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.29	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.98		.67	6.50	elevated
Potassium	< 0.006		.1	1.00	very low
Calcium	< 0.08		< 0.20	0.30	very low
Magnesium	.04		1.56	15.10	slightly low
Aluminium			7.95	77.10	high - available
		ECEC	10.31		
		Ca/Mg	0.00		unbalanced ratio

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	64
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Consultant.....
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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPB1 0.9-1.05m 30/7/03

Sample No: 75678

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.49	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Consultant.....
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Soil Chemistry Profile

Test Type: EC (1:5)
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPB1 1.95-2.0m 30/7/03
Sample No: 75679
Date Received 31/07/2003 Total No Pages: 45
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.63	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPA1 0.0-0.1m 30/7/03

Sample No: 75680

Date Received 31/07/2003 Total No Pages: 45

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Email: sesl@sesl.com.au

TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.03	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1993). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal..... Consultant.....
Simon Leake Date of Report 11/08/2003 N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPA1 0.45-0.55m 30/7/03

Sample No: 75681

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.03	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPA1 1.0-1.1m 30/7/03
Sample No: 75682
Date Received 31/07/2003 Total No Pages: 45
CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.04	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.12		.02	0.50	low
Potassium	.01		.03	0.80	very low
Calcium	< 0.08		< 0.20	0.50	very low
Magnesium	.02		.44	12.00	slightly low
Aluminium			3.15	86.10	high - available
		ECEC	3.66		
		Ca/Mg	0.00		unbalanced ratio

mg/kg

Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	<5
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPF1 0.25-0.6m 30/7/03
Sample No: 75683
Date Received 31/07/2003 Total No Pages: 45
CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.08	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.31		.31	8.10	elevated - sodic
Potassium	.01		.04	1.00	low
Calcium	< 0.08		< 0.20	2.90	very low
Magnesium	.14		1.66	43.10	elevated
Aluminium			1.73	44.90	elevated - available
		ECEC	3.85		
		Ca/Mg	0.10		unbalanced ratio

	mg/kg
Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	467
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF1 0.6-1.0m 30/7/03

Sample No: 75684

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS

pH in water 1:2
pH in $CaCl_2$ 1:2
EC mS/cm 1:2 .24
Chlorides mg/kg

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF1 1.4-1.9m 30/7/03

Sample No: 75685

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.24	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

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Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF3 0.3-0.6m 30/7/03

Sample No: 75686

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.17	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992) **Chloride:** Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF3 0.9-1.2m 30/7/03

Sample No: 75687

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.42	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	1.41		.06	1.70	elevated - sodic
Potassium	.02		.02	0.60	very low
Calcium	< 0.08		1.62	46.60	low
Magnesium	.17		1.78	51.10	high
Aluminium			< 0.02	0.00	unavailable
		ECEC	3.48		
		Ca/Mg	0.90		unbalanced ratio

mg/kg

Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	88
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF3 2.0-2.3m 30/7/03

Sample No: 75688

Date Received 31/07/2003 Total No Pages: 45

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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.14	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
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Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF5 0.0-0.5m 30/7/03

Sample No: 75689

Date Received 31/07/2003 Total No Pages: 45

CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.14	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5)

Order No: Job No: G23085/1

Reference Naval College Rd & Wool Rd, Vincentia

Sample Name: TPF5 0.5-1.0m 30/7/03

Sample No: 75690

Date Received 31/07/2003 Total No Pages: 45

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Email: sesl@sesl.com.au

TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.17	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium					
Potassium					
Calcium					
Magnesium					
Aluminium					
		ECEC			
		Ca/Mg			

mg/kg

Phosphate as P
Ammonium as N
Nitrate as N
Sulphate as S
Iron
Zinc
Copper
Manganese
Boron

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows

Soil Chemistry Profile

Test Type: EC (1:5), eCEC + sol SO4
Order No: Job No: G23085/1
Reference Naval College Rd & Wool Rd, Vincentia
Sample Name: TPF5 2.7-3.0m 30/7/03
Sample No: 75691
Date Received 31/07/2003 Total No Pages: 45
CLIENT: Network Geotechnics Pty Ltd
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TEST	RESULT	COMMENTS
pH in water 1:2		
pH in $CaCl_2$ 1:2		
EC mS/cm 1:2	.21	
Chlorides mg/kg		

CATION ANALYSIS

TEST	SOLUBLE		EXCHANGEABLE		
Unit	meq%	Comment	meq%	% of ECEC	Comment
Sodium	.7		.89	6.50	elevated - sodic
Potassium	.02		.15	1.10	very low
Calcium	< 0.08		4.09	30.00	low
Magnesium	.09		8.51	62.40	high
Aluminium			< 0.02	0.00	unavailable
		ECEC	13.64		
		Ca/Mg	0.50		unbalanced ratio

mg/kg

Phosphate as P	
Ammonium as N	
Nitrate as N	
Sulphate as S	26
Iron	
Zinc	
Copper	
Manganese	
Boron	

Recommendations

Explanation of the Methods:
pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). **Exchangeable Cations, ECEC:** Method 15A1 Rayment & Higginson (1992)
Chloride: Vogel (1961). **Aluminium:** Method 3500 APHA (1992). **Phosphate:** Method 9E1 Rayment & Higginson (1992). **Ammonium, Sulphate, Iron, Copper, Manganese + Zinc:** Method 83-1 to 83-5 Black (1983). **Boron:** Method 12C2 Rayment & Higginson (1992).

Checked by Principal.....
Simon Leake Date of Report 11/08/2003

Consultant.....
N.Burrows