| | | | \wedge | | 1 | | | TI | ES. | T F | IT LOG |
|--------|-----------|-----|--------------------------|--------------------|-----------|-------------|-------------|---|-----------------------|----------------------------------|--|
| ę | | | 9 | | | ori | | ACN 069 211 561 6/6 Morton Close | Job M | 10. G | 23085/1 |
| | Ge | ot | есі | hn | ics | Pty . | Ltd | TUGGERAH NSW 2259 TEL: (02) 43516200 | PitNo | ъ. Т | PG9 (SLOPE) |
| | | | | | | | | FAX: (02) 43516300 | Shee | i 1 | /1 |
| C | lie | nt | ; | | FC | DRBE | S RIG | BY PTY LTD | Starte | ed: | 29/7/03 |
| Р | ъj | ec | t: | | FI | EASIB | ILITY | FOR DEVELOPMENT | Finist | | 29/7/03 |
| Lo | ЭC | ati | on | : | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA | Logg | ed | GP/GV |
| | | | | | G | F 5 (A) | 03 66 | 3) AMG: 56285894E 6116183N | Chec | ked: | RJK |
| E | qu | ip | m e | nt | typ | be: | | EXCAVATOR 7 TONNE | RL su | rface: | |
| в | uс | kε | et S | Siz | e: | | | 450mm | Datur | n | |
| method | water | | | | 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 |
| Ш | countered | - | | 4 | | | SM/ SP | Silty SAND/SAND, fine to medium grained, grey-browr becoming red-brown with depth, trace roots | M | D | TOPSOIL - |
| | None Enc | D |) w s/150m m) | 7 13 9 10 | 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 | Penetrometer (blows/150m | | 1.' | 0 | | Silty CLAY, low to medium plasticity, pale grey mottled orange-brown | M≤ Wp | | |
| | | D | Dynamic Cone | | 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 |
| | | | Ô | | | | | 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 | 5 | | | | | |
| | | | | - | | | | | | | Aurona |
| | | | | - | tan | | | | | | |
| | | | | _ | 3.0 |) | | | | | |
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| | | | | - | | | | | | | |
| | | | | - | - 4.0 | | | | | | |

| G | eoi | tech | | etw ics i | | | d | ACN 069 211 561 6/6 Morton Close TUGGERAH NSW 2255 TEL: (02) 43516200 FAX: (02) 43516300 | Jo P i | b N t No | о. G | PIT LOG 23085/1 PH1 (RIDGE) /1 |
|--------|------|-----------------------|---------------|--------------|-------------|---------------------------------------|-------------|--|--------------------|-------------|----------------------------------|--|
| Clie | ent | : | | FO | RBI | ES R | IGE | BY PTY LTD | | | | 30/7/03 |
| Pro | | | | | | | | FOR DEVELOPMENT | | arte | | 30/7/03 |
| | - | ion: | | N A | VAL | со | _ L E | GE ROAD & THE WOOL ROAD, VINCENTIA | | nish | | GP/GV |
| | | | | G F | °S (/ | A U S | 66) |)AMG: 56286335E 6116336N | | gge | ed: | RJK |
| Eq | uip | me | nt | typ | e: | | E | EXCAVATOR 7 TONNE | RL | su | rface: | |
| Bu | | ət S | iz | e: | | | 4 | 450 m m | Da | tum | 1 | |
| method | ater | samples, tests etc | | depth (m) | graphic log | | USCS symbol | Material description Soll type, particle characteristics or fines plastic colour, secondary and minor components | oistura oistura | condition | Consistency/ relative density | comments notes, structure and additional observations |
| 0 9 | | - | з | | S | S si | | SAND/Silty SAND, fine to medium grained, pale bro tree roots | wn, I | M | L | TOPSOIL |
| | | (E H O | 2 3 5 5 11 7+ | 0.5 | | C C I | -/ | Silty CLAY, low to medium plasticity, pale grey mot yellow-brown Silty CLAY/Clayey SILT, medium plasticity, pale grey Silty CLAY/Clayey SILT, medium to high plasticity, pa grey, interbedded SANDSTONE increasing with dep line grained, red-brown | ale | q \/ | F St VSt | RESIDUAL |
| | | D ynam ic | | 2.0 | | | S | SANDSTONE, extremely weathered, fine grained, ed-brown | D | | | ROCK |
| | | | | 3.0 | | · · · · · · · · · · · · · · · · · · · | | TPH1 terminated at 2.8m depth | | | | |

| • | Ge | otechn | | rork Pty I | | 6 7 7 | CN 069 211 561 %6 Morton Close UGGERAH NSW 2259 FEL: (02) 43516200 AX: (02) 43516300 | Job N Pit No Sheet | io. G . T | PIT LOG 23085/1 PH2 (RIDGE) /1 | Ì | |
|----------|-------------|--|--------------------|---------------|-----------------|--|--|--------------------------|---------------------------------------|---|---|--|
| С | lie | nt: | FO | RBES | RIGI | BY PTY LTD | | Started: 30/7/03 | | | | |
| Ρr | оj | ect: | FΕ | ASIBI | LITY | FOR DEVELOPMENT | | Finished: 30/7/03 | | | | |
| Lc | bCi | ation: | | | | GE ROAD & THE WOOL ROAD, VINC | ENTIA | Logged GP/GV | | | | |
| | | | G F | °S (Al | JS 66 |)AMG: 56286193E 6116239N | | | | | | |
| E | ~ | in mont | | | | EXCAVATOR 7 TONNE | | Check | <ed:< td=""><td></td><td></td></ed:<> | | | |
| | | ipment | | e: | | | | RL su | rface: | | | |
| В | u c | ket Size | e : | 1 | ····· | 450mm | | Datum | | | | |
| method | water | s am ples, tests etc | depth (m) | graphic log | USCS symbo | Material descriptio Soil type, particle characteristics o colour, secondary and minor com | or fines plasticity | Moísture condition | Consistency/ relative density | comments notes, structu and additiona observations | | |
| ВН | Encountered | 3 | | <u> </u> | SM | Silty SAND, fine grained, grey-brown, | tree roots | M | MD | TOPSOIL | | |
| | Лопе Ппс | 4 U 5 99 10 D 0 1/5 0 11 | 0 , 5 0 , 5 | | CL | Silty CLAY, low to medium plasticity, y mottled pale grey | rellow-brown | ≥ ₩ p | St/ VSt VSt | RESIDUAL | | |
| | | o 11 q) 11 u a to mo 12 u b a to mo 12 u b a to mo 15 d a | | | CL/ ML | Silty CLAY/Clayey SILT, low to medium grey/yellow-brown | n plasticity, pale | < W p | | | | |
| | | D J D D D | | | | SANDSTONE, extremely to moderatel fine grained, pale yellow-brown/pale g Clayey SILT decreasing with depth | y weathered, rey, some | D | | ROCK | | |
| | | | - 2.0 - | | - Andrew States | TPH2 terminated at 1.8m dep | th | | | | | |
| | | | - I | | | | | | | | | |
| | | - | 2.5 | | | | | | | | | |
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| | | | 3.5 | | | | | | | | _ | |
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| | | | 4.0 | | | | | | | | | |

| Network |
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| Geotechnics Pty Lta |

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T PIT LOG

| | 2 | | | ¥ 4 | s tw | ork | 6 | ACN 069 211 561 |) | | | | |
|--------|-----------------------------------|--------------|---------|-----|----------|---------------------------------------|---------|--|-----------------------|----------------------------------|--|--|--|
| | | | | | | | | 6/6 Mortan Close TUGGERAH NSW 2259 | Job | No. C | 23085/1 | | |
| | CI E | <i>:01</i> 6 | ecn | nı | ics I | ^p ty l | _ta | TEL: (02) 43516200 | Pit N | о. I | PH3 (RIDGE) | | |
| | | | | | | | | FAX: (02) 43516300 | Shee | t 1 | /1 | | |
| C | lie | nt: | | | FO | RBES | RIG | BY PTY LTD | Start | ed: | 30/7/03 | | |
| Ρ | roj | ec | t: | | FE | ASIBI | LITY | FOR DEVELOPMENT | Finis | hed: | 30/7/03 | | |
| L | эc | atio | on: | | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA | Logged GP/GV | | | | |
| | | | | | GP | 'S (AL | 15 66 | 6) AMG: 56286059E 6116113N | Checked: RJK | | | | |
| E | Equipment type: EXCAVATOR 7 TONNE | | | | | | | | | urface | | | |
| | Bucket Size: 450mm | | | | | | | | | | | | |
| F | T | te sts | | | | | 0 | | Datu | | | | |
| ethod | ater | D les. | - | | epth (m) | tphic log | CS symb | Material description | Moisture condition | Consistency/ relative density | comments notes, structure | | |
| E | 3 | sa H | etc | | ΰ | D a a | n S | Soil type, particle characteristics or fines plastici colour, secondary and minor components | y, ∑ 0 | Cons relativ | and additional observations | | |
| Ц П | ered | D | 1 | 4 | | SS | SM | Silty SAND, fine grained, grey-brown, grass & tree roots | м | | TOPSOIL - | | |
| | Encountered | | 1150 | 5 | | | CL | Sandy CLAY, low to medium plasticity, yellow-brown fine sand, some roots above 0.4m depth | - > W p | St | RESIDUAL - | | |
| | one E | D | blow | 5 | 0.5 | | | | | | | | |
| | D Z | | eter | 4 | | | | | | | | | |
| | | | letrom | 13_ | | | | | | VSt | | | |
| | | | | 5+ | | · · · · · · · · · · · · · · · · · · · | | SANDSTONE, extremely to moderately weathered, | D-M | | ROCK | | |
| | | - | o Cone | - | 1.0 | | | fine grained, pale grey/yellow-brown, some Clayey SILT decreasing with depth | | | | | |
| | | D | Dynamic | ┢ | | | | | | - | | | |
| | | | ò | | | | | | | | | | |
| | | | | - | - | | | | | | | | |
| | | | | - | 1.5 | | | TPH3 terminated at 1.3m depth | | | | | |
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| | | | | | 2.5 | | | | | | _ | | |
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| | | | | | 3.0 | | | | | | | | |
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| | | | | | 3.5 | | | | | | | | |
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| | | | | - | 4.0 | | | | | | _ | | |

REFER TO EXPLANATION SHEETS FOR DESCRIPTION OF TERMS AND SYMBOLS USED

| G | ес | te | chr | | vor. Pty | | ACN 069 211 561 6/6 Morton Close TUGGERAH NSW 2259 TEL: (02) 43516200 FAX: (02) 43516300 | ES ¹ Job 1 Pit N Shee | No. G | 23085/1 PH4 (RIDGE) /1 | | |
|-------|-------|----------------|-----------------------------|-----------|-------------|-----------|---|---|----------------------------------|--|--|--|
| Cli | en | t: | | F | ORBE | SRIG | BY PTY LTD | Start | ad: | 30/7/03 | | |
| Pro | je | ct: | | न | EASIE | BILITY | FOR DEVELOPMENT | Finished: 30/7/03 | | | | |
| Loo | | | | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA | Logg | ed | GP/GV | | |
| | | | | G | P5 (A | 05 66 | 6)AMG: 56285971E 6116016N | Chec | | RJK | | |
| Eq | ui | o m | en | t ty | se: | | EXCAVATOR 7 TONNE | | rface: | | | |
| | | | Siz | | | | 450 m m | Datur | | | | |
| ethod | water | samples, tests | | depth (m) | graphic log | SCS symbo | Soil type, particle characteristics or fines plasticity | isture ndition | Consistency/ relative density | comments notes, structure and additional | | |
| | _ | ώ ¢ | 5 | | | | colour, secondary and minor components | | Cor | observations | | |
| 0 | | | 3 | | NVV VVV | SM | Silty SAND, fine grained, brown, roots | м | MD | TOPSOIL | | |
| L | | | 4 4 5 7 7 11 | 0. | 5 | | Sandy CLAY, low to medium plasticity, yellow-brown, fine sand | qW≤ | St | RESIDUAL | | |
| | D | | 158 | 1. | o | CL/ | Silty CLAY/Clayey SILT, low plasticity, pale grey/yellow- brown | < W p | VSt H | | | |
| | D | | 2 | 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 | | ЯОСК | | |
| | | | | 2.0 | þ | | TPH4 terminated at 1.8m depth | | | | | |
| | | | | | | | | , i i i i i i i i i i i i i i i i i i i | | | | |
| | | | - | | | | | | | | | |
| | | | - | 2.5 | 5 | | | | | - | | |
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| | | | ŀ | 3.0 | | | | | | - 2000 - 2000 - 2000 | | |
| | | | - | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | - servere Addres | | |
| | | | - | 3.5 | | | | | | | | |
| | | | - | | | | | | | | | |
| | | | F | - | | | | | | | | |
| | | | - | - 4.0 | | | | | | | | |

| | | | | | cs | ork Pty I | Ltd | | T ACN 069 211 561 66 Morton Close TUGGERAH NSW 2259 TEL: (02) 43516200 FAX: (02) 43516300 | Job N Pit No Shee | 10. G | PIT LO G | Ì |
|--------|---------------|-----|-----------------------|---------------|---------------|--------------|-------------|--|---|-------------------------|----------------------------------|---|---|
| | | nt | | | | | | BY PTY LTD | | Starte | ed: | 30/7/03 | |
| | | еc | | | | | | FOR DEVELOPMENT | | Finish | ned: | 30/7/03 | |
| Lc | С | ati | on: | | | | | EGE ROAD & THE WOOL ROAD, VIN)AMG: 56285844E 6116213N | CENTIA | Logg | ed | G P / G V | |
| | | | | | | | | | | Chec | ked: | RJK | |
| Εd | qu | ıip | mei | ٦t | typ | e: | | EXCAVATOR 7 TONNE | | RL su | rface: | | |
| В | uc | cke | et S | ize | e : | | | 450 m m | | Datum | า | | |
| method | water | | samples, tests etc | | depth (m) | graphic log | USCS symbol | Material descript Soil type, particle characteristics colour, secondary and minor co | s or fines plasticity | Moisture condition | Consistency/ relative density | comments notes, structu and additiona observations | |
| ВH | Intered | D | - | 2 | - | SSS | SM | Silty SAND, fine grained, brown, trea | e roots | M-W | L | TOPSOIL | |
| | None Encounte | D | - | 3 | - - 0.5 | | SM- SC | Clayey Silty SAND, fine to medium g mottled orange-brown, low plasticity | rained, pale-grey , some tree roots | M | MD | SLOPEWASH | |
| | | D | 1 1 | 7 1 7 + | | | CL | Sandy CLAY, low to medium plasticit mottled pale grey, fine sand, some s | y, orange-brown ilt fines | > W p | VSt | RESIDUAL | |
| | | D | Dynamic Cone | | 1.5 | | | SANDSTONE, extremely to moderate grained, orange-brown, interbedded fine grained, pale grey, est low to me strength; becoming moderately weat low to medium rock strength from 1.8 | Clayey SAND, dium rock hered and est. | D-M | | ROCK | |
| | | | | | _2.5 _3.0 | | | TPF1 lerminated at 2.0m d nearing refusal on rock | epth ~ | | | | |

| | **** | | | ics , | rori Pty | Ltd | | ACN 069 211 561 6/6 Morton Close TUGGERAH NSW 2259 TEL: (02) 43516200 FAX: (02) 43516300 | Job N Pit No Shee | чо. G 5. Т | PIT LOG 23085/1 PF2 (VALLEY) /1 | |
|---------|--------|-----------------------|--------------|-----------|-------------|-------------|---|--|-------------------------|----------------------------------|---|--|
| | ien | | | | | | BY PTY LTD | | Starte | ed: | 30/7/03 | |
| ******* | o je (| | | | | | FOR DEVELOPMENT | | Finist | ned: | 30/7/03 | |
| _0 | cat | ion | | | | | EGE ROAD & THE WOOL ROAD, VINC 6) AMG: 56285995E 6116386N | ENTIA | Logg | ed | GP/GV | |
| | | | | | - (| | , | | Chec | ked: | RJK | |
| Ξc | luip | me | nt | typ | e: | | EXCAVATOR 7 TONNE | | RL su | rface: | ана на около у традина на традици на селото и селото и селото на селото на селото на селото на селото на селото | |
| Bι | ıck | et S | ize | Э: | | | 450 m m | | Datun | | | |
| method | water | samples, tests etc | | depth (m) | graphic log | USCS symbol | Material descripti Soil type, particle characteristics colour, secondary and minor con | or fines plasticity | nd ition | Consistency/ relative density | comments notes, structu and additiona observations | |
| n a | | | 1 | _ | www | SM- SC | Clayey Silty SAND, fine grained, brow tree roots | n, low plasticity, | w | L | TOPSOIL | |
| | D | enetr | 3 4 4 11 222 | | | SC | CLAY, medium to high plasticity, yello some fine sand, tree roots above 1m Clayey SAND, fine grained, pale grey brown, low plasticity | depth | > W p ≥ W p | F/St VSt | RESIDUAL groundwater seepage along 10mmdia. tree roots | |
| | D | | | _3_0 | | | Sandy Silty CLAY, low to medium plas brown mottled pale grey and green, fi fine to medium sandstone gravel TPF2 terminated at 3.0m depti | ie sand, trace | | (VSt) | | |
| | | | | _3.5 | | | | | | | | |

| | | otechni | | ^p ty i | Ltd | ACN 069 211 56 6/6 Morton Closs TUGGERAH N TEL: (02) 4351 FAX: (02) 4351 | 1 ≆ ISW 2259 6200 | Job N Pit No Shee | 40. G | PIT LOG 23085/1 PF3 (VALLEY) /1 | i |
|--------|-------|---|-----------|------------------------|-----------|--|----------------------------|-------------------------|----------------------------------|---|---------|
| | | nt: | | | | BY PTY LTD | | Starte | ed: | 30/7/03 | |
| | | ect: | | | | FOR DEVELOPMENT | | Finish | ned: | 30/7/03 | |
| Lo | C | ation: | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA) AMG: 56286157E 6116555N | | Logg | ed | GP/GV | |
| | | | | ` | | , | | Checi | ked: | RJK | |
| Εc | qu | ipment | type | e : | | EXCAVATOR 7 TONNE | | RI SU | rface: | | |
| | | ket Size | | | | 4 5 0 m m | | Datur | | | |
| | | s ts | | | p o | | | | | 1 | |
| method | water | samples, te | depth (m) | graphic log | USCS symt | Material description Soil type, particle characteristics or fines p colour, secondary and minor components | plasticity, | Moisture condition | Consistency/ relative density | comments notes, structur and additional observations | |
| 8 | | Ê 2 | | | SM | Silty SAND, fine grained, grey-brown, roots | | M-W | L | TOPSOIL | - |
| | | Сщиозі/sмога D ла д 12 | | | SM | Silty SAND, fine grained, pale grey, tree roots 0.4m depth | above | w | MD | SLOPEWASH | |
| | | D % | | | | | | | D | - | - |
| | | 9 12 | 0.5 | | | | | | U | r. | ÷ |
| | | E 22 | | | | | | | | | - |
| | | Denetro Benetr | - 12 | /// | | | | | | | |
| | | e e | - (| // | SM- SC | Clayey Silty SAND, fine to medium grained, or brown/pale grey, low plasticity fines | ange- | M~W | | RESIDUAL | |
| | | c Co Co Co Co | 1.0 | $\boldsymbol{\lambda}$ | | | | | | | |
| | | Dynamic | - 8 | | | | | | | | |
| | | ô | - | | | | 9800,4 U | | | | _ |
| | | | - | $\langle \rangle$ | | | | | | | _ |
| | | | 1.5 | | | | * | | | - | |
| | | | - 12 | | | | | | | | |
| | | | - 2 | | | | | | | | |
| | | Amoun | - 1 | X | | Saadu Ciliu Olay I | | | | | PLIMA |
| | | | 2.0 | | CL | Sandy Silty CLAY, low to medium plasticity, pa orange-brown, fine sand, trace fine to medium | le grey/ gravel | >Wp | (VSt) | - | |
| | | | - | | | | | | | | |
| | - | [| | | | | | | | | |
| | | | | | | | | | | | |
| | | | 2.5 | | | | | | | - | |
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| | | | | | | | | | | | |
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| | | | | · <u>^./.</u> | | TPE3 torminated at 2 cm in the | | | | | |
| | | | | | | TPF3 terminated at 3.0m depth | | | | | |
| ļ | | - | | | | | | | | | |
| | | | 3.5 | | | | | | | | _ |
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| | | | | | | | | | | | |
| | | | | | | | | | Value | | · |
| | ĺ | - | 4.0 | | | | | | | | |

| | N | | | , | | ES | ΓF | IT LOG |
|------------------------------|---|-----------------|------------------|-----------|--|-----------------------|--------------------------|--------------------------------|
| | | | orl | | ACN 069 211 561 6/6 Martan Clase | JOD N | lo, G | 23085/1 |
| Geote | echn. | ics i | Pty I | Ltd | TUGGERAH NSW 2259 TEL: (02) 43516200 | PitNo | ь. т | PF4 (VALLEY) |
| | | | | | FAX: {02} 43516300 | Shee | t 1 | /1 |
| Client: | | FC | DRBES | s rig | BY PTY LTD | Starte | ed: | 30/7/03 |
| Projec | • | FE | EASIB | ILITY | FOR DEVELOPMENT | Finish | ed: | 30/7/03 |
| Locatio | n: | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA 5) AMG: 56286485E 6116651N | Logge | эd | GP/GV |
| | | G | 0 (71 | 55.00 | JAMIG. 36286485E 6116651N | Checl | ked: | RJK |
| Equipr | nent | typ | e: | | EXCAVATOR 7 TONNE | RL su | rface: | |
| Bucke | t Siz | e: | | | 450 m m | Datum | | |
| ethod ater ples, tests | | epth (m) | graphic log | CS symbol | Material description | Moisture condition | sistency/ ive density | comments notes, structure |
| S & 3 S & 3 | e to | σ | - Co Lo Lo | S N | Soil type, particle characteristics or fines plasticity colour, secondary and minor components | , ¥0 | Consis | and additional observations |
| E E E | 1 | | | SM/ ML | Silty SAND/Sandy SILT. fine grained, brown, root matter, some low plasticity clay fines | w | L | TOPSOIL - |
| te encounte | 3 | 0,£ | 5 | SM/ CL | Clayey Silty SAND/Sandy Silty CLAY, low to medium plasticity, grey, fine to medium sand, some tree roots | > ₩ p | MD | SLOPEWASH |
| | Dynamic Cone Penetrometer (blows/150mm) | 1.5 | | | 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 | | СН | Silty CLAY, high plasticity, pale grey | | | |
| | | - 3.0 3.5 | | | TPF4 terminated at 2.7m depth | | | |
| | | 4.0 | | | | | | |



TEST PIT LOG

| 6 | | | | | + 141 | ori | \mathbf{b} | ACN 069 211 561 | | | | | |
|--------|--------|---------------------------------|----------------------------|-----|------------|------------------|--------------|---|-------------------|-----------------------|---------------------|--|---|
| | | | | | | | | 6/6 Moxton Close TUGGERAH NSW 22 | | Job I | No. (| G23085/1 | |
| | i e | 01 | ecr | nic | s I | ^D ty, | Ltd | TEL: (02) 43516200 | | Pit N | o. | TPF5 (VALLEY) | |
| | | | | | | | | FAX: (02) 43516300 | 5 | Shee | t. | 1/1 | |
| С | lie | nt | | | FO | RBES | 6 RIG | BY PTY LTD | | Start | ed: | 30/7/03 | |
| Pr | оj | еc | t: | | FE | ASIB | ILITY | FOR DEVELOPMENT | Finished: 30/7/03 | | | | |
| Lc | o c a | a ti | on: | | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA | Logged GP/GV | | | | |
| | | | | | GP | 5 (A) | JS 66 | 6) AMG: 56286564E 6116457N | - | bec | ked: | RJK | |
| E | зu | Lipment type: EXCAVATOR 7 TONNE | | | | | | | | | | | |
| | | | | | | | | | | | Irface | | |
| | | cketSize: 450mm | | | | | | | |) atur | | | |
| σ | | + | 2 | | Ê | 0 D | symb | Material description | | θĽ | ncy/ ensitv | comments | |
| ethod | ater | | 2 | | depth | raphic | 0 | | | Moisture condition | 00 | | |
| ш | S S | | etc | | 0 C | grai | nsc | Soil type, particle characteristics or fines plast colour, secondary and minor components | icity, | ο Μ Ο Ο Ο | Consist relative | notes, structur and additiona observations | |
| ц Ш | | | | 1 | | 83 | SM/ SP | Silty SAND, fine grained, grey-brown, tree roots | | W | L | TOPSOIL | |
| | | D | ľ | 2 - | | ξÌŞ | | | | | | | |
| | | | - | 3 | | 38 | | | | | | | |
| | | | ŀ | 4 | 0.5 | 213 | | | | | | | - |
| | | | - | | | | SP/ SC | SAND/Clayey SAND, fine to medium grained, pale grey mottled, yellow-brown | e | W | MD | ALLUVIUM | |
| | | | | 7 | | | | | | | D | | _ |
| | | D | | 0 | | / / | | | | | | | |
| | | | Ê | | _1.0 | | | | | | | | |
| | | | 150m | - | | | | | 1 | | | | |
| | | | lows/ | - | | 1 | | | | | | | - |
| | | | Penetrometer (blows/150mm) | | | 1 | | | | | | | |
| | | | e H o | | _1.5 | | | | | | | | |
| | | | Penet | - | | | | | | | | | |
| | | | a no O | | 2 | | | | | | | | |
| | | | ы С | | | | | | | | | | |
| | × | | Dynam io | | _2.0 | / | | | | | | | |
| | | | | | 20.7.01 | | | | | | 4 | | |
| | | | | | A COLORADO | / | | | | | | | - |
| | | | | - | | | | <i>,</i> | | | | | |
| | | | | | 2.5 | XA | CL | Sandy Silty CLAY, medium plasticity, pale grey | > | Wp | (VSt) | RESIDUAL | |
| | - | | | | | | | mottled, orange-brown/red-brown, some fine to medium gravel | | | . , | | |
| | | D | | - | | | | | | | | | _ |
| | | | | - | 3.0 | | | | | | | | - |
| | | | | | | | | | | | | | |
| | | | | - | | | | TPF5 terminated at 3.0m depth | | | | | |
| | | | | | | | | | | | | | |
| | | | | | 3.5 | | | | | | I | | |
| | | | | - | | | | | | | | - | |
| | | | | | | | | | | | | | _ |
| | | | | L | | | | | | | | | _ |
| | | | | | <u>4.d</u> | [| | | | | | | - |

| • | Ge | eot | e ch | | | rori Pty | | | T ACN 069 211 561 6'6 Morton Close TUGGERAH NSW 2259 TUGGERAH NSW 2259 TEL: (02) 43516300 FAX: (02) 43516300 | Job N Pit No Shee | 10. G . T | PIT LOG 23085/1 PF6 (VALLEY) /1 |
|--------|-------------|---------------|------|-------------|-----------|-------------|------------|--|---|-------------------------|----------------------------------|---|
| ····· | | nt: ec | | | | | | BY PTY LTD FOR DEVELOPMENT | | Starte | | 30/7/03 |
| | | | on: | | N. | AVAL C | OLL | EGE ROAD & THE WOOL ROAD, VINC 5) AMG: 56286502E 6116157N | ENTIA | Finish Logg Chec | ed (| 30/7/03 GP/GV RJK |
| Ε¢ | qu | ipı | ne | nt | typ | be: | | EXCAVATOR 7 TONNE | | RL su | rface: | |
| В | u c | | t S | ize |): | | | 450 m m | | Datun | | |
| method | water | samoles tests | | | depth (m) | graphic log | USCS symbo | Material description Soil type, particle characteristics colour, secondary and minor com | or fines plasticity | Moisture condition | Consistency/ relative density | comments notes, structure and additional observations |
| BH | encountered | D | - | 3 5 3 | | | SM/ SP | Silty SAND/SAND, fine to medium gra brown, roots to 0.2m | ined, yellow- | M - W | MD | SLOPEWASH |
| | Sone Z | D | - | 3 | 0. | | CL | Sandy Silty CLAY, low to medium plas mottled yellow-brown, becoming grey brown/orange-brown below 1-2m dep Sandy Silty CLAY, low to medium plas | mottled red- th | > W p | F/St VSt | RESIDUAL |
| | | | | | 3.0 | | | TPF6 terminated at 3.0m de | gravel | | | - - - - - - - - - - - - - - - - - - - |
| | | | | | 4.0 | | | | | | | - |

| | eotec | hnics | | Job Pit N | No. G o. T | EST PIT LOG Job No. G23085/1 Pit No. TPF7 (VALLEY) Sheet 1/1 | | | | |
|--------|--|------------------|--------|--------------|--|---|----------------------------------|---|--|--|
| | ent: | | | | | Start | ed: | 30/7/03 | | |
| | oject: | | | | FOR DEVELOPMENT | Finis | ned: | 30/7/03 | | |
| LOO | cation | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA 5) AMG: 56286422E 611029N | Logg | ed | GP/GV | | |
| | | | | ····· | | Chec | ked: | BJK | | |
| Εq | uipme | ntty | pe: | | EXCAVATOR 7 TONNE | RL su | urface: | | | |
| Bu | icket S | ize: | | | 450m m | Datur | זיז | | | |
| method | water samples, tests etc | depth (m) | 1 phic | USCS symbol | Material description | M oisture condition | Consistency/ relative density | comments notes, structu and additiona observations | | |
| | None encountered a (blows/150mm) | 2 3 6 9 |).5 | SM | Silty SAND, fine grained, yellow-brown, shrub roots 0.3m depth | to W | | SLOPEWASH | | |
| | a e fer | 1517+1 | | CL | Sandy Silty CLAY, medium plasticity, pale grey mottled red-brown, fine sand | > W p | VSt | RESIDUAL | | |
| | D | 2 | 5 | СН | Silty CLAY, high plasticity, pale grey mottled yellow-brown | | | | | |
| | | 3. | | | TPF7 terminated at 2.8m depth | | | | | |

| | Geotechnics Pty Ltd | | | | | | | Job | | PIT LOG | | | | |
|--------|---------------------|-----------------------|--------------------------|------------------------|-------------|-----------|--|---------------------------------|----------------------------------|--|--|--|--|--|
| | Ge | eotec | :hn | ICS | Pty | Ltd | 1050Er641 Notw 2239 TEL: (02) 43516200 FAX: (02) 43516300 | Pit N | Pit No. TPF8 (VALLEY) | | | | | |
| | | | | | | | | Shee | et 1 | /1 | | | | |
| | | nt: | | | | | BY PTY LTD | Starl | ed: | 30/7/03 | | | | |
| | | ect: | | | | | FOR DEVELOPMENT | Finis | hed: | 30/7/03 | | | | |
| | C | atior | ו: | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA 6) AMG: 56286305E 6115940N | Logo Chec | ged cked: | GP/GV RJK | | | | |
| E | qı | lipm | ent | typ | pe: | | EXCAVATOR 7 TONNE | RLs | urface: | | | | | |
| в | uc | cket | Siz | e: | | | 450 m m | Datu | m | | | | | |
| method | water | samples, tests etc | ĺ | depth (m) | graphic log | Ę | Material description | t À' M o isture condition | Consistency/ relative density | comments notes, structure and additional observations | | | | |
| μ | | | 1ws/150mm) | | | / SM | Silty SAND, fine grained, brown, grass and shrub roots Silty Clayey SAND, fine to mediumgrained, pale | | | TOPSOIL | | | | |
| | | D | 9 9 12 15 20 | 1 .1 | 0 | sc | grey mottled yellow-brown, low plasticity | | | SLOPEWASH | | | | |
| | | D | | 1.{ | | CL/ CH | Sandy CLAY, medium to high plasticity, grey mottled red-brown, fine sand, some fine to medium gravel | 9 W < | (VSt) | RESIDUAL | | | | |
| | | D | | 2.5 | | SP | SAND, fine to medium grained, pale grey mottled yellow-brown/red-brown, some low plasticity clay fines becoming | D | (D) | | | | | |
| | > | | | <u>3.0</u> | | SC | Clayey SAND, fine to medium grained, pale grey mottled orange-brown/red-brown, some fine to coarse gravel | D - M | | | | | | |
| | | | | | | | TPF8 terminated at 3.0m depth | | | | | | | |
| | | | | - 4.0 | | | | | | | | | | |

| etworkACN 069 211 561 64 Monton CloseGeotechnics Pty LtdTUGGERAH NSW 2259 TEL: (02) 43516200 FAX: (02) 43516300 | | | | | | | | | Job No. G23085/1 Pit No. BHF9 (VALLEY) Sheet 1/1 | | | | |
|--|------|-----------|-------------|-----------------|---|-----------------------|-------------------------|----------------------------------|---|-----------------|--|--|--|
| Client: | • | FOR | BES | 6 RIG | BY PTY LTD | | Start | ed: | 31/7/03 | | | | |
| Projec | t: | FEA | SIBI | ILITY | FOR DEVELOPMENT | | Finist | | 31/7/03 | | | | |
| Locati | on: | N AV | AL C | OLLI | EGE ROAD & THE WOOL ROAD, VIN | CENTIA | | 10 01. | GP/GV | | | | |
| | | GPS | AL | JS 66 | 5) AMG: 56286574E 6116276N | | Logg | | | | | | |
| | | | | | | | Chec | ked: | RJK | | | | |
| Equipi | ment | type |): | | SKID STEER DRILL 100MM DIA. SOLID FLIGHT AUGERS | · | RL sı | rface: | | | | | |
| | | | | | | 2 | Datur | n | | | | | |
| water samples tests | | depth (m) | graphic log | US:CS symbol | Material descript Soil type, particle characteristics colour, secondary and minor co | s or fines plasticity | M o ísture condition | Consistency/ relative density | comments notes, structu and additiona observations | | | | |
| Q V V | | - | | SP/ SC | SAND/Clayey SAND, fine to medium brown/grey, low plasticity | grained, pale | M-W | | RECENT SLOPEWASH | | | | |
| | | 0.5 | | CL SP/ SC | Sandy SILT, low to medium plasticity to about 0.5m depth becoming grey below 1m c Sandy CLAY, high plasticity, dark gro pale grey with depth, fine to medium SAND/Clayey SAND, fine to medium grey/grey becoming grey/dark grey b | ey becoming | > W p > W p > W p | | ESTURINE SEDIMENT | | | | |
| D | | _3.0 | | | BHF9 terminated at 3.0m depth Slotted (approx. 0.5 to 3M) Piezomo | eter installed | | | | - - - | | | |

| ¢ | | | A | |) etи | vori | k | BO ACN 069 211 561 6/6 Motion Close | 1 | | DLE LOG | | | | |
|--------|-----------|----------------|-----------------|-------------------------------|------------|-------------|------------|---|-------------------------|--|-----------|--|--|--|--|
| (| <i>3e</i> | ote | CI | hn | ics | Pty | Ltd | TUGGERAH NSW 2259 TEL: (02) 43516200 | | Job No. G23085/1 Pit No. BHI1 (LOWER SLOPE) | | | | | |
| | | | | | | | | FAX: (02) 43516300 | Shee | t 1 | /1 | | | | |
| | | nt: | | | | | | ВҮ РТҮ ЦТО | Start | ed: | 31/7/03 | | | | |
| | | ect atic | | | | | | FOR DEVELOPMENT EGE ROAD & THE WOOL ROAD, VINCENTIA | Finis | ned: | 31/7/03 | | | | |
| L C. | | | , , , | • | | | |) AMG: 56286616E 6116088N | Logg Chec | | GP/GV | | | | |
| Εc | qu | ipn | пe | nt | typ | be: | | KID STEER DRILL | | urface: | | | | | |
| | | <u></u> 0 | | | | | | 00mm DIA. SOLID FLIGHT AUGERS | Datur | | | | | | |
| method | water | samples, tests | etc | | depth (m) | graphic log | USCS symbo | Material description Soil type, particle characteristics or fines plasticity colour, secondary and minor components | M o isture condition | Consistency/ relative density | | | | | |
| AD | | D | | 1 2 4 5 | 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 | | | | | | |
| | ♥ | D | le Penetrometer | 7 8 9 10 14 16 | | | CL | Sandy CLAY, low plasticity, pale grey, fine to medium sand Silty CLAY, medium plasticity, pale grey | > w p | MD St/ VSt VSt (H) | RESIDUAL | | | | |
| | | | | | 3.5 3.5 | | | BHI1 terminated at 3.0m depth Slotted Piezometer (0.5 to 3m depth) installed | | | | | | | |

| | Ge | 901 | te d | ehr. | | | vо Pty | | td | B O I ACN 069 211 561 6'6 Motra Close TUGGERAH NSW 2259 TEL: (02) 43516200 FAX: (02) 43516300 | Job 1 Pit N Shee | No. G | DLE LOG 23085/1 HI2 (LOWER SLOPE) /1 |
|--------|------------|-----|-------------------------|-------------------|---|-----------|-------------|-------|-------------|---|-------------------------|----------------------------------|--|
| C | li∈ | nt | : | | | FC | DRB | es r | RIG | BY PTY LTD | Start | ed: | 31/7/03 |
| Ρ | ro | jec | t: | | | FE | EASI | BIL | ITY | FOR DEVELOPMENT | Finist | | 31/7/03 |
| L | oc | ati | or | 1: | | | | | | EGE ROAD & THE WOOL ROAD, VINCENTIA | Logg | | GP/GV |
| | | | | | | GI | °S (, | A U S | 666 |)AMG: 56286520E 6115903N | Chec | | RJK |
| E | qı | ıip | m | эn | t t | зyр | e: | | sĸ | VID STEER DRILL | RL su | rface: | |
| | | | | | | | | | 10 | 0mm DIA SOLID FLIGHT AUGERS | Datur | | |
| method | ater | | samples, tests etc | | - Andrew - A | depth (m) | araphic loo | | USCS symbol | Material description Soil type, particle characteristics or fines plasticity colour, secondary and minor components | M o isture condition | Consistency/ relative density | comments notes, structure and additional observations |
| DV | e encounte | D | 50mm) | 3 3 5 | | | | 211 | M - | Clayey Silty SAND, fine to medium grained, dark yellow-brown, low plasticity, roots to about 0.2m | М | | TOPSOIL |
| | LON | D | e Penetrometer (blows/1 | 5 6 8 10 | | `0.5 | | | C | Sandy CLAY, low plasticity, yellow-brown mottled red- brown/pale grey, fine sand, some silt fines | > W p | St/ VSt VSt/ H | RESIDUAL |
| | | D | Dynamic Con | 16 20 | | _1.5 | | | | Silty CLAY, low to medium plasticity, pale grey mottled yellow-brown | < W p | | |
| | | | | | | | | | | SANDSTONE, extremely to moderately weathered, pale grey becoming red-brown/pale grey, est very low to low rock strength | D | | ROCK |
| | | | | | | 2.0 | | | | BHI2 terminated at 1.65m depth ~ Auger tungsten bit refusal on rock | | | |
| | | | | - | | 2.5 | | | | | | | |
| | | | | | | 3.0 | | | | | | | |
| | | | | | | .0.0 | | | | | | | |
| | | | | | - | 3.5 | | | | | | | |
| | | | | | - | 4.0 | | | | | | | |

| Geotech | etwork nics Pty L | B O ACN 069 211 561 6/6 Motion Close TUGGERAH NSW 2259 TEL: (02) 43516200 FAX: (02) 43516300 | Job Pit N Shee | No. G | DLE LOG 23085/1 8H13 (LOWER SLOPE /1 | |
|--|--------------------------|---|--|-------------------|---|--|
| Client: | FORBES | RIGI | BY PTY LTD | Start | ed i | 31/7/03 |
| Project: | FEASIBI | ILITY | FOR DEVELOPMENT | Finis | | 31/7/03 |
| Location: | NAVAL C | OLLE | GE ROAD & THE WOOL ROAD, VINCENTIA | Logg | | GP/GV |
| | GPS (AU | JS 66 |)AMG: 56286364E 6115707N | Chec | | RJK |
| Equipmer | nt type: | sĸ | KID STEER DRILL | | | |
| | 5. | | 0mm DIA SOLID FLIGHT AUGERS | Datur | rface: | |
| method water samples, tests etc | depth (m) graphic log | USCS symbol | Material description Soil type, particle characteristics or fines plasticit colour, secondary and minor components | isture 1dition | Consistency/ relative density | comments notes, structure and additional |
| 0 | | | Silty SAND, fine grained, yellow-brown, roots to abou | | 0 0 | observations |
| D | | | 0.25m | - M - W | L/M D | SLOPEWASH - - - - |
| a a a a a a a a a a a a a a a a a a a | | | Clayey SAND, fine grained, pale grey mottled yellow- brown, low plasticity | w | D | RESIDUAL |
| | | CL I | Sandy CLAY/Clayey SAND, fine to medium grained, red-brown/pale grey, low plasticity clay increasing with depth, some fine to medium grave! | М | | |
| D | | SL/ S | Bilty CLAY/Clayey SILT, low plasticity, pale grey | מ W > | (VSt) | |
| | 3.5 | B | HI3 terminated at 3.0m depth · Slotted piezometer (0.5 to 3m depth range) installed | | | |

Į



BOREHOLE LOG

Job No. G23085/1

ACN 069 211 561 6/6 Morton Close

| 01 | nto a | hr | inn | - <i>r</i> | 7415 | 1+1 | | TUGGERAH NSW 2259 | | JOB NO. G23085/1 | | | | |
|-------|-----------------------|---|---|---|--|--|---|--|--|--|---|--|--|--|
| ec | let | illi | 105 | i P | 'ly . | LIA | | TEL: (02) 43516200 | PitNo | о. ^В | HJ1 (UPPER SLOPE) | | | |
| | | | | | | | | , .y 51000 | Shee | t 1 | /1 | | | |
| | | | | | | | | | Starte | ed: S | 31/7/03 | | | |
| | | | | | | | | | Finished: 31/7/03 | | | | | |
| са | tior | 1: | r C | N AV G P S | ALC S (AI | US 66 | EGE ROAD & THE WOOL ROA 6) AMG: 56286697E 6115930 | D, VINCENTIA N | Logg | ed | GP/GV | | | |
| | | · · · · · · · · · · · · · · · · · · · | | | | | | | Chec | ked: | RJK | | | |
| ui | рm | en | t ty | ре | э: | | | 5 D C | RLsu | rface: | An <u>1 </u> | | | |
| | | | | | | | | | Datun | Π | | | | |
| water | samples, testi etc | | epth | | graphic log | USCS symbo | Soil type, particle characte | eristics or fines plasticity | M o isture condition | consistency/ elative density | comments notes, structure and additional observations | | | |
| | | 2 | | | | SM | Silty SAND, fine grained,grey, | grass roots to 0.15m | w | L/ MD | TOPSOIL | | | |
| | D | 3 | 0 | | 21151 | And a state of the | Silty SAND, fine grained,pale | grey | w | | SLOPEWASH - | | | |
| | | 2 4 | | | | sc | Clayey SAND, fine to medium | grained, pale grey | M-W | | | | | |
| D | | 2 | | | / | | | | | | | | | |
| D | e Penetrometer | 10 | | | | | Clayey SAND, fine to medium mottled red-brown, low plastici medium gravel | grained, pale grey ity, some fine to | W | D | RESIDUAL | | | |
| | 0 | 15 | | | | CL | Sandy CLAY, medium plasticity pale red-brown | , pale grey mottled | qW≤ | St/ VSt (VSt/ H) | | | | |
| D | | | - | | | 1 | fine to medium grained, red-bro | derately weathered, own, some low | D | I | лоск | | | |
| | | | - - - | | | | — auger tungsten bit r | efusal on rock | | | | | | |
| | | ent: cation uipm samples tests and cone Panetrometer (blows/150mm) etc | ent: pject: cation: uipment station: uipment station: 2 0 2 5 0 2 5 3 2 4 2 5 3 2 4 2 5 3 2 4 2 5 3 2 4 2 5 3 2 4 2 5 3 2 4 7 10 10 10 10 10 10 10 10 10 10 | ent: pject: cation: uipmentty state uipmentty cation: uipmentty cation: uipmentty cation: cation: uipmentty cation: | ent: FO pject: FE/ cation: NAN GP uipment type set set b cation: CE cation: CE c | ent: FORBES Dject: FEASIB Cation: NAVALC GPS (AF Uipment type: | Dject: FEASIBILITY Cation: NAVAL COLL GPS (AUS 66 uipment type: SK 100 state p G G G g G G G G | ent: FORBES RIGBY PTY LTD Dject: FEASIBILITY FOR DEVELOPMENT Cation: NAVAL COLLEGE ROAD & THE WOOL ROA GPS (AUS 66) AMG: S6286697E 6115930 Uipment type: SKID STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGI 6 0 0 0 0 0 0 0 0 0 0 </td <td>eotechnics Pty Ltd Indexent row zess Tex. row designs MX (ag design) ent: FORBES RIGEY PTY LTD bject: FEASIBILITY FOR DEVELOPMENT calion: NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: S6286897E 6115930N uipment type: Skib STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS uipment type: Skib STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS uipment type: Skib STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS uipment type: Skib SH SHIY SAND, fine grained, gray, grass tools to 0.15m uipment type: Sci C Clayey SAND, fine to medium grained, pale grey sill y SAND, fine to medium grained, pale grey Sci C Clayey SAND, fine to medium grained, pale grey o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Sc</td> <td>eotechnics Pty Ltd Income with any row residence of the particle of the particle</td> <td>Bolechnics Pty Ltd The Bear May 200 The Mode State May 199800 The Mode State Material description The Mode State The Mode S</td> | eotechnics Pty Ltd Indexent row zess Tex. row designs MX (ag design) ent: FORBES RIGEY PTY LTD bject: FEASIBILITY FOR DEVELOPMENT calion: NAVAL COLLEGE ROAD & THE WOOL ROAD, VINCENTIA GPS (AUS 66) AMG: S6286897E 6115930N uipment type: Skib STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS uipment type: Skib STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS uipment type: Skib STEER AUGER DRILL 100mm DIA. SOLID FLIGHT AUGERS uipment type: Skib SH SHIY SAND, fine grained, gray, grass tools to 0.15m uipment type: Sci C Clayey SAND, fine to medium grained, pale grey sill y SAND, fine to medium grained, pale grey Sci C Clayey SAND, fine to medium grained, pale grey o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Clayey SAND, fine to medium grained, pale grey motiled o Sci C Sc | eotechnics Pty Ltd Income with any row residence of the particle | Bolechnics Pty Ltd The Bear May 200 The Mode State May 199800 The Mode State Material description The Mode State The Mode S | | | |

| G | ie | ot | f ec | | | | or ^D ty | k Ltd | B O I ACN 069 211 561 66 Marton Close TUGGERAH NSW 2259 TEL: (02) 43516300 FAX: (02) 43516300 | Job N Pit No Shee | 40. G | DLE LOG 23085/1 HJ2 (UPPER SLOPE) /1 |
|------------|------------------|-----|--------------------|-------------------|-------------|-----------|-----------------------|-------------|--|-------------------------|----------------------------------|--|
| C I Pro | ⊃j€ | эс | t: | | | FE | ASIE | ILITY | FOR DEVELOPMENT | Starte Finisł | | 31/7/03 31/7/03 |
| Lo Eq | | | | | | G P | 'S (A | US 60 | EGE ROAD & THE WOOL ROAD, VINCENTIA 5) AMG: 286542E 6115721N | Logg Chec | ked: | G P / G V R J K |
| | | . 6 | | | | | 0. | | SKID STEER DRILL 100mm DIA. SOLID FLIGHT AUGERS | Datun | n n | |
| method | water | 1 | n. | | : | aeptn (m) | graphic log | USCS symbol | Material description Soil type, particle characteristics or fines plasticity | Moisture condition | Consistency/ relative density | comments notes, structure and additional observations |
| | None encountered | D | (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 |
| 9 | | D | Penetrometer (blow | 2 5 8 | | 1.0 | | CL/ | Sandy CLAY/Clayey SAND, low plasticity clay increasing with depth, orange-brown mottled pale grey, fine to medium sand Sandy CLAY, medium plasticity, red-brown mottled | aM≿ | F/ St VSt | RESIDUAL |
| | 1 | D | Dynamic Cone | 21 | | 1.5 | | | pale grey, fine sand SANDSTONE, extremely to moderately weathered, fine grained, red-brown, some low plasticity clay fines | D | | ROCK |
| | | | | | 2 | 2.0 | | | BHJ2 terminated at 1.7m depth | | | |
| | | | | | 2 2 | .5 | | | | | | |
| | | | | | 3 3 | .0 | | | | | | |
| | | | | | - 3 - | .5 | | | | | | |
| | | | | _ | - 4 | .0 | | | | | | |

APPENDIX B

LABORATORY TEST RESULTS

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| Test Type: | EC (1:5) | 6 |
|---------------|------------------------------------|------|
| 1001 1990. | LO (1.5) | |
| Order No: | Job No: G23085/ | /1 |
| Reference | Naval College Rd & Wool Rd, Vincer | ntia |
| Sample Name: | TPE3 0.4-0.45m 29/7/03 | |
| Sample No: | 75662 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
| | Richard King | |
| | 6/6 Morton Close | |
| | TUGGERAH NSW | 2259 |
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| TEST | RESULT | COMMENTS | |
|-----------------------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl ₂ 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | DLUBLE | EXCHANGEABLE | | | | | | |
|-----------|-------|---------|--------------|-----------|---------|--|--|--|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | | | | |
| Sodium | | | | | | | | | |
| Potassium | | | | | | | | | |
| Calcium | | | | | | | | | |
| Magnesium | | | | | | | | | |
| Aluminium | | • | | | | | | | |
| | | | | | | | | | |
| • | | ECEC | | | | | | | |
| | | Ca/Mg | | | | | | | |
| | malka | | | | | | | | |

mg/kg

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

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| planation of the Methods: | |
| I, EC, Soluble Cations, Nitrate: Bradley et al (1983), Exchangeable Cations, ECEC: Method 15A1 Bayment & Higginson (1992) | - |
| Iloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9F1 Bayment & Hinginson (1992). Ammonium: Sulphate, Iron | |
| 1 EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Rayment & Higginson (1992) Iloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Higginson (1992). Ammonium, Sulphate, Iron, pper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginson (1992). | |
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| hecked by Principal | |
| Pimon Looke Data of DW - 1 44/00/0000 | |
| Sinon Leake Date of Report 11/08/2003 N.Burrows | |
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| Test Type: | EC (1:5) | | | |
|---------------|--------------------------------------|------|--|--|
| Order No: | Job No: G23085/1 | | | |
| Reference | Naval College Rd & Wool Rd, Vincenti | а | | |
| Sample Name: | TPE3 0.7-0.8m 29/7/03 | | | |
| Sample No: | 75663 | | | |
| 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 | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SOLUBLE EXC | | EXCHANGEABL | XCHANGEABLE | |
|-----------|-------------|---------|-------------|-------------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium | | | | | |
| Potassium | | | | | |
| Calcium | | | | | |
| Magnesium | | | | | |
| Aluminium | | | | | |
| | | | | | |
| | | ECEC | | | |
| | | Ca/Mg | | | |
| | ma/ka | | | | |

mg/kg

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

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| [+:+] | |
| Explanation of the Methods | |
| pH EC Soluble Cations Nitrate: Bradley et al (1982) Exchangeable Cations ECEC: Mathematica | 15A1 Decement 8 Ulineirone (1000) |
| Chloride: Vogel (1961) Aluminium: Mathod 3500 APHA (1992) Phoenbate: Mathod 951 Paye | 10AT Haynent & Higginson (1992) |
| DH, EC, Soluble Cations, Nitrate: Bradley et al (1983), Exchangeable Cations, ECEC: Method Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayn Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & | & Higginson (1992). |
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| Checked by Principal | Consultan |
| Simon Leake Date of Report 11/08/2003 | N.Burrows |
| | |
| V | |

| Test Type: | EC (1:5), eCEC + sol SO4 | | | |
|---------------|-------------------------------------|------|--|--|
| Order No: | Job No: G23085/1 | | | |
| Reference | Naval College Rd & Wool Rd, Vincent | ia | | |
| 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 CaCl₂ 1:2 | | | |
| EC mS/cm 1:2 | .08 | | |

Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

Phosphate as P Ammonium as N Nitrate as N Sulphate as S 358 Iron Zinc Copper Manganese

Boron

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| Explanation of the Methods: | |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Ba | vment & Hinoinson (1992) |
| Explanation of the Methods Structure in the Method State of the | iginson (1992), Ammonium, Sulphate, Iron. |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginsd | on (1992). |
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| Charlend by Dringing | |
| Checked by Principal | Consultan |
| Simon Leake Date of Report 11/08/2003 | |
| | N.Burtows |
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| Test Type: | EC (1:5) | | | |
|---------------|-------------------------------------|------|--|--|
| Order No: | Job No: G23085/1 | | | |
| Reference | Naval College Rd & Wool Rd, Vincent | ia | | |
| 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 CaCl₂ 1:2 | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SOLUBLE | | SOLUBLE EXCHANGEABLE | | |
|-----------|---------|---------|----------------------|-----------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium | | | | | |
| Potassium | | | | | |
| Calcium | | | | | |
| Magnesium | | | | | |
| Aluminium | | | | | |
| | | | | | |
| | | ECEC | | | |
| | | Ca/Mg | | | |
| | ma/ka | | | | L |

mg/kg

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

| Explanation of the Methods | |
|---|---|
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983) ∉ Exchangeable Cations, ECEC: Method 15A1 Ba | vment & Higginson (1992) |
| DH, EC, Soluble Cations, Nitrate: Bradley et al (1983) Exchangeable Cations, ECEC: Method 15A1 Ra Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Hig Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginsc | gginson (1992). Ammonium, Sulphate, Iron, |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Hayment & Higginsc | on (1992). |
| Al and a second s | \sim |
| | $\langle \chi \rangle$ |
| Checked by Principal | Consultant |
| Checked by Principal | |
| | N.Burrows/ |
| V | |

| Test Type: | EC (1:5), eCEC + sol SO4 | | | |
|---------------|--------------------------------------|------|--|--|
| Order No: | Job No: G23085/1 | | | |
| Reference | Naval College Rd & Wool Rd, Vincenti | а | | |
| 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 CaCl₂ 1:2 | | | |
| EC mS/cm 1:2 | .05 | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

Phosphate as P Ammonium as N Nitrate as N Sulphate as S 95 Iron Zinc Copper Manganese

Boron

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| Explanation of the Methods | | |
| Explanatory of the Methods/1112221112111111111111111111111111111 | | |
| Charles Vices (double Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Ray | nent & Higginson (1992) | |
| Chloride: Voger (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Higg | inson (1992). Ammonium, Sulphate, Iron, | |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginsor | i (1992). | |
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| Checked by Principal Simon Leake Date of Report 11/08/2003 | Ourounantimeter from from the second | |
| Simon Leake Date of Refort 11/08/2003 | N.Burrows | |
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| Test Type: | EC (1:5) | |
|---------------|-------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincent | ia |
| Sample Name: | TPE6 1.5-1.55m 29/7/03 | |
| Sample No: | 75667 | |
| 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 | .06 | | |

Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | 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

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| http://www.com/com/com/com/com/com/com/com/com/com/ | |
| Explainance of the Methods PH, EC, Soluble Cations, Nitrate: Bradley et al (1986). Exchangeable Cations, ECEC: Method 15A1 Re Chioride: Vogel (1981). Aluminium: Method 3500. APHA (1992). Phosphate: Method 9E1 Rayment & Hi Copper, Manganese + Zinc: Method 83-1 to 83-5/Black (1983). Boron: Method 12C2 Rayment & Higgins | |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1986), Exchangeable Cations, ECEC: Method 1541 Ba | wment & Hindingon (1002) |
| Chloride: Vogel (1961), Aluminium: Method 3500 APHA (1992) Phosphate: Method 951 Baymont & Hi | ggineon (1902) Ammonium Sulabata tran |
| Copper, Manganese + Zinc: Method 83-1 to 83-5/Black (1983) Boron: Method 12C2 Bayment & Histing | on (1992). Animonium, Suphate, Ron, |
| The second s | on (1992). |
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| handle | |
| Checked by Principal | |
| Checked by Principal, Simon Leake Date of Report 11/08/2003 | Consultant |
| Simon Leake Date of Benort 11/08/2003 | |
| Cimen Leane Date of hepoint 11/00/2003 | N.Burrows |
| (/ | |

| Test Type: | EC (1:5) | | | |
|---------------|--------------------------------------|------|--|--|
| Order No: | Job No: G23085/1 | | | |
| Reference | Naval College Rd & Wool Rd, Vincenti | а | | |
| Sample Name: | TPD2 0.0-0.1m 30/7/03 | | | |
| Sample No: | 75668 | | | |
| 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 | | | |
| nH in CaCL 1.2 | | | |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

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

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| Explanation of the Methods | |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983)/Exchangeable Cations, ECEC: Method 15A1 Ra Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Hig Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higgins | umani 9 Ulineirana (1000) |
| Chloride: Voral (1961) Auminium Motor 3600 APMA (1903) Bheerbators, Method 354 Ha | when a muguison (1992) |
| Conpar, Maggapasa - Zipa, Malhad 83 to 33 5 Birls (1992), Prospilate: Method 95 T Hayrient & Hit | gginson (1992). Ammonium, Sulphate, Iron, |
| Copper, Manganese + Zinc: Method 65-1 to 65-5 prack (1983). Boron: Method 12C2 Rayment & Higginse | on (1992). |
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| Checked by Dringing! | |
| Checked by Finicipal | Consultant |
| Checked by Principal | |
| | N.Burrows ^{**} |

| Test Type: | EC (1:5) | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | а |
| Sample Name: | TPD2 0.4-0.5m 30/7/03 | |
| Sample No: | 75669 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
| | Richard King | |
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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357 Pennant Hills NSW 1715

Telephone (02) 9980 6554 Facsimile (02) 9484 2427 http://www.sesl.com.au Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | |
|---------------------------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl₂ 1:2 EC mS/cm 1:2 | .05 | | |

EC mS/cm 1:2

Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | LUBLE | 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

| Explanation of the Mennods/ |
|---|
| THE C Soluble Cations Nitrate, Pedag et al (1003) Enderse al 1, 2, 1 , 5,5,5, 4, 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 , 1 , |
| Chloride Vane Catoris, Mitaes, Bradey et al (1993). Exchangeable Cations, ECEC: Method 15A1 Hayment & Higginson (1992) |
| 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). |
| Copper, wanganese + zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginson (1992). |
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| |
| Checked by Principal |
| |
| Simon Leake Date of Report 11/08/2003 N.Burrows |
| ·/ N.Ddiffow3 |
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| Test Type: | EC (1:5), eCEC + sol SO4 | |
|---------------|-------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincent | ia |
| Sample Name: | TPD2 1.4-1.5m 30/7/03 | |
| Sample No: | 75670 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
| | Richard King | |
| | 6/6 Morton Close | |
| | TUGGERAH NSW | 2259 |



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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl₂ 1:2 | | | |
| EC mS/cm 1:2 | .06 | | |

Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

| Phosphate as P | |
|----------------|-----|
| Ammonium as N | |
| Nitrate as N | |
| Sulphate as S | 214 |
| Iron | |
| Zinc | |
| Copper | |
| Manganese | |
| Boron | |

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| Explanation of the Methods | | |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Ra | iyment & Higginson (1992) | |
| PH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Ra Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Hig Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higgins | gginson (1992). Ammonium, Sulphate, Iron, | |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Hayment & Higginso | on (1992). | |
| | \frown | |
| | | |
| Checked by Principal | Consultant | |
| Checked by Principal Simon Leake Date of Report 11/08/2003 | | |
| Sinon Leake Date of Report 11/08/2003 | N.Burrows | |
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| , | | |

| Test Type: | EC (1:5) | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | ia |
| Sample Name: | TPD4 0.1-0.15m 30/7/03 | |
| Sample No: | 75671 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
| | Richard King | |
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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554 Facsimile (02) 9484 2427

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| TEST | RESULT | COMMENTS | | |
|-----------------------------|--------|----------|--|--|
| pH in water 1:2 | | | | |
| pH in CaCl ₂ 1:2 | | | | |

EC mS/cm 1:2

Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | 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

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| Explanation of the Methods: | |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 F | lavment & Higginson (1992) |
| Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & H | ligginson (1992). Ammonium, Sulphate, Iron. |
| PH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 F Chloride: Vogel (1961). Aluminium: Method 3500 Al/HA (1992). Phosphate: Method 9E1 Rayment & H Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higgin | son (1992). |
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| // | |
| Checked by Principal | AT A A A A A A A A A A A A A A A A A A |
| Checked by Principal | Consultant |
| Simon Leake Date of Réport 11/08/2003 | N.Burrows |
| | 11.DU110W5 |
| V | |

| 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 | | | | |
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Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554 Facsimile (02) 9484 2427

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| TEST | RESULT | COMMENTS | |
|-----------------------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl ₂ 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | LUBLE | EXCHANGEABLE | | | 3LE EXCHANGEABLE | | E |
|-----------|--------|---------|--------------|---|------------------|------------------|--|---|
| 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

| neconmendations | |
|---|--|
| | |
| | |
| 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 | |

| Test Type: | EC (1:5) | |
|---------------|---------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincentia | a |
| Sample Name: | TPD4 1.6-1.7m 30/7/03 | |
| Sample No: | 75673 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
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Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554 Facsimile (02) 9484 2427 http://www.sesl.com.au

Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | | |
|-----------------|--------|----------|--|--|
| pH in water 1:2 | | | | |
| pH in CaCl₂ 1:2 | | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | SOLUBLE | | EXCHANGEABLE | | |
|-----------|-------|---------|------|--------------|---------|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | |
| Sodium | | | | | | |
| Potassium | | | | | | |
| Calcium | | | | | | |
| Magnesium | | | | | | |
| Aluminium | | | | | | |
| | | | | | | |
| | | LECEC | | | | |
| | | Ca/Mg | | | | |
| | ma/ka | | | 1 | | |

mg/kg

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

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| Explanation of the Mathiaday | |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exclarageable Cations, ECEC: Method 15A1 Rayment & Higginson (1992) | |
| Explanation as the Methods of the Methods of the second se | |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginson (1992). | |
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| Checked by Drincipal | |
| Checked by Principal | |
| Cimeral asks Data of David Mill dd (00,0000 | |
| Sinon Leake Date of Report 11/08/2003 N.Burrows | |
| | |

| Test Type: | EC (1:5) | |
|---------------|-------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincent | ia |
| Sample Name: | TPC4 0.25-0.45m 29/7/03 | |
| Sample No: | 75674 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
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Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl, 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | SOLUBLE | | EXCHANGEABLE | | |
|-----------|-------|---------|------|--------------|---------------------------------------|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | |
| Sodium | | | | | | |
| Potassium | | | | | | |
| Calcium | | | | | | |
| Magnesium | | | | | | |
| Aluminium | | | | | | |
| | | | | | | |
| | | ECEC | | | · · · · · · · · · · · · · · · · · · · | |
| | | Ca/Mg | | | | |
| | ma/ka | | | | L | |

mg/kg

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

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| Explanation of the Mathanas | |
| DH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 18 Chioride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Raymer Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & H | A Dayman 9 Hissian (1000) |
| Chipride: Vogel (1961) Aluminium: Method 3500 ADHA (1992) Beerhater Active C. Method 12 | A Hayment & Higginson (1992) |
| Conner, Voger (1961), Andrimitant, Method 3500 AFRA (1992), Priosphate: Method 9E1 Haymer | it & Higginson (1992). Ammonium, Sulphate, Iron, |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Hayment & H | ilgginson (1992). |
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| | $Ch \ge$ |
| Checked by Principal. | Consultant |
| Checked by Principal | Consumante Stranger |
| Simon Leake Date of Report 11/08/2003 | N.Burrows |
| | 11.DUIT0475 |
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| V | |

| Test Type: | EC (1:5) | | | |
|---------------|--------------------------------------|---------------------------------------|--|--|
| Order No: | Job No: G23085/1 | | | |
| Reference | Naval College Rd & Wool Rd, Vincenti | 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 | | | |
| CLIENT: | Network Geotechnics Pty Ltd | | | |
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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl. 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

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



| Test Type: | EC (1:5), eCEC + sol SO4 | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | ia |
| Sample Name: | TPC4 1.9-1.95m 29/7/03 | |
| Sample No: | 75676 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
| | Richard King | |
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Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | |
|--|--------|----------|--|
| pH in water 1:2 pH in CaCl ₂ 1:2 | | | |
| EC mS/cm 1:2 | .07 | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

Phosphate as P Ammonium as N Nitrate as N Sulphate as S 150 Iron Zinc Copper Manganese

Boron

| necommendations | |
|--|-----|
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| Septemention of the Methodes | |
| Application of the Methods: PH, EC, Soluble Cations, Nitrate: Bradley et al (1996). 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 N.Burrows | |
| | |

| 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 | | | |
| CLIENT: | Network Geotechnics Pty Ltd | | | |
| | Richard King | | | |
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| | TUGGERAH NSW 2259 | | | |

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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

| Phosphate as P | |
|----------------|----|
| Ammonium as N | |
| Nitrate as N | |
| Sulphate as S | 64 |
| Iron | |
| Zinc | |
| Copper | |
| Manganese | |
| | |

Boron


| 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 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
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Specialists in Soil Chemistry and Agronomy

Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

ACN 002 825 569 ABN 23 002 825 569

16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554 Facsimile (02) 9484 2427

http://www.sesl.com.au

Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | SOLUBLE | | EXCHANGEABL | |
|-----------|-------|---------|------|-------------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium | | | | | |
| Potassium | | | | | |
| Calcium | | | | | |
| Magnesium | | | | | |
| Aluminium | | | | | |
| - | | | | | |
| | | ECEC | | | |
| | | Ca/Mg | | | |
| | ma/ka | | | | |

mg/kg

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

| Explaination of the Mathuds/: | |
|---|---|
| Checked by Principal | • |
| Simon Leake Date of Report 17/08/2003 N.Burrows | |

| 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 CaCl₂ 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | SOLUBLE | | EXCHANGEABLE | | |
|-----------|-------|---------|------|--------------|---------|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | |
| Sodium | | | | | | |
| Potassium | | | | | | |
| Calcium | | | | | | |
| Magnesium | | | | | | |
| Aluminium | | | | | | |
| | | | | | | |
| L | | ECEC | | | | |
| | | Ca/Mg | | | | |
| | ma/ka | | | l | | |

mg/kg

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

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| Explanation of the Methods: | |
| PH, EC, Soluble Cations, Nitrate: Bradley et al (1983), Exchangeable Cations, ECEC: Method 15A1 Ra Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Hig Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginson (1983). | wmant & Higginson (1002) |
| Chloride: Vogol (1961) Auminium: Mothed 2600 ADL/A (1902) Bhoghata Mothed 26 Date and a line of the state of | vinent of hugh son (1992) |
| Conput. More and a second seco | iginson (1992). Ammonium, Sulphate, Iron, |
| Copper, Wanganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Hayment & Higginsc | n (1992). |
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| for the second | |
| | (0) |
| Checked by Principal | Consultant |
| | |
| Simon Leake Date of Report 11/08/2003 | N.Burrows |
| | 14.001046 |
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| Test Type: | EC (1:5) | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | a |
| 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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Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357 Pennant Hills NSW 1715

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| TEST | RESULT | COMMENTS | |
|-----------------------------------|--------|----------|--|
| pH in water 1:2 pH in CaCl。1:2 | | | |

pH in CaOl₂ 1:2 EC mS/cm 1:2 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

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| Explanation of the Methods: | <u></u> |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1993). Exchangeable Cations, ECEC: Method 15A1 Rayment & Higginson (1992) | |
| Chloride: Vogel (1961). Aluminium: Method 3500 & PHA (1992). Phosphate: Method 9E1 Rayment & Higginson (1992). Ammonium, Sulphate, Iron, | |
| DH, EC, Soluble Cations, Nitrate: Bradley et al (1993). Exchangeable Cations, ECEC: Method 15A1 Rayment & Higginson (1992). Chloride: Vogel (1961). Aluminium: Method 3500 &PHA (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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| | |
| Checked by Principal | |
| Simon Leake Date of Report 11/08/2003 N.Burrows | |
| Sinon Leake Date of Mepon 11/00/2003 N.Burrows | |
| \mathcal{O} | |

| 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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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357 Pennant Hills NSW 1715

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| TEST | RESULT | COMMENTS | |
|------------------------------------|--------|----------|--|
| pH in water 1:2 pH in CaCl₂ 1:2 | | | |
| EC mS/cm 1:2 | .03 | | |
| Chlorides mg/kg | | | |

CATION ANALYSIS

| TEST | SC | LUBLE | | EXCHANGEABL | E |
|-----------|------|---------|------|-------------|---------|
| 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 | |
|--|--|
| | |
| | |
| Explaination of the Methods/111111111111111111111111111111111111 | |
| Checked by Principal | |

| Test Type: | EC (1:5), eCEC + sol SO4 | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | а |
| Sample Name: | TPA1 1.0-1.1m 30/7/03 | |
| Sample No: | 75682 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
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Specialists in Soil Chemistry and Agronomy

Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

ACN 002 825 569 ABN 23 002 825 569

16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554

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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl₂ 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

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

Boron



| Test Type: | EC (1:5), eCEC + sol SO4 | |
|---------------|-------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincent | ia |
| Sample Name: | TPF1 0.25-0.6m 30/7/03 | |
| Sample No: | 75683 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
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ABN 23 002 825 569

16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357 Pennant Hills NSW 1715

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| TEST | RESULT | COMMENTS | |
|---------------------------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl₂ 1:2 EC mS/cm 1:2 | .08 | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | SOLUBLE | | EXCHANGEABLE | | |
|--|-----------------------------|---------------|--------------------------------------|--|---|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | |
| Sodium Potassium Calcium Magnesium Aluminium | .31 .01 < 0.08 .14 | | .31 .04 < 0.20 1.66 1.73 | 8.10 1.00 2.90 43.10 44.90 | elevated - sodic low very low elevated elevated - available | |
| | | ECEC Ca/Mg | 3.85 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 |
| DH, EC, Soluble Cations, Nitrate: Bradley et al (1983)/Exchangeable Cations, ECEC: Method 15A1 Rayment & Higginson (1992) Chloride: Vogel (1961). Aluminium: Method 3500 AP/HA (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 |

| Test Type: | EC (1:5) | |
|---------------|---------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincentia | a |
| 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 CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | LUBLE | | EXCHANGEABLE | |
|--|-------|---------------|------|--------------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium Potassium Calcium Magnesium Aluminium | | | | | |
| | mg/kg | ECEC Ca/Mg | | | |

mg/kg

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

| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Ray Chioride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Higg Copper, Manganese + Zinc: Method 83-1 to 83-5 Bjack (1983). Boron: Method 12C2 Rayment & Higginso | ment & Higginson (1992) jinson (1992). Ammonium, Sulphate, Iron, n (1992). |
|--|--|
| Checked by Principal | Consultant. N.Burrows |

| 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, 1:2 | | | |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | LUBLE | | EXCHANGEABL | |
|-----------|-------|---------|------|-------------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium | | | | | |
| Potassium | | | | | |
| Calcium | | | | | |
| Magnesium | | | | | |
| Aluminium | | | | | |
| | | | | | |
| ****** | | ECEC | | | |
| | | Ca/Mg | | | |
| | ma/ka | | | | |

mg/kg

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

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| 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). | للسلب |
| Chloride: Vogel (1961) Aluminium: Mathod 3500 APHA (1992) Bhoshata, Mathod SHI Dawney & Vigence (1962) Augustication (1992) | |
| Conner, Vagan (1997), Alamanian de dou o Arina (1992), Endephate, Melliou 921 Haynein & Higgilison (1992). Ammonium, Sulphate, Iron, | |
| Copper, Manganese + Zinc. Method 63-1 to 63-5 black (1983). Boron: Method 12C2 Hayment & Higginson (1992). | |
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| Checked by Principal | |
| Cineral asks Data data data data data data data data | |
| Checked by Principal | |
| /· N.Durrows | |

| Test Type: | EC (1:5) | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| | Naval College Rd & Wool Rd, Vincenti | а |
| Sample Name: | TPF3 0.3-0.6m 30/7/03 | |
| Sample No: | 75686 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|---|
| oH in water 1:2 | | | • |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | LUBLE | EXCHANGEABLE | | |
|-----------|-------|---------|--------------|-----------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium | | | | | |
| Potassium | | | | | |
| Calcium | | | | | |
| Magnesium | | | | | |
| Aluminium | | | | | |
| | | | | | |
| | | ECEC | | | |
| | | Ca/Mg | | | |
| | ma/ka | L | | | L |

mg/kg

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

| Explanation et the Mathods | |
|--|------------|
| Explanator in the internet | _ <u>.</u> |
| Checked by Principal | |

| Test Type: | EC (1:5), eCEC + sol SO4 | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | ia |
| Sample Name: | TPF3 0.9-1.2m 30/7/03 | |
| Sample No: | 75687 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
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| TEST | RESULT | COMMENTS | <u></u> |
|-----------------|--------|----------|---------|
| pH in water 1:2 | | | |
| pH in CaCl₂ 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

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

mg/kg

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

Boron

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| | T1997 (1997) |
| Explanation of the Methods: | |
| DH, EC, Soluble Cations, Nitrate: Bradley et al (1983). Exchangeable Cations, ECEC: Method 15A1 Ri Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Hi Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higgins | avment & Hinginson (1992) |
| Chloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Bayment & Hi | ingine (1992) Ampopium Sulphate Iron |
| Copper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983) Boron: Method 12C2 Baymont & Higging | gginson (1992). Annonium, Suiphate, iron, |
| The second s | 501(1992). |
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| Checked by Dringingt | |
| Checked by Phhoipal | Consultant |
| Simon Looka Data of Depart 11/00/0000 | Constant of the second s |
| Checked by Principal Simon Leake Date of Report 11/08/2003 | N.Burrows |
| 4. | 11.00110400 |

| Test Type: | EC (1:5) | |
|---------------|--------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincenti | a |
| Sample Name: | TPF3 2.0-2.3m 30/7/03 | |
| Sample No: | 75688 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
| CLIENT: | Network Geotechnics Pty Ltd | |
| | Richard King | |
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Sydney Environmental and Soil Laboratory

Specialists in Soil Chemistry and Agronomy

Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW)

ACN 002 825 569 ABN 23 002 825 569

16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554 Facsimile (02) 9484 2427

http://www.sesl.com.au

Email: sesl@sesl.com.au

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 CaCl₂ 1:2 | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | SOLUBLE | | EXCHANGEABLE | | |
|-----------|-------|---------|------|--------------|---------|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | |
| Sodium | | | | | | |
| Potassium | | | | | | |
| Calcium | | | | | | |
| Magnesium | | | | | | |
| Aluminium | | | | | | |
| | | | | | | |
| | | ECEC | | | | |
| | | Ca/Mg | | | | |
| | ma/ka | | | | | |

mg/kg

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

| splanation of the Melhods | |
|--|--|
| H, EC, Soluble Cations, Nitrate: Bradley et al (1983), Exchangeable Cations, ECEC: Method 15A1 Rayment & Higginson (1992) hloride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Higginson (1992). Ammonium, Sulphate, iron, opper, 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 | |

| Test Type: | EC (1:5) | |
|---------------|---------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincentia | a |
| Sample Name: | TPF5 0.0-0.5m 30/7/03 | |
| Sample No: | 75689 | |
| Date Received | 31/07/2003 Total No Pages: 45 | |
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16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357 Pennant Hills NSW 1715

Telephone (02) 9980 6554 Facsimile (02) 9484 2427 http://www.sesl.com.au Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | LUBLE | | EXCHANGEABL | |
|-----------|-------|---------|------|-------------|---------|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium | | | | | |
| Potassium | | | | | |
| Calcium | | | | | |
| Magnesium | | | | | |
| Aluminium | | | | | |
| | | | | | |
| | | ECEC | | | |
| | | Ca/Mg | | | |
| | ma/ka | _ L | | | |

mg/kg

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

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| planarion of the Methods: | 1 |
| parliarda of headings, Nitrate: Bradley et al (1983)/Exchangeable Cations, ECEC: Melhod 15A1 Rayment & Higginson (1992) Ioride: Vogel (1961). Aluminium: Method 3500 APHA (1992). Phosphate: Method 9E1 Rayment & Higginson (1992). Ammonium, Sulphate, Iron, pper, Manganese + Zinc: Method 83-1 to 83-5 Black (1983). Boron: Method 12C2 Rayment & Higginson (1992). | 4 |
| loride: Vogel (1961). Aluminium: Method 3500 ABHA (1992). Phosphate: Method 9F1 Bayment & Hinginson (1992). Animonium: Sulphate Iron | |
| pper, Manganese + Zinc: Method 83-1 to 83-5 Bláck (1983). Boron: Method 12C2 Bayment & Higginson (1992). | |
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| healed by Dringing | |
| hecked by Principal | |
| | |
| Simon Leake Date of Report 11/08/2003 N.Burrows | |

| Test Type: | EC (1:5) | |
|---------------|---------------------------------------|------|
| Order No: | Job No: G23085/1 | |
| Reference | Naval College Rd & Wool Rd, Vincentia | а |
| 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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Specialists in Soil Chemistry and Agronomy

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ACN 002 825 569 ABN 23 002 825 569

16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357

Pennant Hills NSW 1715 Telephone (02) 9980 6554 Facsimile (02) 9484 2427 http://www.sesl.com.au

Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | |
|-----------------------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCl ₂ 1:2 | | | |

EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SO | SOLUBLE | | EXCHANGEABLE | | |
|-----------|-------|---------|------|--------------|---------|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment | |
| Sodium | | | | | | |
| Potassium | | | | | | |
| Calcium | | | | | | |
| Magnesium | | | | | | |
| Aluminium | | | | | | |
| | | | | | | |
| | | ECEC | | | | |
| | | Ca/Mg | | | | |
| | ma/ka | | | | | |

mg/kg

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

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| Explanation of the Methods | |
| Explanator in the international internati | and a second set |
| Chloride: Vogel (1961) Aluminium: Welbod 300 APHA (1992) Phosphate: Molbod 941 Payment & Highinson (1992) | |
| Conper Magrandes / Ziner Method 93 11 99 5 Plots (1992), Prospitale, Method 32 i Hayment a Highlens (1992), Animonium, Suphate, Iron, | |
| copper, manganese + zinc. Method 33-1 to 33-5 plack (1983). Boron: Method 1202 Rayment & Rigginson (1992). | |
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| Checked by Principal | |
| Cimen Lealer Date of Depart dd/00/0000 | |
| Simon Leake Date of Report 11/08/2003 N.Burrows | |
| TV.Bullow5- | |

| 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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Sydney Environmental and Soil Laboratory Pty Ltd (inc in NSW) ACN 002 825 569

AGN 002 825 569 ABN 23 002 825 569

16 Chilvers Road Thornleigh NSW 2120 Australia Address Mail to PO Box 357 Pennant Hills NSW 1715

Telephone (02) 9980 6554 Facsimile (02) 9484 2427 http://www.sesl.com.au Email: sesl@sesl.com.au

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| TEST | RESULT | COMMENTS | |
|-----------------|--------|----------|--|
| pH in water 1:2 | | | |
| pH in CaCL 1:2 | | | |

pH in CaCl₂ 1:2 EC mS/cm 1:2 Chlorides mg/kg

CATION ANALYSIS

| TEST | SC | LUBLE | EXCHANGEABLE | | |
|--|----------------------------|---------------|--------------------------------------|--|--|
| Unit | meq% | Comment | meq% | % of ECEC | Comment |
| Sodium Potassium Calcium Magnesium Aluminium | .7 .02 < 0.08 .09 | | .89 .15 4.09 8.51 < 0.02 | 6.50 1.10 30.00 62.40 0.00 | elevated - sodic very low low high unavailable |
| | ma/ka | ECEC Ca/Mg | 13.64 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 |
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| Explanation of the Methods: |
| pH, EC, Soluble Cations, Nitrate: Bradley et al (1983)/Exchangeable Cations, ECEC: Method 15A1 Rayment & Higginson (1992) |
| 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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| Charled by Dringing 7/ * |
| Checked by Principal Consultan |
| Simon Leake Date of Report 11/08/2003 N.Burrows |
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