# BOREHOLE No. BH17

Sheet 1 of 4

Project: RTA Wharf Upgrade
Location: Bell Bay
Job No: PI30328

Client: Rio Tinto Aluminum
Start - Finish Date: 12/12/08 - 15/12/08
Bore dia: 150/100mm

Driller: Darren
Rig: Pioneer
Surface Conditions: Water

Northings: 5446316.0mN Logged: MT
Eastings: 488906.3mE Checked: DRAFT
RL: -6.0 Oriented: -90

| LABORATORY DATA | | | | | | FIELD DATA | | | | SOIL DESCRIPTION | | SOIL CONDITION | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| dry density (t/m³) | moisture content (%) | liquid limit (%) | plasticity index (%) | percent fines (%) | design / test data | field & other tests | sample type | field tests ground water | depth (m) | graphic log | soil type, unified classification, colour, structure, particle characteristics, minor components | consistency/ density | moisture condition | drilling method, well construction, water and additional observations |
| | | | | | | | | | 0 | | FILL, rock boulders | | | wash boring |
| | | | | | | | | | | | SILIT (MH)<br>brown, pale green-grey, orange, trace fine to medium coarce black basaltic gravel | F | | |
| | 50.8 | 60 | 28 | | | 3/3/4<br>(N=7)<br>Sup=75<br>Sup=125<br>Sup=50 | | | 1<br>2 | | | | | two attempts to SPT at 1m, both on boulder, no penetration using tri-cone bit for drilling |
| | | | | | | | | | 3 | | CLAYEY SAND (SC)<br>brown, fine to coarse | L | | |
| | | | | | | 1/3/4<br>(N=7) | | | 4 | | | | | SPT no sample |
| | | | | | | | | | 5 | | SILTY CLAY (CH)<br>grey, green-grey, brown, trace fine to medium sand | F-St | | |
| | 28.3 | 63 | 37 | | | Suv=161<br>Suv=>237 | | | 6 | | SILT (ML)<br>grey, organge, occasional medium black basaltic gravel | St | | push tube 45cm |
| | | | | | | | | | 7 | | CLAYEY SAND (SC)<br>brown, orange, with clay, fine to medium, trace basalt gravel, fines of low plactisity | MD | | |
| | 25 | 27 | 8 | | | 2/5/7<br>(N=12)<br>Sup=75<br>Sup=100 | | | 8 | | brown, fine to coarse sand, trace fine black basaltic gravel | MD | | |
| | 22.4 | 23 | 9 | | | 4/8/11<br>(N=19) | | | 9 | | | | | |
| | | | | | | | | | 10 | | SILT(ML)<br>grey, brown | St | | |

**LABORATORY DATA**

UQN Unconfined Comp. (Natural)
UQC Unconfined Comp. (Compacted)
TQN Uncons. Undrained Triax. (Natural)
TQC Uncons. Undrained Triax. (Compacted)
TRX Consolidated Undrained Triaxial with pwp measurement
PSA Particle Size Analysis
CS 1D oedometer Test
LPM Laboratory Permeability

**FIELD DATA ABBREVIATIONS**

Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm
FPM = Field permeability

**GROUNDWATER SYMBOLS**

= Water level (static)
= Water level (during drilling)
= Outflow / Inflow

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**DENSITY (N-value)**

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| MD | (medium dense) | 10 - 30 |
| D | (dense) | 30 - 50 |
| VD | (very dense) | 50 - 100 |
| CO | (compact) | >50/150mm |

**MOISTURE CONDITION**

D = Dry M = Moist W = Wet

**CONSISTENCY (Su)**

| | | |
|---|---|---|
| VS | (very soft) | < 12 kPa |
| S | (soft) | 12 - 25 |
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| | | | | | | Suv=14 | | | | | SILT(ML) | | | push tube 45cm |
| 1.38 | 31.2 | 42 | 19 | 34.5 | | Suv=24 | | | | | grey, brown *(continued)* | | | Gs=2.65 |
| | | | | | | | | | | | CLAYEY SAND (SC) grey, pale brown, fine to medium sand, fines of medium plactisity | L | | |
| | | | | | | | | | | | SANDY SILT (ML) grey, with fine sand, trace fine gravel, trace clayey bands | St | | |
| | | | | | | 2/3/8 (N=11) | | | 11 | | | | | |
| | | | | | | | | | | | SILT(ML) grey-brown, orange, trace thin different colour bands | St | | |
| | | | | | | | | | 12 | | | | | |
| | | | | | | 2/4/7 (N=11) | | | 13 | | | | | |
| | | | | | | | | | | | SILTY CLAY (CL) dark grey | St | | |
| | | | | | | 3/5/8 (N=13) | | | 14 | | | | | |
| | | | | | | | | | | | SILT(ML) grey, trace black, with clay | St | | |
| | | | | | | | | | 15 | | | | | |
| | | | | | | | | | | | SILTY CLAY (CH) dark grey-brown | St | | |
| | | | | | | | | | 16 | | | | | |
| | | | | | | Sup=225 Suv=>237 | | | | | | | | push tube 45cm |
| 1.28 | 38.9 | 64 | 31 | | UQN Su=289 | | | | 17 | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | 18 | | | F | | change in drilling rate |
| | | | | | | 0/3/6 (N=9) | | | 19 | | SANDY SILT(ML)/SILTY SAND (SM) brown, organge, with fine to medium black basaltic gravel as a band | St/L | | |
| | | | | | | | | | | | SILTY SAND (SM) brown, fine to coarse sand | VL | | |
| | | | | | | | | | 20 | | | | | |

**LABORATORY DATA**

| | |
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| TRX | Consolidated Undrained Triaxial with pwp measurement |
| PSA | Particle Size Analysis |
| CS | 1D oedometer Test |
| LPM | Laboratory Permeability |

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Checked: DRAFT
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| | | | | | | | | | | | SILTY SAND (SM)<br>brown, fine to coarse sand *(continued)* | | | |
| | | | | | | 0/0/1<br>(N=1) | | | | | | | | SPT 9cm above depth |
| | | | | | | | | | 21 | | | | | |
| | | | | | | | | | | | gray, brown bands, fine to coarse sand, with fine gravel, fines of low plasticity | L | | |
| | | | | | | | | | 22 | | | | | |
| | 20.6 | 18 | 3 | 13.4 | | 1/1/5<br>(N=6) | | | | | with orange-brown thin layer bands | | | Gs=2.65 |
| | | | | | | | | | 23 | | | | | |
| | | | | | | | | | | | SAND (SP)<br>brown, trace basaltic gravel | L | | |
| | | | | | | | | | 24 | | | | | |
| | | | | | | 0/0/1<br>(N=1) | | | | | | | | SPT 25cm above depth, sand boiling |
| | | | | | | | | | 25 | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | 26 | | SILTY SAND (SM)<br>brown | VL | | |
| | | | | | | 0/0/1<br>(N=1) | | | 27 | | | | | SPT 2.2m above depth, sand boiling, no sample |
| | | | | | | | | | | | | | | |
| | | | | | | | | | 28 | | | | | change in drilling rate |
| | | | | | | | | | | | SILT (ML)<br>dark gray, with clay, trace fine sand | VSt | | |
| | | | | | | | | | 29 | | | | | |
| | | | | | | | | | | | | | | change in size of drilling |
| | | | | | | | | | 30 | | | | | |

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| | | | | | | | | 31 | | SILT (ML)<br>dark gray, with clay, trace fine sand *(continued)*<br>with thin layer different colour bands | | | |
| | | | | | | 5/9/16 (N=25) | ● | 32 | | | | | |
| | | | | | | | | 33 | | CLAY (CH)<br>dark gray, dark brown, with fine to coarse sand | VSt | | |
| | | | | | | | | 34 | | | | | |
| 1.33 | 37.4 | 56 | 27 | 73.1 | | 6/11/15 (N=26) | ● | | | | VSt | | Gs=2.61 |
| | | | | | | | | 35 | | Borehole terminated in SILTY CLAY at 34.65m | | | |
| | | | | | | | | 36 | | | | | |
| | | | | | | | | 37 | | | | | |
| | | | | | | | | 38 | | | | | |
| | | | | | | | | 39 | | | | | |
| | | | | | | | | 40 | | | | | |

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