**Groundwater Education Investment Fund Project**

**Borehole Infrastructure Report**

<table>
<thead>
<tr>
<th>Borehole Type</th>
<th>Multi-Level Piezometer</th>
<th>GPS Easting</th>
<th>(MGA-94 Zone 53)</th>
<th>328733</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique Well ID</td>
<td>18603</td>
<td>GPS Northing</td>
<td></td>
<td>7531957</td>
</tr>
<tr>
<td>Completion Date</td>
<td>16 May 2011</td>
<td>Location</td>
<td>Pine Hill Station, NT</td>
<td></td>
</tr>
<tr>
<td>Drilled By</td>
<td>NRETAS</td>
<td>Installed By</td>
<td>NRETAS</td>
<td></td>
</tr>
<tr>
<td>Monument Type</td>
<td>Round-White-Swing Top</td>
<td>Depth Drilled</td>
<td>60.0 m</td>
<td></td>
</tr>
<tr>
<td>Monument Diameter/Width</td>
<td>216 mm</td>
<td>Drilled Diameter/Method</td>
<td>200 mm (min), Rotary Air</td>
<td></td>
</tr>
<tr>
<td>Development Details</td>
<td>Airlifted 5L/s.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Project Comments:** 18603 is a dual completion nested piezometer, located approximately 20 m south of the Woodforde River channel, Ti Tree Basin, NT.

<table>
<thead>
<tr>
<th>Bore ID</th>
<th>Casing Size (mm)/Type</th>
<th>TOC (mAHD)</th>
<th>Casing Depth (mBGL)</th>
<th>Screen Size (mm)/Type</th>
<th>Cement (mBGL)</th>
<th>Screen Depth (mBGL)</th>
<th>SWL (mTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200/Steel</td>
<td>-0.73</td>
<td>5.7</td>
<td>NA</td>
<td>0.0</td>
<td>5.7</td>
<td>NA</td>
</tr>
<tr>
<td>18603-2</td>
<td>50/PVC12</td>
<td>589.395</td>
<td>-0.46</td>
<td>43.5</td>
<td>50/1/PVC</td>
<td>0.0</td>
<td>41.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.0</td>
<td>42.5</td>
</tr>
<tr>
<td>18603-1</td>
<td>50/PVC12</td>
<td>589.413</td>
<td>-0.49</td>
<td>60.0</td>
<td>50/1/PVC</td>
<td>0.0</td>
<td>58.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

Map of Ti Tree Super Science Piezometer Locations, Pine Hill Station, NT.

Note* Appendix includes Well Completion, Lithology and Geophysical Logs, Hydraulic Test and Chemical Analysis.

Infrastructure Report prepared by: [stephanie.villeneuve@flinders.edu.au](mailto:stephanie.villeneuve@flinders.edu.au)

Contact Details: Office: 08 8201 2724

Checked by: Prof Peter Cook

[Signature]

[Signature]
Well Completion Log

Steel 200 mm NB
Roller bit 280 mm

Class 12 PVC 50 mm

Page 1 of 2
Date Start: 13/05/2011
Completed: 16/05/2011
Contractor: NRETAS

Construction Legend:
- Steel
- PVC
- Cement
- Gravel Pack
- End Cap
- Bentone
- Slots
- Lock Cap
- Creek Sand
- Hole
- Bung
Lithology Log

See detailed log

Silty Sandstone

Pale yellow brown soft friable very coarse to fine grained silty sandstone. Bk iron oxide stains in cracks.

Moderate brown similar to above.

Pale brown similar to above.

Moderate brown similar to above.

---

| Page 1 of 2 | Air Lift Yield L/s | 5 |
| Date Start | 13/05/2011 | Electrical Conductivity μSiemens/cm | 1920 |
| Completed | 16/05/2011 | Standing Water Level m BGL | 36.8 |
| Contractor | NRETAS | Status | Piezometer |

Gamma cps

Depth of casing at logging 0 m
Silty Sandstone

Pale brown similar to above.

---

Silty Sandstone

Similar to above, moderate brown

---

Sandstone

Very light grey disaggregated quartz sand, ranging from 4 mm pebble to fine sand.

---

Sandstone

As above, plus chips light grey and moderate brown fine grained friable sandstone.

---

Sandstone

Light grey and pale brown soft friable silty poorly sorted sandstone.

---

Sandstone

Moderate brown medium to fine grained moderately indurated friable sandstone.

---

Sandstone

Very pale brown disaggregated quartz sand, mostly coarse grained, but ranging up to 10 mm pebbles.

---

Sandstone

Moderate brown and light grey silty sandstone.

---

Gravel

Pale brown sandy gravel, pebbles to 40 mm, plus moderate brown silty friable sandstone.

---

Page 2 of 2

Air Lift Yield L/s 5

Date Start 13/05/2011 Electrical Conductivity $\mu$Siemens/cm 1920

Completed 16/05/2011 Standing Water Level m BGL 36.8

Contractor NRETAS Status Piezometer

Gamma cps

Depth of casing at logging 0 m
Geophysical Logs

The portable Mount Sopris logging system was used to collect geophysical data from bore 18603-1. The 2PGS probe was used to collect natural gamma measurements, and the 2PIA probe was used to measure conductivity/induced resistivity.
A pumping test was performed on piezometer 18603-1 on 31/08/2011 by pumping at a flow rate of 9 L/min and taking manual readings with a water level meter. The results of the test are presented below. The report author may be contacted for the full data set.

A pumping test was performed on piezometer 18603-2 on 31/08/2011 by pumping at a flow rate of 9.6 L/min and taking manual readings with a water level meter. The results of the test are presented below. The report author may be contacted for the full data set.
Chemical Analysis

Basic chemical analysis of the dissolved solutes and concentration of ions in the borehole was performed. The testing also included hydrogen ion activity (pH) and fluid electrical conductivity (EC). Data from the chemical analysis is shown below.

<table>
<thead>
<tr>
<th>Well ID</th>
<th>Date Sampled</th>
<th>SWL</th>
<th>TOC</th>
<th>pH</th>
<th>EC μS/cm</th>
<th>Temp °C</th>
<th>Alkalinity (mg/L CaCO₃)</th>
<th>Ca²⁺ (mg/L)</th>
<th>K⁺ (mg/L)</th>
<th>Mg²⁺ (mg/L)</th>
<th>Na⁺ (mg/L)</th>
<th>Si (mg/L)</th>
<th>Cl⁻ (mg/L)</th>
<th>NO₃⁻ (mg/L)</th>
<th>SO₄²⁻ (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18603-2</td>
<td>31/08/2011</td>
<td>37.27</td>
<td>7.4</td>
<td>1347</td>
<td>28</td>
<td>572</td>
<td>35.5</td>
<td>26.6</td>
<td>29.6</td>
<td>190</td>
<td>31.3</td>
<td>47</td>
<td>12</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>18603-1</td>
<td>31/08/2011</td>
<td>37.31</td>
<td>7.2</td>
<td>2058</td>
<td>28</td>
<td>460</td>
<td>66.1</td>
<td>20.9</td>
<td>49.9</td>
<td>221</td>
<td>31.5</td>
<td>300</td>
<td>30</td>
<td>180</td>
<td></td>
</tr>
</tbody>
</table>