**Groundwater Education Investment Fund Project**

**Borehole Infrastructure Report**

<table>
<thead>
<tr>
<th>Borehole Type</th>
<th>Multi-Level Piezometer</th>
<th>GPS Easting (MGA-94 Zone 53)</th>
<th>368372</th>
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<tbody>
<tr>
<td>Unique Well ID</td>
<td>18823</td>
<td>GPS Northing</td>
<td>7591165</td>
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<tr>
<td>Completion Date</td>
<td>21 May 2012</td>
<td>Location</td>
<td>Stirling Swamp, NT</td>
</tr>
<tr>
<td>Drilled By</td>
<td>NRETAS</td>
<td>Installed By</td>
<td>NRETAS</td>
</tr>
<tr>
<td>Monument Type</td>
<td>Round-Swing Top</td>
<td>Depth Drilled</td>
<td>11.2 m</td>
</tr>
<tr>
<td>Monument Diameter/Width</td>
<td>216 mm</td>
<td>Drilled Diameter/Method</td>
<td>200 mm (min), Rotary Air</td>
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<tr>
<td>Development Details</td>
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<tr>
<td>Project Comments:</td>
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</table>

Project Comments: 18823 is a dual completion multi-level piezometer. It is located adjacent to 18824. Together, these bores provide a nest of four piezometers sampling different depths in the unconfined aquifer.

<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)/Aperture (mm)/Type</th>
<th>Cement (mBGL)</th>
<th>Screen Depth (mBGL)</th>
<th>SWL (mTOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200/Steel</td>
<td>-1.14</td>
<td>1.0</td>
<td>NA</td>
<td>0.0</td>
<td>1.0</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>18823-1</td>
<td>50/PVC12</td>
<td>475.701</td>
<td>-0.95</td>
<td>9.5</td>
<td>7.85</td>
<td>7.95</td>
<td>8.5</td>
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<td></td>
<td>50/0.5/UPVC18</td>
<td>10.3</td>
<td>10.8</td>
<td>1.9</td>
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<td>18823-2</td>
<td>50/PVC12</td>
<td>475.739</td>
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<td>10.8</td>
<td>9.3</td>
<td>9.6</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Map of Ti Tree Super Science Piezometer Locations, Stirling Swamp, NT.

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

Infrastructure Report prepared by: [signature]

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Office: 08 8201 2724

Checked by: [signature] Prof Peter Cook
Well Completion Log

- SWL: 0.8 m BGL
- 0.1 L/s 90700EC
- 1.5 L/s 124500EC
- 10 L/s 130500EC
- 10 L/s 131900EC

Steel 200 mm NB
Blade bit 250 mm to 1 m

PVC Class 12 50 mm
Blade bit 200 mm to 11.2 m

Screen UPVC CI 18 50 mm 0.5mm slot
End Cap

Screen UPVC CI 18 50 mm 0.5mm slot
End Cap

Construction Legend

- Steel
- Gravel Pack
- Creek Sand
- PVC
- Lock Cap
- Fall Back
- Slots
- Bung
- Soil
- Hole
- End Cap
- Cuttings
- Cement
- Bentonite
- Screen

Page 1 of 1

Date Start: 18/05/2012
Completed: 21/05/2012
Contractor: NRETAS
Lithology Log

- Soft friable to sub-plastic, brownish grey (5YR4/1).
- Soft plastic silt, moderate brown (5YR4/4).
- Silt as above, plus soft friable moderate orange pink (5YR8/4) calcrite.
- Calcrite as, over coarse to fine poorly sorted friable sandstone, moderate reddish brown (10R4/6) to pale brown (5YR5/2).
- As above.
- Sample is a mixture, but hole appears to be in coarse pebbly sandstone.
- Medium to coarse pebbly greyish orange (10YR7/4) sandstone. Sample disaggregated, but hole standing.
- Chip mostly fine grained lightly cemented friable quartz sandstone, olive grey (5Y3/2), with some coarse grains. Sample mostly disaggregated fine to coarse washed quartz sand, greyish orange (10YR7/4). Broken pebbles to 30 mm of fine to medium grained silica and iron-oxide cemented hard sandstone. Colour variable, medium dark grey (7.5YR 4/1) to grey.
Geophysical Logs

The portable Mount Sopris logging system was used to collect geophysical data from bore 18823-2, the deepest peizometer. 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 18823-1 on 29/06/2012 by attaching a level logger to a submersible Whale pump, lowering the pump to a depth of 5 mTOC and using a flow rate of 3.8 L/min. 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 18823-2 on 29/06/2012 by attaching a level logger to a submersible Whale pump, lowering the pump to a depth of 8 mTOC and using a flow rate of 6.75 L/min. 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>Field Parameters</th>
<th>Laboratory Analyses</th>
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<tbody>
<tr>
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<td>TOC m</td>
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<tr>
<td>18823-1</td>
<td>30/06/2012</td>
<td>1.9</td>
<td>122,989</td>
<td>24.1</td>
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<td>18823-2</td>
<td>1/07/2012</td>
<td>1.88</td>
<td>122,900</td>
<td>24.7</td>
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