**Borehole Infrastructure Report**

<table>
<thead>
<tr>
<th>Borehole Type</th>
<th>Piezometer Monitoring Bore</th>
<th>Location</th>
<th>Willunga Super Science Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique Well ID</td>
<td>WSS-FR-1</td>
<td>Installed By</td>
<td>Geodrill</td>
</tr>
<tr>
<td>Completion Date</td>
<td>22/11/2010</td>
<td>Depth Installed</td>
<td>6.5 mBGL</td>
</tr>
<tr>
<td>Drilled By</td>
<td>Geodrill</td>
<td>Depth Drilled</td>
<td>6.5 mBGL</td>
</tr>
<tr>
<td>Monument Type</td>
<td>Lockable standpipe</td>
<td>Drilled Diameter/Method</td>
<td>125 mm, Auger</td>
</tr>
<tr>
<td>Monument Diameter/Width</td>
<td>80 mm</td>
<td>Screen Depth</td>
<td>5.5-6.5 mBGL</td>
</tr>
<tr>
<td>T.O.M. offset from G.L.</td>
<td>0.844 m</td>
<td>Screen Size/Aperture/Type</td>
<td>50 mm/0.4 mm/PVC18</td>
</tr>
<tr>
<td>PVC Casing to T.O.M offset</td>
<td>-5.4 cm</td>
<td>Level of Bentonite</td>
<td>4.0-5.0 mBGL</td>
</tr>
<tr>
<td>Ground Elevation (mAHD)</td>
<td>64.149</td>
<td>Casing Size/Type</td>
<td>50 mm/PVC18</td>
</tr>
<tr>
<td>GPS Easting</td>
<td>(MGA-94 Zone 54)</td>
<td>SWL after Development</td>
<td>2.76 mTOC</td>
</tr>
<tr>
<td>GPS Northing</td>
<td>6100821</td>
<td>Development Details</td>
<td>Air lifted 2 hours</td>
</tr>
</tbody>
</table>

**Project Comments:** WSS-FR-1 is a single piezometer monitoring bore, located on the western side of Foggo Road, south of Pedler Creek.

**Map of Willunga Super Science Project Shallow Monitoring Well Sites**

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

**Infrastructure Report prepared by:**

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**Checked by:** Prof Peter Cook
Location and Well Installation of WSS-FR-1 and WSS-FR-2
Lithology and Well Completion Log

WSS-FR-1

0.0-1.0: Silty Clay: Light grey calcareous silty clay with minor angular calcrite fragments to 30mm

1.0-2.5: Silty Clay: Olive grey calcareous silty soft clay with <5% well sorted and rounded medium sand

2.5-3.0: Silty Clay: Olive grey calcareous silty clay with some orange brown mottling

3.0-3.5: Clay: Orange brown soft clay

3.5-4.0: Clay: Orange brown medium stiff clay

4.0-5.0: Clay: Orange brown soft to medium stiff clay

5.0-5.5: Silty Clay: Orange brown silty soft clay with <5% well sorted rounded medium sand

5.5-6.5: NA: no sample returned
Geophysical Logs

The portable Mount Sopris logging system was used to collect geophysical data from bore WSS-FR-1, the deepest peizometer. The 2PGS probe was used to collect natural gamma measurements, and the 2PIA probe was used to measure conductivity/induced resistivity.
Slug Test

A slug test was performed on WSS-FR-1 by placing a level logger at a depth of 6.8 mTOC and using a pump (6 mTOC) to remove the standing water column above the pump. The results of the test are presented below. The report author may be contacted for the full data set.

![Slug Test Graph](image)

Chemical Analysis

The results of major ion chemistry on WSS-FR-1 are presented below, along with chemical parameters measured in the field.

<table>
<thead>
<tr>
<th>Well ID</th>
<th>Date Sampled</th>
<th>SWL</th>
<th>mTOC</th>
<th>µS/cm</th>
<th>°C</th>
<th>meq/L</th>
<th>Total Alkalinity</th>
<th>E.C. µS/cm</th>
<th>F⁻ mg/L</th>
<th>Cl⁻ mg/L</th>
<th>Br⁻ mg/L</th>
<th>NO₃⁻ mg/L</th>
<th>SO₄²⁻ mg/L</th>
<th>Ca mg/L</th>
<th>K mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSS-FR-1</td>
<td>14/12/2011</td>
<td>3.11</td>
<td>6.42</td>
<td>2730</td>
<td>21</td>
<td>2.4</td>
<td>2764</td>
<td>2.7</td>
<td>&lt;0.2</td>
<td>900</td>
<td>2.9</td>
<td>7.6</td>
<td>70</td>
<td>141</td>
<td>6.48</td>
</tr>
</tbody>
</table>

- **Mg**, Na, S, Al, As, B, Cd, Co, Cr: mg/L
- **Cu**, Fe, Mn, Mo, Ni, P, Pb, Sb, Se: mg/L
- Si, Sr, Zn: mg/L

Field Parameters: pH, EC, Temp, Alkalinity

Laboratory Analyses: F⁻, Cl⁻, Br⁻, NO₃⁻, SO₄²⁻, Ca, K

Well ID: WSS-FR-1

Sampled SWL: 3.11

mTOC: 6.42

µS/cm: 2730

°C: 21

meq/L: 2.4

Total Alkalinity: 2764

E.C. µS/cm: 2.7

F⁻: <0.2

Cl⁻: 900

Br⁻: 2.9

NO₃⁻: 7.6

SO₄²⁻: 70

Ca: 141

K: 6.48

Mg: 80.2

Na: 259

S: 17.3

Al: 0.06

As: <0.05

B: 0.11

Cd: <0.05

Co: <0.05

Cr: <0.05

Cu: <0.05

Fe: <0.1

Mn: 0.31

Mo: <0.05

Ni: <0.05

P: 0.1

Pb: <0.05

Sb: <0.05

Se: <0.05

Si: 13.5

Sr: 1.33

Zn: 0.08