**DRILLHOLE RECORD**

**HOLE No.** KTN-ASSH01a

**CONTRACT No.:** GE2010/01

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-38

**COORDINATES:**
- E: 827908.58
- N: 840773.17

**WORKS ORDER No.:** GE2010/01.38

**DATE from:** 05/01/2012 to 14/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 21.54 mPD

**Drilling Progress**

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>Firm, reddish brown (6YR4/3), mottled yellow, slightly sandy, clayey SILT with occasional angular fine to medium gravel of weak tuff and quartz. (COLLUVIUM)</td>
</tr>
<tr>
<td>1.6</td>
<td>Extremely weak, pinkish red (7.5YR7/4), mottled yellow and brown, completely decomposed coarse ash METATUFF. (Firm, clayey SILT)</td>
</tr>
<tr>
<td>5.5</td>
<td>Extremely weak, greyish brown (10YR5/2), mottled black, completely decomposed coarse ash METATUFF. (Firm, slightly sandy, clayey SILT)</td>
</tr>
</tbody>
</table>

**Groundwater Level:**

- 2.0 m below ground surface

**Samples**

<table>
<thead>
<tr>
<th>No.</th>
<th>Type</th>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1.6</td>
<td>Firm, reddish brown (6YR4/3), mottled yellow, slightly sandy, clayey SILT with occasional angular fine to medium gravel of weak tuff and quartz. (COLLUVIUM)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1.6</td>
<td>Extremely weak, pinkish red (7.5YR7/4), mottled yellow and brown, completely decomposed coarse ash METATUFF. (Firm, clayey SILT)</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>5.5</td>
<td>Extremely weak, greyish brown (10YR5/2), mottled black, completely decomposed coarse ash METATUFF. (Firm, slightly sandy, clayey SILT)</td>
</tr>
</tbody>
</table>

**LOGGED**

- DATE: 14/01/2012
- CHECKED: S.C. Wang

**REMARKS**

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 2.50m (3 nos.) and 3.50m (1 no.) below existing ground level on 09/01/2012, 10/01/2012 and 12/01/2012 respectively.
3. Environmental monitoring well was installed at 11.00m below existing ground level on 14/01/2012 and groundwater sampling was carried out on 03/02/2012.

**DATE:** 18/01/2012

**Firm, reddish brown (6YR4/3), mottled yellow, slightly sandy, clayey SILT with occasional angular fine to medium gravel of weak tuff and quartz. (COLLUVIUM)**

**Extremely weak, pinkish red (7.5YR7/4), mottled yellow and brown, completely decomposed coarse ash METATUFF. (Firm, clayey SILT)**

**Extremely weak, greyish brown (10YR5/2), mottled black, completely decomposed coarse ash METATUFF. (Firm, slightly sandy, clayey SILT)**
## DRILLHOLE RECORD

**HOLE No.:** KTN-ASBH01a  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 2 of 4

### PROJECT:
Agreement No. CE 01/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

### METHOD:
Rotary Drilling

### MACHINE & No.:
FDR-38

### CO-ORDINATES:
- E: 827906.58
- N: 840773.17

### WORKS ORDER No.:
GE/2010/01.38

### DATE from:
05/01/2012 to 14/01/2012

### FLUSHING MEDIUM:
Water

### ORIENTATION:
Vertical

### GROUND LEVEL:
+ 21.54 mPD

### Drill hole record

<table>
<thead>
<tr>
<th>Depth</th>
<th>Water Level</th>
<th>T.C.R</th>
<th>S.C.R</th>
<th>R.Q.D</th>
<th>R.I.</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.94</td>
<td>10.05</td>
<td>V</td>
<td>As sheet 1 of 4.</td>
</tr>
<tr>
<td></td>
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<tr>
<td>11</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td></td>
<td></td>
<td>11.94</td>
<td>V</td>
<td>Extremely weak, light brown (7.5YR/6/3), completely decomposed coarse ash METATUFF. (Firm, clayey SILT)</td>
</tr>
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<td></td>
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<tr>
<td>12</td>
<td></td>
<td>1.20m</td>
<td></td>
<td></td>
<td></td>
<td>60lbs</td>
<td></td>
<td></td>
<td>12.45</td>
<td>V</td>
<td>Extremely weak, yellowish brown (10YR/5/6) to grayish brown (10YR/5/2), completely decomposed coarse ash METATUFF. (Firm to stiff, slightly sandy, clayey SILT)</td>
</tr>
<tr>
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<td>13</td>
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<td>3.15m</td>
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</tr>
</tbody>
</table>

### LOGS/3

- **DATE:** 14/01/2012
- **CHECKED:** S.C. Wong

### REMARKS

- **DATE:** 14/01/2012

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**Note:** The diagram includes various symbols for different drilling conditions and tests, indicating the geological characteristics and sampling procedures.
**DRILLHOLE RECORD**

**HOLE No.:** KTN-ASB01a  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 3 of 4

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-38

**COORDINATES:**
- E 827906.58
- N 840773.17

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** +21.54 mPD

**WORKS ORDER No.:** GE/2010/01.38

**DATE from: 05/01/2012 to 14/01/2012**

### Table: Test Results

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.00</td>
<td>V</td>
<td>As sheet 2 of 4.</td>
</tr>
<tr>
<td>22.00</td>
<td>V</td>
<td>Extremely weak, reddish brown (5YR/4/2) to dark brown (7.5YR/3/4), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT with some angular fine to medium gravel)</td>
</tr>
<tr>
<td>23.50</td>
<td>V</td>
<td>Extremely weak, greyish brown (10YR/5/2) to yellowish brown (10YR/5/2), completely decomposed coarse ash METATUFF. (Very stiff, slightly sandy, clayey SILT)</td>
</tr>
</tbody>
</table>

### Remarks

- **LOGGED DATE:** 14/01/2012
- **CHECKED DATE:** 18/01/2012
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH01a  
**CONTRACT No.:** GE/2010/01  
**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation  
**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-38  
**CO-ORDINATES:** E 827906.58, N 840773.17  
**WORKS ORDER No:** GE/2010/01.38  
**DATE from:** 05/01/2012  
**to:** 14/01/2012

**GROUND LEVEL:** + 21.54 mPD

<table>
<thead>
<tr>
<th>Depth</th>
<th>Progress</th>
<th>Cutting Method</th>
<th>Water Level (m)</th>
<th>Shift length</th>
<th>T.C.R. %</th>
<th>S.C.R. %</th>
<th>R.C.D. %</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200 ft</td>
<td>26</td>
<td>30.46</td>
<td>30.00</td>
<td>V</td>
<td></td>
<td>As sheet 3 of 4.</td>
</tr>
<tr>
<td>32</td>
<td></td>
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<td>33</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200 ft</td>
<td>26</td>
<td>-11.45</td>
<td>31.00</td>
<td>V</td>
<td></td>
<td>Very weak, brown (7.5YR6/4), completely decomposed coarse ash METATUFF. (Slightly sandy angular fine to coarse GRAVEL and COBBLES)</td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
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<td>35</td>
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<td></td>
<td></td>
<td></td>
<td>200 ft</td>
<td>26</td>
<td>-13.93</td>
<td>36.50</td>
<td>V</td>
<td></td>
<td>Extremely weak, grey (7.5YR6/1) and dark brown (7.5YR3/4), completely decomposed coarse ash METATUFF. (Very stiff, slightly sandy, clayey SILT)</td>
</tr>
<tr>
<td>36</td>
<td></td>
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<td>37</td>
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<tr>
<td>38</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200 ft</td>
<td>26</td>
<td>-10.46</td>
<td>38.00</td>
<td>V</td>
<td></td>
<td>Extremely weak, dark brown (7.5YR3/4), completely decomposed coarse ash TUFF. (Very stiff, slightly sandy, silty CLAY with some angular fine to medium gravel)</td>
</tr>
<tr>
<td>39</td>
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<td>40</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>End of investigation hole at 58.22m.</td>
</tr>
</tbody>
</table>

**REMARKS**

**LOGGED:** 1/6/2012  
**DATE:** 1/6/2012  
**CHECKED:** 1/6/2012

**FGS Job No:** 69 0451 03 38
### DRILL HOLE RECORD

#### CONTRACT No.: GE/2010/01

#### HOLE No.: KTN-ASB04

#### METHOD: Rotary Drilling

#### MACHINE & No.: FDR-36

#### CO-ORDINATES:
- **E**: 828416.08
- **N**: 840517.08

#### FLUSHING MEDIUM: Water

#### ORIENTATION: Vertical

#### GROUND LEVEL + 11.96 m

#### PROJECT:
Agreement No. CE 64/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

#### WORKS ORDER No. GE/2010/01.38

#### DATE from: 31/12/2011 to 09/01/2012

#### DRILLING PROGRESS

<table>
<thead>
<tr>
<th>Test</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 +</td>
<td>11.96</td>
<td>1.50</td>
</tr>
<tr>
<td>2</td>
<td>1 +</td>
<td>11.95</td>
<td>1.50</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>11.96</td>
<td>1.50</td>
</tr>
</tbody>
</table>

#### Legend
- **V**: Sample

#### Description
- Dark gray (5YR4/1), slightly silty fine to coarse SAND with some angular fine to medium gravel of moderately weak tuff and quartz. (FILL)
- Firm, yellowish brown (10YR5/6) to brown (7.5YR5/4), sandy silty CLAY with some angular fine to coarse gravel of moderately weak tuff and quartz. (COLLUVIUM)
- Extremely weak, reddish brown (5YR6/3) to pink (10YR8/3), mottled light brown, completely decomposed coarse ash METATUFF. (Firm, silty CLAY)
- Extremely weak, brownish pink (5YR7/2), completely decomposed coarse ash METATUFF. (Firm, clayey SILT)

#### REMARKS
1. An inspection pit was excavated to a depth of 1.50 m.
2. Flushing water samples were taken from the water tank when drilling at 1.50 m (1 no.), 18.00 m (3 nos.) and 22.25 m (1 no.) below existing ground level on 04/01/2012, 06/01/2012 and 07/01/2012 respectively.
3. Environmental monitoring well was installed at 9.00 m below existing ground level on 09/01/2012 and groundwater sampling was carried out on 09/02/2012.
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASB04  
**CONTRACT No.** GE/2010/01  
**SHEET:** 2 of 3

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**CO-ORDINATES:**  
E 828416.08  
N 840517.08

**MACHINE & No.:** FDR-36  
**WORKS ORDER No.** GE/2010/01.38  
**DATE from:** 31/12/2011  
**to:** 09/01/2012

**FLUSHING MEDIUM:** Water  
**GROUND LEVEL:** +11.95 mPD

**ORIENTATION:** Vertical  
**Legend to Diagram:**  
V: As sheet 1 of 3.

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Extremely weak, dark grey (S1H4/1) and brown (7,5YR5/4), completely decomposed coarse ash METATUFF. (Soft, clayey SILT with some angular fines to medium gravel)</td>
</tr>
<tr>
<td>13</td>
<td>Extremely weak, reddish brown (5YR4/3), locally dark grey and black, completely decomposed coarse ash METATUFF. (Stiff, clayey SILT)</td>
</tr>
<tr>
<td>15</td>
<td>Extremely weak, greyish brown (10YR5/2), completely decomposed coarse ash METATUFF. (Very stiff, clayey SILT)</td>
</tr>
</tbody>
</table>

**Samples**  
<table>
<thead>
<tr>
<th>No.</th>
<th>Test</th>
<th>T.C.R</th>
<th>S.P.R</th>
<th>R.Q.D</th>
<th>F.I.</th>
<th>Tests</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>42bis</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>10.00</td>
<td>12.50</td>
</tr>
<tr>
<td>11</td>
<td>41bis</td>
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<td>10.00</td>
<td>13.00</td>
</tr>
<tr>
<td>12</td>
<td>58bis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.00</td>
<td>13.50</td>
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<tr>
<td>13</td>
<td>61bis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.00</td>
<td>14.00</td>
</tr>
</tbody>
</table>

**LOGGED** P. ZPS  
**DATE** 13/01/2012  
**CHECKED** S.C. Woon  
**DATE** 13/01/2012

**REMARKS**

- Small Disturbed Sample  
- Holes sample  
- U90 Undisturbed Sample  
- U90 Undisturbed Sample  
- Matier Sample  
- 76mm Vibracore Sample  
- 106mm Vibracore Sample  
- Vibracore Sub-sample  
- SPT U3 sampler

- Standard Penetration Test  
- In-situ Vane Shear Test  
- Permeability Test  
- Permeability Test  
- Teledensometer Survey  
- Parker Test  
- Impact Vane Test  
- Water Sample  
- Ream Tip
**DRILLHOLE RECORD**

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-36

**CO-ORDINATES:**
- E 828416.08
- N 840517.08

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** +11.66 mPD

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 31/12/2011 to 09/01/2012

<table>
<thead>
<tr>
<th>Cutting Progress</th>
<th>Cutting Method</th>
<th>Water Level (m)</th>
<th>Water Return (%)</th>
<th>T.C.R. (%)</th>
<th>S.C.R. (%)</th>
<th>R.D. (%)</th>
<th>F.I.</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grads</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>200 tis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-6.54</td>
<td>38.92</td>
<td>V</td>
<td>IV</td>
<td>As sheet 2 of 3.</td>
</tr>
<tr>
<td>22</td>
<td>3.50m at 50.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90.00</td>
<td>72.0</td>
<td>3.9</td>
<td>T201</td>
<td>-8.24</td>
<td>39.72</td>
<td>V</td>
<td>IV</td>
<td>Weak, brownish grey, highly decomposed coarse ash METAFU. Recovered as slightly sandy angular fine to coarse gravel.</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>22.25</td>
<td>50.23</td>
<td></td>
<td></td>
<td>Strong, grey, spotted black, discolored white, slightly decomposed coarse ash METAFU. Joints are closely to medium spaced, rough planar and stepped, very narrow, calcite and kaolinite (&lt;1mm) coated, dipping at 5°-15°, 25°-35° and 45°-50°.</td>
</tr>
</tbody>
</table>

End of investigation hole at 22.25m.

**REMARKS**

- **LOGGED** P.208
  - **DATE:** 12/01/2012
  - **CHECKED S.C. Wong**
    - **DATE:** 18/01/2012
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH06

**CONTRACT No.:** GE/2010/01

**METHOD:** Rotary Drilling

**CO-ORDINATES:**
- E 828473.07
- N 840803.13

**MACHINE & No.:** FDR-13

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 27/01/2012 to 13/02/2012

**FLUSHING MEDIUM:** Water

**GROUND LEVEL:** +14.53 mPD

**ORIENTATION:** Vertical

**Description**

- Firm, dark grey (5YR4/1), sandy clayey Silt with some angular fine to medium gravel of weak to moderately weak tuff and quartz. (TOP SOIL)
- Brown (7.5YR5/4) to yellowish brown (10YR5/6), slightly clayey, silty sandy angular fine to medium GRAVEL of quartz. (COLLUVIUM)
- Firm, dark brown (7.5YR3/4), sandy clayey Silt with some angular fine to medium gravel of weak to moderately weak tuff and quartz. (COLLUVIUM)

**REMARKS**

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 20.50m (3 nos.) and 45.87m (1 no.) below existing ground level on 04/02/2012, 07/02/2012 and 10/02/2012 respectively.
3. Environmental monitoring well was installed at 12.00m below existing ground level on 12/02/2012 and groundwater sampling was carried out on 31/03/2012.

**LOGGED:** P.29

**DATE:** 23/02/2012

**CHECKED:** S.C. Wong

**DATE:** 24/02/2012
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH06  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 2 of 5

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-13  
**CO-ORDINATES:** E 828473.07  
N 840803.13

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 14.53 mPD

**Tests**  
**Samples**  
**Reduced Level (ft)**  
**Legend Grade**  
**Description**

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>TCR %</th>
<th>SCR %</th>
<th>RQD %</th>
<th>F1</th>
<th>No.</th>
<th>Test</th>
<th>Depth</th>
<th>Legend Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td>10.00</td>
<td>V 3</td>
<td>As sheet 1 of 5.</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td>10.25</td>
<td>V 3</td>
<td>Extremely weak, brown (7.5YR 5/4) to yellowish brown (10YR 5/6), completely decomposed fine ash METATUFF. (Firm to stiff, slightly sandy, clayey SILT).</td>
</tr>
<tr>
<td>12</td>
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<td></td>
<td></td>
<td>12</td>
<td></td>
<td>11.25</td>
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<td>20</td>
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</table>

**LOGGED** P. 20/02/2012  
**DATE** 20/02/2012  
**CHECKED** S.C. Weng  
**DATE** 24/02/2012
### DRILLHOLE RECORD

**HOLE No:** KTN-ASBH06  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 3 of 5  
**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories North Development Areas Planning and Engineering Study - Investigation  
**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-13  
**FLUSHING MEDIUM:** Water  
**CO-ORDINATES:**
- E 828473.07  
- N 840803.13  
**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 27/01/2012 to 13/02/2012  
**GROUND LEVEL:** + 14.53 mPD

### ORIENTATION: Vertical

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.00</td>
<td>V</td>
<td>As sheet 2 of 5.</td>
</tr>
<tr>
<td>21.00</td>
<td>V</td>
<td>Extremely weak, light grey (10R7/1), completely decomposed fine ash METATUFF. (Silt, clayey SILT)</td>
</tr>
<tr>
<td>25.00</td>
<td>V</td>
<td>Extremely weak, purplish brown (7.5R6/3), completely decomposed fine ash METATUFF. (Silt, slightly sandy, clayey SILT)</td>
</tr>
</tbody>
</table>

---

### REMARKS

- **LOGGED:** P. Zheg  
- **DATE:** 23/02/2012  
- **CHECKED:** S.C. Wong  
- **DATE:** 24/02/2012

---
**DRILLHOLE RECORD**

**Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation**

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-13

**CO-ORDINATES:**
- E: 828473.07
- N: 840803.13

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 27/01/2012 to 13/02/2012

**GROUND LEVEL:** + 14.53 mPD

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Water Level (m)</th>
<th>Shrinkage %</th>
<th>Rem. %</th>
<th>R.D. %</th>
<th>F.I.</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-15.07</td>
<td>22.50</td>
<td>V</td>
<td>As sheet 3 of 5.</td>
</tr>
<tr>
<td>32</td>
<td>3.50m at 10.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-18.47</td>
<td>33.00</td>
<td>V</td>
<td>Very weak, grey (7.5YR/8/1), completely decomposed fine ash METATUFF. (Stiff, sandy clayey SILT with some angular to medium (gravel))</td>
</tr>
<tr>
<td>33</td>
<td>5.50m at 02.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-18.47</td>
<td>33.00</td>
<td>V</td>
<td>Extremely weak to very weak, brownish yellow (10YR/6/8) to yellowish brown (10YR/5/8), completely decomposed fine ash METATUFF. (Very stiff, slightly sandy, clayey SILT)</td>
</tr>
<tr>
<td>34</td>
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</tr>
</tbody>
</table>

**Remarks:**

- Small Disturbed Sample
- Pedest sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Matrix Sample
- 76mm Vibrocone Sample
- 100mm Vibrocone Sample
- Vibrcone Sub-sample
- NFF Liner Sample

**LOGGED:** P.Z.01

**DATE:** 23/02/2012

**CHECKED:** S.C. Wong

**DATE:** 24/02/2012
**DRILLHOLE RECORD**

- **PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation
- **METHOD:** Rotary Drilling
- **MACHINE & No.:** FDR-13
- **CO-ORDINATES:** E 828473.07  N 840803.13
- **WORKS ORDER No.:** GE/2010/01.38
- **DATE from:** 27/01/2012 to 13/02/2012
- **FLUSHING MEDIUM:** Water
- **ORIENTATION:** Vertical
- **GROUND LEVEL + 14.53 mPD**

### DRILLING PROGRESS

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.00</td>
<td>200</td>
<td>10, 30</td>
<td>35.47</td>
<td>As sheet 4 of 5.</td>
</tr>
<tr>
<td>35.00</td>
<td></td>
<td></td>
<td>30.47</td>
<td>Extremely weak to very weak, grey (7.5YR/8/4), completely decomposed fine ash METATUFF. (Vory stiff, slightly sandy, clayey SILT with occasional angular fine gravel)</td>
</tr>
<tr>
<td>45.00</td>
<td>200</td>
<td>20, 23</td>
<td>30.47</td>
<td>End of investigation hole at 45.87m.</td>
</tr>
</tbody>
</table>

### REMARKS

- **LOGGED:** P. Zhang
- **DATE:** 23/02/2012
- **CHECKED:** S.C. Wong
- **DATE:** 24/02/2012
### DRILLHOLE RECORD

**CONTRACT No.:** GE/2010/01  
**HOLE No.:** KTN-ASBH07  
**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation  
**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-35  
**COORDINATES:** E 828468.74, N 840994.99  
**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 02/02/2012  
**DATE to:** 13/02/2012  
**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 15.15 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Drilling Progress</th>
<th>Water Level (m)</th>
<th>Water Return (%)</th>
<th>T.C.R. (%)</th>
<th>S.R. (%)</th>
<th>R.D. (%)</th>
<th>FI</th>
<th>Tesla</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>SW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15.15</td>
<td>0.00</td>
<td></td>
<td></td>
<td>Firm, reddish brown (5YR4/2), slightly sandy, clayey Silt with some angular fine to coarse quartz gravel. (COLLUVIUM)</td>
</tr>
<tr>
<td>1.00</td>
<td>SW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.15</td>
<td>1.00</td>
<td></td>
<td></td>
<td>Firm, reddish brown (5YR3/4), slightly sandy, clayey Silt. (COLLUVIUM)</td>
</tr>
<tr>
<td>1.50</td>
<td>SW</td>
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<td></td>
<td></td>
<td></td>
<td>12.15</td>
<td>1.00</td>
<td></td>
<td></td>
<td>Firm, yellow (10YR7/8), mottled red, clayey Silt. (COLLUVIUM)</td>
</tr>
<tr>
<td>2.00</td>
<td>SW</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.65</td>
<td>1.00</td>
<td></td>
<td></td>
<td>Extremely weak, yellowish brown (10YR5/6) to reddish brown (5YR3/4), completely decomposed fine ash METATUFF. (Stiff, clayey Silt)</td>
</tr>
</tbody>
</table>

**LOGGED P. 20**  
**DATE:** 16/02/2012  
**CHECKED S.C. WONG**  
**DATE:** 22/02/2012

**REMARKS:**
1. An inspection pit was excavated to a depth of 1.50m.
2. flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 2.00m (3 nos.) and 4.17m (1 no.) below existing ground level on 04/02/2012, 07/02/2012 and 10/02/2012 respectively.
3. Environmental monitoring well was installed at 11.00m below existing ground level on 13/02/2012 and groundwater sampling was carried out on 21/02/2012.
# DRILLHOLE RECORD

**HOLE No.** KTN-ASBH07  
**CONTRACT No.** GE/2010/01  
**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-35  
**CO-ORDINATES:** E 828469.74, N 840994.99  
**WORKS ORDER No.** GE/2010/01.38  
**DATE from:** 02/02/2012 to 13/02/2012  
**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 15.15 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.65</td>
<td>HMV</td>
<td>4/45 at 38.00</td>
</tr>
<tr>
<td>4.45</td>
<td>HMV</td>
<td>206 bli</td>
</tr>
<tr>
<td>38.00</td>
<td>HMV</td>
<td>206 bli</td>
</tr>
<tr>
<td>45.50</td>
<td>HMV</td>
<td>206 bli</td>
</tr>
<tr>
<td>53.50</td>
<td>HMV</td>
<td>Extremely weak, brown (7.5YR5/14), dappled white, completely decomposed fine ash METATUFF, (Stiff, clayey SILT)</td>
</tr>
</tbody>
</table>

**REMARKS**

- LOGGED P.266  
- DATE 10/02/2012  
- CHECKED S.C. WONG  
- DATE 22/02/2012
### DRILLHOLE RECORD

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**COORDINATES:**
- E: 828469.74
- N: 840994.99

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 02/02/2012 to 13/02/2012

**GROUND LEVEL:** + 15.15 mPD

### FLUSHING MEDIUM: Water

### ORIENTATION: Vertical

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>T.G.R</th>
<th>R.O.D</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level (m)</th>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td></td>
<td></td>
<td>136 ft</td>
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<td>-15.35</td>
<td>10.62</td>
<td>As sheet 3 of 5.</td>
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<tr>
<td>32</td>
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</tr>
<tr>
<td>33</td>
<td></td>
<td></td>
<td>182 ft</td>
<td></td>
<td></td>
<td>15.00</td>
<td>Extremely weak, grey (7.5YR/5/1), locally yellowish brown (10YR/5/6), dappled brown, completely decomposed fine ash METATUFF. (Stiff, clayey Silt)</td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
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<td>35</td>
<td></td>
<td></td>
<td>148 ft</td>
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<td></td>
<td>20.00</td>
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</tr>
</tbody>
</table>

### REMARKS

- Sample notes: Small Disturbed Sample, Pileon sample, U79 Undisturbed Sample, U100 Undisturbed Sample, Master Sample, 76mm Vibrocoring Sample, 100mm Vibrocoring Sample, Vibrocoring Sub-sample, SPT Liner Sample.
- Test notes: Standard Penetration Test, In-situ Vane Shear Test, Permeability Test, Pressuremeter Test, Teklonower Survey, Packer Test, Impression Packer Test, Water Sample, Sandpipe, Hazemaster 'Yp.

**LOGGED)**
- **DATE:** 16/02/2012
- **CHECKED:** S.C. Wong
- **DATE:** 23/02/2012
DRILLHOLE RECORD

HOLE No. KTN-ASBH07

PROJECT: Agreement No. CE 81/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

METHOD: Rotary Drilling

MACHINE & No.: FDR-35

CO-ORDINATES:

E 828489.74
N 840994.99

WORKS ORDER No. GE/2010/01.38

DATE from: 02/02/2012 to 13/02/2012

GROUND LEVEL + 15.15 mPD

FLUSHING MEDIUM: Water

ORIENTATION: Vertical

GROUND LEVEL + 15.15 mPD

<table>
<thead>
<tr>
<th>Level</th>
<th>Water Level (m)</th>
<th>GRD %</th>
<th>R.Q.D %</th>
<th>F.I.</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>1.10m at 18.00</td>
<td>80</td>
<td></td>
<td></td>
<td>123ks</td>
<td>24</td>
<td>-0.00</td>
<td>0.00</td>
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<td>0.00</td>
<td>4.20m at 63.00</td>
<td>80</td>
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<td>25</td>
<td>-48.58</td>
<td>48.00</td>
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</tbody>
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Legend:
V As sheet 4 of 5.
H Strong, dark grey, spotted white, slightly decomposed fine ash METATUFF. Joints are closely to medium, occasionally very closely spaced, rough planar to stepped, very narrow, iron oxide stained and calcite coated, dipping at 5°-10°, 20°-30° and subvertical.
8 43.85 - 43.32m: Moderately strong, moderately decomposed fine ash METATUFF. End of investigation hole at 44.17m.

REMARKS:

LOGGED P 2012
DATE 16/02/2012
CHECKED S.C. Wong
DATE 20/02/2012

FGS Job No: 09 0481 03 38
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH08

**CONTRACT No.:** GE/2010/01

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** +11.89 mPD

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 03/01/2012 to 10/01/2012

---

**Drilling Progress**

**Drilling Depth (m):**

- 00.00
- 02.00
- 04.00
- 06.00
- 09.00
- 12.00
- 16.00
- 20.00
- 25.00
- 30.00
- 35.00
- 40.00
- 45.00
- 50.00
- 55.00
- 60.00
- 65.00
- 70.00
- 75.00
- 80.00
- 85.00
- 90.00

**Gauge Level (m):**

- 6.34
- 6.32
- 6.50
- 7.50
- 8.60
- 9.60
- 10.10
- 10.39
- 10.40
- 10.50
- 10.60
- 10.70
- 10.80
- 10.90
- 11.00
- 11.10
- 11.20
- 11.30
- 11.40
- 11.50
- 11.60
- 11.70
- 11.80

**LEGEND**

- 0:00:00
- 1:00:00
- 2:00:00
- 3:00:00
- 4:00:00
- 5:00:00
- 6:00:00
- 7:00:00
- 8:00:00
- 9:00:00
- 10:00:00
- 11:00:00
- 12:00:00

**Standard Penetration Test**

**In-situ Vane Shear Test**

**Remedial Test**

**Pressuremeter Test**

**Televise Survey**

**Packer Test**

**Inspection Packer Test**

**Water Sample**

**Sandpigs**

**Percussion Tip**

**LOGGED** P.27

**DATE** 13/01/2012

**CHECKED S.C. Wong**

**DATE** 14/01/2012

---

**REMARKS**

1. An inspection pit was excavated to a depth of 1.50m.
2. flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 29.50m (3 nos.) and 41.00m (1 no.) below existing ground level on 04/01/2012, 09/01/2012 and 09/01/2012 respectively.
3. Environmental monitoring well was installed at 7.00m below existing ground level on 10/01/2012 and groundwater sampling was carried out on 02/02/2012.
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH08  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 2 of 5

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-35

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical

**COORDINATES:**
- E 828444.57
- N 841129.05

**GROUND LEVEL:** +11.89 mPD

**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 03/01/2012 to 10/01/2012

<table>
<thead>
<tr>
<th>Depth (Ft.)</th>
<th>Water Level (m)</th>
<th>T.C.R. %</th>
<th>S.C.R. %</th>
<th>R.Q.D. %</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (cm)</th>
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**Tests:**
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Penetrometer Test
- Tensile Soveny
- Ficker Test
- Impact Penetrometer Test
- Water Sample
- Sample
- Piezometer Tip

**DESCRIPTION:**
- V As sheet 1 of 5.
- V Extremely weak, light brown (7.YR 7/5), completely decomposed coarse ash METATUFF. (Firm, slightly sandy, clayey Silt)
- V Extremely weak, brown (7.YR 7/4), completely decomposed coarse ash METATUFF. (Firm, silty CLAY)
- V Extremely weak, greyish brown (10.YR 5/2) to brownish grey (10.YR 5/2), completely decomposed coarse ash METATUFF. (Firm to stiff, slightly sandy, clayey Silt)

**REMARKS:**

**LOGGED:** P.250  
**DATE:** 13/01/2012

**CHECKED:** S.C. Wena  
**DATE:** 18/01/2012

**FIS Job No.:** 09 0461 03 38
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH08

**CONTRACT No.:** GE2010/01

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**CO-ORDINATES:**
- E 828444.57
- N 841129.05

**WORKS ORDER No.:** GE2010/01.38

**DATE from:** 03/01/2012 to 10/01/2012

**FLUSHING MEDIUM:** Water

**GROUND LEVEL:** + 11.89 mPD

**ORIENTATION:** Vertical

---

### Drilling Progress

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<th>Water Level (m)</th>
<th>Initial Quality</th>
<th>RQD %</th>
<th>SC R %</th>
<th>TCR %</th>
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### Sample Analysis

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</table>

### Remarks

- **As sheet 2 of 5.**
- Extremely weak, grey (7.5YR 6/1), spotted white, completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)

---

**LOGGED** 20/01/2012

**DATE**

**CHECKED & DRAWN**

**DATE** 18/01/2012
# Drillhole Record

**Hole No.:** KTN-ASBH08  
**Contract No.:** GE/2010/01  
**Method:** Rotary Drilling  
**Works Order No.:** GE/2010/01.38  
**Date:** 03/01/2012 to 10/01/2012

## Geotechnical Parameters

**Flushing Medium:** Water  
**Orientation:** Vertical  
**Ground Level:** +11.89 mPD

## Drilling Progress

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Water Level (m)</th>
<th>Flushing Required</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level (m)</th>
<th>Ground Level</th>
<th>Description</th>
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<td>-21.11</td>
<td>33.00</td>
<td>Very weak, dark brownish grey (10YR4/2), completely decomposed coarse ash METATUFF. (Very stiff, slightly sandy, clayey SILT with some angular fine to medium gravel)</td>
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<td>-23.61</td>
<td>33.00</td>
<td>Extremely weak, greyish brown (10YR5/2), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
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<td>Extremely weak to very weak, grey (7.5YR8/1) and brown (7.5YR8/4), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
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<td>-26.61</td>
<td>33.00</td>
<td>Very weak, brown (7.5YR5/4), completely decomposed coarse ash METATUFF. (Very stiff, slightly sandy, clayey SILT with some angular fine to medium gravel)</td>
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</tbody>
</table>

## Remarks

**Logged by:**  
**Date:** 13/01/2012  
**Checked by:** S.C. Wone  
**Date:** 16/01/2012

---

**Legend:**
- **V** = Vertical
- **P** = Pilot sample
- **UT5 Undisturbed Sample**
- **U100 Undisturbed Sample**
- **Matric Sample**
- **7mm Vibrocoring Sample**
- **10mm Vibrocoring Sample**
- **Vibrocoring Bulk Sample**
- **SPT Linear Sample**
- **Standard Penetration Test**
- **In-situ Vane Shear Test**
- **Remediation Test**
- **Pneumatic Hammer Test**
- **Television Survey**
- **Packer Test**
- **Impression Packer Test**
- **Water Sample**
- **Cone Penetration Test**
- **Reactor Tip**
**DRILLHOLE RECORD**

**HOLE No.:** KTN-ASBH08

**CONTRACT No.:** GE/2010/01

**SHEET:** 5 of 5

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**CO-ORDINATES:**

<table>
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<tr>
<th>E</th>
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<td>841129.05</td>
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</table>

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 03/01/2012 to 10/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 11.89 mPD

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Core</th>
<th>Core &amp; Cuttings</th>
<th>Water Level (m)</th>
<th>Shaft Start</th>
<th>Start Point</th>
<th>T.C.R.</th>
<th>S.C.R</th>
<th>R.D.</th>
<th>F.I.</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
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<td>As shot 4 of 5.</td>
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<tr>
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<td>Extremely weak to very weak, grey (7.5YR6/1) and brown (7.5YR5/4), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
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</tbody>
</table>

End of investigation hole at 41.00m.
## DRILLHOLE RECORD

**HOLE No.:** KTN-ASBH09  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 1 of 4

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FHS-07  
**CO-ORDINATES:**
- E: 827923.77
- N: 841232.80

**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 05/12/2011  
**to:** 24/12/2011

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 28.13 mPD

### Drilling Progress

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Materials</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>SW</td>
<td>Firm, brownish red (5YR4/3) to red (10R5/6), slightly sandy, clayey SILT with some angular fine to medium gravel of weak to moderately weak tuff. (FILL)</td>
</tr>
<tr>
<td>3.16</td>
<td>PW, at 18.00</td>
<td>Firm, brown (7.5YR5/4), slightly sandy, silty CLAY with some angular fine to medium gravel of moderately weak to moderately strong tuff. (COLUVIUM)</td>
</tr>
<tr>
<td>31.14</td>
<td>PW</td>
<td>Firm, reddish brown (5YR4/3), motilised yellow, slightly sandy, silty CLAY. (RESIDUAL SOIL)</td>
</tr>
<tr>
<td>25.13</td>
<td>VI</td>
<td>Extremely weak, reddish brown (5YR4/3), motilised brown, completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
</tr>
</tbody>
</table>

**LOGGED:** P.71  
**DATE:** 24/12/2011  
**CHECKED:** S.C. Wong  
**DATE:** 03/12/2012

**REMARDS**
1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 15.00m (1 no.) and 30.00m (1 no.) below existing ground level on 06/12/2011, 13/12/2011 and 19/12/2011 respectively.
3. Environmental monitoring well was installed at 11.30m below existing ground level on 21/12/2011 and groundwater sampling was carried out on 24/12/2011.
### DRILLHOLE RECORD

**CONTRACT No.:** GE/2010/01

**HOLE No.:** KTN-ASBH09

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**MACHINE & No.:** FHS-07

**METHOD:** Rotary Drilling

**CO-ORDINATES:**

<table>
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<tr>
<th>E</th>
<th>N</th>
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<tr>
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<td>841232.80</td>
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**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 05/12/2011 to 24/12/2011

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 28.13 mPD

---

### Tests

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<th>Reduced Level</th>
<th>Depth (m)</th>
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### Remarks

- Small Disturbed Sample
- Plates sample
- U70 Undisturbed Sample
- U900 Undisturbed Sample
- Master Sample
- 7mmns Vibracore Sample
- 10mmns Vibracore Sample
- 10mmns Sub-sampie
- SPI Uher Sample

**LOGGED:** PS 2012-2011

**DATE:** 26/12/2011

**CHECKED:** S.C. Wong

**DATE:** 03/01/2012
# DRILLHOLE RECORD

**HOLE No.:** KTN-ASBH09  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 3 of 4

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FHS-07  
**COORDINATES:**
- E 827923.77  
- N 841232.80  
**DATE from:** 05/12/2011  
**TO:** 24/12/2011

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 28.13 mPD

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Cutting Depth</th>
<th>Water Level (m)</th>
<th>T.C.R %</th>
<th>S.C.R %</th>
<th>R.D.R %</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced</th>
<th>Depth (m)</th>
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<tr>
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<th>No.</th>
<th>Test</th>
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<td>21</td>
<td>96 m</td>
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<tr>
<td>22</td>
<td>118 m</td>
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<tr>
<td>23</td>
<td>200 m</td>
<td></td>
<td>25.50 - 25.96 m: Firm, sandy clayey Silt.</td>
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<td>24</td>
<td>200 m</td>
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<td>25</td>
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</table>

**LOGGED:** P. 29  
**DATE:** 24/12/2011

**CHECKED:** S.C. Wong  
**DATE:** 03/01/2012

**REMARKS**

- Small Disturbed Sample
- Piston sample
- U70 Undisturbed Sample
- U100 Undisturbed Sample
- Master Sample
- 76mm Vibrocoring Sample
- 100mm Vibrocoring Sample
- SPT Liner Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Packer Test
- Television Survey
- Steridip sample
- Steridip sample
- Rockmklar Tip
### DRILLHOLE RECORD

**HOLE No.:** KTN-ASBH09  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 4 of 4

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**MACHINE & No.:** FHS-07  
**METHOD:** Rotary Drilling  
**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 28.13 mPD  
**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 05/12/2011 to 24/12/2011

### Tests

<table>
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<tr>
<th>Depth (m)</th>
<th>Water Rem. %</th>
<th>T.D.R. %</th>
<th>remaining R.D.S. %</th>
<th>F1</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level (m)</th>
<th>Logm (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
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<tr>
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<td>-2.17</td>
<td>30.50</td>
<td>V</td>
<td>IV</td>
<td>30.50 - 30.68m : Weak, highly decomposed METATUFF. Recovered as angular medium to coarse gravel and cobbles.</td>
</tr>
<tr>
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<td>-2.55</td>
<td>30.68</td>
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<td>End of investigation hole at 30.68m.</td>
</tr>
</tbody>
</table>

### Remarks

- LOGGED:  
  - DATE: 24/12/2011  
  - CHECKED: S.C.  

- LOGGED:  
  - DATE: 03/10/2012
**DRILLHOLE RECORD**

**HOLE No:** KTN-ASBH12

**CONTRACT No.:** GE/2010/01

**METHOD:** Rotary Drilling

**CO-ORDINATES:**
- E: 827952.51
- N: 941080.08

**MACHINE & No.:** FDR-13

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 20/12/2011 **to:** 05/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 24.88 mPD

---

**Drilling Progress**

<table>
<thead>
<tr>
<th>Level (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW</td>
<td>Firm, dark gray (5YR4/1), slightly sandy SILT with some angular fine to medium gravel of moderately weak tuff with occasional wood and brick fragments. (FILL)</td>
</tr>
<tr>
<td>PW</td>
<td>Firm, reddish brown (5YR4/3), slightly sandy, silty CLAY with occasional angular fine to medium gravel of weak tuff and quartz. (COILL/ILUM)</td>
</tr>
<tr>
<td>PW</td>
<td>Extremely weak, brown (7.5YR8/4), completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT with occasional angular fine to medium gravel)</td>
</tr>
<tr>
<td>PW</td>
<td>Extremely weak, brownish yellow (10YR8/6), moldy light brown, completely decomposed METATUFF. (Firm, slightly sandy, clayey SILT)</td>
</tr>
<tr>
<td>PW</td>
<td>Extremely weak, purplish red (7.5R6/4), completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
</tr>
</tbody>
</table>

---

**REMARKS**

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 20.50m (3 nos.) and 37.62m (1 no.) below existing ground level on 28/12/2011, 30/12/2011 and 03/01/2012 respectively.
3. Environmental monitoring well was installed at 10.50m below existing ground level on 04/01/2012 and groundwater sampling was carried out on 03/02/2012.
## Drill Hole Record

**Hole No.:** KTN-ASBH12  
**Contract No.:** GE2010/01  
**Sheet:** 2 of 4

**Project:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**Method:** Rotary Drilling

**Machine & No.:** FDR-13  
**Co-ordinates:**
- E: 827952.51
- N: 841080.06

**Works Order No.:** GE2010/01.38  
**Date from:** 20/12/2011 to 05/01/2012

**Flushing Medium:** Water  
**Orientation:** Vertical  
**Ground Level:** + 24.88 mPD

### Tstable Measurements

<table>
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<tr>
<th>Depth (m)</th>
<th>Type</th>
<th>GPR</th>
<th>CPT</th>
<th>RQD %</th>
<th>SCR %</th>
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### Remarks

- **Logged:** P.2750  
  **Date:** 04/01/2012  
  **Checked:** S.C. Wong  
  **Date:** 07/01/2012

**Small Undisturbed Sample**  
**Piston sample**  
**U75 Undisturbed Sample**  
**U100 Undisturbed Sample**  
**Master Sample**  
**76mm Vibrocore Sample**  
**100mm Vibrocore Sample**  
**Vibracore Sub-sample**  
**SPT Liner Sample**  

**Standard Penetration Test**  
**In situ Vane Shear Test**  
**Ponderol Survey**  
**Packer Test**  
**Impedance Packer Test**  
**Water Sample**  
**Grout**  
**Preconcrete Tip**

**Remarks:**
- As sheet 1 of 4.
- Extremely weak, brown (7.5YR 5/4) to dark brown (7.5YR 3/4) and greyish brown (10V/5/2), completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)
- Extremely weak to very weak, grey (7.5YR 8/1) to brownish grey (10YR 5/2), completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH12

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-13

**CO-ORDINATES:**
- E 827952.51
- N 841080.06

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 20/12/2011 to 05/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 24.88 mPD

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<th>Casing Diameter</th>
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<th>Water Level Relative to Ground Level</th>
<th>TCR %</th>
<th>SCR %</th>
<th>ROC %</th>
<th>PI</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
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<td>24.00</td>
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<td>30.00</td>
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</tr>
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<td>30</td>
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<td></td>
<td></td>
<td>30.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REMARKS**

- As sheet 2 of 4.
- 25.50 - 25.01m: With some angular line to coarse gravel of quartz.
**DRILLHOLE RECORD**

**PROJECT:** Agreement No. CE 01/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-13

**COORDINATES:**
- E 827562.51
- N 841080.06

**WORKS ORDER No.:** GE/2010/01.38
- DATE from: 20/12/2011 to 05/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** +24.88 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Water Level</th>
<th>D.I.</th>
<th>Test Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>5.600 m</td>
<td>30.80</td>
<td>200 lbs</td>
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<tr>
<td>32</td>
<td>5.500 m</td>
<td>30.80</td>
<td>200 lbs</td>
</tr>
<tr>
<td>33</td>
<td>4.900 m</td>
<td>30.00</td>
<td>200 lbs</td>
</tr>
<tr>
<td>34</td>
<td>3.000 m</td>
<td>30.00</td>
<td>200 lbs</td>
</tr>
<tr>
<td>35</td>
<td>1.000 m</td>
<td>30.00</td>
<td>200 lbs</td>
</tr>
</tbody>
</table>

**Samples**

- No: 16
- Type: 3
- Depth [m]: 30.80
- Grade: V
- Description: As sheet 2 of 4.

**Remarks**

- End of investigation hole at 37.52m.

---

**REMARKS**

- Date: 04/01/2012
- Checked: S.C. Wong
- Date: 07/01/2012
DRILLHOLE RECORD

PROJECT: Agreement No. CE 01/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

METHOD: Rotary Drilling

CO-ORDINATES: E 826828.74
                N 841324.53

MACHINE & No.: FDR-35

FLUSHING MEDIUM: Water

ORIENTATION: Vertical

GROUND LEVEL + 18.73 mPD

WORKS ORDER No. GE/2010/01.38

DATE from: 13/01/2012 to 28/01/2012

HOLE No. KTN-ASBH13

SHEET: 1 of 6

REMARKS
1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 3.50m (3 nos.) and 54.30m (1 no.) below existing ground level on 10/01/2012, 17/01/2012 and 20/01/2012 respectively.
3. Environmental monitoring wells was installed at 12.00m below existing ground level on 28/01/2012 and groundwater sampling was carried out on 06/02/2012.
**DRILLHOLE RECORD**

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**CO-ORDINATES:**
- E 828528.74
- N 841324.53

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 13/01/2012 to 28/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 18.73 mPD

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Casing Depth (m)</th>
<th>Water Level (m)</th>
<th>R. D. %</th>
<th>R. D. %</th>
<th>Test</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29 Ms</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12</td>
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<td></td>
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<td></td>
<td>30 Ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 13                |                  | 0.90m
         | 16.00          | 4.00m
         | 09.00          | 13.00          |             | 12      |        |        |             |
|                  |                  |                 |         |         |              |         |               |           |        |        | As sheet 1 of 8. |
| 14                |                  |                 |         |         | 14 Ms |         |               |           |        |        |             |
| 15                |                  |                 |         |         | 15 Ms |         |               |           |        |        |             |
| 16                |                  |                 |         |         | 16 Ms |         |               |           |        |        |             |
| 17                |                  |                 |         |         | 17 Ms |         |               |           |        |        |             |
| 18                |                  |                 |         |         | 18 Ms |         |               |           |        |        | Extremely weak, brown (7.5YR/5/4), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT) |
| 19                |                  |                 |         |         | 19 Ms |         |               |           |        |        |             |
| 20                |                  |                 |         |         | 20 Ms |         |               |           |        |        |             |

**REMARKS**

**LOGGED**

**DATE**

**CHECKED**

**DATE**
<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>W.L.</th>
<th>T.C.R.</th>
<th>S.C.R.</th>
<th>R.Q.D.</th>
<th>Test</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.22</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>18</td>
<td>36.00</td>
<td>As sheet 2 of 6.</td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>19</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>20</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>3.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>21</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>4.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>22</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>5.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>23</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>6.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>24</td>
<td>36.00</td>
<td>Extremely weak, yellowish brown (10YR/5/8) to reddish brown (5YR/4/3), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey Silt)</td>
</tr>
<tr>
<td>1.22</td>
<td>7.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>25</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>8.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>26</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>9.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>27</td>
<td>36.00</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>10.00</td>
<td></td>
<td></td>
<td></td>
<td>200lbs</td>
<td>28</td>
<td>36.00</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**

- Small Disturbed Sample
- Fresh sample
- U36 Undisturbed Sample
- U100 Undisturbed Sample
- NUC/3 Sample
- 7mm Vibrocore Sample
- 10mm Vibrocore Sample
- Vibrocore Sub-sample
- SPY Liner Sample

- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Pressuremeter Test
- Tiltmeter Survey
- Packer Test
- Impression Packer Tool
- Water Sample
- Description
- Pressuremeters
- Placimeter Tip

**Logged:**

- Date: 20/01/2012

**Checked:**

- S.C. Wong

**Date:** 20/01/2012
### DRILLHOLE RECORD

**HOLE No.** KTN-ASBH13  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 4 of 6

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-35

**COORDINATES:**  
- Easting: 828528.74  
- Northing: 841324.53

**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 13/01/2012 to 28/01/2012  
**GROUND LEVEL:** + 18.73 mPD

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Water Level (m) Std at Stand end</th>
<th>Sample %</th>
<th>T.C.R. %</th>
<th>R.Q.D %</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Length (m)</th>
<th>Legend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>1.30m at 0200</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td>67 bts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>1.30m at 0200</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td>67 bts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>6.26m at 0200</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td>59 bts</td>
<td></td>
<td></td>
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<tr>
<td>34</td>
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<td></td>
<td></td>
<td>59 bts</td>
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<tr>
<td>35</td>
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<td></td>
<td></td>
<td>93 bts</td>
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<tr>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>93 bts</td>
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<td>37</td>
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<td>93 bts</td>
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<td>93 bts</td>
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<td>39</td>
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<td></td>
<td></td>
<td>93 bts</td>
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<td>198 bts</td>
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**LOGGED**  
**DATE:** 26/01/2012  
**CHECKED:** R.C. Wong/DF  
**DATE:** 26/01/2012

**REMARKS:**  
- As sheet 3 of 6.
## DRILLHOLE RECORD

**HOLE No.** KTN-ASBH13  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 5 of 6

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**FLUSHING MEDIUM:** Water

**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 13/01/2012 to 28/01/2012

**COORDINATES:**
- **E:** 828528.74
- **N:** 841324.53

**GROUNDS LEVEL:** +18.73 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Casing Diameter (mm)</th>
<th>Water Level (m)</th>
<th>T.C.S %</th>
<th>S.C.R %</th>
<th>R.D.D %</th>
<th>FI</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>119</td>
<td>lbs</td>
<td>34</td>
<td>44.35</td>
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<tr>
<td>42</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>43.77</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td></td>
<td>1.30m at 66.00</td>
<td>65</td>
<td>90</td>
<td></td>
<td>121</td>
<td>lbs</td>
<td>36</td>
<td>45.40</td>
<td>As sheet 3 of 6,</td>
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<tr>
<td></td>
<td></td>
<td>6.30m at 66.00</td>
<td></td>
<td></td>
<td></td>
<td>37</td>
<td></td>
<td></td>
<td>45.80</td>
<td></td>
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<tr>
<td>44</td>
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<td></td>
<td>123</td>
<td>lbs</td>
<td>38</td>
<td>45.83</td>
<td>Extremely weak, greyish brown (10YR/5/2) to brown (7.5YR/5/4), dissected black, completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey Silt)</td>
</tr>
<tr>
<td>45</td>
<td></td>
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<td></td>
<td></td>
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<td>40</td>
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<td></td>
<td>45.83</td>
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<td>47</td>
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<td></td>
<td>42</td>
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<td></td>
<td>45.83</td>
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<td></td>
<td></td>
<td>44</td>
<td></td>
<td></td>
<td>45.83</td>
<td></td>
</tr>
</tbody>
</table>

**LOGGED**: 28/01/2012  
**CHECKED** by S.C. Wong  
**DATE:** 28/01/2012

**REMARKS**

- Small Disturbed Sample
- Piston sample
- U90 Undisturbed Sample
- U120 Undisturbed Sample
- Measured Sample
- 75mm Vibracore Sample
- 100mm Vibracore Sample
- Vibracore Sub-sample
- SPT Undisturbed Sample

**Standard Penetration Test**

**In-situ Vane Shear Test**

**Permeability Test**

**Pressuremeter Test**

**Televiewer Survey**

**Packer Test**

**Imprint Packer Test**

**Water Sample**

**Sediment**

**Reconnaissance Tip**
## DRILLHOLE RECORD

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**CO-ORDINATES:**
- E: 828528.74
- N: 841324.53

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 13/01/2012 to 28/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 18.73 mPD

### Tests

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Water Level (m)</th>
<th>S.R. %</th>
<th>R.O.D. %</th>
<th>F.I.</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced level (m)</th>
<th>Depth (m)</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.50 at 80</td>
<td>2.50 at 80</td>
<td>0.00</td>
<td></td>
<td>100</td>
<td>V</td>
<td>42</td>
<td>31.77</td>
<td>31.77</td>
<td>V</td>
</tr>
<tr>
<td>2.50 at 80</td>
<td>2.50 at 80</td>
<td>0.00</td>
<td></td>
<td>100</td>
<td>V</td>
<td>43</td>
<td>31.77</td>
<td>31.77</td>
<td>V</td>
</tr>
<tr>
<td>20.0 at 50</td>
<td>20.0 at 50</td>
<td>0.00</td>
<td></td>
<td>200</td>
<td>V</td>
<td>44</td>
<td>35.57</td>
<td>35.57</td>
<td>V</td>
</tr>
<tr>
<td>20.0 at 50</td>
<td>20.0 at 50</td>
<td>0.00</td>
<td></td>
<td>200</td>
<td>V</td>
<td>45</td>
<td>35.57</td>
<td>35.57</td>
<td>V</td>
</tr>
<tr>
<td>2.20 at 80</td>
<td>2.20 at 80</td>
<td>0.00</td>
<td></td>
<td>100</td>
<td>IV</td>
<td>Weak, grey, highly decomposed coarse ash METATUFF. Recovered as slightly sandy angular fine to coarse gravel and cobbles.</td>
<td>35.57</td>
<td>35.57</td>
<td></td>
</tr>
<tr>
<td>2.20 at 80</td>
<td>2.20 at 80</td>
<td>0.00</td>
<td></td>
<td>100</td>
<td>IV</td>
<td>Weak, grey, highly decomposed coarse ash METATUFF. Recovered as slightly sandy angular fine to coarse gravel and cobbles.</td>
<td>35.57</td>
<td>35.57</td>
<td></td>
</tr>
<tr>
<td>2.20 at 80</td>
<td>2.20 at 80</td>
<td>0.00</td>
<td></td>
<td>100</td>
<td>IV</td>
<td>Weak, grey, highly decomposed coarse ash METATUFF. Recovered as slightly sandy angular fine to coarse gravel and cobbles.</td>
<td>35.57</td>
<td>35.57</td>
<td></td>
</tr>
</tbody>
</table>

### Remarks
- End of investigation hole at 54.30m.

**LOGGED P: 29/01/2012**

**DATE: 29/01/2012**

**CHECKED S.C. Wong:**

**DATE: 29/01/2012**

---

**NEXT PAGE:**
### DRILLHOLE RECORD

**HOLE No.** KTN-ASBH14a  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 1 of 3

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-36  
**CO-ORDINATES:**  
<table>
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<th>E</th>
<th>N</th>
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<tbody>
<tr>
<td>828166.84</td>
<td>840512.45</td>
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</table>

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 12.45 mPD

**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 12/12/2011  
**to:** 30/12/2011

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Co-ordinates</th>
<th>Water Level (m)</th>
<th>Chalk Start</th>
<th>T.C.R.%</th>
<th>S.R.%</th>
<th>R.O.D.%</th>
<th>F1</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
</table>
| SW | 26/04/2011 | 0.90m at 08:00 | 22 bbls | 4 | 5 | 63 | 7 | 8 | 9 | 10 | 11.95 | 3.60 | Firm, reddish brown (6YR/4/3), slightly sandy, silly CLAY. (FILL)  
| 0.00 - 0.80m: With some angular fine to medium gravel of quartz. |
| SW | 01/05/2011 | 106 bbls | 55 | 6.95 | 3.50 | 10 | 11 | 12 | 13 | 14 | 6.00 | 10 | Firm, light brownish grey (2.5YR/6/2), very sandy, silly CLAY. (ALLUVIUM)  
| Extremely weak, brown (7.5YR/5/4) to brownish grey (10YR/6/2), completely decomposed META/TUFF. (Very stiff, slightly sandy Silt)  
| 8.60 - 8.80m: With white quartz vein. |

#### REMARKS

1. An inspection pit was excavated to a depth of 1.50m.  
2. Floating water samples were taken from the water tank when drilling at 1.50m (1 no.), 15.60m (1 no.) and 25.73m (1 no.) below existing ground level on 14/12/2011, 16/12/2011 and 23/12/2011 respectively.  
3. Environmental monitoring well was installed at 6.00m below existing ground level on 29/12/2011 and groundwater sampling was carried out on 12/01/2012.
As sheet 1 of 3.

Very weak, brownish grey (10YR 2/52), completely decomposed METATUFF. (Slightly sandy, silty angular fine to coarse GRAVEL)
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<th>SCR %</th>
<th>R.Q.D %</th>
<th>FI</th>
<th>Tests</th>
<th>Samples</th>
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As shot 2 of 3.

20.50 - 20.63 m: With white quartz vein.

Strong, grey, spotted white, slightly decomposed coarse ash METATUFF.

Joints are closely to medium, occasionally very closely spaced, rough planar to stepped, very narrow, iron oxide stained, kaolin (<3mm) coated, dipping at 3°-15° and 21°-35°.

End of investigation hole at 25.73 m.
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH14b

**CONTRACT No.:** GE/2010/01

**SHEET:** 1 of 5

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-35

**CO-ORDINATES:**
- E 828209.61
- N 840750.92

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 17.81 mPD

**DATE from:** 10/12/2011 to 29/12/2011

**WORKS ORDER No.:** GE/2010/01.38

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<td>1.80</td>
<td>Extremely weak to weak, reddish brown (5YR4/3), mottled yellow, completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
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<td>2</td>
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<td>3.00</td>
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<td>Extremely weak, pinkish brown (2.5YR7/4) to yellowish brown (10YR5/8), completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
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<td>5.50</td>
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<td>5.50</td>
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<td>5.50</td>
<td>Extremely weak, brownish red (5YR4/3), spotted white, completely decomposed METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
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</table>

**LOGGED** 27/12/2011

**DATE:** 29/12/2011

**CHECKED:** S.C. Wong

**DATE:** 03/01/2012

**REMARKS**
1. An inspection pit was excavated to a depth of 1.50m.
2. flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 2.50m (2 nos.) and 4.90dm (1 no.) below existing ground level on 16/12/2011, 20/12/2011 and 23/12/2011 respectively.
3. Environmental monitoring well was installed at 11.00m below existing ground level on 29/12/2011 and groundwater sampling was carried out on 11/01/2012.
**DRILLHOLE RECORD**

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**PROJECT:**

Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - investigation

**METHOD:**

Rotary Drilling

**MACHINE & No.:** FDR-35

**COORDINATES:**

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**WORKS ORDER No.:** GE/2010/01.38

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**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 17.81 mPD

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<td>Extremely weak to very weak, yellowish brown (10YR5/5) to brown (7.5YR5/4), locally mottled white, completely decomposed METATUFF. (Very stiff, slightly sandy, clayey SILT)</td>
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**Remarks**

Small Disturbed Sample  
Piston sample  
U96 Undisturbed Sample  
U100 Undisturbed Sample  
Matier Sample  
78mm Vibrocoring Sample  
100mm Vibrocoring Sample  
Vibrocoring Sub-sample  
BPT Linor Sample  

**LOGGED**  

P. 7500  

DATE  

29/12/2011  

CHECKED  

S.C. Wong  

DATE  

03/01/2012
<table>
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<tr>
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<th>Casing Depth (m)</th>
<th>Water Level (m)</th>
<th>T.C.R. %</th>
<th>S.G.R. %</th>
<th>R.O.D. %</th>
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<th>Depth (m)</th>
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<td>15</td>
<td>20.00</td>
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<td>As sheet 2 of 5.</td>
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**REMARKS**

- LOGGED: 29/12/2011
- DATE: 29/12/2011
- CHECKED: S.C. Wong
- DATE: 03/01/2012
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<th>SCR %</th>
<th>RQD %</th>
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<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Grade</th>
<th>Legend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>000'</td>
<td>00'</td>
<td>90</td>
<td></td>
<td></td>
<td>200'</td>
<td>26</td>
<td>26.00</td>
<td>26.00</td>
<td>V</td>
<td>As shown 2 of 5.</td>
<td></td>
</tr>
<tr>
<td>32'</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>200'</td>
<td>26</td>
<td>26.00</td>
<td>26.00</td>
<td>IV</td>
<td>Very weak, greyish brown, highly decomposed METATUFF. Recovered as slightly sandy, silty clayey angular medium to coarse gravel and cobbles. 33.00 - 33.28m: With some quartz vein.</td>
<td></td>
</tr>
<tr>
<td>33'</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>200'</td>
<td>26</td>
<td>26.00</td>
<td>26.00</td>
<td>VI</td>
<td>Extremely weak, brownish grey (10YR5/2) and light brown (7.5YR6/3) to brown (7.5YR3/4), completely decomposed METATUFF. (Very stiff, slightly sandy, clayey Silt)</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks**
- **LOGGED P. ZH**
- **DATE 23/12/2011**
- **CHECKED S.C. WONG**

**Date:** 03/01/2012
DRILLHOLE RECORD

HOLE No.    KTN-ASBH14b
CONTRACT No.: GE/2010/01    SHEET: 5 of 5


METHOD: Rotary Drilling

MACHINE & No.: FDR-35

CO-ORDINATES: E 822209.81 N 940759.92

WORKS ORDER No. GE/2010/01.38

DATE from: 10/12/2011 to 29/12/2011

FLUSHING MEDIUM: Water

ORIENTATION: Vertical

GROUND LEVEL +17.81 mPD

<table>
<thead>
<tr>
<th>Depth</th>
<th>Water Level</th>
<th>Water Return</th>
<th>T.C.R %</th>
<th>S.P.R %</th>
<th>R.Q.D %</th>
<th>F.I</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.00</td>
<td>6.22m</td>
<td>8.00</td>
<td>45.0%</td>
<td></td>
<td></td>
<td>15</td>
<td>bits</td>
<td>34</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td>As sheet 4 of 5.</td>
</tr>
<tr>
<td>42.00</td>
<td>8.02m</td>
<td>8.92m</td>
<td>35.0%</td>
<td></td>
<td></td>
<td>35</td>
<td></td>
<td>35</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>43.00</td>
<td>8.00m</td>
<td></td>
<td>50.0%</td>
<td></td>
<td></td>
<td>36</td>
<td>bits</td>
<td>36</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>44.00</td>
<td>7.00m</td>
<td></td>
<td>50.0%</td>
<td></td>
<td></td>
<td>37</td>
<td></td>
<td>37</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>45.00</td>
<td>8.00m</td>
<td></td>
<td>50.0%</td>
<td></td>
<td></td>
<td>38</td>
<td>bits</td>
<td>38</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>46.00</td>
<td>8.00m</td>
<td></td>
<td>50.0%</td>
<td></td>
<td></td>
<td>39</td>
<td></td>
<td>39</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

End of investigation hole at 46.00m.

<table>
<thead>
<tr>
<th>Depth</th>
<th>Water Level</th>
<th>Water Return</th>
<th>T.C.R %</th>
<th>S.P.R %</th>
<th>R.Q.D %</th>
<th>F.I</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>47.00</td>
<td></td>
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<td>40</td>
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<td>40</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>48.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41</td>
<td></td>
<td>41</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>49.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42</td>
<td></td>
<td>42</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>50.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>43</td>
<td></td>
<td>43</td>
<td>-22.19</td>
<td>40.00</td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

Small Disturbed Sample  
Horton sample  
U190 Undisturbed Sample  
U190 Undisturbed Sample  
Master Sample  
70mm Vibracore Sample  
100mm Vibracore Sample  
Vibracore Sub-sample  
SPT Liner Sample  

Standard Penetration Test  
In-situ Vane Shear Test  
Permeability Test  
Pore Pressure Test  
Televator Survey  
Packer Test  
Imprison Packer Test  
Water Sample  
Sample Tip  

LOGGED: P. Z1G1  
DATE: 29/12/2011

CHECKED: S.C. Woon  
DATE: 29/01/2012

REMARKS
DRILLHOLE RECORD

HOLE No. KTN-ASBH15

CONTRACT No.: GE/2010/01

SHEET: 1 of 3


METHOD: Rotary Drilling

MACHINE & No.: FDR-07

CO-ORDINATES:

E  827688.98
N  840537.71

FLUSHING MEDIUM: Water

ORIENTATION: Vertical

GROUND LEVEL + 11.81 mPD

DATE from: 23/12/2011 to 06/01/2012

WORKS ORDER No. GE/2010/01.38

Legend:

Firm, grey (7.5YR/6/1), slightly sandy, silty CLAY with some angular line to medium gravel of moderately weak tuff and quartz. (FILL)

Firm, dark grey (7.5YR/4/1), moderately, grey, slightly sandy, silty CLAY with occasional angular line of gravel of quartz. (FILL)

Firm, grey (7.5YR/6/1), slightly CLAY with occasional angular line to medium gravel of quartz. (FILL)

Light grey (10R7/11), molified dark grey, slightly clayey, sandy angular line to coarse GRAVEL of quartz. (FILL)

Extremely weak, purpleish brown (7.5G6/3), completely decomposed METATUFF. (Silt, slightly sandy, clayey SILT)

Very weak, brown (7.5YR/6/4), completely decomposed METATUFF. (Slightly silty, clayey sandy angular line to coarse gravel)

REMARKS:

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 20.60m (3 nos.) and 22.50m (1 no.) below existing ground level on 28/12/2011, 03/01/2012 and 04/01/2012 respectively.
3. Environmental monitoring was installed in 0.60m below existing ground level on 05/01/2012 and groundwater sampling was carried out on 03/03/2012.

LOGGED P. 28

DATE 04/01/2012

CHECKED S.C. Wang

DATE 07/01/2012

FUGRO GEOTECHNICAL SERVICES LTD
### DRILLHOLE RECORD

**PROJECT:** Agreement No. CE 01/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-07

**CO-ORDINATES:**
- E 827686.98
- N 840537.71

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 23/12/2011 to 06/01/2012

**GROUND LEVEL:** + 11.81 mPD

### FLUSHING MEDIUM:

**Water:**
- Level (m): E 8.800 N 8.400
- Rate: 0.501 LPM

**ORIENTATION:** Vertical

### Samples

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Sub-samples</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.00</td>
<td>200 Us</td>
<td>As sheet 1 of 3. Extremely weak, brown (7.5YR 5/4) to yellowish brown (10YR 5/6), completely decomposed METATUFF. (Very stiff, sandy SILT with occasional angular fine to medium gravel)</td>
</tr>
<tr>
<td>13.00</td>
<td>200 Us</td>
<td>Very weak, brownish grey to brown, highly decomposed METATUFF. Recovered as slightly stony, sandy angular fine to coarse gravel and cobbles.</td>
</tr>
<tr>
<td>15.00</td>
<td>200 Us</td>
<td>Extremely weak, brownish yellow (10YR 6/8), completely decomposed METATUFF. (Very stiff, slightly sandy, clayey SILT with occasional angular fine gravel)</td>
</tr>
</tbody>
</table>

### REMARKS

- Small Disturbed Sample
-深层 sample
- U29 Undisturbed Sample
- U50 Undisturbed Sample
- Master Sample
- Tonsa Vicorcon Sample
- 100mm Vicorcon Sample
- Vicorcon Sub-sample
- SPT Line Sample

- Standard Penetration Test
- Soil Vane Shear Test
- Permeability Test
- Pressuremeter Test
- Trench Survey
- Particle Test
- Impregnationacker Test
- Water Sample
- Skidpipe
- Permeability Tip

**LOGGED:** P. Z

**DATE:** 04/01/2012

**CHECKED S.C. Wong:** 3

**DATE:** 07/01/2012
## DRILLHOLE RECORD

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation  

**METHOD:** Rotary Drilling  

**MACHINE & No.:** FDR-07  

**FLUSHING MEDIUM:** Water  

**ORIENTATION:** Vertical  

**GROUND LEVEL:** +11.81 m

### Co-ordinates

<table>
<thead>
<tr>
<th>Code</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>827666.98</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>840537.71</td>
<td></td>
</tr>
</tbody>
</table>

### Flushing Medium

- Water

### Works Order No.

GE/2010/01.38

### Date Range

- From: 23/12/2011
- To: 06/01/2012

### Drilling Progress

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Drilling Progress</th>
<th>Water Level (m)</th>
<th>Water Return %</th>
<th>T.C.R. %</th>
<th>S.C.R. %</th>
<th>R.O.D. %</th>
<th>F.1</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>0.20m at 10:00</td>
<td>3.60m at 06:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
<td>-8.68</td>
<td>29.02</td>
<td>V</td>
<td>As shot 2 of 3.</td>
</tr>
<tr>
<td>23</td>
<td>200 lbs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
<td>-11.19</td>
<td>23.00</td>
<td>V</td>
<td>Very weak, grey (7.5YR 8/1) to brownish grey (10YR 5/2), completely decomposed METATUFF. (Very stiff, slightly sandy, clayey SILT with some angular fine to coarse gravel)</td>
</tr>
<tr>
<td>27</td>
<td>1.20m at 10:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27</td>
<td>-15.19</td>
<td>25.00</td>
<td>III</td>
<td>Moderately weak to moderately strong, brown and grey, moderately decomposed coarse ash METATUFF. Very closely fractured, recovered as angular fine to coarse gravel and cobbles.</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>End of investigation hole at 27.50m.</td>
</tr>
</tbody>
</table>

### Remarks

- LOGGED: P. 27
- DATE: 04/06/2012
- CHECKED: S.C. Wong
- DATE: 07/06/2012
DRILLHOLE RECORD

HOLE No. KTN-ASBH20


METHOD: Rotary Drilling

MACHINE & No.: FDR-13

CO-ORDINATES:
- E: 828871.90
- N: 840623.70

WORKS ORDER No. GE/2010/01.38

DATE from: 06/01/2012 to 14/01/2012

FLUSHING MEDIUM: Water

GROUND LEVEL + 6.26 mPD

ORIENTATION: Vertical

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>Firm, brown (7.5YR5/3) and grey (7.5YR6/1), slightly sandy, clayey Silt. (FILL)</td>
</tr>
<tr>
<td>1.00</td>
<td>Firm, greyish brown (6YR5/2), slightly sandy, silty CLAY. (FILL)</td>
</tr>
<tr>
<td>2.00</td>
<td>Soft, dark grey (5YR4/1), silty CLAY. (ALLUVIUM)</td>
</tr>
<tr>
<td>5.00</td>
<td>Light grey (10R/7/1) to light brown (7.5YR8/3), slightly clayey, slightly fine to coarse SAND with some angular fine to coarse gravel and cobbles of quartz. (ALLUVIUM)</td>
</tr>
<tr>
<td>6.50</td>
<td>Extremely weak, reddish brown (5YR4/3), completely decomposed coarse ash METATUFF. (Firm, silty CLAY)</td>
</tr>
</tbody>
</table>

REMARKS
1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 23.00m (3 nos.) and 38.50m (1 no.) below existing ground level on 09/01/2012, 11/01/2012 and 14/01/2012 respectively.
3. Environmental monitoring well was installed at 8.00m below existing ground level on 14/01/2012 and groundwater sampling was carried out on 03/03/2012.
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH20

**CONTRACT No.:** GE/2010/01

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-13

**CO-ORDINATES:**

<table>
<thead>
<tr>
<th>E</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>828871.90</td>
<td>840623.70</td>
</tr>
</tbody>
</table>

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 06/01/2012 to 14/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 6.26 mPD

### Results Table

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>As shot 1 of 4.</td>
<td></td>
</tr>
<tr>
<td>Extremely weak, greyish brown (10YR5/5) to yellowish brown (10YR5/5), completely decomposed coarse ash METATUFF. (Firm to stiff, (Jayey Silt))</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Tests</th>
<th>Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>49 Us</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>50 Us</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>51 Us</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>52 Us</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>53 Us</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>54 Us</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>55 Us</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>56 Us</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>57 Us</td>
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</tr>
<tr>
<td>19</td>
<td>58 Us</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>59 Us</td>
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</tbody>
</table>

**LOGGED**

**DATE:** 12/01/2012

**CHECKED**

**DATE:** 31/01/2012
**DRILLHOLE RECORD**

**PROJECT:** Agreement No. CE 01/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-13

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 6.26 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Water Level</th>
<th>T.C. (%)</th>
<th>S.C. (%)</th>
<th>R.Q.D. (%)</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21</td>
<td>21</td>
<td></td>
<td>24.20</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td>22</td>
<td>-15.24</td>
<td>25.60</td>
<td>Extremely weak, light greyish brown (10YR/6/2), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>133</td>
<td>23</td>
<td>-15.60</td>
<td>25.60</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
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<td>129</td>
<td>24</td>
<td>-15.24</td>
<td>25.60</td>
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<td>-15.60</td>
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</tr>
<tr>
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<td></td>
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<td>100</td>
<td>26</td>
<td>-21.74</td>
<td>29.00</td>
<td>Extremely weak, brown (7.5YR/5/4) to dark brown (7.5YR/3/4), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95</td>
<td>27</td>
<td>-23.74</td>
<td>33.00</td>
<td></td>
</tr>
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<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90</td>
<td>28</td>
<td></td>
<td>33.00</td>
<td></td>
</tr>
<tr>
<td>29</td>
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<td>80</td>
<td>29</td>
<td></td>
<td>33.00</td>
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<td>75</td>
<td>30</td>
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<td>33.00</td>
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</tr>
</tbody>
</table>

**REMARKS**

LOGGED: P. Z

DATE: 18/01/2012

CHECKED: S.C. Wong

DATE: 31/01/2012
<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Water Level (m)</th>
<th>Water</th>
<th>T %</th>
<th>C R %</th>
<th>S C R %</th>
<th>R O D %</th>
<th>F</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>3.500</td>
<td>0.500</td>
<td>25</td>
<td>35</td>
<td>50</td>
<td>15</td>
<td>2</td>
<td>17 lbs</td>
<td>28</td>
<td>-23.74</td>
<td>200</td>
<td>V</td>
<td>As sheet 3 of 4.</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>3.100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>200 lbs</td>
<td>20</td>
<td>-20.74</td>
<td>280</td>
<td>V</td>
<td>Extremely weak, light brown (7.5YR6/2) to white (8N), completely decomposed coarse ash METATUFF. (Angular coarse GRAVEL of quartz)</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>26</td>
<td>-29.24</td>
<td>315</td>
<td>V</td>
<td>Extremely weak, grey (7.5YR3/1), completely decomposed coarse ash METATUFF. (Stiff, slightly sandy, clayey SILT)</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>31</td>
<td>-32.50</td>
<td>360</td>
<td>V</td>
<td>Strong, brownish grey to grey, deghosted white, slightly decomposed coarse ash METATUFF. Joints are closely to medium, occasional very closely spaced, rough planar and stepped, very narrow lentic (e.g., 1mm), dipping at 5°-15°, 25°-35° and 45°-55°. 37.75 - 38.15m: Moderately strong, moderately decomposed, very closely fractured. 38.45 - 38.95m: Moderately strong, moderately decomposed, very closely fractured. End of investigation hole at 39.50m</td>
<td></td>
</tr>
</tbody>
</table>

**REMARKS**

FIS Job No: 09 0401 03 36
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH21  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 1 of 4

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**CO-ORDINATES:**  
- E 829980.28  
- N 840714.28  
**WORKS ORDER No.** GE/2010/01.38  
**DATE from:** 07/01/2012 to 18/01/2012

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 5.86 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 - 0.30</td>
<td>Grey, CONCRETE slab.</td>
</tr>
<tr>
<td>0.30 - 1.00</td>
<td>Firm, dark grey (5YR/4/1), slightly sandy, clayey SILT. (FILL)</td>
</tr>
<tr>
<td>1.00 - 1.50</td>
<td>Firm, brownish grey (10YR5/2), slightly sandy, silty CLAY. (FILL)</td>
</tr>
<tr>
<td>1.50 - 2.14</td>
<td>White (8), angular medium to coarse GRAVEL and COBBLES of quartz. (ALLUVIUM)</td>
</tr>
<tr>
<td>2.14 - 2.80</td>
<td>Gray (7.5YR6/1), slightly clayey, silty fine to coarse SAND with some angular fine to coarse gravel of quartz. (ALLUVIUM)</td>
</tr>
<tr>
<td>2.80 - 3.50</td>
<td>Extremely weak, greyish brown (10YR5/2), completely decomposed coarse ash METATUFF. (Firm, silty CLAY)</td>
</tr>
</tbody>
</table>

**LOGGED** 3/01/2012  
**CHECKED** S.C. Weng  
**DATE** 10/01/2012

**REMARKS**
1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 10.00m (3 nos.) and 11.50m (1 no.) below existing ground level on 10/12012, 12/01/2012 and 14/01/2012 respectively.
3. Environmental monitoring well was installed at 8.00m below existing ground level on 17/01/2012 and groundwater sampling was carried out on 03/02/2012.
**DRILLHOLE RECORD**

**HOLE No.:** KTN-ASBH21  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 2 of 4

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories East Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-07  
**CO-ORDINATES:** E 829980.28  
**N 840714.28**

**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 5.86 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 m</td>
<td>As sheet 1 of 4.</td>
</tr>
<tr>
<td>107 m</td>
<td>Extremely weak, brown (7.5YR/5/4) to greyish brown (10YR/5/2), completely decomposed coarse ash METATUFF. (Firm to stiff, clayey Silt)</td>
</tr>
<tr>
<td>111 m</td>
<td>Extremely weak, dark brown (7.5YR/3/4), completely decomposed coarse ash METATUFF. (Firm, slightly sandy, silty CLAY with some angular fine to medium gravel of quartz)</td>
</tr>
</tbody>
</table>

**REMARKS**

**LOGGED:**  
**DATE:** 18/01/2012  
**CHECKED:** R.C. Wong  
**DATE:** 31/01/2012
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH21  
**PROJECT:** Agreement No. CE 51/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation  
**METHOD:** Rotary Drilling  
**MACHINE & No.:** FDR-07  
**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 5.86 mPD  
**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 07/01/2012 to 18/01/2012  

<table>
<thead>
<tr>
<th>Drilling Progress</th>
<th>Testing Details</th>
<th>Water Level (m)</th>
<th>LO ~ HO</th>
<th>T.C.R.</th>
<th>SCR %</th>
<th>R.Q.D. %</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level (m)</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200 lbs</td>
<td>25, 27</td>
<td>30.00</td>
<td>30.10, 30.20, 30.28</td>
<td>V</td>
<td>As shot 3 of 4.</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td></td>
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<tr>
<td>33</td>
<td></td>
<td>2.99m at 18.00</td>
<td>H20</td>
<td></td>
<td></td>
<td></td>
<td>100 lbs</td>
<td>28, 30</td>
<td>20.00</td>
<td>20.10, 20.12, 20.14</td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
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<tr>
<td>38</td>
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<td>40</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REMARKS**

LOGGED: P. ZH  
DATE: 19/01/2012  
CHECKED: S.C. Wong  
DATE: 31/01/2012
## DRILLHOLE RECORD

### HOLE No.
KTN-ASBH29

### CONTRACT No.
GE/2010/01

### SHEET:
1 of 1

### PROJECT:
Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

### METHOD:
Rotary Drilling

### CO-ORDINATES:

<table>
<thead>
<tr>
<th>E</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>828857.09</td>
<td>841205.56</td>
</tr>
</tbody>
</table>

### WORKS ORDER No.
GE/2010/01.38

### DATE from:
31/01/2012 to 07/02/2012

### FLUSHING MEDIUM:
Water

### ORIENTATION:
Vertical

### GROUND LEVEL:
+ 11.26 mPD

### Description

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Firm, grey brown (10YR5/2), slightly sandy, clayey Silt with occasional roots. (TOP SOIL)</td>
</tr>
<tr>
<td>2</td>
<td>Firm, brown (7.5YR5/4) to reddish brown (5YR4/2), slightly sandy, clayey silt with occasional angular fine to medium quartz gravel. (COLLUVIUM)</td>
</tr>
<tr>
<td>3</td>
<td>Extremely weak, brownish red (5YR4/3), modified white, completely decomposed fine ash METATUFF. (Firm, clayey Silt)</td>
</tr>
<tr>
<td>4</td>
<td>Extremely weak, brown (7.5YR5/4), completely decomposed fine ash METATUFF. (Firm, slightly sandy, clayey Silt)</td>
</tr>
<tr>
<td>5</td>
<td>End of investigation hole at 8.50m.</td>
</tr>
</tbody>
</table>

### LOGGED
P. Zhou

### DATE
10/02/2012

### CHECKED
S.C. Wong

### DATE
13/02/2012

### REMARKS
1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.) and 8.50m (1 no.) below existing ground level on 02/02/2012 and 04/02/2012 respectively.
3. Environmental monitoring well was installed at 7.00m below existing ground level on 06/02/2012 and groundwater sampling was carried out on 08/02/2012.
### DRILLHOLE RECORD

**CONTRACT No.: GE/2010/01**
**HOLE No.: KTN-ASBH32**

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-36

**CO-ORDINATES:**
- E: 826284.40
- N: 841522.19

**WORKS ORDER No.: GE/2010/01.38**
**DATE from: 11/01/2012 to 18/01/2012**

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** +17.61 m PD

### Drilling Progress

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Water Level (m)</th>
<th>Casing Depth (m)</th>
<th>Water Level %</th>
<th>SCR %</th>
<th>ROD %</th>
<th>F</th>
<th>Reduced Level</th>
<th>Tests</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>4.5</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>F</td>
<td>17.61</td>
<td>1.5</td>
<td>Firm, red</td>
<td>Firm,</td>
<td>reddish brown (5YR/3/5), slightly sandy, silty CLAY. (FILL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>dark grey</td>
<td>grey (5YR2/1), slightly sandy, silty CLAY with some angular fine to coarse gravel of weak to moderately weak tuff. (FILL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.1</td>
<td></td>
<td>0%</td>
<td>0%</td>
<td>F</td>
<td>17.11</td>
<td>1.5</td>
<td>Extremely weak, grey (5YR2/1), completely decomposed Meta-siltstone. (Silty fine SAND)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOGGED P.**

**DATE:** 21/01/2012

**CHECKED S.C. Wong**

**DATE:** 21/01/2012

### REMARKS

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank whilst drilling at 1.0m (1 no.), 18.06m (3 nos.) and 24.96m (1 no.) below existing ground level on 13/01/2012, 14/01/2012 and 17/01/2012 respectively.
3. Environmental monitoring well was installed at 7.00m below existing ground level on 18/01/2012 and groundwater sampling was carried out on 08/02/2012.

---

**Standard Penetration Test**

**In situ Vane Shear Test**

**In-situ Pressure Test**

**In-situ Stress Test**

**Piezometer Test**

**Piezometer Tip**

**Televiewer Survey**

**Water Sample**

**Sandstone**

**SPT Line Sample**

---

**FGS Job No.: 06 0461 03 30**
### DRILLHOLE RECORD

**HOLE No.** KTN-ASBH32

**CONTRACT No.:** GE/2010/01

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**CO-ORDINATES:**

<table>
<thead>
<tr>
<th>E</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>828284.40</td>
<td>841522.19</td>
</tr>
</tbody>
</table>

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 11/01/2012 to 18/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 17.61 mPD

### Drilling Log

<table>
<thead>
<tr>
<th>Depth</th>
<th>Stage</th>
<th>Water Level (m)</th>
<th>TDR %</th>
<th>SCR %</th>
<th>RQD %</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No. Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
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<tr>
<td>14</td>
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<td>11</td>
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<td>15</td>
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<td>12</td>
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<tr>
<td>16</td>
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<td>17</td>
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</tr>
</tbody>
</table>

**Legend:**

- **V:** Vertical

**Tests:**

- 5m/l/s
- 1.00m at 18.00
- 1.50m at 60.00
- 10.50m
- 15.65m
- 16.00m
- 20.00m
- 22.30m
- 23.30m
- 23.80m
- 25.00m
- 26.70m
- 27.80m
- 29.00m

**Sample Description:**

- As sheet 1 of 3.
- Extremely weak, yellowish brown (10YR/5/6) to brown (7.5YR/5/4), completely decomposed METASILTSTONE. (Firm, clayey SILT)
- Very weak, dark reddish brown (2.5YR/3/4), completely decomposed METASILTSTONE. (Stiff, slightly sandy, clayey SILT with some angular fine to coarse gravel)

### Remarks

- LOGGED: 21/01/2012
- DATE: 21/01/2012
- CHECKED: S.C. Woos
- DATE: 21/01/2012

**Remarks:**

- Standard Penetration Test
- In situ Vane Shear Test
- Permeability Test
- Consolidation Test
-ADVERTISEMENT
- Packer Test
- Impression Packer Test
- Water Sample
- Gravel
- Pleatometer Tip

**FGS Job No.:** 09 04/01 03 30
<table>
<thead>
<tr>
<th>Drilling Stage</th>
<th>Water Level (m)</th>
<th>Water Quality</th>
<th>T &amp; C (%)</th>
<th>S &amp; R (%)</th>
<th>R &amp; D (%)</th>
<th>Tests</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>22</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Weak, grey, highly decomposed METASILTSTONE. Recovered as angular cobbles.</td>
</tr>
<tr>
<td>23</td>
<td>75</td>
<td>30</td>
<td>25</td>
<td>25</td>
<td></td>
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<td></td>
<td></td>
<td>Moderately weak to moderately strong, grey, moderately decomposed METASILTSTONE. Non-intact, recovered as angular fine to coarse gravel with some cobbles.</td>
</tr>
<tr>
<td>24</td>
<td>1.50m at 08:00</td>
<td>30</td>
<td>10</td>
<td>65</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22.30 - 23.60m: Weak, highly decomposed METASILTSTONE. Joints are very closely to closely spaced, rough and smooth planar, very narrow, iron oxide stained and chlorite coated, dipping at 5°-15° and 25°-35°.</td>
</tr>
<tr>
<td>25</td>
<td>1.00m at 18:00</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>End of investigation hole at 24.86m.</td>
</tr>
</tbody>
</table>

REMARKS

LOGGED: 23/01/2012
DATE: 23/01/2012
CHECKED: S.C. Warr
DATE: 23/01/2012
### DRILLHOLE RECORD

**HOLE No.:** KTN-ASBH38  
**CONTRACT No.:** GE/2010/01  
**SHEET:** 1 of 2  
**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation  
**METHOD:** Rotary Drilling  
**CO-ORDINATES:**  
- **E** 828996.18  
- **N** 940532.15  
**WORKS ORDER No.:** GE/2010/01.38  
**DATE from:** 17/01/2012 to 31/01/2012  
**FLUSHING MEDIUM:** Water  
**ORIENTATION:** Vertical  
**GROUND LEVEL:** + 6.96 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 2.60 m</td>
<td>FWD, HV</td>
<td>Firm, dark brownish grey (10YR4/2), sandy Silt, with some angular fine to coarse gravel of moderately weak to moderately strong tuff and granite. (FILL)</td>
</tr>
<tr>
<td>2.60 m to 4.80 m</td>
<td>FWD, HV</td>
<td>Brown (7.5YR5/4), slightly silty fine to coarse SAND with occasional angular fine quartz gravel. (FILL)</td>
</tr>
<tr>
<td>4.80 m to 5.20 m</td>
<td>FWD, HV</td>
<td>Brownish grey (10YR5/2), slightly silty fine to coarse SAND with some angular fine to medium gravel of strong quartz. (ALLUVIUM)</td>
</tr>
<tr>
<td>5.20 m to 5.90 m</td>
<td>FWD, HV</td>
<td>White (8H), slightly silty, clayey sandy angular fine to coarse GRAVEL of strong quartz. (ALLUVIUM)</td>
</tr>
<tr>
<td>5.90 m to 6.05 m</td>
<td>FWD, HV</td>
<td>Extremely weak, dark yellowish brown (10YR4/4), completely decomposed coarse ash METATUFF. (Firm, slightly sandy SILT)</td>
</tr>
</tbody>
</table>

**LOGGED** P. 26  
**DATE** 24/01/2012  
**CHECKED** S.C. Wong  
**DATE** 31/01/2012

**REMARKS**

1. An inspection pit was excavated to a depth of 1.50 m.  
2. Flushing water samples were taken from the water tank when drilling at 1.60 m (1 no.), 1.95 m (3 nos.) and 17.87 m (1 no.) below existing ground level on 16/01/2012, 19/01/2012 and 20/01/2012 respectively.  
3. Environmental monitoring well was installed at 10.00 m below existing ground level on 31/01/2012 and groundwater sampling was carried out on 08/02/2012.  
4. Coordinates refer to monitoring well installation location.
**Drillhole Record**

**Hole No.** KTN-ASBH38

**Contract No.** GE/2010/01

**Project:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**Method:** Rotary Drilling

**Machine & No.:** FDR-38

**Coordinates:**

- E 828996.18
- N 846532.15

**Works Order No.:** GE/2010/01.38

**Date from:** 17/01/2012

**Date to:** 31/01/2012

**flushing medium:** Water

**Orientation:** Vertical

**Ground Level:** + 6.96 mPD

### Drilling Progress

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>TDR %</th>
<th>SDR %</th>
<th>ROD %</th>
<th>Drilling Fluid</th>
<th>Water Level</th>
<th>Level of Water</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>Water</td>
<td>Water</td>
<td>122 lbs</td>
<td>9</td>
</tr>
<tr>
<td>3.04</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>Water</td>
<td>Water</td>
<td>0.00</td>
<td>10</td>
</tr>
<tr>
<td>10.00</td>
<td>10.00</td>
<td>10.00</td>
<td>10.00</td>
<td>Water</td>
<td>Water</td>
<td>18.00</td>
<td>17.67</td>
</tr>
<tr>
<td>18.00</td>
<td>18.00</td>
<td>18.00</td>
<td>18.00</td>
<td>Water</td>
<td>Water</td>
<td>18.00</td>
<td>17.67</td>
</tr>
</tbody>
</table>

**Legend:**
- V: As sheet 1 of 2.
- X: Extremely weak, light grey (10R7/1), completely decomposed coarse ash METATUFF. (Still, slightly sandy Silt with some angular fine to medium gravel)
- III: Moderately strong, grey, moderately decomposed coarse ash METATUFF. Joints are very closely to closely spaced, rough planer and stepped, very narrow, kaolin coated (<1mm) and clean, dipping at 10°-20°, 30°-40° and 60°-65°.
- End of investigation hole at 17.87m.

**Remarks:**

- LOGGED: P 0.75
- DATE: 30/01/2012
- CHECKED: S.C. Wong
- DATE: 31/01/2012

**Small Disturbed Sample**

- piston sample
- U75 Undisturbed Sample
- U100 Undisturbed Sample
- Master Sample

**76mm Vibracore Sample**

- 100mm Vibracore Sample
- Vibracore Sub-sample
- SPT Liner Sample

**Standard Penetration Test**

- In-situ Vane Shear Test
- Porepressure Test
- Tiltmeter Survey
- In-situ UC Test
- In-situ CPT Test
- Water Sample
- Storipro
# DRILLHOLE RECORD

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**MACHINE & No.:** FDR-38

**METHOD:** Rotary Drilling

**CO-ORDINATES:**
- E 827788.67
- N 840977.39

**HOLE No.:** KTN-ASBH Offsite

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 20/12/2011 to 04/01/2012

**GROUND LEVEL:** + 26.40 mPD

## FLUSHING MEDIUM
- Water

## ORIENTATION
- Vertical

## Orientation

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>Firm, dark grey (5YR4/1), sandy silt with some angular fine to medium gravel of moderately weak tuff, glass and occasional asphalt fragments. (FILL)</td>
</tr>
<tr>
<td>2.00</td>
<td>Firm, yellowish brown (10YR5/6) to reddish brown (5YR4/3), slightly sandy, clayey silt with some angular fine to coarse gravel and cobbles of moderately weak tuff. (COLLUVIUM)</td>
</tr>
<tr>
<td>6.75</td>
<td>Extremely weak, pinkish brown (2.5YR7/4) to purplish brown (7.5YR3/3), modified light brown, completely decomposed METATUFF. (Firm, clayey silt)</td>
</tr>
</tbody>
</table>

## REMARKS

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 1.50m (1 no.), 16.50m (3 nos.) and 30.85m (1 no.) below existing ground level on 24/12/2011, 29/12/2011 and 30/12/2011 respectively.
3. Environmental monitoring well was installed at 9.00m below existing ground level on 03/01/2012 and groundwater sampling was carried out on 13/01/2012.
### DRILLHOLE RECORD

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-38

**CO-ORDINATES:**
- E 827788.67
- N 840977.39

**WORKS ORDER No.:** GE/2010/01.38

**DATE from:** 20/12/2011 to 04/01/2012

**GROUND LEVEL:** + 26.40 mPD

---

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GRADIENT:**
- V

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 3.00</td>
<td>As sheet 1 of 4. Extremely weak to very weak, brown (7.5YR/5/4) to purplish brown (7.5R/3/3), mottled light brown and black, completely decomposed METATUFF. (Very stiff, slightly sandy Silt with occasional angular fine to medium gravel)</td>
</tr>
</tbody>
</table>

---

**Remarks**

- LOGGED P: 27/02
- DATE: 04/01/2012
- CHECKED: S.C. Wong
- DATE: 07/06/2012

---

**Samples**

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Material Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50</td>
<td>30</td>
</tr>
<tr>
<td>0.50 at OS:00</td>
<td>30</td>
</tr>
<tr>
<td>9.30</td>
<td>10</td>
</tr>
<tr>
<td>18.30</td>
<td>10</td>
</tr>
</tbody>
</table>

---

**Tests**

- Standard Penetration Test
- In situ Vane Shear Test
- Permeability Test
- Pressuremeter Test
- Teledrometer Survey
- Raker Test
- Impression Parker Test
- Water Sample
- Soilpips
- Pezometer Tip
**DRILLHOLE RECORD**

**HOLE No.** KTN-ASBH Offsite

**CONTRACT No.:** GE/2010/01

**PROJECT:** Agreement No. CE 61/2007 (CE) North East New Territories New Development Areas Planning and Engineering Study - Investigation

**METHOD:** Rotary Drilling

**MACHINE & No.:** FDR-38

**CO-ORDINATES:**
- E: 827788.67
- N: 840977.39

**WORKS ORDER No:** GE/2010/01.38

**DATE from:** 20/12/2011 to 04/01/2012

**FLUSHING MEDIUM:** Water

**ORIENTATION:** Vertical

**GROUND LEVEL:** + 26.40 mPD

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Test</th>
<th>Samples</th>
<th>Reduced Level</th>
<th>Depth (m)</th>
<th>Legend</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.20</td>
<td>200Hs</td>
<td>26</td>
<td>-4.10</td>
<td>30.60</td>
<td>V</td>
<td></td>
<td>As sheet 3 of 4.</td>
</tr>
<tr>
<td>3.25</td>
<td>200Hs</td>
<td>27</td>
<td>-4.45</td>
<td>33.80</td>
<td>V</td>
<td></td>
<td>Very weak, greyish brown (10YR7/6), dappled black, completely decomposed METATUFF. (Very stiff, slightly sandy SILT)</td>
</tr>
</tbody>
</table>

End of investigation hole at 30.85m.
DRILLHOLE RECORD


METHOD: Rotary Drilling

MACHINE & No.: FDR-07

CO-ORDINATES:

<table>
<thead>
<tr>
<th>Code</th>
<th>E</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>827755.80</td>
<td>840973.13</td>
</tr>
</tbody>
</table>

FLUSHING MEDIUM: Water

ORIENTATION: Vertical

GROUND LEVEL: + 26.37 mPD

WORKS ORDER No.: GE/2010/01.38

DATE from: 10/02/2012 to 18/02/2012

REMARKS

1. An inspection pit was excavated to a depth of 1.50m.
2. Flushing water samples were taken from the water tank when drilling at 0.00m (1 no.), 18.40m (1 no.) and 30.60m (1 no.) below existing ground level on 13/02/2012, 15/03/2012 and 17/02/2012 respectively.
3. Environmental monitoring well was installed at 30.00m below existing ground level on 18/02/2012 and groundwater sampling was carried out on 28/02/2012.

LOGGED P. ZH

DATE: 28/02/2012

CHECKED S.C. Wong

DATE: 29/02/2012
<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>T.C.R. %</th>
<th>G.C.R. %</th>
<th>R.Q.D. %</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.200 at 18.00</td>
<td>70</td>
<td>62</td>
<td>0</td>
<td>Moderately weak, yellowish brown, moderately decomposed fine ash METATUFF. Joints are very closely spaced, rough planar to stepped, narrow to very narrow, iron-oxide stained and euhedral (&lt;1mm) coated, dipping at 5°-15° and 25°-35°. 10.85 - 11.75m: No recovery, assumed to be completely decomposed fine ash METATUFF.</td>
</tr>
<tr>
<td>11.75</td>
<td></td>
<td></td>
<td></td>
<td>Extremely weak, brown (7.5YR5/4) to purplish brown (7.5R3/2), completely decomposed fine ash METATUFF. (Firm to stiff, clayey SILT)</td>
</tr>
</tbody>
</table>

**Remarks:**
- Small Disturbed Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Pressuremeter Test
- Tensiometer Survey
- Fadler Test
- Injection Filter Test
- Water Sample
- Swivel pipe
- Perometer Tip

**Logs:**
- LOGGED: P. ZH
- CHECKED: S.C. Wong

**Date:**
- 28/02/2012
- 29/02/2012
<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Tools</th>
<th>Samples</th>
<th>Reduced Level (m)</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.60</td>
<td></td>
<td>49</td>
<td>-3.63</td>
<td></td>
</tr>
</tbody>
</table>

**Description**

- **28.69 - 28.89m**: No recovery, assumed to be completely decomposed fine ash METATUFF.
- **Weak, brown, highly decomposed fine ash METATUFF**: Recovered as angular cobbles.
- End of Investigation hole at 30.60m.