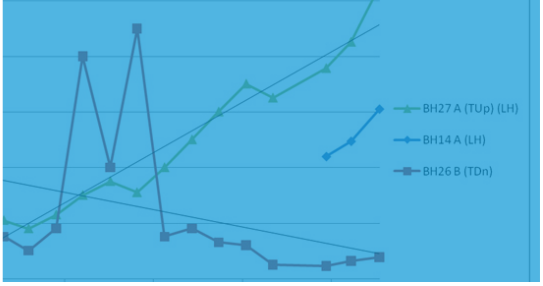
# ESdat

**Your Data**. Organised, Analysed, Reported. **Faster**

*Produced by* ESdIS
EarthScience Information Systems

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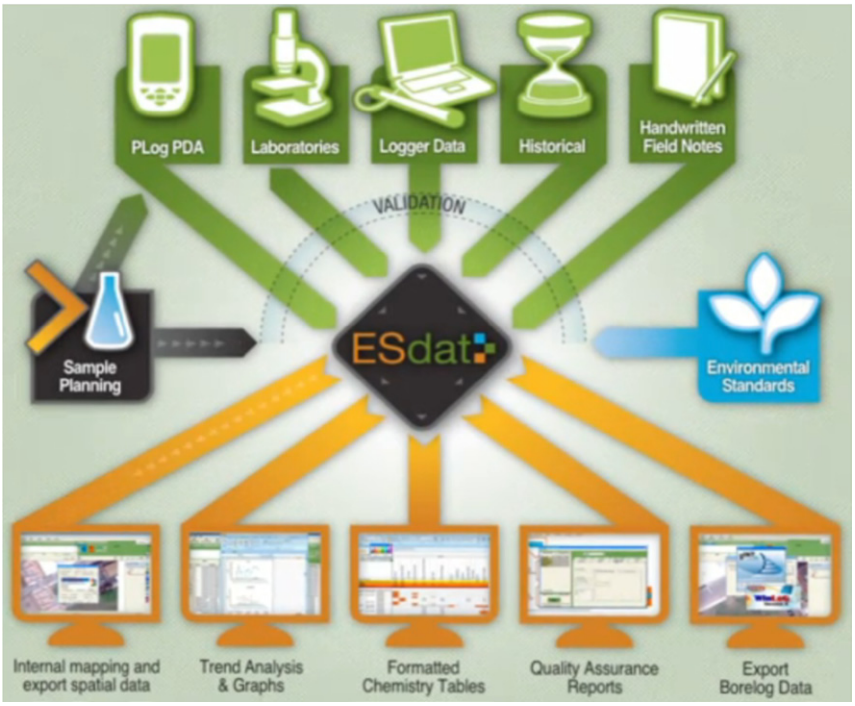
# **Data** importing




Easy import of validated (correct) data is critical to the efficient and reliable usage of the system. Data can be added directly onto a map; to a table; through a PDA; in bulk from Excel; or from data files.

All data is subject to automatic validation checks prior to import, ensuring you can use your data with confidence. Main categories of data are:

### Laboratories

Laboratory Data can be directly imported into ESdat. Most major laboratories can provide data in a suitable format, which includes comprehensive Quality Assurance information.

### Field

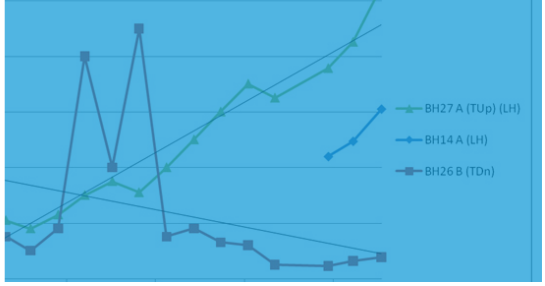
Field and Borehole/Drilling data can be entered directly into ESdat Excel based Import Templates, or imported directly from the PLog PDA system.

### Historical/Other

Historical or data from other sources can be imported directly from tabular formats in Excel.

### Extensible

All hydrogeological, geo-environmental, and similar data can be managed within the system, or it can be extended by the user to capture additional data as required.

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# **Chemistry** tables

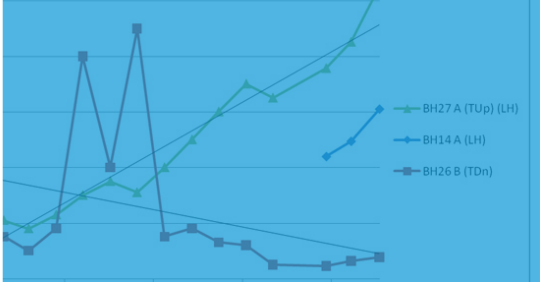
**Chemistry output tables automatically show results alongside environmental standards, exceedances and summary statistics.**

Results can be grouped or arranged in a specific order; can be orientated with the compounds across the top, or down the left; and exceedances of environmental standards can be indicated by font changes or highlighting.

| | | | Lead | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lead | Lead (Filtered) | Arsenic | Arsenic (Filtered) | Chromium (III+VI) | Copper |
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg |
| EQL | | | 0.005 | 0.001 | 0.005 | 0.001 | 0.005 | 0.0 |
| CA MCLs | | | 0.015 | 0.015 | 0.01 | 0.01 | 0.05 | 1. |
| US MCLs | | | 0.015 | 0.015 | 0.01 | 0.01 | 0.1 | 1. |
| USEPA PRG Tap Water | | | | | 0.000045 | 0.000045 | | 1. |
| LocCode | WellCode | Sampled_Date-Time | | | | | | |
| BH01 | A | 8/01/2004 | 0.12 | 0.093 | 0.17 | - | - | - |
| | | 30/01/2004 | 0.108 | 0.0837 | 0.004 | - | 0.21 | 1.0 |
| | B | 8/01/2004 | 0.12 | 0.093 | 0.17 | - | - | - |
| | | 30/01/2004 | 0.18167 | 0.17823 | 0.004 | - | 0.21 | 1.0 |
| BH02 | A | | - | - | - | - | - | - |
| | | 8/01/2004 | <0.0009 | - | 0.002 | - | - | - |
| | | 30/01/2004 | <0.001 | - | 0.17 | - | 0.064 | 0.0 |
| | B | 27/02/2004 | <0.00102 | <0.0009 | - | 0.0036 | - | - |
| | | 30/03/2004 | <0.001 | <0.001 | - | 0.004 | 0.26 | 1.95 |
| | C | 8/01/2004 | <0.0009 | - | 0.002 | - | 0.234 | - |
| | | 30/01/2004 | - | - | 0.17 | - | 0.064 | 0.0 |
| BH05 | A | 30/04/2004 | 0.00951 | <0.001 | - | - | <0.0061 | <0.0 |
| | B | 27/02/2004 | - | 0.0018 | - | - | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Field_ID | | | | | BH01_2-3 | BH01_3-4 | BH0 |
| LocCode | | | | | BH01 | BH01 | BH0 |
| Depth_Range | | | | | 2-3 | 3-4 | 5-6 |
| Date-Time | | | | | 8 Jan 2004 | 8 Jan 2004 | 8 Ja |
| Description | | | | | Slight Petroleum Smell | | |
| ChemName | Units | EQL | Dutch Invervention | USEPA PRG Indust Soil | | | |
| BTEX | | | | | | | |
| Benzene | mg/kg | 0.001 | 1 | 1.4 | 0.002 | 0.002 | |
| Ethylbenzene | mg/kg | 0.001 | 50 | 400 | 100 | <0.001 | |
| Toluene | mg/kg | 0.001 | 130 | 520 | 800 | 300 | |
| Xylene (m & p) | mg/kg | 0 | | | <0.002 | <0.002 | |
| Xylene (o) | mg/kg | 0.001 | | | <0.001 | <0.001 | |
| Xylene Total | mg/kg | 0 | 25 | 420 | <0.003#5 | <0.003#1 | 0 |
| Lead | | | | | | | |
| Lead | mg/kg | 0.001 | 530 | 800 | 60 | <0.001 | |
| Metals | | | | | | | |
| Arsenic | mg/kg | 0.001 | 55 | 1.6 | 0.001 | 0.001 | |
| Cadmium | mg/kg | 0.0001 | 12 | 450 | <0.0001 | <0.0001 | |
| Chromium (III+VI) | mg/kg | 0.0001 | 380 | 450 | <0.0001 | <0.0001 | |
| Chromium (Trivalent) | mg/kg | 0.0001 | | 100000 | <0.0001 | <0.0001 | |
| Copper | mg/kg | 0.001 | 190 | 41000 | <0.001 | <0.001 | |
| Mercury | mg/kg | 0.0001 | 10 | | <0.0001 | <0.0001 | |
| Nickel | mg/kg | 0.001 | 210 | 20000 | 0.004 | 0.004 | |
| Zinc | mg/kg | 0.005 | 720 | 100000 | 0.009 | 0.009 | |

- **Compounds across or down**
- **Format exceedances by background color, font color, underline, bold, italic**
- **Customisable templates**
- **Many different presentation options**

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# Chemistry Quality Assurance (QA) tables

**Chemistry data is often assessed against strict QA protocols. The ESdat QA checker has the ability to assess chemistry data for the following QA tests:**

- Field and Interlaboratory duplicates
- Field and laboratory blanks
- Holding times
- Certified reference materials
- Laboratory duplicates
- Matrix and trip spikes
- Laboratory control samples
- Surrogates

**Overview Summary**
Summary By SDG
Summary By Compound
**Holding Times**
Holding Time Errors (0)
**Blanks**
Field Blanks
Detects in Lab Blanks (0)
SDG's without Method Blanks (0)
**Duplicates**
Field and Interlab Dupes
Lab Duplicates with high RPDs (0)
Duplicate Samples with incorrect or missing Parent Samples (0)
Samples at the same Location/Depth/Time not specified as duplicates (0)
**Surrogates**
Surrogate Variation > 25% (0)
**Lab Control Samples**
SDG's without a Laboratory Control Sample (0)
Laboratory Control Samples, Error > 25% (0)
**Certified and Standard Reference Materials**
Certified Reference Materials - Error > 25% (0)
**Matrix Spikes**
SDG's without a Matrix Spike (0)
Trip Spikes with invalid Control Sample (0)
Less than 1 matrix spike in 20 samples, or less than 1 matrix duplicate in
Matrix Spike Recoveries less than 30% or greater than 150% (0)
Trip Spike Recoveries less than 30% or greater than 150% (0)
**Inorganic**
BOD > COD (0)
Na + CL > TDS (0)
BOD > COD (0)
**Other**
Unit Conversion Problems (0)

***Complete report with hyperlinks***

Field Duplicates (WATER)
Filter: SDG in('16715','16714','16713')

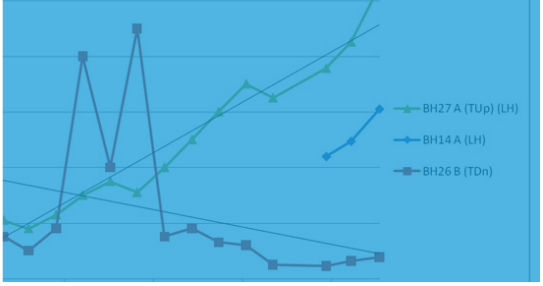
| | SDG | 16715 | 16713 | | 16715 |
|---|---|---|---|---|---|
| | Field_ID | BH25 | Dupe1 | RPD | BH26 |
| | Date-Time | 30 03 2004 | 30 03 2004 | | 30 03 20 |
| ChemName | Units | EQL | | | |
| INORGANICS Magnesium | mg/l | 0.1 | 3.5 | 3.5 | 0 | 4.9 |
| Potassium | mg/l | 0.1 | 9.3 | 8.8 | 6 | |
| Sodium | mg/l | 0.1 | 28.0 | 26.0 | 7 | 64.0 |
| MET Chromium (III+VI) | mg/l | 0.005 | 0.006 | <0.005 | 18 | 0.006 |
| Chromium (III+VI) (Filtered) | mg/l | 0.001 | 0.001 | 0.001 | 0 | 0.001 |
| Copper | mg/l | 0.005 | <0.005 | <0.005 | 0 | <0.005 |
| Copper (Filtered) | mg/l | 0.001 | 0.002 | 0.003 | 40 | 0.002 |
| Lead | mg/l | 0.005 | 0.007 | 0.006 | 15 | 0.007 |
| Lead (Filtered) | mg/l | 0.001 | 0.002 | 0.002 | 0 | 0.002 |
| Zinc | mg/l | 0.005 | **0.073** | **0.046** | **45** | 0.073 |
| Zinc (Filtered) | mg/l | 0.005 | 0.035 | 0.041 | 16 | **0.035** |

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (5-10 x EQL); 30 (10-30 x
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. An

Detailed tables (ie duplicates)

| Matrix Type | GAS | soil | WATER |
|---|---|---|---|
| First Sample Date | 8/01/2004 | 14/01/2009 | 11/11/2009 |
| Last Sample Date | 8/01/2004 | 14/01/2009 | 11/11/2009 |
| Sampling Period (days) | 1 | 1 | 1 |
| Number of Samples Submitted | 6 | 30 | 100 |
| Number of Non QA Samples Submitted | 4 | 28 | 84 |
| Number of Field Blanks | 1 | 1 | 6 |
| Number of Trip Blanks | 0 | 0 | 0 |
| Number of Rinsates | 0 | 0 | 1 |
| Number of Field Duplicates | 1 | 1 | 9 |
| Number of Interlab Duplicates | 0 | 0 | 0 |
| Number of Trip Spikes | 0 | 0 | 0 |
| Number of Lab Duplicates | 1 | 20 | 9 |

Summary tables

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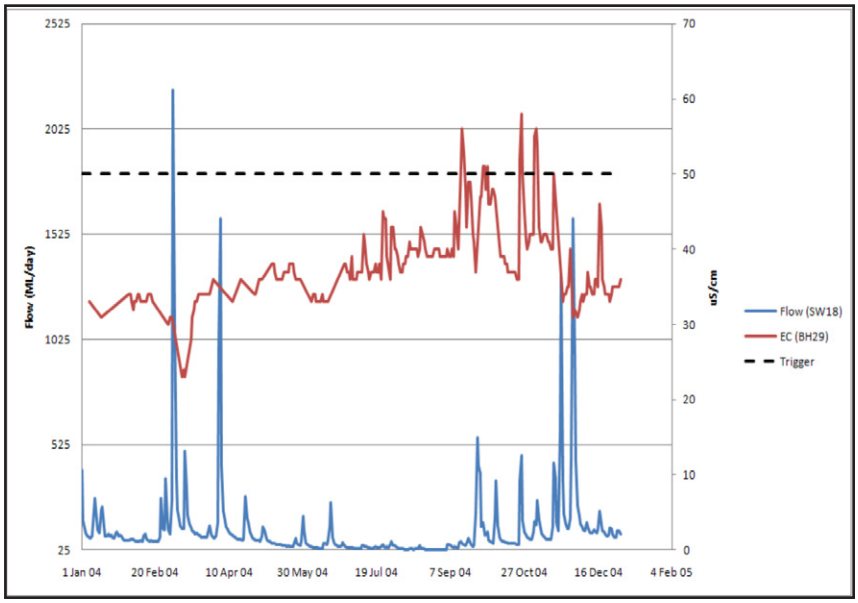
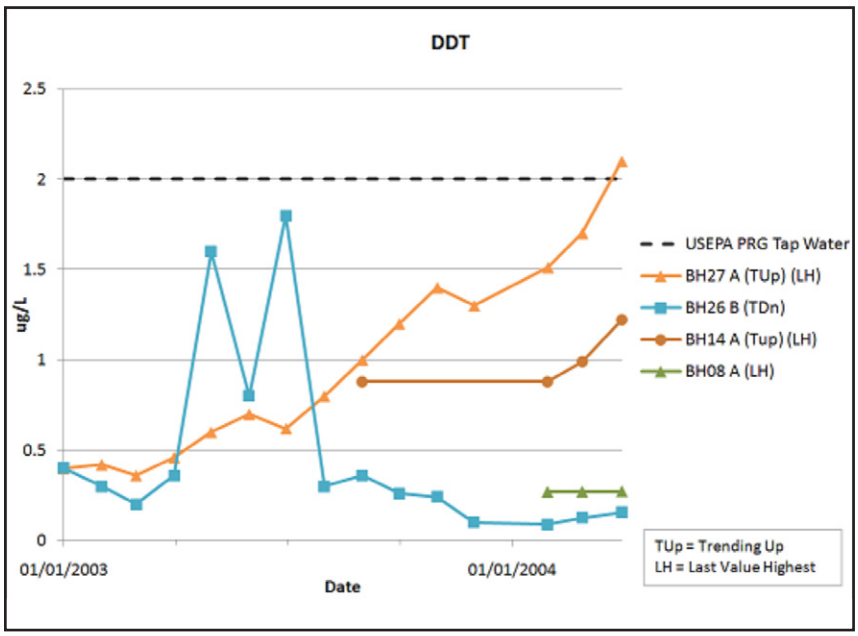
# Graphing

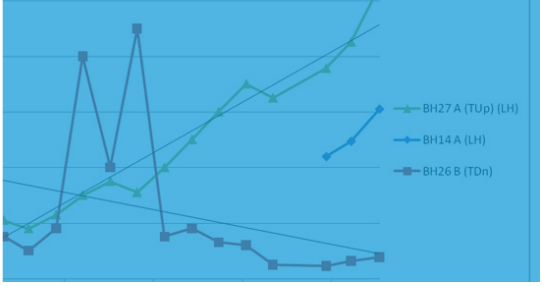
**Graphs can be produced and exported to Excel with a number of options.**

Graphs can indlude a Mann Kendall or Linear Regression trend analysis, and Environmental standards can be included on the graph.




- Lab, field or logger data
- Include environmental guidelines
- Trend analysis

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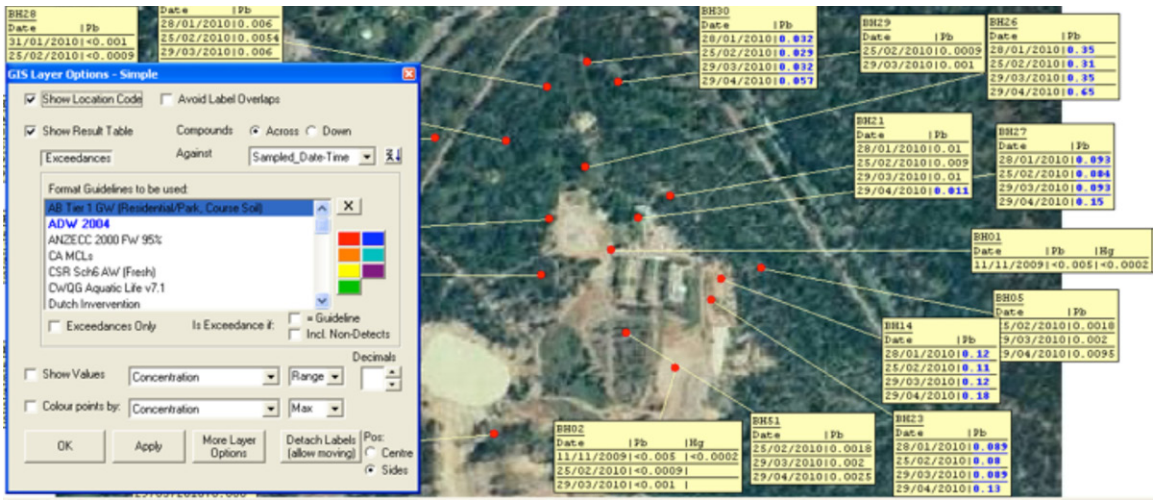
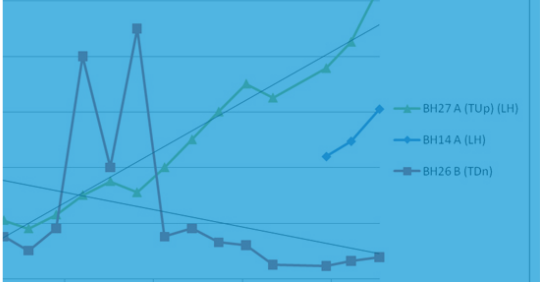
# **GIS** outputs

**An inbuilt GIS offers all the basic functionality required for producing report quality maps.** Data can alternatively be exported to ArcMap, Mapinfo, Surfer or Google Earth using ESRI Shape, MapInfo MIF, ML, text files, or live ODBC database linkages.

- Min / Max / Avg / Range: labels and colouring
- Chemistry tables on an inbuilt map
- GIS is inbuilt, or export to ArcView, MapInfo, Google Earth, Surfer



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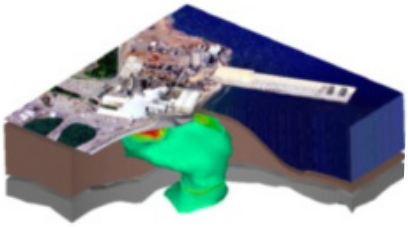
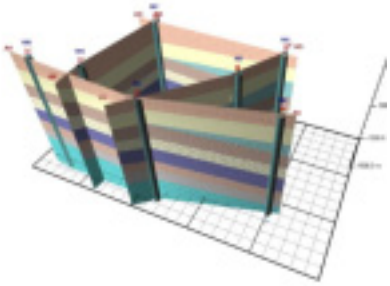
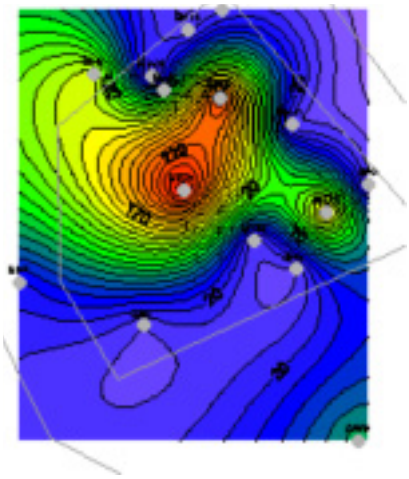
# **External** applications

ESdat can integrate with:

- Excel
- Google Earth
- ArcMap
- EVS
- WinLog
- ProUCL
- Surfer
- MapInfo
- gINT
- PLog







**ESDAT** Telephone: Fax:

**MONITORING WELL LOG: BH01**

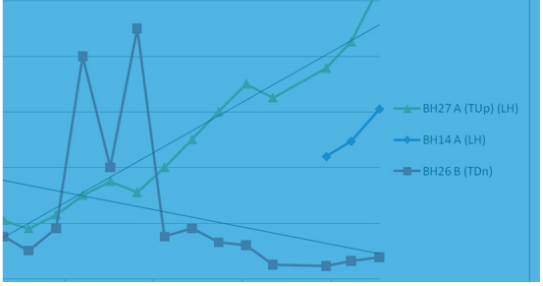
**PROJECT NUMBER** Sample 01
**PROJECT NAME** Sample 01 Contam
**LOCATION** 453 Alder St, Mascot
**DRILLING METHOD** Augering Hollow Flight
**SAMPLING METHOD** Split Spoon; SS
**LOGGED BY** JB

**DATE** 01/01/2005 - 02/01/2005
**COORDINATES** 4581.8, 6021, (MGA 56)
**SURFACE ELEVATION** 45.15 AHD
**WELL HEAD/TOC** A: 45.2; B: 45.23; C: 45.17 AHD
**BLANK** A: 50 mm uPVC; B: 50 mm uPVC; C: 20 mm uPVC
**SCREEN** A: 50 mm uPVC Factory Slotted; B: 50 mm uPVC Factory Slotted; C: 20 mm uPVC Factory Slotted

**COMMENTS**

| PID (ppm) | BLOW COUNTS | RECOVERY | SAMPLE NUMBER | ANALYSED | DEPTH (m BGL) | GRAPHIC LOG | LITHOLOGIC DESCRIPTION | CONTACT DEPTH | WELL DIAGRAM |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0.5 | | **Asphalt:** Asphalt,Hard | 0.30 | C B A |
| | | | | | 1.0 | | **Silty Clay:** Silty red clay with minor organic matter,W,Dense | | Grout |
| 82 | 4 | | BH01 | | 1.5 | | | | |
| | | | BH01 | | 2.0 | | | | |
| | | | | | 2.5 | | | | Backfill |
| | | | | | 3.0 | | | | |
| | | | | | 3.5 | | | | |
| | | | | | 4.0 | | | | |
| | | | | | 4.5 | | | | |
| | | | BH01 | | 5.0 | | | | |
| 6 | 5 | | | | 5.5 | | | | |
| | | | BH01 | | 6.0 | | **Gravelly Sand:** ,D,Dense | 6.00 | |
| | | | | | 6.5 | | | | Filter Pack |
| | | | | | 7.0 | | | | |
| | | | | | 7.5 | | | | |
| | | | BH01 | | 8.0 | | **Silty Clay:** ,D,Dense | 8.00 | |
| 34 | 8 | | | | 8.5 | | | | Bentonite |
| | | | | | 9.0 | | **Sandy Gravel:** ,D,Dense | 9.00 | |
| | | | | | 9.5 | | | | |
| | | | BH01 | | 10.0 | | | | Filter Pack |
| | | | | | 10.5 | | | | |
| | | | | | 11.0 | | **Granite:** Highly weathered granite,D,Hard | 11.00 | |
| | | | | | 11.5 | | | | Bentonite |
| | | | | | 12.0 | | | | |
| | | | | | 12.5 | | | | Filter Pack: fine grained sand |
| | | | | | 13.0 | | | | |
| | | | | | 13.5 | | | | Backfill: collapsed |
| | | | | | 14.0 | | Borehole terminated at 14.0 m | 14.00 | |
| | | | | | 14.5 | | | | |
| | | | | | 15.0 | | | | |

ESDAT_GINT_JETGIL_LIBRARY.GLB Log GENERAL LOG ESDAT_GINT.GDL DWG06806.GDW 28/09/2009 07:31

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# Users

**Users include:**

AECOM

Golder Associates

CH2MHILL

ERM

EBA Tetra Tech

Parsons Brinckerhoff

GHD

SKM

WSP Environmental

PGL Environmental

Dillon Consulting

Origin Energy

MMG

Centennial Coal

Defence

Linc Energy

*"Its simple, efficient and easy to learn"*
**Hamish Campbell, ERM**

*"Ease of use, generic/flexible, standard platforms (Access/SQL Server), support"*
**Luke Cameron, Golder Associates**

*"Quick and easy tables and dataset overview, great QA help"*
**Yvonne Binai, GHD**

*"Ability to pick up guideline exceedences automatically"*
**Belle Casement, Senversa**

*"Good for large volumes of laboratory results"*
**Tom Madill, Tonkin & Taylor**

*"Time savings, especially for long-running sites (historical data). Reduction of errors (no transcription)"*
**Amy Smith, Parsons Brinckerhoff**

*"I like that I don't have to go through the data to find Guidelines exceedances"*
**Ryan Baxter, EBA Engineering**

*"Laboratory reporting formats/QA/QC/TIME SAVING"*
**Cameron Kay, Golder Associates Pty Ltd**

*"Generate chem data and borelogs within minutes. Provides a data base of all lab reports for each job"*
**James Coley, FMG Engineering**

*"Accuracy of data"*
**Tho Tran, OTEK**