

June 2012

Project Update

Online groundwater data for Victoria

The first iteration of the Visualising Victoria's Groundwater web-portal is on-track for release in mid July. The site will display the data for all of Victoria from the following sources:

Department of Sustainability and Environment (DSE)

- Groundwater Management System (GMS)
- 3-D Victorian Aquifer Framework models (3D)

Department of Primary Industries (DPI)

- Geological Exploration and Development Information System (GEDIS)
- Salinity bore database from Future Farming Systems Research (FFSR)
- Seamless Geology

University of Ballarat (UB)

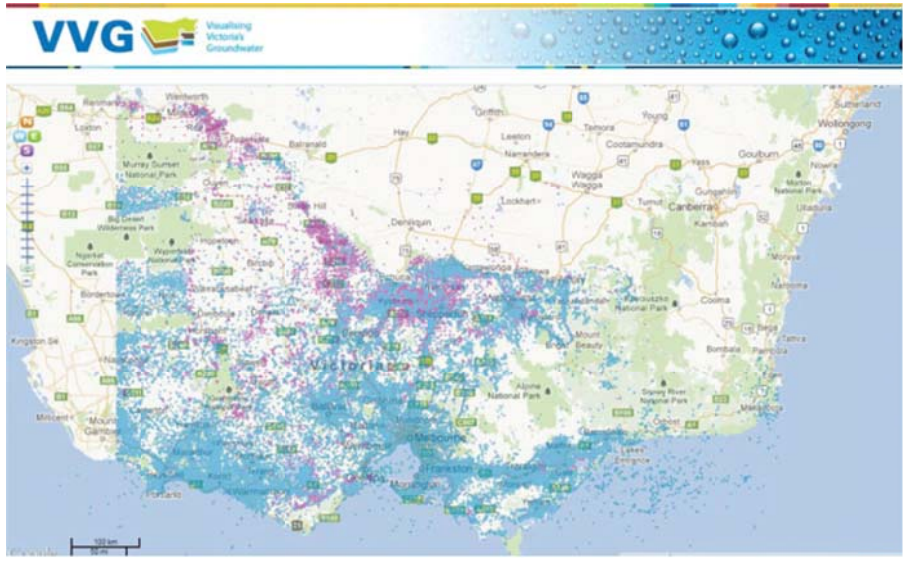
- Groundwater research bores and other bores not recorded elsewhere (UB Spatial)

Victorian Mineral Water Committee (VMWC)

- Victorian Mineral Springs database (VMSD)

Some data (i.e. UB Spatial, VMSD and seamless geology) is accessed directly from the host's servers whereas other data (GMS, 3D, GEDIS & FFSR) accesses the most current versions as they are periodically released by their custodians (via Dropbox or CD). It remains our intention to interoperably link directly to the databases on the custodian's servers in the future.

- VVG Update
- Online groundwater data
- Data enhancement
- System developments
- Data visualisation

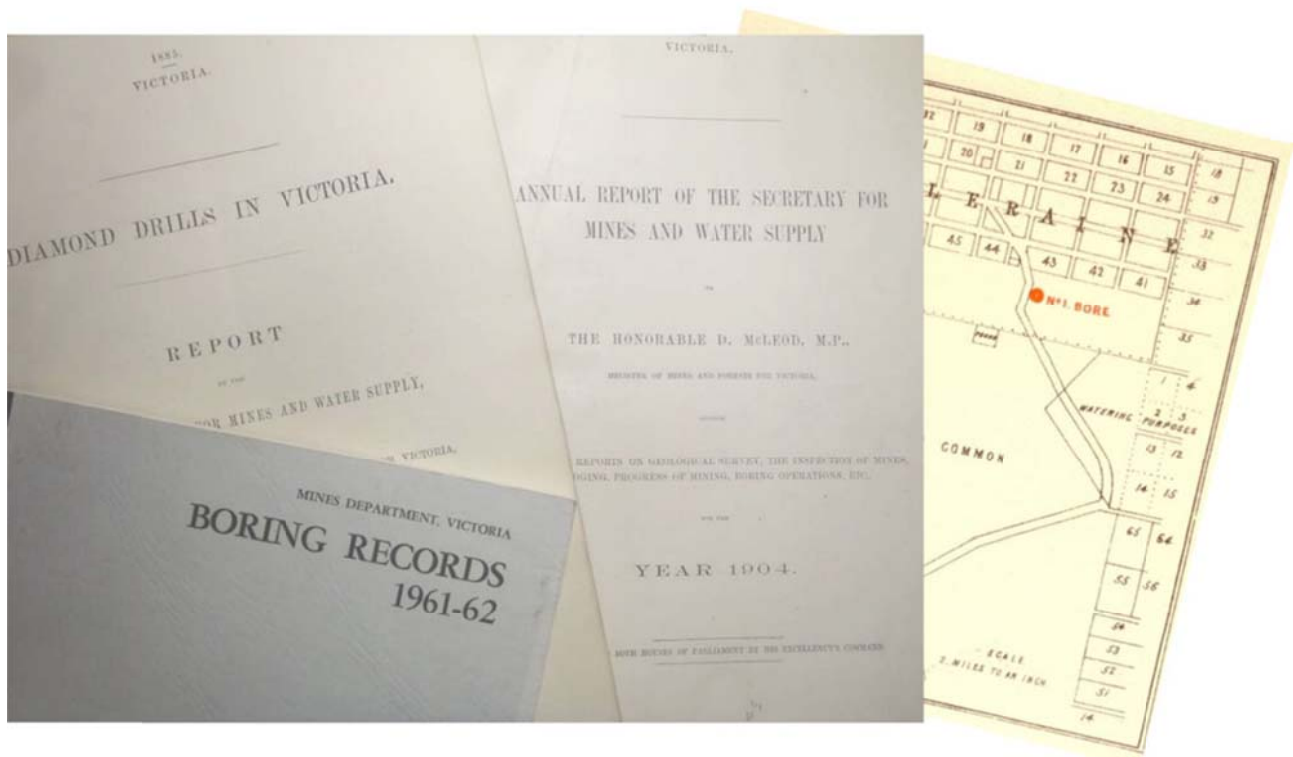


Data cleaning and enhancement

In getting all of the data online, it has become apparent that the quality of the data is highly variable. Therefore the second half of this year will be dedicated to cleaning the GMS and UB Spatial data and adding source documents where possible. The Victorian boring record series are about to be digitised so that the source information can be linked to the government bores. In the first instance this includes the series of documents which record the lithological logs and water groundwater information contained in the:

Diamond Drills and Water Augers reports, Diamond Drills and Other Boring Machinery reports, Annual Reports of the Secretary for Mines, Annual Reports of the Secretary for Mines and Water, Special Reports - Records of Boring Operations, Summary of Annual Reports of the Geological Survey Branch and Records of Boring Operations, Records of Boring Operations, Annual Reports Including Gold and Mineral Statistics and Boring Records, Boring Records, and Groundwater Investigation Reports.

This series records all of the information on government bores drilled between 1884 and 1965. Negotiations are underway with the State Library of Victoria (SLV) to explore the hosting of the information in the SLV system, which would secure the long-term repository of this information and provide a stable link to the original documents into the future.



The second phase of the data enhancement is to digitise and link the bore details for government bores drilled from 1965 to the present day. This information is generally held in bore completion reports among the Geological Survey of Victoria's Unpublished Report series, and other reports by the State Rivers and Water Supply Commission, Rural Water Corporation, HydroTechnology, etc.

The VMSD is currently under construction and will be maintained by Dr Andrew Shugg as the data custodian for the VMWC. Andy has an impressive library of historical documents and images that will be linked to the records in the VMSD.

System architecture and developments

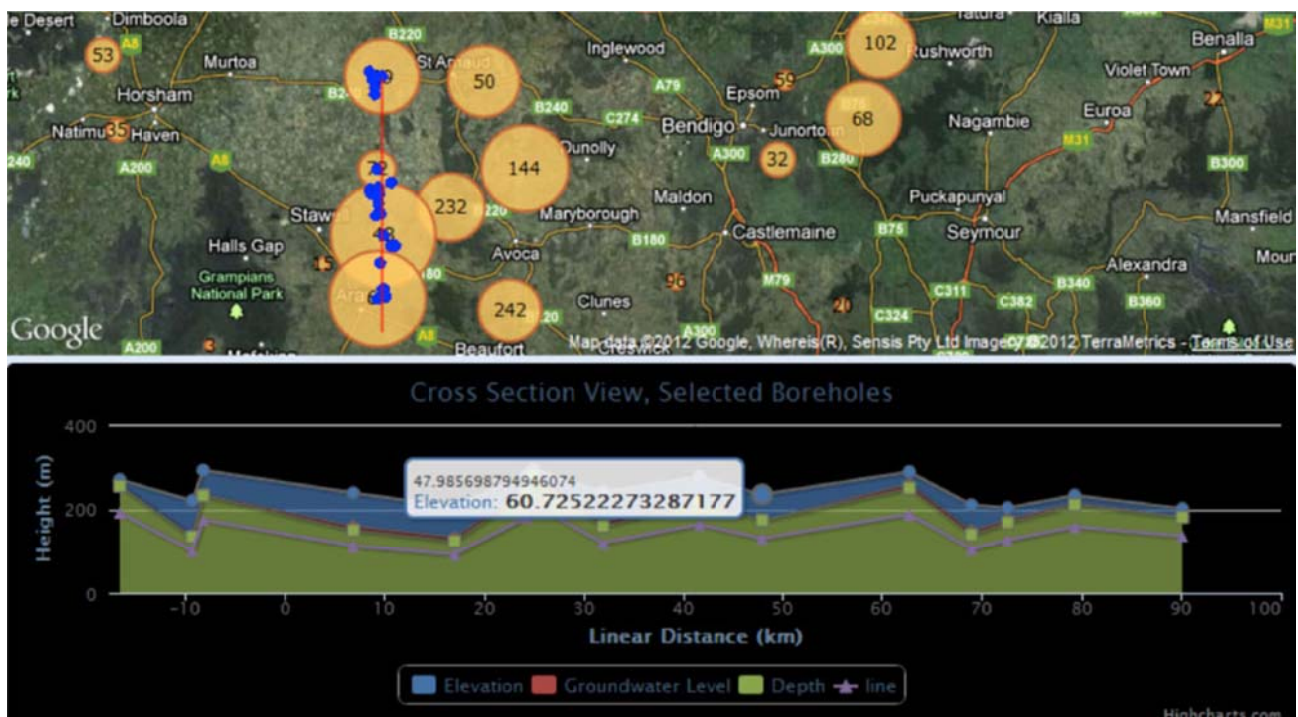
Technical development is progressing on two parallel paths.

1. We are continuing to build upon the strengths of the UBSpatial infrastructure (speed and ease of use) and its underlying database schema for bore information. To this end we have developed automated translation tools to import data from the various custodian data sources into the UBSpatial schema. Given the discussions with the various custodians, this is the most practical way to provide access to all the data in the short term. Testing to date has shown that we have been able to maintain performance despite a 10-fold increase in data.
2. The project is aiming to promote and utilise an interoperable methodology, open-source software and OGC standards. To this end we have been continuing to work with CSIRO(AuScope) and their Spatial Information Services Stack (SiSS) to implement WFS services. As the project progresses, and these technologies continue to mature we will be looking to ramp up collaborative efforts in this regard.

Additionally, the project has been exploring the use of the Nectar Research Cloud through our relationship with VerSI. The use of high-speed broadband is central to our ability to provide visualisation and 3D modelling on-the-fly and tests so far have been very encouraging.

Data visualisation

The development of data visualisation tools is regarded as a critical component of the VVG project. This phase is scheduled for next year, although several experiments have commenced already. Dr Armin Schmidt and King Chiu of the Victorian eResearch Strategic Initiative (VerSI) developed a new visualisation tool to show vertical sections from a line drawn through the bores on the map. In their demonstrator they used the bores in the FFSR database which are hosted by VerSI and delivered using the Spatial Information Services Stack (SiSS) developed by CSIRO in Perth. The section line shows a linear interpolation of the data in the bore records, such as hydrostratigraphy or water levels, and is modelled on-the-fly using open source software.



Discussions have also commenced with Associate Professor Malcolm Cox at the Queensland University of Technology (QUT) and his Groundwater Systems Research (GSR) team who have developed stunning groundwater visualisation tools (known as the Groundwater Visualisation System (GVS) based on open source software. It is hoped that Mal's team at QUT will be available to collaborate on web-based visualisations of the VVG data using a modified version of their GVS.

Research

The VVG project will be presented at the:

- 34th International Geological Congress (Theme 5.1 - Geoscience spatial data infrastructure) held in Brisbane from 5th - 10th August 2012.
- 39th IAH Congress (Program - Groundwater management - technical; Stream - Data management) held in Niagara Falls, Canada from 16th - 21st September 2012.

While we are in Canada we are taking the opportunity to catch up with Boyan Brodaric and Eric Boisvert of Natural Resources Canada to discuss the progression into true interoperability using GroundwaterML and also the visualisation components.



Meeting

A meeting of VVG project collaborating partners is booked for 10am to 2pm Wednesday July 18th at the TransACT Conference Centre, Greenhill Enterprise Centre, Technology Park, University of Ballarat, Mt Helen. Morning tea and a light lunch will be provided.

The purpose of the meeting is to demonstrate the VVG knowledge base and discuss the future steps in the project. While the meeting is specifically aimed at the end-user group, we encourage all partners to attend this meeting.

Acknowledgement

This project has received funding support from project partners and the Victorian State Government through the Broadband Enabled Innovation Program.

