

December 2012

Project Newsletter and Update

Welcome

Welcome to the second newsletter for the Visualising Victoria's Groundwater (VVG) project. Since the last issue, many significant project milestones have been achieved, including the launch of the website. The project has also been showcased at state, national and international forums where it has been met with much interest and positive feedback! This has led to some exciting and unexpected invitations for collaboration on other important, national and international projects.

As 2012 draws to a close the VVG project team looks forward to 2013 and the next important stages for the project. This will include further advances to the scope and capacity of the VVG database, including data visualisation, and improved data availability through advanced mobile technologies.

Project Update

In July 2012, the VVG website was officially launched for the public (<http://www.vvg.org.au>). The VVG spatial portal allows users to access groundwater data across Victoria. It features a unique state-wide map of over 275,000 bores, providing users with access to a user-friendly database offering access to all available groundwater data in Victoria. The website continues to evolve; the VVG spatial portal is the first version of several staged releases with some significant data additions to be released in 2013.

By January 2013, all VVG data will be online and will include:

- Data from 275,000 bores available from four bore databases: the DSE Groundwater Management System, DPI's salinity monitoring bores, DPI's geological exploration bores and UB's research bores;
- Mineral Springs data available from the Victorian Mineral Springs Committee database, managed by Dr Andrew Shugg;
- The Victorian Aquifer Framework as delineated by DSE for the Secure Allocations Future Entitlements (SAFE) project;
- The seamless geology layer for Victoria from DPI's database.

Data enhancement is continuing through the digitisation of the government boring records and linking these (along with the relevant maps and cross-sections) to the individual bores. The State Library of Victoria is undertaking the digitisation and hosting of the records. Correcting and editing the DSE bore data also continues, with the data being fed back to the State groundwater management system.

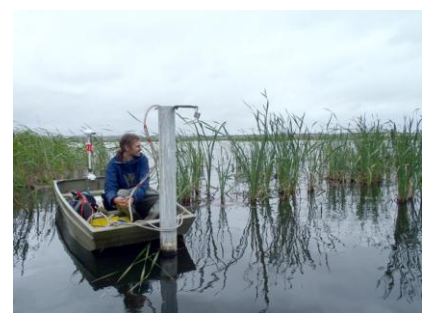
VVG Update

Benchmarking feedback

Showcasing VVG

New partnerships

Where to for 2013



Benchmarking the Feedback about VVG

Since its launch, access and usage of the VVG website has been strong, with over 5,500 visitors (including 46% new visitors and 54% returning visitors) to the website and over 12,000 page views.

Visitors to the website have also provided feedback through the website survey (n = 9) and via email (n = 21). Comments and feedback have been received from many different users including scientists, engineers, academics and managers in government and non-government organisations. Feedback about VVG has been very positive, as evidenced by the following comments:

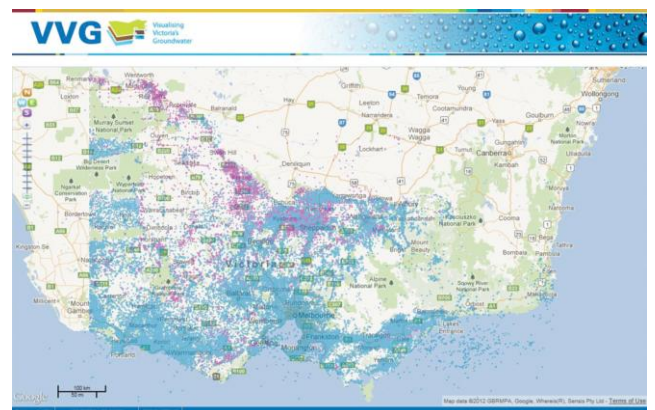
- Very nifty and good sign of things to come.
- Great application, very well done!
- The website looks great...so very exciting to have this resource; you must feel that it is such a great achievement. The site is well on its way to becoming a useful research tool. I am generally not a fan of web applications, which often do not provide useful capabilities beyond having a quick look at some data. The strengths of VVG that I see are in bringing together data from disparate sources and providing some basic data display tools. There are many nice touches on the site.
- I've had a brief rummage through the VVG web interface and think it has great potential to be first port of call for a contaminated land consultants and I'm sure many other interested parties in general land management.
- This is a fantastic tool that aims to close a large gap in groundwater data visualisation! Congratulations.

Some users of the website have also shared thoughts about how the website and data could be further enhanced. These ideas have been very helpful and the project team are considering each of these in light of project changes anticipated in 2013.

Showcasing VVG

Since the launch of the website, the VVG team have been active in presenting the project at national, state and international conferences and forums, including:

- International Geological Congress (Brisbane, August)
- Australian Contaminated Land Consultants Association meeting (Melbourne, September)
- International Association of Hydrogeologists Congress (Niagara Falls, September)
- National Groundwater Information System Technical Reference Group (Melbourne, October)
- Victorian Landcare Forum (Geelong, October)
- Groundwater Dependent Ecosystems workshop (Colac, November)
- Central Highlands Agribusiness Forum AGM (Ballarat, November)





University of Ballarat and QUT research collaboration meeting (L-R): Prof Malcolm Cox, QUT, Dr Peter Dahlhaus, UB, Andrew MacLeod, UB, and Allan James (QUT)

Principal researchers for the project, Dr Peter Dahlhaus and Andrew MacLeod from the CeCC at the University of Ballarat, presented at these forums and conferences showcasing the interoperable groundwater data portal, and its application to a variety of users in regional areas. Peter observed that all presentations were well received by delegates and that the project has attracted attention as one of the few non-government hydrogeoscience data portals in the world using interoperable technologies to bring together data.

New Partnerships and Collaborations

Queensland University of Technology collaboration

The University of Ballarat and the Queensland University of Technology have agreed to collaborate on integrating QUT's Groundwater Visualisation System (GVS) into the VVG portal. The highly acclaimed GVS has been developed by Professor Mal Cox (Groundwater Systems Research) and Alan James (High Performance Computing research). Both QUT and UB recognise that the exciting potential of the research to produce a globally desirable system.

Groundwater data exchange standards - the GW2IE collaboration

The Open Geospatial Consortium has officially endorsed an experiment - known as GW2IE - which aims to develop the ISO standard for groundwater data transfer. The GW2IE project includes the geological surveys of Canada, US, Germany, France, UK, NZ and Poland, the European Commission, CSIRO and University of Ballarat. UB is leading one of five 'use-cases' (#3 - Environmental). Further details are available at:

http://external.opengis.org/twiki_public/HydrologyDWG/GroundwaterInteroperabilityExperiment2

Dynamic cross-sections from interoperable data

In collaboration with Natural Resources Canada and QUT we have commenced an experiment to create user-requested cross-sections that are dynamically generated from the interoperable data consumed at the time. Initially the sections may simply show water tables interpolated along a line between a number of bores, but eventually they may illustrate the predicted tops of aquifers (in the groundwater system). The challenge lies in developing the algorithms used to interpolate the dynamic data input.



Where to for 2013?

2013 is the year of:

Visualisation. In collaboration with Queensland University of Technology and others, efforts will be focused on browser-based visualisations of Victoria's groundwater systems using user-determined cross-sections and three dimensional block-models.

Graphics and graphs. Graphic bore logs which illustrate the bore construction, groundwater levels, lithology, stratigraphy and hydrostratigraphy are on the list of 2013 developments. Also included are improved graphs to depict water chemistry, such as Piper Plots, Stiff Diagrams, Durov Plots, etc.

Improved interoperability. Apart from the GW2IE experiment, VVG's focus has been utilising high-speed broadband to transmit groundwater data across the internet. In 2013 the VVG team will improve data exchange by enhancing existing complex Web Feature Services (WFS) using the emerging GWML2 standard. The deployment of other OGC standard implementations such as Web Coverage Services (WCS) will also improve interoperability.

Mobile Apps and technologies. Spatial data such as that in the VVG portal can be adapted to mobile applications to empower the user with the site-specific predictions of the groundwater properties beneath their feet. Inspired by the France's BRGM i-InfoTerre, developing a mobile application for the VVG has already commenced.

Telemetry. Linking to real-time data from sensors installed in the field is another development intended for the VVG project in 2013. This will initially be trialled with the University of Ballarat's research monitoring bores at Morrisons and Reedy Lake.

IAH 2013 Congress: Perth. The International Association of Hydrogeologists 40th International Congress will be held in Perth on 15th to 20th September 2013. The theme of the Congress is "Solving the Groundwater Challenges of the 21st Century" and a broad range of topics will be covered. Session 5.9 will focus specifically on the topic of Interoperative Data Sharing and we encourage our collaborators and partners to submit an abstract on your VVG experience. Abstracts submissions close on 28th February 2013. Further details are available at: <http://iahcongress2013.org>

Season's Greetings

Best wishes for the festive season to all our partners, collaborators, supporters and users. We look forward to continued association with you via the VVG project throughout 2013.

