

# **Australian Centre for Geomechanics/ Public Seismic Network**

## **ACG/PSN Report for Jan-Dec 2014**

Vic Dent, David Love, Dale Hardy and Mike Turnbull.

**The Public Seismic Network operates as three sub-networks in Australia, as discussed below.**

### **Western Australia**

A number of changes were made to the configuration of the PSN network in the Southwest seismic zone during 2014. In the northern part of the zone, a new station at the general store at Cadoux was opened on 11<sup>th</sup> Feb 2014. The location is noisy, but is close to several important historical sources of seismicity.

A station was opened at Bencubbin Community Resource Centre on 16<sup>th</sup> Nov 2014, replacing a station which had been operating at Mukinbudin, approximately 50 km east of Bencubbin. The Mukinbudin station had not been recording since xxxx

A new station was installed at the Beverley Community Resource Centre on 14<sup>th</sup> July, replacing the station at York, approx. 30 km to the north of Beverley. The York station had not operated since 2 April 2014.

In the southern part of the seismic zone, in Gnowangerup region, a new station was installed on 15<sup>th</sup> July at a location about 5 km to the NW of the station GNOW, forming a mini-network in the area. This new station replaces another satellite station, GNOB, which was about 10 km east of GNOW, and had operated between 2008 and 2014

A new station near the Beaufort River Roadhouse, north of Kojonup, was opened on 15<sup>th</sup> Nov 2014

### **South Australia**

In the mid-north of the state, the station at Peterborough High School continued operating satisfactorily, with only minor periods of data loss. However, the station at Jamestown High School contributed no data after xxxx.

In the Adelaide Hills region, the station at Mylor was closed on 12<sup>th</sup> July, and moved to a new location at Mt Barker, opening on 11<sup>th</sup> Nov 2014. Stations at Lobethal, Modbury Heights and Noarlunga continued to operate with minimal data loss.

In the south of the Fleurieu Peninsula, a new station at Middleton, about 15 km east of Victor Harbor, opened on 12<sup>th</sup> April 2014.

### **Eastern Australia**

In the Hunter Valley region, a new station was opened at Kurri Kurri High School on 29<sup>th</sup> November 2013. Stations at Redhead and Dungog continued to operate with only minor periods of data loss.

In the Central West of NSW, the station at Crookwell High School, which had not contributed significant data since March 2014 was closed, and the equipment moved to Boorowa High School – opened 13<sup>th</sup> Oct?

Equipment at Gundaroo Primary School, which had been inoperative since Nov 2013?, was moved to a new location approx. 6 km to the NE on 27<sup>th</sup> March 2014?

In Central Queensland, a new station was opened at Bundaberg High School on 31<sup>st</sup> March ? The station near Gin Gin, approx. 60 km to the west, opened in 2010(?) continued to operate with only minor periods of data loss.

Sandon, near Bendigo, central Victoria, was out of service from late 2014 to early 2015.

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### **ACG/PSN Report for Jan-Dec 2013**

Vic Dent & Dale Hardy

The PSN continued in 2013, with some major changes in Western Australia, and lesser ones in South Australia and NSW.

In Western Australia, new stations were installed at Koorda Community Resource Centre (CRC) (replacing Beacon, closed Dec. 2012), Kalbarri CRC (replacing Northampton), Mukinbudin CRC, Pingelly, Kulin (replacing Lake Grace), and at Woodanilling (in response to numerous felt events in the vicinity).

Temporary seismographs operated at Bunbury Grammar School (February – July 2013), and near Woodanilling (Nov – Dec - about 10 km northeast of the permanent station mentioned above).

In eastern Australia, the seismograph at Dungog High School was moved slightly (~50 m), to a location with less background noise (28<sup>th</sup> June, 2013), and a similar change was made at Crookwell High School (24<sup>th</sup> May, 2013). At Lithgow High School, the sensor was moved about 200 m to a quieter location (8<sup>th</sup> June, 2013), and transmits data to the school via a Bluetooth radio link. The station at Gundaroo Primary School did not operate due to computer problems.

The station near Gin Gin (QLD) was upgraded, with the geophone being replaced by a seismometer.

In South Australia, new stations were installed at Victor Harbor and Peake (about 100 km south-east of Adelaide).

In the Northern Territory, a station was installed at Katherine (18<sup>th</sup> Feb 2013), but closed again in December 2013.

### **Australian Centre for Geomechanics/ Public Seismic Network, 2013 report.**

A brief history of this network, which began in 2006, is given in the 2011 Australian Seismological Report. In its current form, the network is divided into three sub-networks – Eastern Australia, Central Australia and Western Australia. The stations in the networks are owned or maintained by volunteers, and assisted by the Australian Centre for Geomechanics (ACG), based in Perth, WA, which provides web-based analytical software, as well as networking and communications software, and data storage.

In Eastern Australia, the network as it existed in 2011 (9 stations) continued in 2012 with little change. The only significant change was the installation of a new station at Lithgow High School to replace that at Katoomba, which had significant noise problems arising from the school air-conditioning system.

The stations in the Central Australian network, at Peterborough, Jamestown and Modbury Heights continued operation in 2012, and two new stations, in the Adelaide Hills region, were added, at Lobethal and Mylor. Data from the Central Australian network are regularly used by personnel in DMITRE, Adelaide, in conjunction with data from their own network, to assist in locating South Australian earthquakes.

In Western Australia the network contracted, basically due to difficulties in maintaining internet connections through school internet security systems. Stations at schools in Broome, York, Lake Grace, Beacon and Pinjarra all closed during 2012. The network is now looking towards taking advantage of local Community Resource Centres, and the station at the District High School in York, closed in November 2011, was re-opened at the York CRC in October 2012.

Several temporary sites were occupied for short periods in late 2012 in the Beacon/Koorda region, about 200 km north-east of Perth, to monitor swarm activity occurring there. Some useful recordings were made, and a report is being prepared for presentation to the AEES.

## *2012 contribution*

### **Australian Centre for Geomechanics/ Public Seismic Network**

Vic Dent, Paul Harris, Dale Hardy, John Harris, Blair Lade

This network had its beginnings in WA in 2006, with a station in the Geology Dept. at the University of WA. It has now expanded significantly across Australia, and its success is due largely to a small group of dedicated volunteers. It uses hardware and software supplied by the Webtronics company in Redwood City, California, which is also used by a loosely-knit world-wide community, known as the Public Seismic Network or PSN. It also has been given access to communications and web-based analytical software developed by the Australian Centre for Geomechanics (ACG), Perth. The seismographs have often been sited in schools, to take advantage of improved security, and access to power and the internet.

Most of the stations in this network collect data at 200 samples per second, and have GPS controlled timing. The sensors deployed are mostly Willmore Mark II seismometers, or Mark Products L15B geophones, as indicated in the accompanying table. The network expanded significantly in 2011, with the installation of 7 new stations, across all states except Tasmania and the Northern Territory;

The network allows identification and approximate location of many small earthquakes, as well as approximate magnitude determination, often before they are listed on the Geoscience Australia website.

In NSW, a new station was installed at Tallong Primary School on 17<sup>th</sup> February 2011 (replacing a test station at Wingello), using a Mark Products geophone, and later upgraded with a Willmore Mk II seismometer (20<sup>th</sup> July). The seismograph at Crookwell High school, initially installed in 2010, did not collect data consistently until serviced on 21<sup>st</sup> February. New stations were also installed at James Sheahan College, Orange, in May 2011 and Dungog Senior High School in October 2011. The Redhead seismic station was upgraded to include a home-built Force Balance (vertical) sensor, with excellent response at long wavelengths, with data on-line from 15<sup>th</sup> November. The station at Katoomba High School was closed on 6<sup>th</sup> September because of excessive background noise.

In South Australia, seismographs were installed at Peterborough and Jamestown high schools on 29<sup>th</sup> June 2011. A Willmore Mk II was used at Peterborough, while a single component geophone was used at Jamestown. The DMITRE (S. A. Govt.) station at Modbury Heights (THS), which had been out of service since 6<sup>th</sup> January 2011, was converted to a PSN station on 24<sup>th</sup> June 2011.

In Western Australia, a new station was installed at Lake Grace District High School on 28<sup>th</sup> January 2011. Glen Forrest was closed on 6<sup>th</sup> June, and a new station installed at Northampton District High School on 25<sup>th</sup> July. The station at Beacon Primary School (installed March 2009) was upgraded to a Willmore on 29<sup>th</sup> August. A new station was set up north of Koorda on 11<sup>th</sup> November 2011, to monitor an eq swarm occurring there. YORK was closed on 28<sup>th</sup> November 2011. In the far southwest of the state, an area of poor seismograph coverage, a test station was set up at Dunsborough Primary School. It operated between October 2010 and March 2011, but site difficulties meant its operation could not be continued.

In Queensland, a new station was set up on 6<sup>th</sup> August to run in parallel with a seismograph (FS03) already operated by Mike Turnbull, near Gin Gin (about 100 km west of Bundaberg).

A station was installed on 27<sup>th</sup> September at Sandon, Victoria (near Bendigo) to run in parallel with a station operated by Gary Gibson (S88B).

More information on the network, and current seismograms from some stations, can be found at <http://www.rsuw.daleh.id.au>