10.1071/PVv2017n191newsp22

Update on geophysical survey progress from Geoscience Australia and the Geological Surveys of Western Australia, South Australia, Northern Territory, Queensland, New South Wales, Victoria and Tasmania (information current on 10 November 2017)

Further information on these surveys is available from Murray Richardson at GA via email at Murray.Richardson@ga.gov.au or telephone on (02) 6249 9229.

Table 1. Airborne magnetic and radiometric surveys

Survey name	Client	Project management	Contractor	Start flying	Line km	Spacing AGL Dir	Area (km^2)	End flying	Final data to GA	Locality diagram (*Preview*)	GADDS release
Murloocoppie	GSSA	GA	MAGSPEC Airborne Surveys	11 Feb 2017	109 560	200 m 60 m E–W	19 540	25 May 2017	Oct 2017	183: Aug 2016 p. 34	Nov 2017
Warrina	GSSA	GA	MAGSPEC Airborne Surveys	11 Feb 2017	135 628	200 m 60 m E–W	24 140	25 May 2017	Oct 2017	183: Aug 2016 p. 34	Nov 2017
Andamooka	GSSA	GA	Sander Geophysics	23 Feb 2017	81 396	200 m 60 m E–W	14 560	6 Jun 2017	Final data QA/QC in progress	183: Aug 2016 p. 34	TBA
Barton	GSSA	GA	Thomson Aviation	22 Jan 2017	111 758	200 m 60 m E–W	20 560	11 May 2017	Final radiometric data QA/QC in progress	183: Aug 2016 p. 34	TBA
Fowler	GSSA	GA	Thomson Aviation	18 Feb 2017	95 009	200 m 60 m E–W	17 360	2 Jun 2017	Final radiometric data QA/QC in progress	183: Aug 2016 p. 34	TBA
Torrens	GSSA	GA	Sander Geophysics	4 Mar 2017	79 990	200 m 60 m E–W	14 800	15 Jun 2017	Final data QA/QC in progress	183: Aug 2016 p. 34	TBA
Coonabarabran	GSNSW	GA	UTS Geophysics	17 May 2017	50 827	250 m 60 m E–W	11 000	30 Jul 2017	Nov 2017	184: Oct 2016 p. 23	Nov 2017
Tasmanian Tiers	MRT	GA	TBA	TBA	Up to an estimated 66 000	200 m 60 m N–S or E–W	11 000	TBA	TBA	TBA	National Collaborative Framework Agreement between GA and MRT is being updated. The survey has been deferred to occur between Oct 2017 and Mar 2018
Isa Region	GSQ	GA	GPX	3 Jul 2017	120 062	100 m 50 m E–W	11 000	5 Nov 2017	TBA	188: Jun 2017 p. 21	TBA
Tallaringa N (1A)	GSSA	GA	TBA	26 Oct 2017	97 762	200 m 60 m E–W	17 320	6.7%	TBA	190: Oct 2017 p. 26	TBA
Tallaringa S (1B)	GSSA	GA	TBA	26 Sep 2017	145 042	200 m 60 m E–W	26 010	19%	TBA	190: Oct 2017 p. 26	TBA
Coober Pedy (8A)	GSSA	GA	TBA	18 Sep 2017	90 627	200 m 60 m N–S	16 140	55.1%	TBA	190: Oct 2017 p. 26	TBA
Billa Kalina (8B)	GSSA	GA	TBA	10 Oct 2017	90 625	200 m 60 m N–S	16 140	54.4%	TBA	190: Oct 2017 p. 26	TBA
Childara (9A)	GSSA	GA	TBA	5 Nov 2017	135 021	200 m 60 m N–S	23 910	3.6%	TBA	190: Oct 2017 p. 26	TBA
Lake Eyre (10)	GSSA	GA	TBA	2 Oct 2017	91 800	200 m 60 m E–W	16 180	25.3%	TBA	190: Oct 2017 p. 26	TBA

TBA, to be advised.

Table 2. Gravity surveys

Survey name	Client	Project management	Contractor	Start survey	No. of stations	Station spacing (km)	Area (km^2)	End survey	Final data to GA	Locality diagram (*Preview*)	GADDS release
Tanami-Kimberley	GSWA	GA	Thomson Aviation	16 Jun 2017	49 825	2500 m line spacing	110 000	31 Oct 2017	TBA	The survey area covers the Billiluna (all), and parts of the Lucas, Cornish, Mount Bannerman, Mount Ramsay, Noonkanbah, Lansdowne, Lennard River, Derby, Charnley and Yampi 1:250 k standard map sheets	TBA
Kidson Sub-basin	GSWA	GA	CGG Aviation (Australia)	14 Jul 2017	72 933	2500 m line spacing	155 000	TBA	70.7%	The survey area covers the Anketell, Joanna Spring, Dummer, Paterson Range, Sahara, Percival, Helena, Rudall, Tabletop, Ural, Wilson, Runton, Morris and Ryan 1:250 k standard map sheet areas	TBA
South Nicholson	GA	GA	Atlas Geophysics	30 Jul 2017	2724	4 km spacing	43 330	28 Jul 2017	1 Sep 2017	The survey area covers parts of the Mount Drummond, Ranken and Avon Downs standard 1:250 k map sheet areas	15 Sep 2017

TBA, to be advised.

Table 3. AEM surveys

Survey name	Client	Project management	Contractor	Start flying	Line km	Spacing AGL Dir	Area (km^2)	End flying	Final data to GA	Locality diagram (*Preview*)	GADDS release
East Kimberley	GA	GA	SkyTEM Australia	26 May 2017	13 723	Variable	N/A	24 Aug 2017	Nov 2017	TBA	TBA
AusAEM (Year 1)	GA	GA	CGG	TBA	59 349	20 km with areas of infill	TBA	TBA	32.9%	186: Feb 2017 p. 18	TBA
Surat-Galilee Basins QLD	GA	GA	SkyTEM Australia	2 Jul 2017	4627	Variable	Traverses	23 Jul 2017	Nov 2017	188: Jun 2017 p. 21	TBA
Stuart Corridor, NT	GA	GA	SkyTEM Australia	6 Jul 2017	9832	Variable	Traverses	12 Aug 2017	Nov 2017	188: Jun 2017 p. 22	TBA
Olympic Domain	GSSA	GA	SkyTEM Australia	14 Nov 2017	3181	1.5 & 3 km E–W	33 200	TBA	TBA	190: Oct 2017 p. 27	TBA
Fowler Domain	GSSA	GA	SkyTEM Australia	Early Dec 2017	3057	5 km NW–SE	15 000	TBA	TBA	190: Oct 2017 p. 27	TBA

TBA, to be advised.

Table 4. Magnetotelluric (MT) surveys

Location	State	Survey name	Total number of MT stations deployed	Spacing	Technique	Comments
Northern Australia	Qld/NT	AusLAMP	150	50 km	Long period MT	The survey covers the area between Tennant Creek and Mount Isa

New seismic in the South Nicholson Basin region

In early August 2017 acquisition of deep crustal seismic reflection data was completed in the region between the southern McArthur Basin to the Mt Isa western succession, crossing the South Nicholson Basin and Murphy Province (Figure 1). Prior to this survey the region contained no seismic data and minimal well data.

Five seismic lines were acquired totalling 1100 line km with two of the seismic lines to the east linking with existing deep crustal seismic data in the Mt Isa western succession. The acquisition was designed to explore exposed and undercover sedimentary basins to better understand the location and scale of potential energy resources.

This data will also support mineral exploration through the improved understanding of the region's geological evolution and the identification of geological terrains with greater mineral potential. Initial field stack data are of excellent quality and image a variety of previously unknown features. The public release of processed data is expected in early mid-2018.

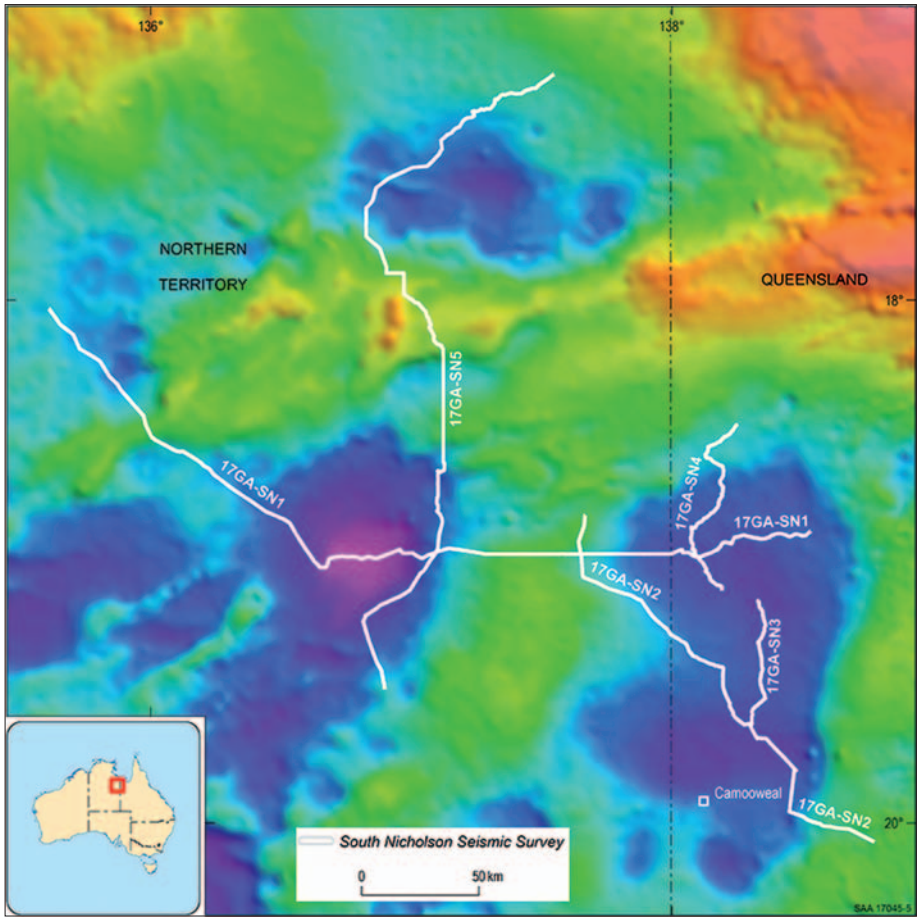

Figure 1. *Location of the South Nicholson seismic survey.*

Geological Survey of South Australia: Discovery Day

The Geological Survey of South Australia recently held Discovery Day, a one-day extravaganza on all thing minerals exploration related in South Australia. Four of the GSSA's geophysicists presented at the conference.

The GSSA's latest geophysical recruit, Kate Robertson, presented on 'Scale reducing MT exploration funded by PACE Copper'. This presentation updated participants on the AusLAMP project in South Australia, and included some exciting results from early inversion work. Kate used WinGLink software to demonstrate the conductive lower crust in the Curnamona Region.

Stephan Thiel also presented work on MT in South Australia. His presentation titled 'Evolving AusLAMP resistivity models in South Australia' showed depth slices of the state, illustrating the regional resistivity models. The inversion results showed resistivities from depths of 10 km to 150 km, giving a truly regional perspective on the subsurface of South Australia.

Laszlo Katona presented on the Gawler Craton Airborne Survey (GCAS), providing an update to the industry. The presentation provided an overview of the survey and covered many of the challenges that the GSSA have had to overcome. This is particularly true in terms of community engagement with the holders over 28 000 land parcels within the survey region. Laz demonstrated how a website designed to inform the various stakeholders has been successful in engaging everyone concerned.

Finally, Philip Heath presented two posters. The first poster presented the results from the Coompana microgravity surveys. The microgravity surveys were designed to detect underground cavities prior to a drilling programme. The results clearly show underground areas of low density, which may correspond to caves and cavities. The second poster gave an update on new geophysical surveys available for downloading via SARIG. Some highlights included the Musgraves Tempest and SkyTEM surveys, as well as the Coompana regional gravity and the first tranche of GCAS data.

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Geological Survey of Western Australia: More aerogravity surveys in WA

The Geological Survey of Western Australia is proposing to continue its program of airborne gravity surveys over the north-eastern part of the state.

Within the framework of the Western Australia Reconnaissance Gravity Project National Collaboration Agreement, Geoscience Australia has released a public request for tender for new surveys in one or more of four potential project areas (Figure 1; http://tenders.gov.au, ATM ID 2017/4223, closing date 18 December 2017).

The proposal for these new surveys follows from the successful conclusion of the East Kimberley survey in 2016 and the progress of the aerogravity surveys being conducted in 2017 (Table 1). All surveys are being flown at 2.5 km line spacing.

A list of non-confidential private company surveys held by GSWA are listed in Table 2 with the locations shown in Figure 1. Data from these surveys are available for free download from GSWA's online delivery system at www.dmp.wa.gov.au/geoview (under the 'Company Airborne Surveys' layer in the 'Geophysical Surveys' group).

For more information contact geophysics@dmirs.wa.gov.au.

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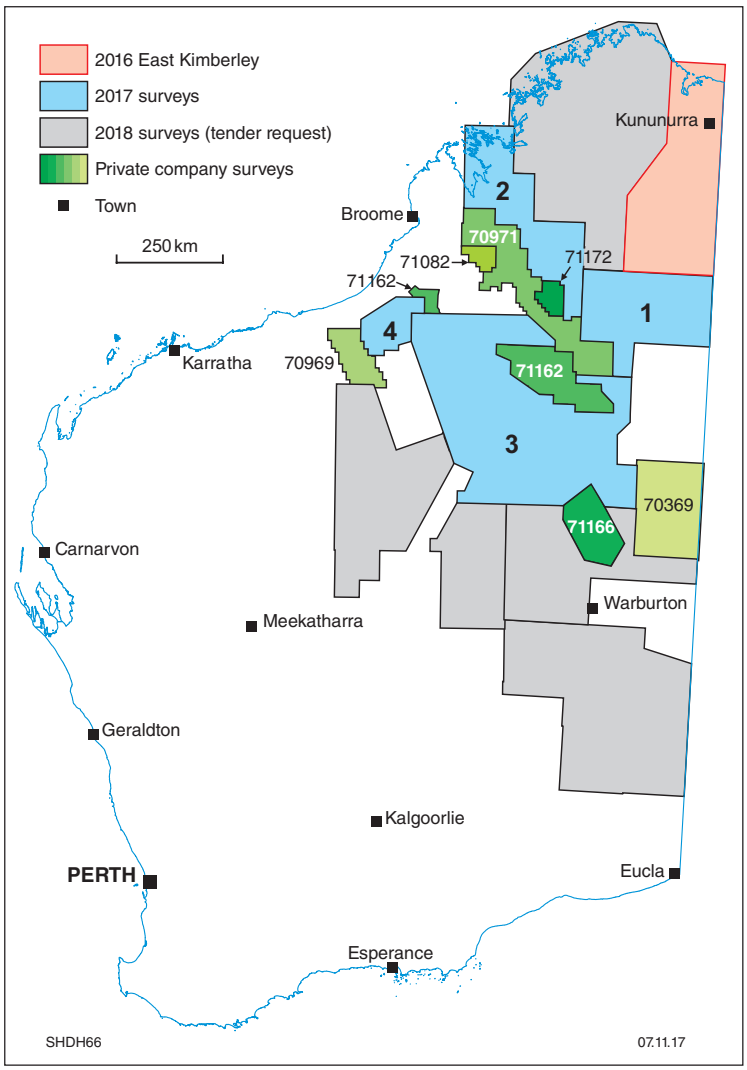

Figure 1. *Aerogravity surveys in Western Australia.*

Table 1. Status of GSWA aerogravity surveys in Western Australia

Survey name	Size (line km)	Contractor	Technology	Status
2016 East Kimberley	38 000	Sander Geophysics	AIRGrav	Complete; GSWA survey registration number 70156
2017 Surveys				
1. Tanami	25 000	Thomson Aviation	GT-2A	Data processing; release: Dec 2017 (est.)
2. NE Canning	25 000	Thomson Aviation	GT-2A	Data processing; data release: Feb 2018 (est.)
3. Kidson	70 000	CGG Aviation	Falcon/sGrav	Data acquisition; release Mar 2018 (est.)
4. Kidson extension (Anketell Shelf)	5500	CGG Aviation	Falcon/sGrav	Data acquisition; release Mar 2018 (est.)

Table 2. Exploration company aerogravity surveys (non-confidential)

Registration number	Survey name	Line spacing	Size (line km)	Technology
70369	Amadeus SPA704.5 AG	5000 m	7780	GT-1A
70969	SPA-055 Falcon AGG	3250 m	4065	Falcon
70971	Canning Basin Falcon AGG	1000 m	43 880	Falcon
71162	Canning Basin EP450_451 AG	2500 m	11 100	GT-2A
71166	Canning Basin SPA-A AG	1500 m	12 900	GT-1A
71172	Canning Basin 2434 AGG	1500 m	3560	Falcon

Geological Survey of Victoria: new airborne survey for Otway Basin

GSV are planning an 18 000 km^2 gravity/gravity-gradiometry survey over the Otway Basin as part of a pre-competitive data package to support a nearshore petroleum acreage release in 2018. The surveying is part of the $42.5 million Victorian Gas Program, which aims to produce a clear picture of the state's prospective onshore and offshore gas resources, as well as options for underground gas storage (https://www.premier.vic.gov.au/wp-content/uploads/2017/10/171031-Victorian-Gas-Research-In-Full-Flight-1.pdf).

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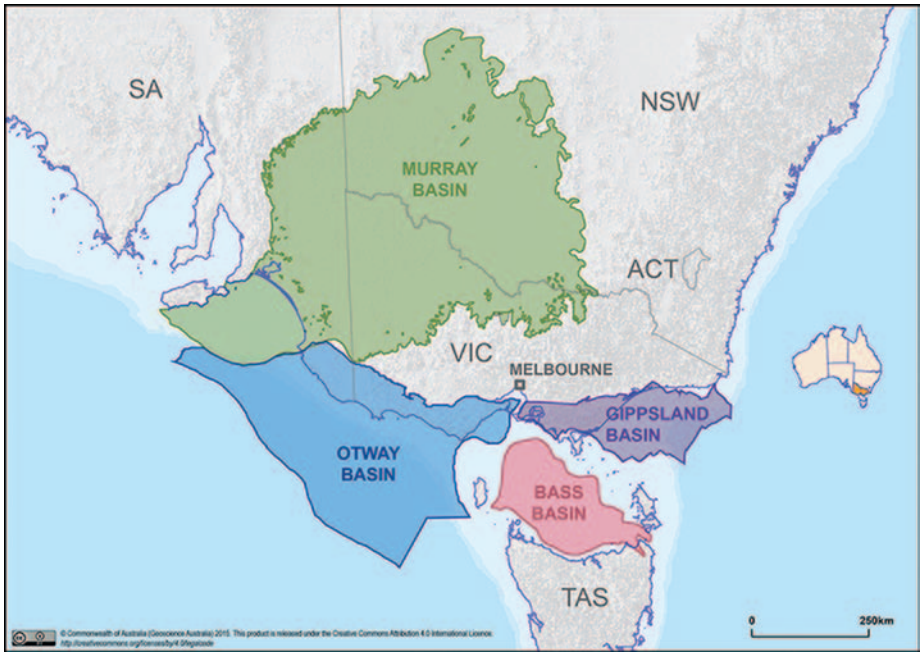

Victorian sedimentary basins; the Victorian Gas Program will focus on the Otway and Gippsland Basins.