



## Impact of regional airborne geophysical surveys on exploration sentiment: GSWA south Yilgarn magnetic and radiometric surveys, 2004–05

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### **Summary**

The coincidence of spikes in exploration activity with the release of new survey data in the south Yilgarn area confirms the dramatic impact that regional geophysical surveys can have on exploration sentiment in Western Australia.

### **Background**

On 12 February 2004, the Premier of Western Australia announced a \$12 million, four-year additional funding package for GSWA to provide regional aeromagnetic and radiometric coverage for some of the State's most prospective areas. The decision came in response to recommendations of the State Government's Bowler Inquiry into greenfield exploration, the Federal Government's Prosser Inquiry into impediments to increasing investment in mineral exploration, and the industry-led Mineral Exploration Action Agenda process.

Planning for the new program commenced immediately and the southern Yilgarn Craton was selected as the initial area for coverage. In June 2004, advance notice was given of plans to cover an area of approximately 112 000 km<sup>2</sup> in a region extending from Kellerberrin to Ravensthorpe in three major and two minor survey blocks (Fig. 1).

The program included the acquisition of new magnetic and radiometric data along lines 400 m apart from aircraft flying at a nominal 60 m above ground level. The new data, integrated with existing data acquired from private companies, added approximately 400 000 line-km of magnetic and radiometric data to the Western Australia public data inventory.

### **Gauging exploration sentiment**

Exploration sentiment can be gauged by the level of exploration activity that is occurring at a given time — the greater the level of activity the more positive the sentiment and vice versa. Exploration activity can be measured relatively simply by the number of tenements held, the area of ground under tenement, and the level of exploration expenditure.

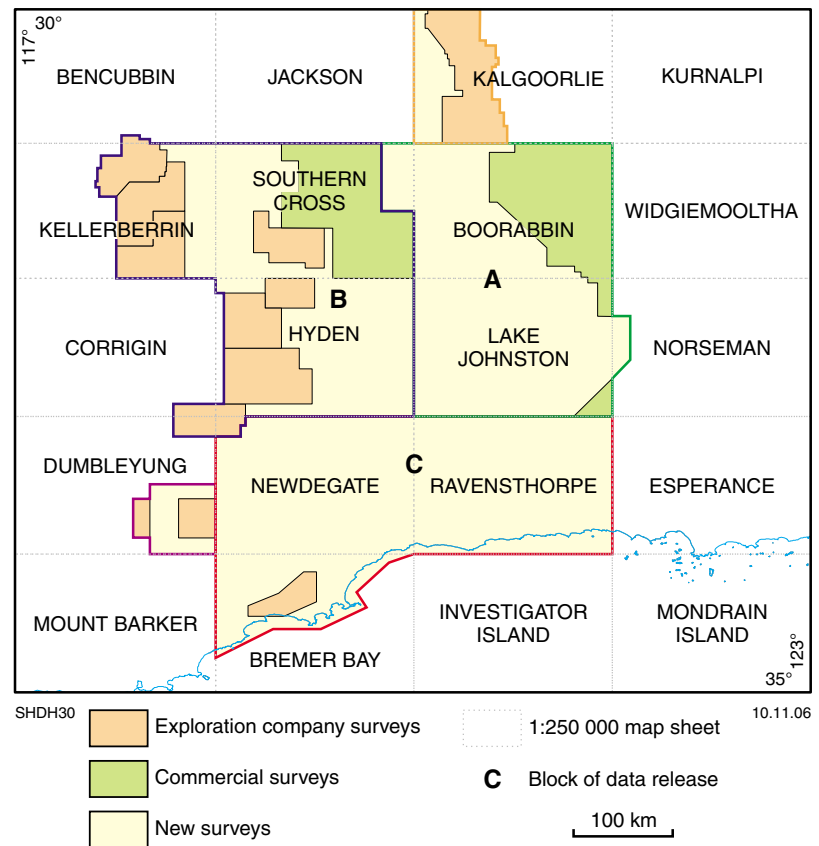


Figure 1. South Yilgarn airborne geophysical survey project area

Private-company exploration sentiment and resultant exploration activity are influenced by a number of factors that relate to the risk involved in exploration investment. These factors include land access, the fiscal and legal framework, the mining law, environmental legacies and security of tenure and, of course, the geological prospectivity or the likelihood that an economic deposit will be found in an area.

The number and complexity of these factors means that it is very difficult, as a general rule, to measure the effect of any one of them on exploration sentiment and activity. However, in cases where only one aspect of the exploration environment has changed, it may be possible to gauge the impact of that factor.

In a politically stable exploration environment such as Western Australia, one factor that can be changed relatively easily is the geological prospectivity, which is almost entirely a function of what is known or surmised about the geology of an area. It is this relationship that underpins the work of the Geological Survey of Western Australia in providing geological maps and other geoscience datasets that can be used to improve the level of understanding about the geology of Western Australia.

Because of the extensive regolith cover of soil and highly weathered rocks in Western Australia, magnetic and radiometric geophysical surveys are widely used as a means to interpret the underlying geology. Hence, the availability of new geophysical data can have a dramatic impact on the perception of the geological prospectivity of an area.

The effect of that change in perception on exploration sentiment might then be gauged by any changes that occur in the level of exploration activity if there have been no changes in other factors.

### ***Key program dates in the south Yilgarn survey program***

Advance public notice of surveys: 31 May 2004		
New survey contracts let: 13 July 2004		
Survey periods:	Start	End
Block A :	30 October 2004	17 February 2005
Block B:	18 September 2004	21 January 2005
Block C:	6 November 2004	5 May 2005
Release schedule announced: April 2005		
Data releases		
Block A:	9 May 2005	
Block B:	9 May 2005	
Block C:	18 July 2005	

### ***Exploration activity indicators***

Figure 2 shows graphs of exploration activity indicators — in the form of monthly new exploration tenement applications and potential minimum expenditure commitments — in the area of the south Yilgarn survey blocks from July 2004 to April 2006. Superimposed on the exploration activity graphs are the key survey dates.

On all three graphs, there is an undoubted coincidence between significant spikes in new exploration tenement applications and the data release dates.

During this period, the only significant change that we are aware of in the exploration environment in this area was the airborne magnetic and radiometric survey; all other factors either remained constant or changes were the same for the whole of Western Australia.

It is an inescapable conclusion that the availability of the new survey data had a direct impact on the decision to apply for tenement, in these areas.

Quite apart from the inferential conclusion of a causal link between the availability of the data and increased tenement activity, in at least one case, an Australian Stock Exchange (ASX) release notice issued by an exploration company three days after the data release date makes the linkage unequivocal: 'Image Resources is pleased to announce the acquisition of 14 new tenements totalling 1045 sq km in the southern Yilgarn, centred on the Ravensthorpe belt of WA following the release of new government aeromagnetic and radiometric data' (Image Resources, ASX release, 21 July 2005).

The new application spikes in the three areas are equivalent to first-year expenditure commitments of some \$2 million in aggregate, if all applications were granted.

### ***Effect on GSWA data release policy***

Up to this time, GSWA policy has been that new survey data were released only after completion of all stages of processing and final data evaluation. For large surveys, this meant a delay of many months between commencement of the survey and final data release.

The impact of this demonstrated link between new geoscience data and tenement activity has resulted in a change to GSWA policy for data release. On subsequent surveys, preliminary images and datasets have been released in stages (with appropriate warnings to end-users) as blocks of data from the survey were acquired. A release of preliminary data over the whole survey area is made at the completion of the data-acquisition stage. This allows exploration companies and other users of these datasets to make initial plans and decisions in a much more timely manner.

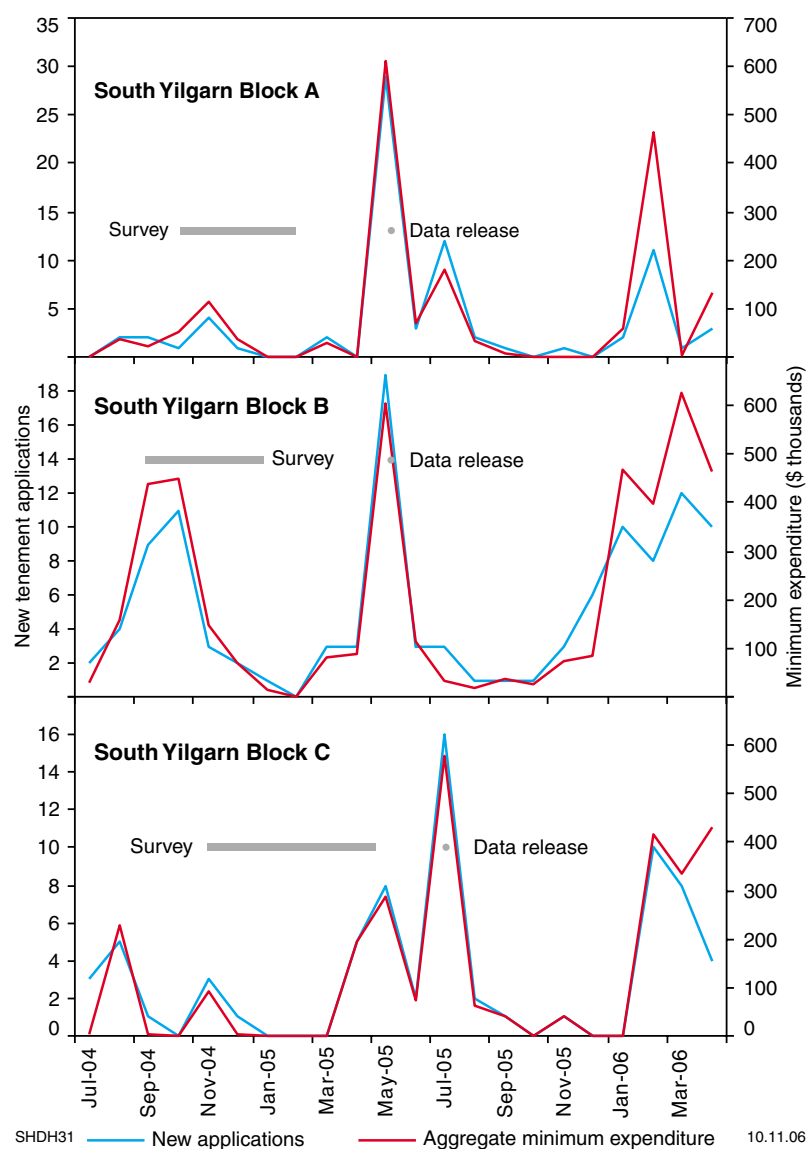


Figure 2. Exploration activity indicators in areas of regional geophysical surveys

As usual, the final data release is not made until all data processing has been completed and the data fully evaluated.