Foreword

The Commonwealth government established the Regional Minerals Program in August 1996 to encourage a coordinated regional approach to mineral resource development involving the Commonwealth government, state and territory governments and industry. The Commonwealth government committed $1.2 million to the program with complementary funding of around equal proportions provided by state governments and industry. This funding covers a four year period that is due to end in June 2000. The key objectives in the program are to identify the mining and mineral processing potential of selected regions, to coordinate planning of infrastructure and government services, to remove impediments and unnecessary duplication in the provision of these services, and to streamline approval processes. Seven regional studies have been undertaken or are in progress under the program.

The objective in this study is to undertake an evaluation of the Regional Minerals Program. A major part of the evaluation is based on a survey of participants to obtain their assessment of the program’s benefits and shortcomings, and their recommendations for its future. This study was commissioned by the Commonwealth Department of Industry, Science and Resources.

Government consideration of the extension of the program beyond June 2000 is expected to take into account the information contained in this report.

BRIAN S. FISHER
Executive Director

June 2000
Acknowledgments

The authors thank Donna Harkess, Jill Roberts and Rod Shaw from the Minerals Development Branch in the Commonwealth Department of Industry, Science and Resources for providing initial survey contact details, the various regional reports and related documents, and comments on both the questionnaire and earlier drafts of this report. The authors are also grateful to Sally Thorpe, Laurie Cannon and Carol Keil from ABARE for assistance in progressing the survey, and to Ray Lindsay and Peter Connell from ABARE for comments on an earlier draft of this report. The contribution of Mary Durack, who provided feedback on the initial questionnaire and contact details for the Western Australian regional studies, is also gratefully acknowledged. To all survey respondents, thank you.

Further details on the Regional Minerals Program can be obtained from:

Manager
Minerals Competitiveness and State Relations Section
Coal and Mineral Industries Division
Commonwealth Department of Industry, Science and Resources
GPO Box 9839
Canberra ACT 2601
Phone: +61 2 6213 7179
Fax: +61 2 6213 7817
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>1</td>
</tr>
<tr>
<td>Key findings</td>
<td>4</td>
</tr>
<tr>
<td>1 Introduction</td>
<td>9</td>
</tr>
<tr>
<td>Terms of reference</td>
<td>10</td>
</tr>
<tr>
<td>Scope of the study</td>
<td>10</td>
</tr>
<tr>
<td>2 Regional Minerals Program</td>
<td>12</td>
</tr>
<tr>
<td>Overview</td>
<td>12</td>
</tr>
<tr>
<td>Central West, New South Wales</td>
<td>16</td>
</tr>
<tr>
<td>Gawler Craton, South Australia</td>
<td>20</td>
</tr>
<tr>
<td>Western Tasmania</td>
<td>24</td>
</tr>
<tr>
<td>Central Pilbara, Western Australia</td>
<td>26</td>
</tr>
<tr>
<td>Mid-West, Western Australia</td>
<td>30</td>
</tr>
<tr>
<td>3 Survey design</td>
<td>33</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>33</td>
</tr>
<tr>
<td>Survey participants</td>
<td>36</td>
</tr>
<tr>
<td>Conducting the survey</td>
<td>38</td>
</tr>
<tr>
<td>Reporting the survey results</td>
<td>39</td>
</tr>
<tr>
<td>4 Survey results</td>
<td>40</td>
</tr>
<tr>
<td>Encouraging coordination between government and industry</td>
<td>40</td>
</tr>
<tr>
<td>Identifying mining and mineral processing potential</td>
<td>41</td>
</tr>
<tr>
<td>Infrastructure and government services</td>
<td>43</td>
</tr>
<tr>
<td>Streamlining approval processes</td>
<td>47</td>
</tr>
<tr>
<td>Benefits and shortcomings</td>
<td>49</td>
</tr>
<tr>
<td>Proposed modifications</td>
<td>55</td>
</tr>
<tr>
<td>Other comments</td>
<td>57</td>
</tr>
</tbody>
</table>
5 Discussion
   An ongoing role for a Regional Minerals Program? 59
   Costs 60
   Overall effectiveness and future directions 61

6 Conclusion 65

Appendixes
A Management committee members in the Regional Minerals Program 66
B Survey results, by regional study 70
C Wilcoxon test results 75

References 77
Boxes
1 Progress on regional studies under the Regional Minerals Program 14
2 Questionnaire 34

Figures
A Proportion of respondents in each regional study 38
B Total survey results for question 2 – knowledge of regional study 38
C Total survey results for question 3 – coordinated approach to minerals development 41
D Total survey results for question 4 – identifying mineral resources potential 42
E Total survey results for question 5 – identifying mineral processing potential 42
F Total survey results for question 6 – assessing infrastructure and government services 44
G Total survey results for question 7 – identifying impediments in the provision of infrastructure and government services 46
H Total survey results for question 8 – developing proposals relating to the provision of infrastructure and government services 48
I Total survey results for question 9 – streamlining approval processes 49
J Total survey results for question 10, by regional study – overall effectiveness of the Regional Minerals Program 55
K Total survey results for question 14 – merit in continuing the Regional Minerals Program 55

Maps
1 Location of study areas under the Regional Minerals Program 13
2 Central West, New South Wales, study area 16
3 Gawler Craton study area 20
4 Western Tasmania study area 24
5 Central Pilbara study area 27
6 Mid-West, Western Australia, study area 30
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Survey participants and response rate</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>Average results for question 3 – coordinated approach</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Average results for questions 4 and 5 – identifying mineral resources and processing potential</td>
<td>41</td>
</tr>
<tr>
<td>4</td>
<td>Average results for question 6 – assessing infrastructure and government services</td>
<td>43</td>
</tr>
<tr>
<td>5</td>
<td>Average results for question 7 – identifying impediments</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>Average results for question 8 – developing proposals</td>
<td>47</td>
</tr>
<tr>
<td>7</td>
<td>Average results for question 9 – streamlining approval processes</td>
<td>49</td>
</tr>
<tr>
<td>8</td>
<td>Average results for question 10 – overall effectiveness</td>
<td>54</td>
</tr>
<tr>
<td>9</td>
<td>Survey results for question 3 – coordinated approach to minerals development</td>
<td>70</td>
</tr>
<tr>
<td>10</td>
<td>Survey results for question 4 – identifying mineral resources potential</td>
<td>70</td>
</tr>
<tr>
<td>11</td>
<td>Survey results for question 5 – identifying mineral processing potential</td>
<td>71</td>
</tr>
<tr>
<td>12</td>
<td>Survey results for question 6 – assessing infrastructure and government services</td>
<td>71</td>
</tr>
<tr>
<td>13</td>
<td>Survey results for question 7 – identifying impediments</td>
<td>72</td>
</tr>
<tr>
<td>14</td>
<td>Survey results for question 8 – developing proposals</td>
<td>73</td>
</tr>
<tr>
<td>15</td>
<td>Survey results for question 9 – streamlining approval processes</td>
<td>73</td>
</tr>
<tr>
<td>16</td>
<td>Survey results for question 10 – overall effectiveness of the Regional Minerals Program</td>
<td>74</td>
</tr>
<tr>
<td>17</td>
<td>Survey results for question 14 – merit in continuing the Regional Minerals Program</td>
<td>74</td>
</tr>
<tr>
<td>18</td>
<td>Wilcoxon test results for selected pairs of questions</td>
<td>76</td>
</tr>
</tbody>
</table>
Summary

The Regional Minerals Program is a policy initiative managed by the Commonwealth Department of Industry, Science and Resources that aims to encourage a coordinated approach by the Commonwealth government, state and territory governments and industry to facilitate the regional development of mining and mineral processing activities, and to promote regional employment opportunities. The Commonwealth government committed $1.2 million to the Regional Minerals Program in the 1996-97 budget, for the period August 1996 to June 2000, with complementary funding of around equal proportions to be provided by state governments and industry.

Regional studies

Seven regional studies will have been funded under the program. Two studies that had only recently commenced at the time of the survey and are therefore not included in the review are the Murray Basin on the borders of New South Wales, Victoria and South Australia; and the Southern Cross – Esperance in Western Australia.

The five regional studies that are largely completed are as follows.

Central West, New South Wales

The regional study for the Central West of New South Wales was announced in December 1997 and the final report was released in September 1998 (Dames and Moore 1998). The principal mineral resources of the region are gold, copper, lead, zinc, silver and other metals. Difficulties in obtaining access to adequate water supply is the most important infrastructure issue for future regional minerals development in the region. The recent introduction of water reforms by the New South Wales government, however, is likely to enable mining companies to purchase water permits to meet the requirements of their operations over the fifteen year projection period.

Following the recommendations of the report, a Water Resources Forum was held in Orange in November 1998 and a government brochure was released to facilitate and raise awareness of the impacts of water reform on the minerals industry.
**Gawler Craton**

The regional study for the Gawler Craton was announced in February 1998 and the final report was released in May 1999 (Woodward-Clyde, Bassett Consulting Engineers and Maunsell McIntyre 1999a,b). The main mineral resources in the region are gold, copper, silver, lead, zinc, iron ore and coal. The Gawler Craton has two substantial mining operations — BHP’s iron ore mines in the Middleback Ranges with a steel works at Whyalla, and Western Mining Corporation’s development at Olympic Dam. Woodward-Clyde et al (1999a,b) assume that new mines will be established as fly in – fly out operations. Water management is also one of the most important issues for the mining industry in this region.

In November 1999, the South Australian government released its Resources Task Force Report which includes a number of recommendations from the Gawler Craton study.

**Western Tasmania**

The regional study for Western Tasmania was announced in June 1998 and the final report was released in December 1999 (Woodward-Clyde, Thompson and Brett Consulting Engineers, Kvaerner and SGS 1999). The region is prospective for several mineral resources including gold, zinc, lead, silver, copper, tin and nickel.

Three key findings have come from the study:

- access to competitively priced energy (gas and electricity) is the most important infrastructure issue for future regional minerals development in the region;
- exploration expenditure needs to be substantially increased if the current level of mining activity is to be maintained; and
- Port Latta could be developed as an alternative multipurpose site to Bell Bay for future industrial and minerals processing.

In April 2000, the Commonwealth government announced that a $5 million commitment in 1999-2000 and 2000-01 would be used to increase the standard of geological data available to exploration companies and for preparatory work to be done toward developing Port Latta.
Central Pilbara

The Central Pilbara study was commissioned in November 1998 and a draft report of the results of the study was released in July 1999 (Dames and Moore 1999). The final report was released in March 2000 (Dames and Moore 2000). The principal mineral resource of the region is iron ore. Dames and Moore found there may be a move toward a larger number of smaller mines that are based on long distance commuting of employees. Infrastructure services were found to be either adequate for existing and projected mining industry requirements or at substantial surplus capacity (such as electricity and accommodation). An important infrastructure issue for iron ore companies and government is the increasing per person cost of supporting the existing towns and ancillary support services.

Following the study’s recommendations, the Commonwealth government contributed $30 000 toward the second stage study of the Central Pilbara’s groundwater resources.

Mid-West, Western Australia

The Mid-West, Western Australia regional study was announced in November 1998 and a final report is expected to be released in June 2000 (SMEC 2000). The principal mineral resources of the region are gold, heavy mineral sands (titanium minerals and zircon), zinc, silver and copper. SMEC suggests that there is considerable potential for further processing given the extensive mineral resources in the Mid-West and Pilbara regions, potential access to low cost energy, proximity to Asian markets and potential deepwater ports. Infrastructure projects that are already planned for the Mid-West region include the construction of east–west links, the southern port access corridor and the deepening of the existing port. SMEC found there are no major infrastructure deficiencies for projected mining and mineral processing requirements.

Evaluation of the program

The objective in this study is to evaluate the Regional Minerals Program. (The terms of reference for the ABARE study are given in chapter 1.) An evaluation of the program requires a comparison of the actual and expected costs and benefits of the program. Although most of the completed reports have only been released since mid-1999, some progress has been made in implementing the recommendations of the reports. The main benefits of the
Key findings

• The Regional Minerals Program is a low cost policy initiative that has been effective in achieving its stated objectives.

• Ninety per cent of the survey’s respondents indicated that the program should be continued beyond 30 June 2000, either in its current form or some revised form.

• Survey respondents on average responded that the program performed well in:
  – encouraging a coordinated approach to regional minerals development;
  – identifying the mineral resources and processing potential of selected regions;
  – assessing the infrastructure and government services of a region and developed proposals to overcome identified impediments.

• The ability of the regional studies to streamline approvals processes was assessed by survey respondents as the weakest area of the program.

• The program has brought together industry and federal, state and local government representatives for common goals, increasing cooperation and coordination between participants in the each of the regional studies.

• The program has created a set of regional reports that represent a substantial information base on regional infrastructure planning and development options, with particular relevance to mining and minerals processing industries.

• Regional study recommendations that facilitate mineral exploration, mining or mineral processing activities are likely to contribute to regional economic growth through flow-on (or multiplier) effects.

• Through the regional studies the program has informed governments on the needs of industry and the community in regional Australia, increased the awareness of governments and regional communities of the benefits of the mining industry and provided industry with a greater understanding of the constraints and opportunities for regional minerals development.
Key findings

• The main benefits of the program are likely to be realised in the future as the implementation of recommendations progresses.

• The program should include a mechanism to review study recommendations and monitor their implementation within the study regions.

• State ministers responsible for minerals and energy have also acknowledged the benefits of the program and gave unanimous support for its continuation in a letter to the Minister for Industry, Science and Resources.

**ABARE survey – overall effectiveness of the Regional Minerals Program**

- **All regions, by grade**
  - Very good: 10 per cent
  - Good: 52 per cent
  - Adequate: 26 per cent
  - Poor: 6 per cent
  - Very poor: 0 per cent
  - Not applicable: 6 per cent

- **Average response, by region**
  (Based on 1 = very poor, 2 = poor, 3 = adequate, 4 = good, 5 = very good)
  - Central West, New South Wales: 4.2
  - Gawler Craton, South Australia: 3.6
  - Western Tasmania: 3.4
  - Central Pilbara, Western Australia: 3.4
  - Mid-West, Western Australia: 4.0
  - Total: 3.7

- **Respondents indicating a poor performance, by region (if nonzero)**
  - Gawler Craton: 2 people (17 per cent of respondents)
  - Central Pilbara: 1 person (10 per cent of respondents)
  - Total: 3 people (6 per cent of respondents)
program, however, are likely to be realised in the future as the implementation of recommendations progresses.

The assessment of the program is based largely on a survey of key participants who are potential users of the findings and recommendations in the reports and who have also been well informed about the process to date. The survey sample comprises 54 management committee members for the five regional studies that had been, or were largely, completed at the time of the survey. This sample excludes Commonwealth government representatives and three committee members who have retired or left the organisation and could not be contacted or replaced with an informed alternative representative from the same organisation.

A total of 48 responses were received for the survey, representing 89 per cent of the survey participants. For individual regions, the response rate ranged from 71 per cent (or five people) in the Central West, New South Wales to 100 per cent (or ten people) for Western Tasmania.

Results of the survey

The main survey results for questions that required respondents to provide a grade (ranging from very poor to very good) are given in the key findings table. On the effectiveness of the Regional Minerals Program (as given in part one of the terms of reference), survey respondents on average indicated:

- a **good** performance in encouraging a coordinated approach to regional minerals development (question 3 in the questionnaire — see chapter 3);
- a **good** performance in identifying the mineral resources and processing potential of selected regions (average of questions 4 and 5);
- a **good** performance in assessing the infrastructure and government services of a region and developing proposals to overcome any identified impediments (average of questions 6, 7 and 8 for parts a and b);
- an **adequate** performance in identifying ways of streamlining approval processes (question 9); and
- a **good** overall performance (question 10).

There was some regional variation in assessments of the effectiveness of the program. It should be noted, however, that a regional comparison of survey results needs to be interpreted with some caution, given the relatively small
number of respondents for each region. The effectiveness of the program in the Central West, New South Wales region was ranked highest, followed by the Mid-West in Western Australia, the Gawler Craton and, finally, with an equal overall ranking, Western Tasmania and the Central Pilbara.

All regions were assessed to have performed consistently well in encouraging coordination between government and industry. The Central West, New South Wales and Mid-West, Western Australia regions tended to outperform other regions in identifying the mineral resources and processing potential of selected regions. Together with the Gawler Craton, these regions outperformed Western Tasmania and the Central Pilbara in both infrastructure assessments and identifying ways to streamline approval processes. Notably, the performance of the Western Tasmania regional study in identifying ways to streamline approval processes was assessed by survey respondents to have been poor.

On the contribution of the program to broader regional economic development (as given in part two of the terms of reference), survey respondents provided a range of comments. The general point was made that any information or recommendations contained in the regional studies that facilitated exploration, mining or mineral processing activities was also likely to contribute to regional economic growth through flow-on (or multiplier) effects. Importantly, the regional studies identified infrastructure deficiencies and other impediments to regional minerals development that are also relevant to other industries.

The regional studies have also informed governments on the needs of industry and the community in regional Australia, increased the awareness of governments and regional communities to the benefits of the mining industry and provided industry with a greater understanding of the constraints and opportunities for regional minerals development.

The program brought industry and federal, state and local government representatives together for common goals, and increased cooperation and coordination between participants in the study.

Whether there are identifiable benefits from continuing the program beyond 30 June 2000 (as given in part three of the terms of reference), 90 per cent of respondents indicated that the program should be continued either in its current form or in some revised form.
The program also has broader support. In August 1999, ANZMEC ministers sent a letter to Senator Minchin, Commonwealth Minister for Industry, Science and Resources, in which they acknowledged the benefits that have resulted from the Regional Minerals Program and sought a continuation of it beyond June 2000.

**Future directions**

Many of the comments of respondents relate to the initial stages of a regional study — for example, identifying the key regional issues in the detailed terms of reference, selecting management committee members and consultants, and liaising with local and regional stakeholders — or the final stages — for example, disseminating regional reports, implementing recommendations, undertaking detailed studies and specific projects, and introducing formal reviews of progress for a period of time after the completion of each regional study.

Overall, the Regional Minerals Program is a low cost policy initiative that has been effective in achieving its stated objectives. A key area where there is potential for a higher level of achievement is streamlining approval processes. In the survey, there is very strong support for continuing the program beyond 30 June 2000 either in its current form or some revised form.
Regional social and economic issues have become increasingly important in recent years. The ‘Regional Australia Strategy’ announced in 1998 aims to achieve sustainable growth in regional Australia (Anderson and MacDonald 1999). In a ‘whole of government’ approach, the strategy draws together Australian government policy initiatives that have an impact on regional Australia, although individual departments retain responsibility for specific initiatives. Policy priorities identified within the strategy include:

- improving regional services;
- fostering employment and business initiatives;
- enhancing regional infrastructure, particularly telecommunications infrastructure;
- improving family and community lifestyles; and
- achieving environmental sustainability.

A key element of the strategy is to encourage cooperation between governments, business and communities to facilitate information exchange, and to progress the assessment of key regional issues and solutions. The Regional Australia Summit in Canberra on 27–29 October 1999 was part of this process.

Consistent with the Regional Australia Strategy, the Regional Minerals Program is a policy initiative that aims to encourage a coordinated approach by industry and all levels of government to facilitate regional mineral resource development and to promote regional employment opportunities. The Commonwealth government established the program in August 1996, with funding covering a four year period.

The regional studies under the program follow previous major assessments of the Carpentaria–Mount Isa region of Queensland and the Northern Goldfields region of Western Australia (Parer 1996a,b). Five regional studies in New South Wales, South Australia, Tasmania and Western Australia have been or are nearly completed, and a further two regional studies in the Murray
Basin (on the borders of New South Wales, Victoria and South Australia) and Western Australia were announced in 1999 (Minchin 2000a).

With the program due to end in June 2000, the Commonwealth Department of Industry, Science and Resources commissioned ABARE to conduct an evaluation of the Regional Minerals Program.

**Terms of reference**

1. Examine the outcomes and effectiveness of the Regional Minerals Program in encouraging a coordinated Commonwealth government, State government and industry approach to minerals development, through:
   - identifying the mineral resources and processing potential of selected regions;
   - assessing the infrastructure and government services of a region and developing proposals to overcome any identified impediments;
   - identifying ways to streamline approval processes.

2. Examine the role of the Regional Minerals Program in contributing to the broader economic development of individual regions studied.

3. Consider and advise on whether there are identifiable benefits in continuing the Regional Minerals Program beyond 30 June 2000, either in its current form or in some revised form.

**Scope of the study**

The overriding objective in government policy is to maximise the wellbeing of the Australian community (social welfare) over time, accounting for relevant constraints such as available technologies and human, physical and natural resources. The assessment of social welfare has both efficiency and equity aspects. The argument for government policy intervention is based on the premise that certain goods and services are not provided efficiently or equitably, if at all, through the normal operations of private markets. The least cost policy action should be chosen if the benefits of the policy action outweigh the costs.

An evaluation of the Regional Minerals Program therefore requires a comparison of its actual and expected costs and benefits, as well as an assessment
of any program shortcomings that may assist in identifying its future directions.

This assessment of the benefits and future directions of the Regional Minerals Program is largely based on a survey of key program participants who may use the findings and recommendations in the reports, and who are also well informed about the process. Corresponding to the specific issues raised in the terms of reference, the survey asked participants to provide feedback on the effectiveness of the program and make recommendations about its future.

ABARE has undertaken assessments of other policy initiatives that draw on surveys of key participants. Harris, Anderson and Shafron (1998), for example, examined the effectiveness of the Commonwealth government’s Enterprise Energy Audit Program, and Garnaut, Robinson and Lubulwa (1997) examined issues in the delivery of Commonwealth social support programs to people in rural areas.

This study also contributes to ABARE’s ongoing research into economic issues relating to regional Australia. In one line of ABARE research into the role of mining and infrastructure in regional Australia, Hogan, Berry and Thorpe (1999) examined regional variations in income and other measures of general wellbeing, the location choices of industry, and the provision of economic and social infrastructure in regional economies.

In a second line of research, ABARE (1999a) prepared a preliminary report on changes in nonmetropolitan population, employment and industries as part of a larger study for the Department of Transport and Regional Services to provide to participants at the Regional Australia Summit in October 1999. A summary of this paper (with some extended analysis) was presented at OUTLOOK 2000 (Garnaut et al. 2000). The larger study will emphasise the geographic location of the food and beverage industries.
Regional Minerals Program

The Commonwealth government provided $1.2 million in the 1996-97 budget for the Regional Minerals Program over four years. The aim was to encourage a coordinated regional approach to facilitate the development of new mines, mineral processing and related infrastructure (Parer 1996a). An overview of the Regional Minerals Program is provided below, along with a summary of the main findings of five regional studies.

Overview

The Regional Minerals Program is a partnership between the Commonwealth government, state and territory governments and industry. It aims to:

- identify the mineral resources and processing potential of selected regions;
- coordinate the planning of infrastructure and government services;
- remove impediments and unnecessary duplication; and
- streamline approval processes.

The key objectives of the program are to reduce costs to industry, generate income earlier than may otherwise be expected, encourage value added processing, and create employment in rural Australia (Parer 1996b).

Under the program, state governments nominate regions that are highly prospective for minerals. If the Commonwealth government approves the nomination, the state government acts as a project manager to seek support from local mining and energy companies. Funding for a study is generally shared equally between the Commonwealth government and state governments/industry.

Independent consultants undertake the studies so as to protect the confidential commercial interests of individual companies. The selected consultants are usually a consortium of specialists in diverse fields of geology, minerals assessment, telecommunications, infrastructure engineering and planning. The consultants produce an assessment and recommendations.
A management committee consisting of senior government officials and company representatives develop the terms of reference, select the consultant and oversee the work program. A principals’ committee, consisting of ministers and chief executive officers, provides strategic direction and commitment to the study’s recommendations.

The terms of reference for studies usually cover four key issues:

- an overview of the mineral potential and scenarios for development and downstream processing over the next ten years or so;
- identification of the infrastructure and servicing of the resources sector;
- identification and documentation of government policies required to facilitate development in the region and documentation of approval processes; and
- an investigation of the appropriate means to ensure the coordinated development of infrastructure provision by government and industry.
Seven regions across Australia were selected for funding under the program. The location of these regions is indicated in map 1, and key dates and outputs for each regional survey are given in box 1.

Five regional studies have been completed or are nearing completion — Central West, New South Wales; Gawler Craton, South Australia; Western Tasmania; Central Pilbara, Western Australia; and Mid-West, Western Australia. Two further studies announced in 1999 had only recently commenced at the time

<table>
<thead>
<tr>
<th>1</th>
<th>Progress on regional studies under the Regional Minerals Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central West, New South Wales</strong></td>
<td></td>
</tr>
<tr>
<td>29 December 1997</td>
<td>Infrastructure study announced (Parer, Woods and Martin 1997)</td>
</tr>
<tr>
<td>1 September 1998</td>
<td>Infrastructure study released (Dames and Moore 1998; Parer, Woods and Martin 1998)</td>
</tr>
<tr>
<td>4 November 1998</td>
<td>Water Resources Forum held in Orange</td>
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<tr>
<td><strong>Gawler Craton, South Australia</strong></td>
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<tr>
<td>3 February 1998</td>
<td>Infrastructure advance planning study announced (Parer and Kerin 1998)</td>
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<tr>
<td>November 1998</td>
<td>Explorers’ Guide to the Gawler Craton released (Woodward-Clyde et al. 1998)</td>
</tr>
<tr>
<td>4 June 1999</td>
<td>Infrastructure advance planning study released (Woodward-Clyde, et al. 1999a,b; Minchin 1999b; Kerin 1999)</td>
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<tr>
<td><strong>Western Tasmania</strong></td>
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<tr>
<td>18 June 1998</td>
<td>Infrastructure study announced (Parer and Beswick 1998)</td>
</tr>
<tr>
<td>11 May 1999</td>
<td>Commonwealth government to provide $5 million in 1999-2000 and 2000-01 to support infrastructure identified by the Regional Minerals Program (Minchin 1999a)</td>
</tr>
<tr>
<td>20 May 1999</td>
<td>Information collection report released (Woodward-Clyde 1999)</td>
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<tr>
<td>December 1999</td>
<td>Final regional development plan released (Woodward-Clyde et al. 1999)</td>
</tr>
<tr>
<td>16 March 2000</td>
<td>Senator Minchin endorsed the findings of the study</td>
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<tr>
<td>17 April 2000</td>
<td>Senator Minchin announced that the allocation of the $5 million is based on the key findings of the study (Minchin 2000b)</td>
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### Progress on regional studies under the Regional Minerals Program

<table>
<thead>
<tr>
<th>Location</th>
<th>Key Events</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Pilbara, Western Australia</strong></td>
<td>19 November 1998: Major minerals study announced (Minchin and Barnett 1998)</td>
</tr>
<tr>
<td></td>
<td>July 1999: Draft of infrastructure planning study released (Dames and Moore 1999)</td>
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<td></td>
<td>15 September 1999: Findings of the Central Pilbara infrastructure planning study endorsed by Senator Minchin (Minchin 1999c)</td>
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<td></td>
<td>September 1999: Second stage study on regional groundwater resources commenced</td>
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<tr>
<td></td>
<td>March 2000: Final report released (Dames and Moore 2000)</td>
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<tr>
<td><strong>Mid-West, Western Australia</strong></td>
<td>19 November 1998: Major minerals study announced (Minchin and Barnett 1998)</td>
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<tr>
<td></td>
<td>15 September 1999: Preliminary findings of the study endorsed by Senator Minchin</td>
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<tr>
<td></td>
<td>June 2000: Final regional minerals study expected to be released (SMEC 2000)</td>
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<tr>
<td><strong>Murray Basin, borders of New South Wales, Victoria and South Australia</strong></td>
<td>March 1999: Release by the Victorian, South Australian and New South Wales governments of proposal for inclusion of the Murray Basin in the Regional Minerals Program</td>
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<tr>
<td></td>
<td>21 April 1999: Major minerals study announced (Minchin 1999d).</td>
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<tr>
<td></td>
<td>November 1999: Work on study commenced by consultant, Sinclair Knight Merz</td>
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<tr>
<td></td>
<td>28 February 2000: Regional workshop held in Mildura</td>
</tr>
<tr>
<td><strong>Southern Cross–Esperance, Western Australia</strong></td>
<td>May 1999: Release by the Department of Resources Development, Western Australia, of proposal for the Southern Cross–Esperance regional minerals study.</td>
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<tr>
<td></td>
<td>15 September 1999: Announcement by Senator Minchin of a major minerals study on the Southern Cross–Forrestania region in the south western corner of Western Australia to commence shortly (Minchin 1999c)</td>
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<tr>
<td></td>
<td>February 2000: Consultant, Connell Wagner, selected to undertake study</td>
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<tr>
<td></td>
<td>15 March 2000: First management committee meeting held</td>
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of the survey and are therefore not included in the review — the Murray Basin on the borders of New South Wales, Victoria and South Australia; and Southern Cross–Esperance, Western Australia.

Central West, New South Wales

The Central West region is located to the west of Sydney, and extends from Lithgow, Young and West Wyalong in the south to Mudgee, Dubbo, Nyngan and Cobar in the north (map 2). Other towns include Bathurst, Orange, Parkes, Forbes and Cowra.

The regional study for the Central West of New South Wales was announced in December 1997, and the final report (Dames and Moore 1998) was released in September 1998 (box 1). The key objectives in the study were to provide high, medium and low case projections for new mine developments over a fifteen year period, to assess the mineral processing potential of the region, review the provision of infrastructure services (particularly water availability) and identify potential impediments to regional mineral development.
The following discussion summarises key findings and recommendations by Dames and Moore (1998). Notably, the final report contains 42 recommended actions, grouped under five headings in order of importance (with suggested responsibilities and time frames).

**Mining and mineral processing potential**

The principal mineral resources of the region are gold, copper, lead, zinc, silver and other metals. The region had eight substantial operating metalliferous mines in 1997, and three at advanced stages of development. Five of these mines are expected to operate for at least a further ten years. Exploration activity in the region has been relatively high in recent years, partly as a result of expanded geological datasets becoming available from government agencies associated with the Discovery 2000 initiative (undertaken by the New South Wales government) and the joint Commonwealth–state National Geoscience Mapping Accord. Increased exploration activity has resulted in the discovery of new ore deposits.

Dames and Moore (1998) use a range of information in estimating the potential for new mine developments, including available data, discussions with the New South Wales Department of Mineral Resources, comments from mining/exploration groups, and a subjective interpretation of prospective mineral trends.

In the high growth case, 38 new mines are assumed to commence operations over the next fifteen years — sixteen mines over the next five years, seventeen mines over the five to ten year period, and a further five mines over the ten to fifteen year period. A large number of these are small and small to medium sized, with production lives of less than ten years. The medium (base) and low growth cases are assumed to be 75 per cent and 50 per cent respectively of total production in the high growth case projection.

In the base case, 28 new mines are assumed to commence operations over the next fifteen years. These mines range from relatively high grade, small deposits to low grade, high tonnage deposits. Total production, in gold equivalent terms, is projected to be 23 million ounces valued at $10.2 billion (in average 1997 gold prices). Total employment is projected to be about 900 people in the first five years, 2100 people in the five to ten year period, and 1800 people in the ten to fifteen year period.

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*Regional minerals program* 17
Dames and Moore (1998) estimate that mining costs over the fifteen year projection period would be $6.9 billion (in 1997 prices), of which around 30 per cent (or $2.1 billion, equivalent to $140 million a year on average) is assumed to represent wages and purchases of goods and services within the region. Regional economic impacts from the projected level of mining activity would be enhanced through multiplier effects.

Processing at most mines is limited to crushing the ore to obtain concentrates which are then transported to a smelter or other processing facilities located outside the region. However, gold is processed to bullion at some mines, and copper metal is produced at the Girilambone mine using a hydrometallurgical process that is lower cost and more environmentally sensitive than conventional smelting facilities. Some new mines are assumed to adopt hydrometallurgical processing in the first five years, and this process may become part of the normal development of new mines in later years. Energy and water are major inputs in mineral processing.

**Infrastructure, government services and approval processes**

Dames and Moore (1998) found that generally the base case projections for mining and mineral processing would require relatively minor upgrades to regional transport, housing and community services. Energy is well provided throughout the region, although there may be problems with distribution.

Potential impediments to the development of new mines, as identified by Dames and Moore (1998), are:

- difficulties in accessing adequate water supply;
- delays in negotiations on native title;
- increasing areas of conservation reserves; and
- the complexity of the planning approval process.

The study area includes the Lachlan and Macquarie–Bogan river systems. Even so, water is a scarce resource. Dames and Moore (1998) estimate that water use by potential new mines represents around 10 per cent and 8 per cent of current agricultural water use in the respective river systems. The New South Wales government recently introduced water reforms that will enable mining companies to purchase water permits to meet the requirements of their operations. Water prices are assumed to rise over the fifteen year projection period.
Dames and Moore (1998) recommended that ‘the Department of Land and Water Conservation and the mining industry review the impact of the water reforms on mine development after they have been in force for one year, and the mining industry provides relevant River and Groundwater Management Committees with information to ensure that they understand the water requirements of mines and their economic contribution to the region’. They found that land access for exploration and mining has become more uncertain in the region as a result of changes in:

• the legal situation with native title;
• the extent of national parks and reserves; and
• the attitude of the community to mining.

And they recommended that ‘the mining industry works with the New South Wales Aboriginal Land Council to develop a generic framework for resolving land access issues’.

They further recommended that ‘the New South Wales government establishes policies and procedures for the full consideration of mining and environmental values of an area before it is declared a conservation reserve and that this includes evaluation of multiple landuse options’. Dames and Moore (1998) argue that the Regional Forest Agreement process is a model that could be used to provide a transparent and comprehensive review of economic and environmental values before a conservation reserve is declared.

Government regulations for development approval are complex and costly for the mining industry. The New South Wales government has introduced changes to integrate and coordinate the planning approvals process, although details are yet to be determined. Dames and Moore (1998) recommend that ‘the industry and agencies work together to develop protocols for the new planning approval process and that it be monitored and reviewed to ensure that it operates efficiently’.

As a result of the recommendation on water use, a Water Resources Forum, ‘Water and the Minerals Industry’, was held in Orange on 4 November 1998. The New South Wales Department of Mineral Resources and the Department of Land and Water Conservation also published a brochure to further facilitate and raise awareness of the impacts of water reform on the minerals industry. The brochure was publicised at a major mineral exploration forum in Sydney in May 1999 which was attended by most of the companies exploring in New South Wales.
Gawler Craton, South Australia

The Gawler Craton, an arid and relatively undeveloped area of South Australia, is located to the north west of Adelaide (map 3). The region extends from Whyalla and Port Augusta in the south east to Ceduna in the south west and Coober Pedy in the north. It includes the world class Olympic Dam mine.

The regional study for the Gawler Craton was announced in February 1998 and two reports have been released — an explorers’ guide to the Gawler Craton in November 1998 and the final report in May 1999 (with a separate executive summary). The key objectives in the study were to analyse the requirements of potential mine developments and to provide recommendations on infrastructure, government processes, environmental management and personnel issues.

The Explorer’s Guide to the Gawler Craton, a GIS interactive database for explorers in the field, was developed in stage 1 of the study. It draws together information on exploration status, land use and land tenure, infrastructure
and services, environmental and waste disposal requirements, aboriginal heritage and native title, and government processes. The guide is available on CD-ROM and in hard copy.

The following discussion summarises key findings and recommendations from the final report by Woodward-Clyde, Bassett Consulting Engineers and Maunsell McIntyre (1999a,b). The final report contains 59 recommended actions grouped under four headings, with suggested responsibilities and timeframes.

**Mining and mineral processing potential**

The main mineral resources in the region are gold, copper, silver, lead, zinc, iron ore and coal. The Gawler Craton has two substantial mining operations — BHP’s iron ore mines in the Middleback Ranges, with a steelworks at Whyalla, and Western Mining Corporation’s development at Olympic Dam. Exploration has been relatively high in the Gawler Craton since the mid-1990s, although the region remains relatively underexplored.

The principal basis used for assessing potential mine developments in the Gawler Craton are the existing mining operations, the mining and exploration companies’ data on geological interpretations, and these companies’ assessments of development potential. However, the regional study found that few mining companies have provided indicative sizes of potential developments, and there is little information on the anticipated timing or types of developments. No new commercial mining developments are confirmed in the Gawler Craton.

Woodward-Clyde, Bassett Consulting Engineers and Maunsell McIntyre (1999a,b) assume that fifteen new mines will be established as fly in – fly out operations, although they note this is considered to be an optimistic level of development. The production life of each mine is assumed to be fifty years. Annual total production, in gold equivalent terms, is projected to be around 2 million ounces valued at $900 million a year (in 1998 gold prices). Total mining costs are projected to be around $620 million a year, but most inputs would be sourced from outside the region.

The development scenario excludes the proposed South Australian Steel and Energy project, given uncertainties about its economic viability. The project comprises a commercial pig iron plant near iron ore and coal resources in the northern part of the Gawler Craton. Annual production of 2.5 million
tonnes of pig iron would be valued at nearly $400 million (at current spot prices of US$90 a tonne). Revenue from the project may double if the analysis includes an expanded export coal mining operation. The project, if undertaken, would involve substantial power generating capacity; it has the potential to supply electricity to adjacent mining projects or population centres, and possibly to connect to the national power grid.

**Infrastructure, government services and approval processes**

Woodward-Clyde et al. (1999a,b) identified several potential issues for, or impediments to, new mine developments in the Gawler Craton. These limit exploration, slow mine development programs or increase operating costs for exploration and mining companies. They relate to:

- infrastructure development;
- water resource management;
- environmental planning and regulation;
- government reform of approval processes;
- access to high quality geoscience information;
- market access; and
- land access and native title.

Current levels of infrastructure are generally adequate for exploration activities, but future mine developments will increase demands on infrastructure services, particularly water supply, electricity, communications and transport. Water management is one of the most important issues for the mining industry in the region. The regional study report included several recommendations aimed at increasing the efficiency of water management in the Gawler Craton.

Gaining mine development approval based on environmental considerations usually requires expenditure on major data collection programs and specialist input, and liaison with several government departments. The regional study found that future mine developments in the Gawler Craton would benefit from a streamlining of approval processes, including better coordination among various government departments. The development of a ‘one window’ approach, which is a South Australian government reform priority, is likely to facilitate the approvals process.
Woodward-Clyde et al. (1999a,b) also found that the provision of high-quality geoscience information would encourage investment in exploration and mining activities in the region. More generally, they argued that there is a role for government to provide information to potential investors about the mineral prospectivity of the region to encourage well informed decision making. However, many companies consider native title related uncertainty about land access to be the most important issue affecting exploration and mining activities in the region.

In November 1999, Primary Industries and Resources, South Australia (PIRSA), released its Resources Task Force Report. Objective 4.4 of that report, on planning for infrastructure development, recommended a number of actions to develop South Australia’s physical infrastructure to meet mineral industry needs. Those actions included implementation of appropriate recommendations of the Gawler Craton infrastructure study and the undertaking of advanced planning studies for other areas of the state, complementing the Gawler Craton infrastructure report.

Partly as a result of the Gawler Craton infrastructure study, the South Australian government is also actively reviewing the Mining Act and associated regulatory processes. PIRSA is continuing to develop its ‘one window into government’ approach to further streamline approvals and other interactions between mineral development companies and government, as recommended in the study.

In addition, the Office of Minerals and Energy Resources is regularly monitoring the potential for resource development in the Gawler Craton. A strategic review of airfields has been completed and its results are being considered. And substantial progress has already been made toward establishing a water management board with responsibility over the region.

Woodward-Clyde et al. (1999a,b) recommended that PIRSA conduct a number of programs, including regional hydrogeological mapping, remote sensing drilling and water balance studies. PIRSA has a program to assess the hydrogeological potential of the region. When substantial resource developments appear likely to proceed, PIRSA may convene an interagency Gawler Craton facilitation team to consult with industry and other key stakeholders about infrastructure requirements. An Office of Regional Development has been established and will include representation on the interagency Gawler Craton facilitation team when it is set up.
Western Tasmania

The Western Tasmanian region is located in the north west corner of the state (map 4). The region extends from Queenstown in the south to Launceston in the east, and includes the offshore Bass and Sorell Basins. Other towns include, Devonport and Burnie.

The regional study for Western Tasmania was announced in June 1998 and two reports have been released — an information collection report in May 1999 and the final report in December 1999. The key objective in the study was to propose a regional development plan for up to fifteen years to support the development of the region’s minerals industry through infrastructure development.

The final regional development plan by Woodward-Clyde et al. (1999) contains 27 recommended actions grouped under four headings, with indicative budgets, responsibilities and timeframes. The following discussion summarises the key findings and recommendations of the plan.
**Mining and mineral processing potential**

The Western Tasmanian region is prospective for several mineral resources, including gold, zinc, lead, silver, copper, tin and nickel. Eight operating mines and four major processing plants employed an estimated 1530 and 1224 people respectively at July 1999.

A key finding of the study was that exploration expenditure needs to be substantially increased to maintain the current level of mining activity. Many of the region’s existing mines are old and only marginally economic when prices are low. Two recently developed mines are profitable but relatively small, and they will be short lived. New magnesite mines may be developed in the Arthur and Savage river area, but the regional study generally found that the known mineral deposits in the region provide limited scope for mine development over the next fifteen years.

In Tasmania, expenditure on greenfields exploration (in 1999 prices) declined from a recent peak of $9.4 million in 1996-97 to around $5 million in 1998-99. (Greenfields exploration is defined in the study as activity in exploration licence areas.) According to estimates by Mineral Resources Tasmania and the University of Tasmania, annual expenditure on greenfields exploration needs to be around $15 million to sustain the current level of mining activity. This is equivalent to one new mine opening on average every five years.

Prospects for mineral processing in Tasmania — processing ores produced in either Tasmania or imported from mainland Australia — will be influenced by the availability of energy at competitive prices. Tasmania has limited capacity to provide electricity to major new users such as mineral processing plants. Additional energy to support any expansion of mineral processing activities is likely to be obtained from the Basslink electricity cable, the proposed gas pipeline from Victoria or gas from the offshore Yolla field.

Most mineral processing facilities in the region are located in Bell Bay. Following the construction of a planned magnesium smelter, Bell Bay will be near its environmental limits for some air emissions and water supply, restricting future expansion of the industry at this site. Woodward-Clyde et al. (1999) found that Port Latta may be suitable for development as a new site for mineral and other processing activities because it is well located for many mining operations in the region and could be supplied with natural gas by pipeline from Bell Bay or the Yolla field.
Infrastructure, government services and approval processes

Existing mines have adequate infrastructure to meet current requirements. However, Woodward Clyde et al. (1999) reported that mining companies have identified the need for more competitive pricing of energy and transport, and for improved efficiency of the existing infrastructure through better coordination by the companies.

Woodward Clyde et al. (1999) recommended the following key action areas to support exploration and regional minerals development:

- encouraging exploration expenditure by increasing the standard of geoscientific data available to exploration companies, improving the presentation and promotion of the data and more actively marketing both the data and prospective exploration areas in the region;
- ensuring the provision of competitive energy;
- moving toward rezoning the Port Latta site for possible future industrial and minerals processing development;
- reducing industry costs through the coordinated use of infrastructure; and
- developing specific infrastructure for communications, transport, water and energy as industry development warrants.

Concerns have also been raised about the uncertainties of obtaining approvals for new mines in the region. Woodward-Clyde et al. (1999) suggest that an information program would be useful to respond to some of the concerns.

Central Pilbara, Western Australia

The Central Pilbara is located in the north west of Western Australia (map 5). The region extends from Newman in the south east to Paraburdoo and Tom Price in the west and close to Wittenoom in the north.

The Central Pilbara Infrastructure Planning Study was commissioned in November 1998 and a draft report of the study results (Dames and Moore 1999) was released in July 1999. Senator Minchin, Minister for the Commonwealth Department of Industry, Science and Resources, endorsed the study findings at a Central Pilbara principals’ committee meeting on 15 September 1999. The final report was released in March 2000 (Dames and Moore 2000).
The report contains 35 recommended actions with suggested areas of responsibility. The following discussion summarises key findings and recommendations made by Dames and Moore (1999).

**Mining and mineral processing potential**

The principal mineral resource of the Central Pilbara region is iron ore. The region produced an estimated 125 million tonnes of iron ore in 1996-97 (valued at over $3 billion) and accounts for around 95 per cent of Australia’s iron ore production. Based on Australian Bureau of Statistics census data, mining employment was an estimated 2018 people in 1996, accounting for about 38 per cent of regional employment.

The report contains iron ore mine development scenarios for each five year interval during the period 2000–15. Each five year period has three demand growth forecasts corresponding to possible low, high and expected demand growth cases. In preparing the mine development scenarios, Dames and Moore (1999) used information obtained from discussions with each of the
major companies, the Western Australian Department of Resources Development, publicly available production data, recent development proposals and media releases.

The period 2001–05 is projected to be one of significant mine development, especially on the eastern side of the Central Pilbara. Under the expected and high demand growth scenarios, no new mines are projected to be developed in the 2006–10 period; in the 2011–15 period, no new mines are projected to be developed in any of the demand growth scenarios. Iron ore production is projected to be around 210 million tonnes in 2015.

Compared with the current situation of a few large, long term mining operations, there may be a move toward a larger number of smaller mines that have shorter production lives. These mines are likely to be more highly mechanised and automated, with a higher dependency on contract services support and long distance commuting of employees. Consequently, the permanent population of the region is likely to continue to decline.

Infrastructure, government services and approval processes

Dames and Moore (1999) found that all infrastructure services are either adequate for existing and projected mining industry requirements or at substantial surplus capacity (such as electricity and accommodation). An important infrastructure issue for iron ore companies and government is the increasing per person cost of supporting the existing townships and ancillary support services. Expansion of economic activities other than iron ore mining is therefore required to stabilise or expand the population, and to stimulate regional economic growth. Such economic activities include tourism, aquaculture and irrigated agricultural development.

Key recommendations in the study include:

• to provide a direct road link between Karratha and Tom Price (which is a project that has been identified as a priority in previous transport planning studies);

• to abandon the concept of either a new town or service centre in the Central Pilbara, because there is no requirement for it;

• given the national significance of the region’s biological reserves, to coordinate a regional environmental strategy for government and industry that will maximise the efficiency and effectiveness of inputs to environmen-
tal management and ensure that the study area’s environmental values are adequately conserved;

• to integrate available hydrogeological data to gain a regional perspective on groundwater resources within the region;

• to establish an overall strategic land use plan for the Central Pilbara to provide focus for future land use potential and assist development;

• to encourage nonmining economic activities, support existing towns and facilitate Aboriginal economic and community development;

• to examine the impact of fiscal policy on regional development; and

• to examine potential efficiency gains, including better coordination of local government services, of administering the Central Pilbara as a single locality (instead of the current administration by two local authorities).

There was a need to integrate available hydrographical data for the Central Pilbara to gain a regional perspective on groundwater resources within the region. Study recommendation 5 sought to address this issue and is being undertaken as a joint initiative by the mining industry, state and Commonwealth governments, with the Water and Rivers Commission as lead agency. Industry input is being coordinated through the Pilbara Iron Ore Environment Committee. The Commonwealth has contributed $30 000 toward the funding for this second stage study.

Specifically, the study will clarify the interaction between different aquifer systems within the study area, determine the potential cumulative impacts of existing and proposed future mining development on sensitive aspects of the environment and assess environmental water requirements of the surrounding environment.

The study commenced in September 1999 and is expected to be completed by June 2000. The March 1999 progress report provided by the Western Australian Department of Resources Development advises that all hydrogeological reports held by government and the iron ore industry have been reviewed. Base maps are being prepared for key areas. A first draft of a report by consultants on the identification of water dependent environmental values in the Pilbara has been reviewed.
Mid-West, Western Australia

The Mid-West region in Western Australia extends from Greenhead in the south to 50 kilometres north of Kalbarri, with its easternmost point located about 500 kilometres from the coast (map 6). The main regional centre is Geraldton, which is located about 400 kilometres north of Perth.

The Mid-West regional study was announced in November 1998 and a final report (SMEC 2000) was released in March 2000. The report contains 49 recommendations, with indicative timing and areas of responsibility. The following discussion summarises the key findings and recommendations in the report.

Mining and mineral processing potential

The principal mineral resources of the Mid-West region are gold, heavy mineral sands (titanium minerals and zircon), zinc, silver and copper. The value of regional mineral production was an estimated $0.9 billion in 1997-
98. Notably, the value of gold production was an estimated $0.5 billion in that year, accounting for around 56 per cent of regional mineral production.

The report presents, low, medium and high growth scenarios for regional mineral development. The most likely outcome is for relatively strong growth in the production of mineral sands and base metals, and some growth in gold production. The outlook for gold production is particularly uncertain; no major gold developments are planned for the region and, if gold prices decline, the eight mines in operation may be reduced to four over the next five years. However, some recovery in gold prices is assumed in the medium growth scenario, so mining operations recently placed on care and maintenance may be recommissioned.

Mineral processing in the region includes processing of heavy mineral sands, attapulgite, limesands and garnet. Western Mining Corporation has announced the planned construction of a processing facility at the Three Springs talc mine, which will produce products for export to Asia. SMEC (2000) suggested there is considerable potential for further processing given the region’s extensive mineral resources, potential access to low cost energy, proximity to Asian markets and potential deepwater ports.

Mineral processing opportunities that have been studied or considered include iron ore, titanium minerals, lead, ferro-vanadium and nickel. SMEC (2000) concluded there is considerable potential for iron and steel processing based on deposits within the Mid-West region, and some potential for iron and steel and petrochemical facilities based on raw materials from the Pilbara.

**Infrastructure, government services and approval processes**

Infrastructure projects already planned for the Mid-West region include the construction of east–west links, the southern port access corridor, and the new port and industrial area at Oakajee. SMEC (2000) found that significant further infrastructure would be required in the region only under the high growth scenario; there are no major infrastructure deficiencies for projected mining and mineral processing requirements.

The Mid-West region comprises the coastal sector in the west — which is a diverse and expanding area centred on Geraldton, and the declining eastern sector — which has been negatively affected by declining gold prices, a general rural downturn and expanding fly in–fly out activities. A theme of
the report’s recommendations is for the eastern sector to change its focus from Perth to Geraldton.

Native title was also found to be a key issue for mining in the region, resulting in costly delays through the approvals process and reportedly constraining the expansion of towns in the eastern sector. SMEC (2000) found that native title issues are delaying a number of mining tenement applications.

A key finding of the study is the need for improved coordination of initiatives in the region. SMEC (2000) found that the mining industry is affected by a wide range of government activities which require monitoring and coordination to maximise the benefits to the mining industry and the community. The key areas with potential for improved coordination are:

- the prioritisation of road improvements;
- transport policy implementation and review;
- energy and telecommunications infrastructure;
- the development of Geraldton as the regional focus;
- training issues; and
- the implementation of the study recommendations.

Many of the recommendations in the report are ongoing and long term, so SMEC (2000) recommended the formation of a core implementation group (comprising representatives from key agencies and stakeholders involved in the region) to facilitate the required level of coordination.
A major part of the evaluation of the Regional Minerals Program is based on participant assessment of the program’s benefits and shortcomings, and their recommendations about its future. In this chapter, various aspects of the survey design are explained, including the questionnaire, the survey participants, the conduct of the survey, and the presentation of the results.

**Questionnaire**

The questionnaire (box 2) was designed to enable survey participants to provide feedback on the effectiveness of the Regional Minerals Program (based on the points covered in the terms of reference) and their recommendations for its future.

The questionnaire comprises seventeen questions (with parts to some questions) in two main sections. Questions 1–10 are all multiple choice: question 1 requires respondents to identify the regional study, and questions 2–10 require a grade based on 1 for very poor, 2 for poor, 3 for adequate, 4 for good, 5 for very good and 6 for not applicable. Questions 11–16 generally require respondents to provide brief comments. Question 17 is a requirement by the Commonwealth Government Statistical Clearing House to obtain an estimate of the time taken to complete the questionnaire.

The terms of reference are provided in chapter 1. The questions, or parts of questions, that relate to key aspects of the terms of reference are as follows:

- encouraging a coordinated Commonwealth government, state government and industry approach to minerals development — question 3;
- identifying the mineral resources and processing potential of selected regions — questions 4 and 5;
- assessing the infrastructure and government services of a region, and developing proposals to overcome any identified impediments — questions 6(a) and (b), 7(a) and (b) and 8(a) and (b);
- identifying ways in which to streamline approval processes — question 9;
The following set of questions was included in the survey of participants in the Regional Minerals Program. The Commonwealth Government Statistical Clearing House approval number 00490–01 was included on each page.

*If you have been involved in more than a single case study, please copy the questionnaire and complete questions 1 to 10 for each individual case study.*

**Part 1: Multiple choice questions. Please provide additional comments on any of these questions if you wish to do so.**

Q1. Please indicate which of the following Regional Minerals Program case studies you have been involved in:
   1. Central West, New South Wales
   2. Gawler Craton
   3. Central Pilbara
   4. Mid-West
   5. Western Tasmania

Please answer each of the remaining questions in part 1 of the questionnaire with a number based on the following scale:


Q2. How would you describe your knowledge of the Regional Minerals Program process in the selected region? _____

Q3. How effective has the Regional Minerals Program been in encouraging a coordinated Commonwealth, state government and industry approach to minerals development in the selected region? _____

Q4. How effective has the Regional Minerals Program been in identifying the mineral resources potential of the selected region? _____

Q5. How effective has the Regional Minerals Program been in identifying the mineral processing potential of the selected region? _____

Q6. How effective has the Regional Minerals Program been in assessing the infrastructure and government services of the selected region for:
   (a) the development of mineral resources? _____
   (b) the development of mineral processing potential? _____
   (c) broader regional economic development? _____

Q7. How effective has the RMP been in identifying impediments to the provision of infrastructure and government services of the selected region for:
   (a) the development of mineral resources? _____
Q8. How effective has the Regional Minerals Program been in developing proposals to overcome any identified impediments to the provision of infrastructure and government services of the selected region for:

(a) the development of mineral resources? ______
(b) the development of mineral processing potential? ______
(c) broader regional economic development? ______

Q9. How effective has the Regional Minerals Program been in identifying ways to streamline approval processes in the selected region. ______

Q10. Overall, how effective has the Regional Minerals Program been in meeting its objectives in the selected region? ______

Part 2: Please provide brief answers to the following questions

Q11. Do you think the Regional Minerals Program has contributed to the broader economic development of the selected regions? If so, in what way?

Q12. What have been the main identifiable benefits of the Regional Minerals Program?

Q13. What have been the main identifiable shortcomings, if any, of the Regional Minerals Program?

Q14. Do you see merit in the Regional Minerals Program continuing beyond 30 June 2000:

(a) in its current form? Y/N ______
(b) in some revised form? Y/N ______
(c) not at all? Y/N ______

Q15. If you answered yes to question 14(b), what modifications would you like to see made to the Regional Minerals Program?

Q16. Do you have any other comments that you would like to make about the Regional Minerals Program?

Q17. Please provide an estimate of the time taken to complete this questionnaire. (Include time spent reading instructions and preparing responses).

Minutes ______
• overall effectiveness of the Regional Minerals Program — questions 10, 12, 13 and 16;
• contribution to broader regional economic development — questions 6(c), 7(c), 8(c) and 11;
• future of the Regional Minerals Program — questions 14 and 15.

Survey participants
For each of the regional studies identified in chapter 2, a management commit-
tee was formed initially to select and brief the consultants, then to meet peri-
odically with the consultants to review the progress of the study. Each
management committee comprises representatives from the Commonwealth
government, the relevant state government and several mining companies
from the area. The project manager (a state government officer) provides
executive and administrative support to the management committee.

Although each regional study may have significant implications for regional
economic activity, management committee members from the area or state
are assumed to represent government departments or private companies that
are major users of the information and recommendations generated in each
study. Management committee members are also informed about the regional
studies, so are well placed to comment on the effectiveness of the Regional
Minerals Program.

The Commonwealth Government Statistical Clearing House must clear statis-
tical surveys conducted by, or on behalf of, the Commonwealth government
that involve fifty or more business participants. As part of this process, the
initial questionnaire was sent to a key participant in the Regional Minerals
Program for test purposes. The key feedback was that it would be difficult
to obtain meaningful information from participants in a regional study that
had only recently commenced (such as the Southern Cross–Esperance study
in Western Australia). Consequently, participants from the two recently
commenced regional studies, the Murray Basin and Southern Cross–
Esperance, were excluded from the survey. The Commonwealth Government
Statistical Clearing House approval number was 00490–01.

Management committee members for the five regional studies that had been
or were nearly completed at the time of the survey are listed in appendix A.
Excluding Commonwealth government representatives, 57 people make up
this group (with two people each being on two separate management commit-
tees). Three committee members have retired or left the organisation and
could be neither contacted nor replaced with an informed alternative from the same organisation — one person from the Central West (New South Wales), one from the Gawler Craton and one from the Central Pilbara. Thus there were 54 survey participants, ranging from seven for the Central West (New South Wales) to fourteen for both the Gawler Craton and Mid-West (Western Australia) (table 1).

The Gawler Craton Infrastructure Planning Group — comprising fourteen government representatives, mainly from South Australia — was initially considered for inclusion in the survey. However, it was judged to bias the survey results substantially toward both government representatives and the Gawler Craton regional study, so the group was excluded from the survey population.

**Survey sample**

The consultants received a total of 48 responses in the survey, representing 89 per cent of the survey participants (table 1). For individual regions, the response rate ranged from 71 per cent (or five people) in the Central West (New South Wales) to 100 per cent (or ten people) for Western Tasmania. The survey was completed on average in 22 minutes.

The Central West (New South Wales) was the least well represented of the regional studies, reflecting the relatively small size of its management committee and a lower response rate. The number of respondents in each regional

<table>
<thead>
<tr>
<th>Survey participants</th>
<th>Survey sample</th>
<th>Response rate</th>
<th>Average time to complete survey</th>
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</thead>
<tbody>
<tr>
<td>no.</td>
<td>no.</td>
<td>%</td>
<td>min.</td>
</tr>
<tr>
<td>Central West, New South Wales</td>
<td>7</td>
<td>5</td>
<td>71</td>
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<tr>
<td>Gawler Craton, South Australia</td>
<td>14</td>
<td>12</td>
<td>86</td>
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<tr>
<td>Western Tasmania</td>
<td>10</td>
<td>10</td>
<td>100</td>
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<tr>
<td>Central Pilbara, Western Australia</td>
<td>11</td>
<td>10</td>
<td>91</td>
</tr>
<tr>
<td>Mid-West, Western Australia</td>
<td>14</td>
<td>13</td>
<td>93</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>48</td>
<td>89</td>
</tr>
</tbody>
</table>

a Two people are each on two separate regional studies, so the total does not equal the sum of the regional studies. b Number of responses. c Survey sample as a percentage of survey population.

*Regional minerals program* 37
study as a share of the total number of respondents was 10 per cent for the Central West (New South Wales), and ranged from 20 per cent to 26 per cent for the other regions (figure A). Each respondent had at least an adequate knowledge of the Regional Minerals Program, with nearly three quarters indicating that they had either a good or very good knowledge of the program (figure B).

**Conducting the survey**

The survey was conducted during January and February 2000 mainly by email, which was the preferred choice of distribution because it is the most efficient form of communication. However, where an email address was not available, the survey was distributed by fax or, in a single case, by mail.
Telephone interviews were not conducted in the study because the response rate was expected to be relatively high; however, followup contact was made by telephone for participants who had not returned the questionnaire by the end of January.

**Reporting the survey results**

Survey participants were informed that their responses would be treated as confidential, with information provided only in aggregated form in the final report.

For questions 3–10 and 14, aggregate survey results by grade are presented in graphical form in chapter 4, and regional survey results by grade are presented in tables in appendix B. Average survey results for each regional study and in aggregate are also presented in tables in chapter 4. The Wilcoxon test has been applied to selected pairs of questions to test whether there is a statistically significant difference in the mean responses to the questions. A description of the Wilcoxon test and the results are presented in appendix C.

For other questions in part 2 of the questionnaire — questions 11, 12, 13, 15 and 16 — responses are in the form of brief answers. Summaries of the responses and examples of comments in some cases are provided in chapter 4.
Survey results

The Regional Minerals Program survey results are presented in this chapter, as they relate to the study’s terms of reference outlined in chapter 3. Responses to questions 3–10 take the form of a rating from 1 to 5, indicating a performance assessment that ranges from very poor to very good respectively, or ‘not applicable’. Respondents main reasons for giving a ‘not applicable’ rating were that they did not know or felt it was too early to make an assessment.

Except for question 14 which requires a recommendation on the program’s future, the responses to questions 11–16 take the form of brief answers. In this chapter, these comments are either summarised or quoted to provide a representative overview of the responses. Some of the shortcomings identified by respondents are outside the terms of reference of the regional studies, but are nevertheless indicative of significant issues for the exploration, mining and mineral processing industries in the selected regions. The discussion in this chapter attempts to cover the full range of comments made by respondents; further discussion of these responses is provided in chapter 5.

Encouraging coordination between government and industry

The most common response to question 3 on the effectiveness of the Regional Minerals Program in encouraging a coordinated Commonwealth government, state government and industry approach to regional minerals development was good, with 46 per cent of respondents in this category (figure C).

The average response was 3.9, and the range of the responses was from poor (8 per cent) to very good (24 per cent of respondents).

Responses varied somewhat across regional studies (tables 2 and 9).

<table>
<thead>
<tr>
<th>Region</th>
<th>Average response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central West, New South Wales</td>
<td>4.3</td>
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<tr>
<td>Gawler Craton, South Australia</td>
<td>3.9</td>
</tr>
<tr>
<td>Western Tasmania</td>
<td>4.0</td>
</tr>
<tr>
<td>Central Pilbara, Western Australia</td>
<td>3.8</td>
</tr>
<tr>
<td>Mid-West, Western Australia</td>
<td>3.9</td>
</tr>
<tr>
<td>Total</td>
<td>3.9</td>
</tr>
</tbody>
</table>
Excluding the ‘not applicable’ category, respondents indicated coordination was either good or very good in the Central West region of New South Wales. All the respondents who indicated a poor level of coordination were from the Gawler Craton or the Central Pilbara.

Identifying mineral resource and processing potential

The survey results indicated the Regional Minerals Program overall might have been marginally more effective in identifying regional mineral resources potential (question 4) than in identifying mineral processing potential (question 5), although these differences were not statistically significant at the 5 per cent level (appendix C).

The most common response on the effectiveness of the program in identifying regional mineral resources potential was good, with 36 per cent of respondents in this category (figure D). This compares with 38 per cent and 36 per cent of respondents who indicated an adequate and good performance respectively in identifying regional mineral processing potential (figure E). The average response for questions 4 and 5 was 3.7 and 3.5 respectively (table 3).
A larger proportion of respondents indicated a very good performance in identifying mineral resources potential (20 per cent) than in identifying mineral processing potential (12 per cent). In aggregate, 10 per cent and 8 per cent of respondents indicated a very poor or poor performance in identifying regional mineral resource and processing potential respectively; these respondents were from the Gawler Craton, Western Tasmania or Central Pilbara (tables 10 and 11 in appendix B).

One respondent included in the ‘not applicable’ category for question 4 did not provide any rating but commented that it was a difficult question to answer because detailed geological survey and corporate exploratory work is required to identify the mineral resources potential of a selected region.
Infrastructure and government services

The survey results for questions 6, 7 and 8 on regional infrastructure and government services indicate that the Regional Minerals Program might have been marginally more effective in analysing requirements for the development of mining activity, than in analysing those for mineral processing activity. However, as for questions 4 and 5, these differences are not statistically significant at the 5 per cent level (appendix C).

The survey results also indicate that the program might have been slightly more effective in assessing regional infrastructure and government services required for future development, than in identifying impediments to the provision of these services and particularly in developing proposals to overcome any identified impediments. Based on the Wilcoxon test results in appendix C, most of these differences are statistically significant at the 5 per cent level.

Assessing infrastructure and government services

The average response for the questions on assessing infrastructure and government services required for mining (question 6a) and mineral processing activity (question 6b) was 4.1 and 3.8 respectively (table 4). The most common response in each case was good, with 50 per cent and 54 per cent of respondents in this category for mining and mineral processing activity respectively (figure F).

A higher proportion of respondents indicated a very good performance for the infrastructure and government services required for mining activity (28

<table>
<thead>
<tr>
<th></th>
<th>6(a)</th>
<th>6(b)</th>
<th>6(c)</th>
</tr>
</thead>
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<tr>
<td>Central West, New South Wales</td>
<td>4.6</td>
<td>4.2</td>
<td>4.5</td>
</tr>
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<td>Gawler Craton, South Australia</td>
<td>4.3</td>
<td>4.0</td>
<td>3.8</td>
</tr>
<tr>
<td>Western Tasmania</td>
<td>3.4</td>
<td>3.7</td>
<td>3.0</td>
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<td>Central Pilbara, Western Australia</td>
<td>3.9</td>
<td>3.4</td>
<td>3.9</td>
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<td>Mid-West, Western Australia</td>
<td>4.2</td>
<td>4.0</td>
<td>3.8</td>
</tr>
<tr>
<td>Total</td>
<td>4.1</td>
<td>3.8</td>
<td>3.7</td>
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</table>

Regional minerals program 43
Total survey results for question 6 – assessing infrastructure and government services

<table>
<thead>
<tr>
<th></th>
<th>(a) For development of mineral resources</th>
<th>(b) For development of mineral processing potential</th>
<th>(c) For broader regional economic development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable</td>
<td>Very poor</td>
<td>Poor</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td></td>
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<td></td>
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<tr>
<td>Poor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very poor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

ABARE research report 2000.5
per cent) compared with those required for mineral processing activity (16 per cent). In addition, a slightly smaller proportion of respondents indicated a poor performance for mining activity requirements (2 per cent) compared with mineral processing activity requirements (4 per cent), these respondents were from the central Pilbara (table 12 in appendix B).

**Identifying impediments**

For the questions on the effectiveness of the program in identifying impediments to the provision of regional infrastructure and government services required for mining (question 7a) and mineral processing activity (question 7b), the average response was 3.7 and 3.6 respectively (table 5). The most common response in each case was good, with 50 per cent and 56 per cent of respondents in this category for mining and mineral processing respectively (figure G).

As in the previous case, a higher proportion of respondents indicated a very good performance in identifying impediments relating to mining activity (14 per cent) compared with identifying those relating to mineral processing activity (6 per cent). A smaller proportion of respondents also indicated a poor performance for mining activity (8 per cent) compared with mineral processing activity (10 per cent); these respondents were from all regional studies except the central west (New South Wales) (table 13 in appendix B).

**Developing proposals**

The average response for the questions on the effectiveness of the program in developing proposals to overcome any identified impediments to regional

<table>
<thead>
<tr>
<th>Average results for question 7 – identifying impediments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average response</td>
</tr>
<tr>
<td>7(a)</td>
</tr>
<tr>
<td>no.</td>
</tr>
<tr>
<td>Central West, New South Wales</td>
</tr>
<tr>
<td>Gawler Craton, South Australia</td>
</tr>
<tr>
<td>Western Tasmania</td>
</tr>
<tr>
<td>Central Pilbara, Western Australia</td>
</tr>
<tr>
<td>Mid-West, Western Australia</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

`Regional minerals program`
Total survey results for question 7 – identifying impediments in the provision of infrastructure and government services

(a) For development of mineral resources

(b) For development of mineral processing potential

(c) For broader regional economic development
infrastructure and government services for mining (question 8(a) and for mineral processing activity (question 8(b) was 3.4 and 3.3 respectively (table 6). The most common response in each case was adequate, with 42 per cent and 50 per cent of respondents in this category for the questions of mining and mineral processing activity respectively (figure H).

A higher proportion of respondents indicated a good or very good performance in developing proposals relating to infrastructure and government services required for mining activity (40 per cent) compared with developing proposals relating to infrastructure and government services for mineral processing activity (32 per cent). In addition, a slightly smaller proportion of respondents indicated a poor performance for the question on mining activity (12 per cent) compared with that on mineral processing activity (14 per cent); these respondents were from all regions except the Mid-West of Western Australia (table 14 in appendix B).

### Streamlining approval processes

The average response to question 9 on the effectiveness of the Regional Minerals Program in streamlining approval processes was 2.9 (table 7), below the average responses for all other questions. Based on the Wilcoxon test results reported in table 18 in appendix C, the average response to question 9 was significantly lower than the average responses for all questions relating to infrastructure and government services, except for the question on developing proposals relating to mineral processing (question 8b).
Total survey results for question 8 – developing proposals relating to the provision of infrastructure and government services

(a) For development of mineral resources

- Very good: 6%
- Good: 0%
- Adequate: 12%
- Poor: 42%
- Not applicable: 30%
- Very poor: 10%

(b) For development of mineral processing potential

- Very good: 4%
- Good: 0%
- Adequate: 14%
- Poor: 24%
- Not applicable: 8%
- Very poor: 50%

(c) For broader regional economic development

- Very good: 8%
- Good: 0%
- Adequate: 14%
- Poor: 24%
- Not applicable: 4%
- Very poor: 50%
The most common response to question 9 was adequate, with 30 per cent of respondents in this category (figure 1). In aggregate, 22 per cent of respondents indicated a good or very good performance, and 26 per cent of respondents indicated a poor or very poor performance.

The average responses for each regional study (table 2) indicated some regional variation in the program’s assessed effectiveness in streamlining approval processes. The average responses for western Tasmania and the Central Pilbara were 1.8 and 2.6 respectively compared with 3.0–3.3 for the other regions. However, at least one respondent from each of the five regional studies indicated a very poor or poor performance in this aspect of the program (table 15, appendix B).

Benefits and shortcomings

Survey respondents commented on the benefits (including the contribution to broader regional economic development), shortcomings and overall effectiveness of the Regional Minerals Program in their answers to questions 10–13. These comments are summarised in this section.
Benefits

The regional studies are reported to be an important guide to the government on the needs of industry and the community in regional Australia. Some respondents noted that the Regional Minerals Program has increased government and regional community awareness of the benefits of the mining industry. A respondent noted that a major benefit of the program is that it has provided a focus for assessing mineral resources and processing potential and related infrastructure requirements from a regional perspective.

Several respondents indicated that the regional study provided a good overview of the area, and identified and documented useful material for industry and government. One respondent noted that some of this information was obtained from government files and was not normally readily accessible. Some respondents indicated that this information would be particularly useful in the future for companies entering the region for the first time.

Some respondents noted that issues pertaining to a particular region were identified with consultations or input from all participants in the area, and that the strategies were similarly developed. Several respondents indicated that the Regional Minerals Program brought industry and federal, state and local government representatives together for common goals, and increased cooperation and coordination among participants in the study. An example given for the Central Pilbara is the sharing of environmental information between companies participating in the study. Both industry and government are reported to have gained a greater understanding of the constraints and opportunities for regional mineral resource development.

Several respondents noted that the regional studies identified infrastructure deficiencies and other impediments to mineral resource development, and provided a list of prioritised projects that would benefit the region. (Regional economic benefits are discussed separately below.) Some respondents noted that a major benefit of the Regional Minerals Program was the ability to produce a concise report on key deliverables, responsible agencies and time-frames. One respondent indicated that the regional study provided a ‘reality check’ on the scope for value adding or downstream processing in the region. It was also noted that the studies were useful in identifying the need to undertake further work on key regional development issues.

Implementation of the recommendations of the regional studies is argued to be necessary to achieve many benefits of the program, for example:
'Because of the inclusive and comprehensive planning process adopted in these studies, the outcomes have the potential to be important guides to government on the needs of industry and the broader community in regional Australia. The critical issue is the acknowledgment that the study does not finish at the report stage. Unless the outcomes are recognised and acted upon by both the federal and state government, the value of the studies is limited.' (Central Pilbara, Western Australia)

Some respondents indicated that there may be benefits from the information and recommendations in the regional studies over time but only if, for example, there are significant mineral discoveries, mineral prices rise, or broader issues (such as native title) are addressed that alter the economics of mining in the region.

One respondent indicated that the Regional Minerals Program has resulted in a greater understanding of geoscience and thus mineral prospectivity. Some respondents noted that a benefit of the program was that it confirmed that there are deficiencies in the provision of geological data for precompetitive tendering.

**Contributing to regional economic development**

The aggregate survey results for questions on the program’s effectiveness in assessing infrastructure and government services, identifying impediments, and developing proposals for broader regional economic development are presented in figures F, G and H respectively. In each case, the average response was not significantly lower than the corresponding average response for mineral processing (table 18 in appendix C).

Consistent with the results for questions on mineral processing, the average response for the program’s effectiveness in developing proposals relating to infrastructure and government services for broader regional economic development (question 8c) was significantly lower than the average response for either assessing infrastructure and government services (question 6c) or identifying impediments (question 7c).

In their answers to question 11, survey respondents provided comments on the contribution of the Regional Minerals Program to broader regional economic development. The following discussion summarises these comments.
One respondent indicated that the regional studies identified the likely long

term contribution of the mining and mineral processing industries to regional
economic development. More generally, the basis of several responses was
that any information or recommendations in the regional study reports that
facilitate exploration, mining or mineral processing activities are also likely
to contribute to regional economic growth through flow-on (or multiplier)
effects.

Some respondents indicated that the Regional Minerals Program initiated
communication across all levels of government and industry in the area. As
part of this process, both government and industry were reported to have
gained a greater understanding of the constraints and opportunities for
regional economic development. Several respondents noted that the regional
studies identified infrastructure deficiencies and other impediments to mineral
resource development that are also relevant to other industries. The follow-
ing were cited examples.

- The regional study for the Central West of New South Wales alerted the
mining industry to the high priority of managing scarce water resources
in the region, and of planning new developments to reduce water use to
an absolute minimum. It prompted various levels of government to exam-
ine the relative returns on water used by the agricultural and mining indus-
tries.

- The regional study for the Gawler Craton enabled essential preinvestment
infrastructure investment and planning to occur under government auspices,
which the private sector may not have done until later, if at all.

- The regional study for Western Tasmania identified, and made recom-
mendations on, Port Latta as a multi-industry site for development in the
future.

- The regional study for the Central Pilbara emphasised the need to diver-
sify the region’s economic base, and identified several areas (such as
tourism and agriculture) that may contribute to regional economic and
population growth.

- The regional study for the Mid-West of Western Australia identified key
issues or projects — such as the need for transport and services corridors
to link coastal facilities with inland mineral areas — that are important in
realising the region’s economic potential.

Several respondents indicated that it was either too early to comment or there
was no evidence that the program had contributed to regional economic devel-
opment. Some respondents indicated that the program would have regional economic benefits only after the implementation of recommendations. The following is an example of such a response:

‘The Central Pilbara study covered this issue very creatively and thoroughly. It presented a number of good proposals to broaden the economic base of the study area. Given that the study has just been completed, the extent to which those proposals are acted on by the relevant authorities will determine the outcome of the study and the contribution to the broader economic development.’

Other respondents indicated that there may be benefits from the program over time — for example, if there are significant mineral discoveries, if mineral prices rise, or if broader issues (such as native title) are addressed and thus alter the economics of mining in the region. It was noted that some benefits may depend on the extent to which the information contained in the regional studies is disseminated. Some benefits of the Mid-West, Western Australia study, for example, may depend on whether the message that Geraldton can benefit more as a regional centre reaches business people in that town.

However, one respondent indicated the Central Pilbara study may not have a significant impact on the region because the broader Pilbara issues were not addressed.

Four respondents indicated the Regional Minerals Program has not contributed to broader economic development as the regional studies tended to focus on the mineral resource potential of the area and the infrastructure required to allow the development of those resources. A small number of respondents indicated they either had no comment or did not know.

**Shortcomings**

Many respondents indicated that the program has no shortcomings, or none of any substance. While not shortcomings as such, several respondents stressed the importance of implementing recommendations and maintaining communication between various government departments and industry representatives. Others argued that the program has inadequately assessed broader issues such as native title and taxation issues which are seen as the major impediments to progress, although it should be noted that such issues are outside the scope of the regional studies.
Some respondents indicated a need to broaden the focus or objectives of the regional studies to include other industries or other regions. A small number of respondents regarded the timing of the study as an issue, although there was no consensus within this group on the most effective timing for regions that are at different stages of mineral development. In other comments, some respondents argued that the program is flexible and that outcomes may be expected to vary between regions.

Related to the timing issue, access to information, knowledge about the mineral resources in the region, and the provision of geoscientific data were also issues for some respondents. Several respondents commented on the breadth of experience and knowledge of the consultants or the composition of the management committees. The relative expertise of some consultants is reported to have been in infrastructure assessments and regional planning rather than mining, which placed greater importance on the information and direction provided by management committees in this area.

Some respondents focused on the need to liaise more with industry in the initial stages, and to disseminate the study results.

**Overall effectiveness**

In response to question 10 on the overall effectiveness of the Regional Minerals Program, 88 per cent of respondents indicated that the program’s performance was adequate or better (figure J). Only 6 per cent indicated a poor performance. No respondents gave the program a very poor performance rating. The average response for the overall effectiveness of the program was 3.7 (table 8).

The three respondents who indicated a poor performance were from either the Gawler Craton or the Central Pilbara (table 16 in appendix B). However, one respondent from the Gawler Craton, together with respondents from the Central West (New South Wales) and the Mid-West (Western Australia), indicated a very good performance. The average responses for the regional studies were 3.4 for Western Tasmania and

<table>
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<tr>
<th>Average results for question 10 – overall effectiveness</th>
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<tbody>
<tr>
<td><strong>Average response</strong></td>
</tr>
<tr>
<td>Central West, New South Wales</td>
</tr>
<tr>
<td>Gawler Craton, South Australia</td>
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<td>Western Tasmania</td>
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<tr>
<td>Central Pilbara, Western Australia</td>
</tr>
<tr>
<td>Mid-West, Western Australia</td>
</tr>
<tr>
<td>Total</td>
</tr>
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</table>
the Central Pilbara, 3.6 for the Gawler Craton, 4.0 for the Mid-West (Western Australia) and 4.2 for the Central West (New South Wales).

**Proposed modifications**

In response to question 14, 90 per cent of respondents indicated there is merit in continuing the Regional Minerals Program either in its current form (46 per cent) or in some revised form (44 per cent) (figure K). One respondent indicated the program should not continue, while a further 4 respondents did not indicate a clear preference and were placed in an ‘other’ category (table 18 in appendix B). One respondent in this ‘other’ category suggested that regional studies should be undertaken only following the discovery of mineral deposits in the selected region.
Some respondents indicated that it was too early to suggest modifications, and that the program should be viewed as an evolving process. However, other respondents suggested a range of modifications, largely reflecting their comments on the program’s shortcomings.

Several respondents indicated that followup is needed, through implementing recommendations, undertaking detailed studies and specific projects, obtaining agreement on a long term development strategy, or committing to a revision or update of the regional studies in three to five years. One respondent suggested that the Regional Minerals Program process should include a mechanism whereby the study recommendations and their implementation or otherwise are regularly formally reviewed over the next five to ten years.

Several respondents commented on aspects of the scope of the regional studies — for example, developing the terms of reference for each regional study in consultation with local stakeholders; increasing the emphasis in the terms of reference on mineral processing, transport issues or synergies between mineral and agricultural infrastructure requirements; identifying a broader study area; or covering specific recommendations on native title and other impediments to exploration and mining activity. A related suggestion was to focus more on geoscience data collection priorities (such as type of data and the area over which to collect data), which would then need a commitment to fund data collection.

One respondent suggested undertaking a regional study only when significant discoveries are made in a region. Another respondent suggested trialing an alternative study whereby the obstacles to progressing an existing project are analysed with the objective of getting the project ‘off the ground’. One respondent suggested taking a broader approach in regions with substantial existing minerals industries to determine the reasons for reduced growth or the lack of mineral industry development in the region.

One respondent indicated that reports should be written in a consistent way, with outcomes that can be compared across regions. A further suggestion was to modify the fee structure to encourage consultants to make proactive recommendations for change. One respondent stated that consultants should be required to have a demonstrated robust understanding of the Australian minerals industry and the primary political and economic factors affecting its continued growth. One respondent commented that the study has taken too long to be completed.
Other comments

Question 16 provided respondents with the opportunity to make other comments about the Regional Minerals Program. These comments often provided a useful overview of participants’ key points, for example:

‘A very useful collaboration between the minerals industry and two levels of government, aided by excellent consultants.’ (Gawler Craton, South Australia)

‘I think the concept is good but underfunded and too slow. It should also be updated on a regular basis (for example, eighteen months). Presently no funding is provided to my knowledge for this purpose. Maximum use of user friendly electronic reporting and data provision should be made.’ (Gawler Craton, South Australia)

‘Good concept. Outcomes will vary from region to region — that is okay.’ (Western Tasmania)

‘The Regional Minerals Program process should continue to facilitate synergies between players in the industry.’ (Western Tasmania)

‘It was well managed due both to the organisation direction of the management committee and to the enthusiasm and hard work of the secretariat.’ (Western Tasmania)

‘The government focus on regional growth and development is good. Studies should not be conducted in isolation. All stakeholders must be part of setting the initial project scope. The early involvement will increase the potential for success or highlight key issues and contributors.’ (Central Pilbara, Western Australia)

‘It is providing useful additional information about the regions and is a beneficial forum in which to hear about industries’ requirements.’ (Central Pilbara, Western Australia)

‘Generally a worthwhile exercise. Need for provision for implementation.’ (Central Pilbara, Western Australia)

‘The Regional Minerals Program process should include a mechanism whereby at regular intervals over the next five to ten years the study recommendations and their implementation or otherwise, are formally reviewed.’ (Central Pilbara, Western Australia)
‘A very good concept. Relies on the skills of the chosen consultants to map available intelligence of a region. Also requires follow up to ensure that required action takes place.’ (Mid-West, Western Australia)

‘A good mechanism for politicians/government to find out what the real priorities are, rather than rely on government department thinking, statistics, budgets.’ (Mid-West, Western Australia)
Discussion

The Regional Minerals Program is a policy initiative that aims to provide information to public and private sector decision makers, particularly on the provision of infrastructure and government services required to facilitate regional minerals development. The costs of obtaining this information are largely incurred during the program’s implementation, but the main benefits are likely to be realised over time as recommendations are implemented.

In this chapter, the objectives of the Regional Minerals Program are discussed, the program’s costs and effectiveness are examined, and its possible future directions are identified.

An ongoing role for a Regional Minerals Program?

A major objective in the Regional Minerals Program is to assess the infrastructure services required for minerals development in selected regions. Mineral resource development comprises exploration, mining and mineral processing activities. Both economic and social infrastructure services need to be considered in the assessment, whereby:

- **economic infrastructure** includes the physical networks and facilities that provide electricity, gas, water, transport and communication services; and
- **social infrastructure** includes educational and health facilities, and other public buildings and places (such as government offices, fire and police stations, public housing, child care facilities, libraries and parks).

A key role of government is to ensure the provision, either directly or through private supply, of efficient economic and social infrastructure (subject to budgetary and other constraints) to complement private sector economic activities and to ensure people have access to a reasonable level of infrastructure services.

Narrowly defined, the Regional Minerals Program aims to assess infrastructure services at two levels — first, the provision of economic infrastructure services for exploration, mining and mineral processing activities and, second, the provision of services for the workforce and their families.
The implications of mineral resource development for other economic activities, such as retail trade, also need to be taken into account.

The economic and social infrastructure requirements of mineral resource projects vary substantially according to the location and nature of the developments. There are four basic worker settlement options in mining (described in Hogan, Berry and Thorpe 1999), including:

- expansion of existing settlements;
- construction of new single company mining towns;
- construction of new central mining towns; and
- long distance commuting or fly in – fly out operations.

Mineral processing may be located at the mine site or in some other location with cost effective access to key inputs such as labor, energy and transport. The type of mining and mineral processing activities likely to be developed in particular regions will have implications for longer term regional infrastructure planning. Identifying the mineral resource and processing potential of selected regions is therefore an important objective in the Regional Minerals Program.

Other key program objectives are to identify and develop proposals to remove impediments in the provision of infrastructure and government services, and to streamline approval processes. These objectives aim to achieve greater efficiencies in the provision of services and reduce administrative costs — that is, to achieve a given level of services at least cost.

From an economic perspective, the objectives in the Regional Minerals Program appear to be consistent with identifying least cost policy options to facilitate regional mineral resource and processing development.

**Costs**

The Commonwealth government committed $1.2 million to the Regional Minerals Program in the 1996-97 budget, for the period August 1996 to June 2000. Seven regional studies will have been funded under the program, although details of funding arrangements for each study are unavailable. Initially, the program objective was to provide Commonwealth government funding of up to $300 000 for each regional study, with complementary
funding of around equal proportions to be provided by state governments and industry (Parer 1996a).

Industry typically comprises several mineral resource companies that have actual or prospective interests in the selected region. For the Central West (New South Wales) study, for example, the Commonwealth government, the New South Wales government (Department of State and Regional Development) and a group of mining companies — Alkane Exploration, Girilambone Copper Company, Hargraves Resources, Newcrest Mining, North Limited, Pasminco Elura and Rio Tinto — provided equal funding (Dames and Moore 1998).

Most regional studies reported that the main source of state funding has been the relevant mineral resources department in the corresponding state government. State government and industry have also contributed to the process by providing ‘in kind’ support for studies, in the form of geoscientific data, maps and meeting venues.

Overall effectiveness and future directions
A major part of the evaluation of the Regional Minerals Program is based on the assessment of participants in the five regional studies that had been or were nearly completed at the time of the survey. Although each regional study may have significant implications for regional economic activity, management committee members from the area or state are assumed to represent government departments or private companies that are major users of the findings and recommendations in each report.

Given the role of management committee members in overseeing the regional studies, they are well placed to comment on the program’s effectiveness, and to provide recommendations about its future. The questionnaire distributed to management committee members was designed to address the specific issues outlined in this study’s terms of reference (chapters 1 and 3). The detailed survey results are discussed in chapter 4.

Of the 48 survey respondents (representing 89 per cent of the available management committee members), 10 per cent rated the performance of the Regional Minerals Program as very good, and a further 52 per cent and 26 per cent gave a good and adequate performance rating respectively. Only 6 per cent of respondents indicated that the program’s performance has been poor.

Regional minerals program

61
However, there were statistically significant differences in the average responses on particular aspects of the program’s performance. The program was rated as having performed relatively well at encouraging a coordinated approach to regional minerals development by Commonwealth, state and territory and local governments and industry, and also at assessing the infrastructure and government services required for the development of mineral resources and processing potential.

Notably, the program was considered to have been significantly more effective in assessing regional infrastructure and government services than in identifying impediments to the provision of these services and particularly in developing proposals to overcome any identified impediments for either industry or broader regional economic development. The program’s effectiveness in streamlining approval processes, while assessed to be adequate, also tended to be below the performance rating achieved in other areas.

There was some regional variation in assessments of the effectiveness of the program. It should be noted, however, that a regional comparison of survey results needs to be interpreted with some caution, given the relatively small number of respondents for each region. The effectiveness of the program in the Central West, New South Wales region was ranked highest, followed by the Mid-West in Western Australia, the Gawler Craton and, finally, with an equal overall ranking, Western Tasmania and the Central Pilbara.

All regions were assessed to have performed consistently well in encouraging coordination between government and industry. The Central West, New South Wales and Mid-West, Western Australia regions tended to outperform other regions in identifying the mineral resources and processing potential of selected regions. Together with the Gawler Craton, these regions outperformed Western Tasmania and the Central Pilbara in both infrastructure assessments and identifying ways to streamline approval processes. Notably, the performance of the Western Tasmania regional study in identifying ways to streamline approval processes was assessed by survey respondents to have been poor.

Ninety per cent of survey respondents indicated that there is merit in continuing the Regional Minerals Program either in its current form or some revised form beyond 30 June 2000. The program also has broader support. In August 1999, ANZMEC ministers wrote to Senator Minchin, Commonwealth Minister for Industry, Science and Resources, acknowledging the benefits that have resulted from the Regional Minerals Program and seeking a
continuation of it beyond June 2000. There are several issues to consider in assessing future directions for the program.

There is considerable diversity in the regions selected for assessment under the Regional Minerals Program. (See chapter 2 for a summary of the key findings and recommendations of five regional studies.) The regions vary in terms of mineral prospectivity, mining and mineral processing operations, and availability of economic and social infrastructure services. Legislative and administrative arrangements, including approval processes, also vary among states and territories.

The key issues for future regional minerals development will therefore vary across regions and over time. The Regional Minerals Program needs to target the key issues for the selected region, and to choose participants (management committee members and consultants) with an appropriate mix of skills and knowledge who can effectively contribute to the analysis of these issues.

Relevant examples cited by survey respondents are the initial lack of recognition of the importance of mineral processing activities (Mid-West, Western Australia), or a bias in the composition of the management committee toward a particular skill set or knowledge base — for example, the emphasis on exploration (Gawler Craton, South Australia). This becomes a more significant issue if the selected consultants are relatively experienced in broader infrastructure planning and development assessments but less experienced in exploration, mining and mineral processing activities for example.

To achieve a higher level of consistency in the effectiveness of the Regional Minerals Program in selected regions, there is a need in future studies:

- to ensure comprehensive pre-planning for each regional study (including an assessment of critical issues for the exploration, mining and mineral processing industries in the region), taking into account the implications for regional economic development, to provide better representation of relevant organisations/skills on the management committees and better focus for the consultants’ reports; and

- to ensure comprehensive briefing of management committee members, to facilitate understanding of the program’s objectives in the selected region, including recognition of the issues outside the terms of reference (although the program is potentially a useful framework to enable participants to inform Commonwealth and state governments about regional perspectives on broad economic and policy issues).
Related to these aspects of the regional studies, survey respondents suggested that increased liaison with local and regional stakeholders, and greater initial marketing to exploration and mining companies in the area, would enhance the program’s effectiveness.

In addition, there is scope to provide greater explicit recognition of the role of local governments in regional economic planning and development, by including reference to local governments in the stated objectives of the Regional Minerals Program (as well as differentiating states and territories) and ensuring representation of local governments on management committees.

The program has been significantly less successful in streamlining approval processes than in most aspects of assessing infrastructure and government services for regional minerals development. One approach to improve the program’s effectiveness in this area is to advise future management committees and consultants to assess these issues in more detail than has occurred in the past. An alternative approach is to conduct two separate studies for each selected region, to enable consultants to focus on streamlining approval processes independently of issues about infrastructure and government services.

In assessing future directions for the program, several respondents did not provide specific suggestions but recommended an evolving process. This study, which attempts to collect, organise and disseminate the feedback of experienced management committee members, represents part of such a process. Similarly, the dissemination of reports released in each regional study is an important component of this learning process, contributing to increased knowledge about both the specific region and the assessment methods.

An important aspect of the program is that it is creating a set of regional reports that represents a substantial information base on regional infrastructure planning and development options, with particular relevance for mining and mineral processing industries. This information may be used to facilitate regional minerals development through the implementation of recommendations, or simply progress future regional studies. Several respondents argued for the implementation of study recommendations and the introduction of regular formal reviews to monitor progress in the selected regions.
Conclusion

An evaluation of the Regional Minerals Program requires a comparison of the actual and expected costs and benefits. In the 1996-97 budget, the Commonwealth government committed $1.2 million to the program over a four year period, with approximately equal funding from state governments and industry. The main outcomes from the program to date have been a series of reports from five regional studies. Some progress has been achieved in implementing their recommendations. The program’s main benefits are likely to be realised in the future as the implementation of recommendations progresses.

Overall, the Regional Minerals Program is a comparatively low cost policy initiative that has been effective in achieving its stated objectives. Ninety per cent of survey respondents indicated that there is merit in continuing the program either in its current form or some revised form beyond 30 June 2000.

Streamlining approval processes is a key potential area for increasing the effectiveness of the program. In considering future directions for the program, many respondents commented on the initial or final stages of each regional study. Important issues in the initial stages include identifying key regional issues in the detailed terms of reference, selecting and briefing management committee members and consultants, and liaising with local and regional stakeholders. Important considerations in the final stages include disseminating regional reports, implementing recommendations, undertaking follow up detailed studies and specific projects, and introducing formal reviews of progress for a period after the completion of each regional study.
Management committee members in the Regional Minerals Program

In this appendix, management committee members and their affiliations are listed for each of the seven regional studies undertaken as part of the Regional Minerals Program. For each management committee, where appropriate, members are listed in order of chair, project manager, other state government representatives, Commonwealth government representatives, local and regional organisations, industry associations, and private companies associated with regional exploration, mining and/or mineral processing activities.

Central West, New South Wales

Lindsay MacAlister Chair
Denis Casey Project Manager, New South Wales Department of Mineral Resources
Graeme Varcoe New South Wales Department of State and Regional Development
Les Craig Commonwealth Department of Industry, Science and Resources
Geoff Cullen Newcrest Mining
Barry Deans Girilambone Copper Company
John Dini Pasminco Elura Mine
Tim McConachy Rio Tinto Exploration
Geoff Meates Peak Hill Gold

Gawler Craton, South Australia

Roger Goldsworthy Chair
John Fargher Project Manager, Primary Industries and Resources, South Australia
Les Craig Commonwealth Department of Industry, Science and Resources
Bob Goreing South Australian Chamber of Mines and Energy
Neill Arthur Aulron Energy (formerly Meekatharra Minerals)
Andrew Beckwith Acacia Resources
Derek Carter Minotaur Gold
Alan Downie Normandy Mining
Richard Elson MIM Exploration
Jerome Gillman Gawler Joint Ventures
Rodolfo Gomez RMG Services
Kate Hobbs Grenfell Resources
Norman Kennedy Goldsearch
John Parker Equinox Resources
Keith Yates Adelaide Resources
Richard Yeeles Western Mining Corporation (Copper Uranium)

**Western Tasmania**
Robert Calvert Chair, Caterpillar Elphinstone
Carol Bacon Project Manager, Mineral Resources Tasmania
Tony Brown Mineral Resources Tasmania
Rod Shaw Commonwealth Department of Industry, Science and Resources
Terry Long Tasmanian Minerals Council
Bill Colvin Goldfields (Tasmania)
Graham Hawes Pasminco
Angus Guthrie Boral Energy Resources
Christopher Laughton Golden Triangle Resources
Greg Marshall Western Metals Resources
Andrew Wilson Metair

**Central Pilbara, Western Australia**
Peter Ellery Chair, Peter Ellery and Associates
Mary Durack Project Manager, Department of Resources Development, Western Australia
Mike Allen Ministry for Planning
Ron Payne Department of Transport, Western Australia
Tim Glenister Main Roads, Western Australia
Karen Powell Commonwealth Department of Industry, Science and Resources
David Carey Shire of Ashburton
Allen Cooper East Pilbara Shire Council
Paul Piercy Pilbara Development Commission
Peter Eggleston Hamersley Iron
Stedman Ellis BHP Iron Ore
Dick Jupp Hope Downs Management Services
Bill Willis Robe River Iron Associated Co.

*Regional minerals program*
Mid-West, Western Australia

Peter Ellery Chair, Peter Ellery and Associates
Milka Klobucar Project Manager, Department of Resources and Development, Western Australia
Mike Allen Ministry for Planning, Western Australia
Steve Beyer Department of Transport, Western Australia
David Blight Department of Minerals and Energy, Western Australia
Tom Engelke Main Roads, Western Australia
Rod Shaw Commonwealth Department of Industry, Science and Resources
Ron Caunce Waters and Rivers Commission
Graeme O’Grady Mid West Development Commission
Tamara Stevens Association of Mining and Exploration Companies
Gary Comb BGC Contracting
Jeff Gresham Homestake Gold
Andrew McKee Vanadium Australia
Thomas Melsom Australian Gas Light
Warren Smith Iluka Resources

Murray Basin, borders of New South Wales, Victoria and South Australia

John Reynolds Chair
Graham Gooding Project Manager, Natural Resources and Environment, Victoria
Denis Casey New South Wales Department of Mineral Resources
Michael Cullen New South Wales Department of State and Regional Development
John Fargher Department of Primary Industries and Resources, South Australia
Rod Shaw Commonwealth Department of Industry, Science and Resources
David Clarke Murray Basin Minerals
Mark Elliot GDM Resources
Stephen Everett BeMax Resources
Brad Farrell Craton Resources
Peter McGoldrick Iluka Resources
Patrick McManus RZM
Southern Cross – Esperance, Western Australia

Colin Stewart  Chair, Esperance Port Authority
Mary Durack  Project Manager, Department of Resources Development, Western Australia
Mike Allen  Ministry for Planning, Western Australia
Don Challis  Department of Transport, Western Australia
Kevin Smith  Main Roads, Western Australia
Rod Shaw  Commonwealth Department of Industry, Science and Resources
Grant Arthur  Wheatbelt Development Commission
Dick Thorp  Goldfields Esperance Development Commission
George Savell  Association of Mining and Exploration Companies
Peter Ashton  Wesfarmers Coal
Allan Blood  Australian Power and Energy
David Cairns  Resolute
Gary Comb  BGC Contracting
Geoff Hegney  Goldfields Gas Transmission
Glenn Jardine  Lionore Australia
Roj Jones  Comet Resources
Chris Lalor  Sons of Gwalia
Frank Lister  WA Salt Koolyanobbing
Craig Manley  MacMahon Contracting
Richard Mehan  Koolyanobbing Iron
Ian Neuss  Outokumpu Mining Australia
Appendix

Survey results, by regional study

In this appendix, regional survey results, by grade, for questions 3–10 and 14 are presented in tables 9–17 respectively. It should be noted that the aggregate number of respondents for each grade is equal to the sum of the number of respondents for the corresponding grade across all regional studies. The aggregate number of respondents is therefore equal to fifty — two more than in table 1 — because two respondents each participated in two separate management committees.

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9 Survey results for question 3 – coordinated approach to minerals development

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10 Survey results for question 4 – identifying mineral resources potential

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### Survey results for question 10 – overall effectiveness of the Regional Minerals Program

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### Survey results for question 14 – merit in continuing the Regional Minerals Program

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Average survey results by grade for questions 3–10 and 14 are presented in table 2. In this appendix, the Wilcoxon test is applied to selected pairs of questions to test whether there is a statistically significant difference in the average or mean responses to the questions.

The Wilcoxon test is a nonparametric test based on rank sums (see, for example, Freund 1972). Assume there are two samples, A and B, that may be of unequal size. Combine the two samples, arrange them in an increasing order of magnitude, and assign them in this order the ranks 1, 2, 3 and so on. Tied observations are assigned the mean of the ranks that they jointly occupy.

The Wilcoxon test is used to test the null hypothesis that the two samples come from identical populations. If there is a large difference in the means of the two populations, the values of one sample tend to be assigned most of the lower ranks while the values of the other sample tend to be assigned most of the relatively higher ranks. The Wilcoxon test is therefore based on the ranks of the values of the two samples. Specifically, calculate the following:

\[
U = n_A n_B + n_A(n_A + 1)/2 - R_A
\]

where \(n_A\) and \(n_B\) are the sizes of samples A and B respectively, and \(R_A\) is the sum of the ranks assigned to the values of sample A. The mean of \(U\) is:

\[
E(U) = n_A n_B / 2
\]

and the variance of \(U\) is:

\[
\text{var}(U) = n_A n_B(n_A + n_B + 1)/12
\]

If \(n_A\) and \(n_B\) are greater than 8, then the distribution of \(U\) can be approximated closely by a normal distribution — that is:

\[
z = (U - E(U))/\text{var}(U)^{0.5}
\]

where \(z\) is a random variable with a standard normal distribution.

The Wilcoxon test results for selected pairs of questions in the Regional Minerals Program survey are given in table 18. In these one tailed tests, the null hypothesis of \(\mu_A = \mu_B\) is tested against the alternative hypothesis of

---

**Appendix C**

**Wilcoxon test results**

Regional minerals program
μ_A > μ_B at the 5 per cent significance level, where μ_A and μ_B are the means of populations A and B respectively. The null hypothesis is rejected if z ≤ −1.645. The Wilcoxon test results are discussed in chapter 4.

## Wilcoxon test results for selected pairs of questions

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*An asterisk indicates the average response for question A is significantly higher than the average response for question B at the 5 per cent level.
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ABARE 1999a, Changes in Nonmetropolitan Population, Jobs and Industries, Preliminary report to the Department of Transport and Regional Services, Canberra, October.

—— 1999b, Australian Farm Surveys Report 1999, Canberra.


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