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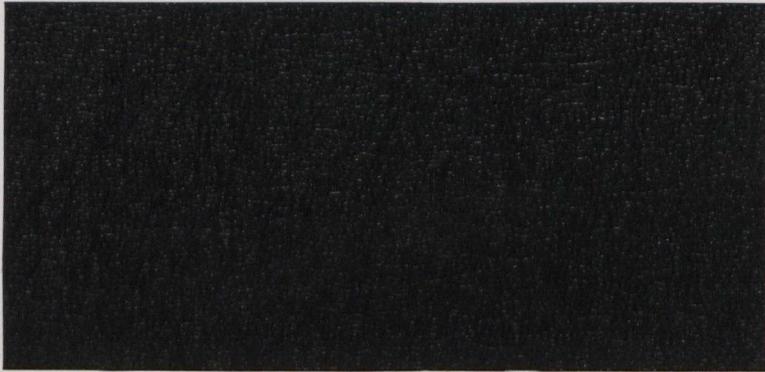


# **MARKET STUDY SERIES**

**A BRIEF FOR CANADIAN MANAGERS**

**A BRIEF GUIDE TO THE  
REMOTE SENSING  
INDUSTRY IN AUSTRALIA**

**CANADIAN TRADE COMMISSIONER SERVICE — AUSTRALIA  
EXTERNAL AFFAIRS AND  
INTERNATIONAL TRADE CANADA**



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**A BRIEF GUIDE TO THE  
REMOTE SENSING  
INDUSTRY IN AUSTRALIA**

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AUSTRALIA IN BRIEF

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Australia is almost as large as the United States in size, making it the sixth largest country in the world. It has a relatively modest population of 17 million. Seventy five percent of Australians reside along the eastern seaboard; the major cities of Sydney and Melbourne account for 40 percent of the total population. There are six states, one territory and a national capital region. The populations and surface area are as follows:

1. Australia in Brief

TABLE 1

1.1 Scope of Report

State & Major City	Population (millions)	Surface Area (km square) (thousand km <sup>2</sup> )
New South Wales (Sydney)	5.3 (3.62)	802
Victoria (Melbourne)	4.4 (3.03)	228
Queensland (Brisbane)	2.9 (1.27)	1727
Western Australia (Perth)	1.6 (1.15)	2536
South Australia (Adelaide)	1.4 (1.03)	984
Tasmania (Hobart)	0.4 (1.18)	68
Northern Territory (Darwin)	0.1 (0.7)	1346
Australian Capital Territory (Canberra)	0.3 (0.2)	2
Total	16.97 (16.38)	7683

2. Market Structure

2.1 The Australian Market

3. Summary

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6. Industry Conferences

7. Canadian Trade Offices in Australia

Australia's economy has traditionally been based on natural resources, including wool, iron ore and coal, thereby prompting observations that the economy is commodity dependent. In recent times, wool prices have dropped and the agricultural sector, traditionally a crucial export earner, is generally experiencing a slump in export earnings. These factors, together with heavy overseas borrowings have contributed to a sizable current account deficit. Economists and analysts believe indicators point to a slow economic recovery in 1991 after reaching a low point in early 1991, on the heels of two consecutive quarters of negative economic growth.

While Australia's economy is largely based on primary products there has been a push in recent years to improve productivity in the manufacturing sector as a result of a policy of phasing in lower import tariffs in many product areas. However, in many sectors, Australia's high technology capabilities are dominated by multinationals, as the indigenous high technology firms suffer from lack of venture capital and a small domestic market. The total market for high technology products in Australia is estimated at \$14 billion, or 1.5 percent of exports. Every \$100 of exports, Australia imports 100 of advanced technology products. There are obviously exceptions to this trend and a number of excellent niche products have been developed and exported successfully.



1. AUSTRALIA IN BRIEF

Australia is almost 7.7 million square kilometres in size, making it the sixth largest country in the world. It has a relatively modest population of 17 million. Seventy five percent of Australians reside along the eastern seaboard; the major cities of Sydney and Melbourne account for 40 percent of the total population. There are six states, one territory and a national capital region whose respective populations and surface area are as follows:

TABLE 1.

<u>State &amp; Major City</u>	<u>Population (millions)</u>	<u>Surface Area (km square) (thousand km.sq)</u>
New South Wales (Sydney)	5.8 (3.62)	802
Victoria (Melbourne)	4.4 (3.03)	228
Queensland (Brisbane)	2.9 (1.27)	1727
Western Australia (Perth)	1.6 (1.15)	2526
South Australia (Adelaide)	1.4 (1.03)	984
Tasmania (Hobart)	0.4 (.18)	68
Northern Territory (Darwin)	0.1 (.07)	1346
Australian Capital Territory (Canberra)	0.3 (0.3)	2
Total	16.97 (10.38)	7683

Australia's economy has traditionally been based on natural resources, including minerals, grains and wool, thereby prompting observations that the economy "rides on the sheep's back". In recent times, wool prices have dropped and the agricultural sector, traditionally a crucial export earner, is generally experiencing a slump in export earnings. These factors, together with heavy overseas borrowings have contributed to a sizable current account deficit. Economists and analysts believe indicators point to a slow economic recovery commencing mid-late 1991 after reaching a low point in early 1991, on the heels of two consecutive quarters of negative economic growth.

While Australia's economy is largely based on primary products there has been a push in recent years to improve productivity in the manufacturing sector as a reaction to the government's policy of phasing in lower import tariffs in many product areas. However, in many sectors Australia's high technology capabilities are dominated by multinationals, as the indigenous high technology firms suffer from lack of venture capital and a small domestic market. The total market for advanced technology products in Australia is estimated at \$14 billion, of which about 50% is imported. For every \$100 of exports, Australia imports \$900 of advanced technology products. There are obviously exceptions to this trend and a number of excellent niche products have been developed and exported successfully.



## 1.1 SCOPE OF REPORT

This report provides an overview of the Australian remote sensing sector and examines the potential for collaborative ventures between Australian and Canadian organisations. Canada's geography and demography are similar to Australia's, consequently Canadian expertise and the long term commitment to remote sensing development provide an instructive model for Australia. There are clearly commercial opportunities in Australia for Canadian remote sensing firms..

## 2. MARKET STRUCTURE

The Australian Space Office (ASO) has been given the task of developing an Australian remote sensing industry as one of the major objectives in the implementation of the National Space Policy. This being said, it should be recognized that the Australian remote sensing industry plays an integral role in an array of industries and as such envelopes research and commercial activity from the private sector, federal and state government agencies, academic institutions and the CSIRO (Commonwealth Scientific and Industrial Research Organization). The latter can be viewed as the Australian counterpart to Canada's National Research Council.

In respect of research and development, a number of organizations have been involved, ranging from institutions such as the University of New South Wales to private companies; however, by far the most active proponent of research and development in the remote sensing area is the internationally respected CSIRO, who's work has provided the foundation for numerous successful commercial initiatives.

Remotely sensed data supply in Australia is available through ACRES (Australian Centre for Remote Sensing) and Technical and Field Surveys. The Bureau of Meteorology, a longstanding service organisation, is also beginning to adopt a commercial approach in this area.

### 2.1 THE AUSTRALIAN MARKET

Remote sensing activity in Australia can be expected to increase as the monitoring of global environmental factors from a southern hemisphere vantage point assumes greater importance. However, it was the requirement to provide credible data to the mining industry which fostered early initiatives and developments. Currently, in excess of 50 percent of remotely sensed data in Australia, which was estimated at \$A40 million in 1990, is used by mining organizations; a further 30-40 percent is accounted for by natural resource monitoring and management activities in the forestry, fisheries, and agriculture sectors.

The Australian remote sensing sector has probably developed in a less co-ordinated manner than its Canadian counterpart. This in part is attributed to a fragmentation of effort and resources between federal and state departments, academic and private industry. However, the recently received mandate of the ASO to foster and promote remote sensing in Australia should henceforth produce a more national, co-ordinated approach.



The following brief analysis of the Australian market is broken down into four categories widely recognized throughout the industry.

a) SPACE INDUSTRY

Only 5-20 percent of remote sensing activities in Australia are attributed to the space sector. The space industry is dominated by international aerospace companies and Australian involvement has been limited, the one notable exception being the Along Track Scanning Radiometer (ATSR) sensor development for ERS-1. The ASO is actively encouraging development of a competitive space industry to combat Australia's position as a substantial net importer of space hardware, software and services. Factors contributing to Australia's limited capability include a small domestic market, high venture capital costs and insufficient qualified personnel. Contrary to the previous statement, however, potential opportunities for Canadian collaboration exist in this area, specifically from research and development generated in Australia. Organizations such as the CSIRO, together with Australian companies possessing good engineering and design capabilities would be receptive to a Canadian commercial partner as the latter are viewed as being of more appropriate size than other, larger foreign firms.

b) AIRBORNE MANUFACTURING SEGMENT

Australia has achieved reasonable success in the design and production of scanners and sensors. Research and development by the CSIRO and the Defence Research Establishment in conjunction with companies such as Geoscan and BHP have resulted in marketable products. Once again, should a Canadian firm be interested in joint development activities there are opportunities to participate, as Australia continues to seek international collaboration. Estimated earnings in the airborne and space manufacturing sector for the near future in Australia are \$A5-10 million.

c) GROUND RECEPTION FACILITIES

Australia has some expertise in the design and development of low cost data reception facilities. At the opposite end of the scale, one of the leading Canadian manufacturers of large receiving stations was the prime contractor in supplying the LANDSAT ground station system in Australia in 1979. A substantial upgrade was completed in 1988. Development of links between the ACRES (Australian Centre for Remote Sensing) reception facilities at Alice Springs and the Canberra processing facility and onto the end user for data transfer is cited as a potential opportunity, among other smaller contracts.

d) IMAGE PROCESSING AND ANALYSIS SYSTEMS

As indicated earlier in this report, Australia's economic dependence on natural resources, especially minerals, has led to a particularly strong capability in this area of remote sensing. A large number of commercial image processing systems and software packages have been developed by Australian companies; however, a few Canadian systems have also gained acceptance. This is an extremely competitive segment of the industry and applications-driven systems tailored to particular organisations are envisaged for the near future.



3. SUMMARY

The remote sensing market worldwide has generally grown much more slowly than first anticipated; this has also been the case in Australia. While Canadian remote sensing capabilities have strengthened in several areas, including hardware, software and applications, Australian capabilities are at an earlier stage of development, except in the area of image processing and analysis. The ASO, charged with fostering the growth of an Australian remote sensing industry as part of a National Space Policy, has recognised the need for continued international collaboration.

Canada's commitment to the commercial development of remote sensing through forward planning and co-operation between government and industry is highly regarded by the Australian remote sensing community. In light of the many commercial, economic and political similarities between Canada and Australia, it is not surprising that Canadian remote sensing firms have achieved some successes to date in the Australian market. Obviously, both government and industry in Australia are supportive of joint ventures rather than direct sales, and regulations and offsets policies are geared to encourage the former.

Future opportunities for Canadian firms appear to be significant relative to the size of the market. Along with France and the U.S., Canadian technology and expertise are highly regarded both in academic and commercial circles; also to our advantage is the off-heard preference of Australians "to do business" with Canadians rather than other prospective international partners.

For more specific information on any particular segment of the industry please contact the Canadian Consulate in Melbourne, or the Consulate General or High Commission in Sydney and Canberra, respectively.

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Technology Park  
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Fax: (08) 522 3153

Distributor of image analysis systems and geographic information systems.



4. REMOTE SENSING ORGANISATIONS IN AUSTRALIA

Australian Space Office  
51 Allara Street  
CANBERRA ACT 2601

Tel: (06) 276 1915  
Fax: (06) 276 1942

Implementation of the National Space Policy, a major objective of which is the future development of the Australian remote sensing industry.

Australian Centre for Remote Sensing  
Dunlop Court, Fern Hill Park  
BRUCE ACT 2617

Tel: (06) 252 4411  
Fax: (06) 251 6326

Provider of satellite digital data to government and industry acquired by DAF in Alice Springs - SPOT, Landsat and National Oceanic & Atmospheric Administration (NOAA) (AVHRR)

Commonwealth Scientific and Industrial Research Organisation (CSIRO)  
Office of Space Science and Applications  
PO Box 225  
DICKSON ACT 2602

Tel: (06) 270 1811  
Fax: (06) 273 3958

Manages space related research, operates research aircraft & participates in world-wide space programs.

South Australian Centre for Remote Sensing  
Suite 10, Innovation House  
Technology Park  
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Fax: (08) 349 7003

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Implementation of the National Space Policy, a major objective of which is the  
future development of the Australian remote sensing industry.

Australian Centre for Remote Sensing  
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Tel: (08) 252 4411  
Fax: (08) 251 4326

Provider of satellite digital data to government and industry acquired by  
DAF in Air Force Support Unit (AFSU) Land and National Oceanic & Atmospheric  
Administration (NOAA) (AVHRR)

Commonwealth Scientific and Industrial Research Organisation (CSIRO)  
Office of Space Science and Applications  
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Fax: (08) 273 3928

Manages space related research, operates research aircraft & participates in world-  
wide space programs.

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Technology Park  
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Fax: (08) 269 7003

Provides consulting services, and education nationally and internationally. Also  
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monitoring.

Earth Australia  
18 Power Street  
WEST PERTH WA 6005

Tel: (09) 481 1143  
Fax: (09) 322 3133

Distributor of image analysis systems and geographic information systems.

Clough Engineering Group  
246 Church Street  
RICHMOND VIC 3121

Tel: (03) 427 1955  
Fax: (03) 427 1779

Co-developed with CSIRO (and markets) the DISIMP (Device Independent Image Processing) system.

Image Tech. International Pty Ltd  
1st Floor, 192 Cambridge Street  
WEMBLEY WA 6014

Tel: (09) 388 1555  
Fax: (09) 381 4148

Distributes the A-Image software system.

International Imaging Systems (Aust) Pty Ltd  
27 Wilde Street  
WYNNUM QLD 4178

Tel: (07) 396 5796  
Fax: (07) 396 5796

Distributes an image processing system and film-writers.

Trippet Sheddon Pty Ltd  
136 Buckhurst Street  
SOUTH MELBOURNE VIC 3205

Tel: (03) 693 5779  
Fax: (03) 699 2279

Systems engineering company. Has collaborated with a U.S. firm in the development of image processing products.

Kevron Aerial Surveys Pty Ltd  
PO Box 6325 Hay Street  
EAST PERTH WA 6004

Tel: (09) 325 2644  
Fax: (09) 421 1658

Involved in the acquisition and processing of airborne geophysical data.



Dames and Moore Pty Ltd  
26 Lyall Street  
SOUTH PERTH WA 6010

Tel: (09) 367 8055  
Fax: (09) 367 6780

Consulting services.

Geoscan Pty Ltd  
24 Outram Street  
WEST PERTH WA 6005

Tel: (09) 481 3466  
Fax: (09) 481 1530

Complete remote sensing services offered, particularly in mining exploration.

PHM Survey Centre  
Unit 3, 18 Main Street  
OSBORNE PARK WA 6017

Tel: (09) 444 0233  
Fax: (09) 443 2598

Distributor of global positioning systems.

MPA International Pty Ltd  
37-51 Lusher Road  
CROYDON VIC 3136

Tel: (03) 724 4444  
Fax: (03) 724 4455

Commercial development and marketing of the micro BRIAN image processing system.

World Geoscience Corporation  
17 Emerald Terrace  
WEST PERTH WA 6005

Tel: (09) 322 1799  
Fax: (09) 481 0709

Specialists in earth resource mapping.



Earth Resource Mapping Pty Ltd  
316 Churchill Avenue  
SUBIACO WA 6008

Tel: (09) 388 2900

Fax: (09) 338 2901

Developers of image processing software.

5. PUBLICATIONS AVAILABLE

Australian Remote Sensing Industry Strategy and Action Plan (July 1989)  
Australian Space Industry Development Strategy

Both publications available from:

Australian Space Office  
Department of Industry Technology and Commerce  
51 Allara Street  
CANBERRA ACT 2601

Tel: (06) 276 1915

Fax: (06) 276 1942

6. INDUSTRY CONFERENCES

Sixth Australasian Remote Sensing Conference  
Wellington, New Zealand

November 2-6, 1992

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SUBLEAK WA 6008

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Fax: (09) 388 2901

Developers of image processing software

### TELEVISIONS AVAILABLE

Association Remote Sensing Industry Strategy and Action Plan (July 1989)  
Australian Space Industry Development Strategy

Both publications available from:

Australian Space Office  
Department of Industry Technology and Commerce  
21 Alinga Street  
CANBERRA ACT 2601

Tel: (06) 276 1912  
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### INDUSTRY OPPORTUNITIES

5th Australian Remote Sensing Conference  
Wellington New Zealand

November 2-6, 1992

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Fax: 61 2 223-4230

Canadian High Commission  
Commercial Division  
Commonwealth Avenue  
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Tel: 61 62 73-3844  
Fax: 61 62 73-3285



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