WHY AUSTRALIA

1. **4th largest** economy in Asian region and **12th largest** in the world

2. **26th year** of consecutive annual economic growth

3. GDP of more than **US$1.5 trillion** (two per cent of global GDP)

4. **AAA rating** by all three credit rating agencies

5. A **strategic base** for exporting services and technologies to **high-growth Asian markets**

6. A **growing population** of currently **23.7 million**
WHY AUSTRALIA

[Diagram showing arrows pointing from Business, Growth, Innovation, Location, Talent, to a central map of Australia]
LOCATION: ASIAN DEMAND DRIVING TRADE GROWTH

AUSTRALIA: A PARTNER FOR GROWTH IN ASIA

Ten of Australia’s top 12 goods and services export markets were in the Asian region in 2014.

Note: Country ceiling for Europe and North America only reflect the UK and the USA.

Sources: Department of Foreign Affairs and Trade, Composition of Trade 2014, pages 43 and 46 (released 4 August 2015); Austrade
HIGHEST GROWTH AMONG ADVANCED ECONOMIES

REAL GDP GROWTH BY ECONOMIC GROUPING
Average annual growth rate: 2012–16\(^{\circ}\) and 2017–21\(^{\text{p}}\)

<table>
<thead>
<tr>
<th>Country</th>
<th>2012 to 2016(^{\circ})</th>
<th>2017 to 2021(^{\text{p}})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>0.8</td>
<td>0.5</td>
</tr>
<tr>
<td>World Average</td>
<td>3.3</td>
<td>3.6</td>
</tr>
<tr>
<td>ASEAN-5(^{1})</td>
<td>5.1</td>
<td>5.4</td>
</tr>
<tr>
<td>China</td>
<td>7.3</td>
<td>6.0</td>
</tr>
<tr>
<td>India</td>
<td>6.9</td>
<td>7.8</td>
</tr>
<tr>
<td>Australia</td>
<td>2.7</td>
<td>2.9</td>
</tr>
<tr>
<td>USA</td>
<td>2.1</td>
<td>1.9</td>
</tr>
<tr>
<td>UK</td>
<td>2.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Euro Area(^{2})</td>
<td>0.7</td>
<td>1.5</td>
</tr>
</tbody>
</table>

F = Forecast
1. ASEAN-5 = Indonesia, Malaysia, Philippines, Thailand and Vietnam.
2. Composed of 19 economies in Europe: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia and Spain.

Sources: International Monetary Fund, World Economic Outlook Database, October 2016; Austrade
FIFTH IN THE WORLD FOR ECONOMIC FREEDOM

INDEX OF ECONOMIC FREEDOM WORLD RANKING – 2016

1. The 2016 Index of Economic Freedom covers 186 economies and measures 10 components of economic freedom (Business Freedom, Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Financial Freedom, Property Rights, Freedom from Corruption and Labour Freedom). The 10 component scores are equally weighted and averaged to get an overall economic freedom score for each economy. The number in brackets in the chart indicates the country's world ranking.

Sources: The Wall Street Journal and The Heritage Foundation, 2016 Index of Economic Freedom; Austrade
AUSTRALIA’S CSIRO RANKS IN THE TOP 1% OF THE WORLD’S SCIENTIFIC INSTITUTIONS IN 14 RESEARCH FIELDS

Long track record in world-class innovation

Over 1,000,000,000 people around the world rely on Australian discoveries and innovations every day

- Google maps
- IVF
- Ultrasound
- WiFi
- Bionic Ear
- Cervical Cancer Vaccine
- Black Box
LEADING ECONOMY FOR R&D EXPENDITURE

WORLD OF RESEARCH AND DEVELOPMENT

Size of circle reflects the relative amount of annual gross domestic expenditure on R&D (GERD) in US$ current prices and purchasing power parity terms.

Note: Researchers data is in full-time units and refer to 2014 except for Indonesia (2009), Australia, Brazil and India (2010), South Africa (2012), Canada, New Zealand and the USA (2013). For Brazil, India and Indonesia, data is provided by the UNESCO Institute for Statistics. Figures of GERD and GERD % of GDP refer to 2014 except Australia, New Zealand, the USA, Brazil and Indonesia (2013), South Africa (2012) and India (2011).

Sources: OECD, Main Science and Technology Indicators Database, www.oecd.org/sti/msti.htm; UNESCO Institute for Statistics, Science, Technology and Innovation Database, July 2016; Austrade
AUSTRALIAN INDUSTRY A SOURCE OF R&D EXPENDITURE

AUSTRALIA’S GROSS EXPENDITURE ON RESEARCH AND DEVELOPMENT
A$ billion by sector

Compound annual growth rate of Australia’s total GERD from 2000–01 to 2014–15E = 8.7%

- Private non-profit
- HERD
- GOVERD
- BERD

<table>
<thead>
<tr>
<th>Year</th>
<th>Private non-profit</th>
<th>HERD</th>
<th>GOVERD</th>
<th>BERD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000–01</td>
<td>0.3</td>
<td>2.8</td>
<td>6.9</td>
<td>5.0</td>
</tr>
<tr>
<td>2002–03</td>
<td>2.4</td>
<td>3.4</td>
<td>6.9</td>
<td>5.0</td>
</tr>
<tr>
<td>2004–05</td>
<td>4.3</td>
<td>2.8</td>
<td>6.9</td>
<td>5.0</td>
</tr>
<tr>
<td>2006–07</td>
<td>12.6</td>
<td>3.1</td>
<td>6.9</td>
<td>5.0</td>
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<tr>
<td>2008–09</td>
<td>6.8</td>
<td>3.4</td>
<td>6.9</td>
<td>5.0</td>
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<tr>
<td>2013–14</td>
<td>10.1</td>
<td>9.6</td>
<td>18.8</td>
<td>10.1</td>
</tr>
<tr>
<td>2014–15E</td>
<td>10.1</td>
<td>10.1</td>
<td>18.8</td>
<td>10.1</td>
</tr>
</tbody>
</table>

GERD = Gross expenditure on research and development (R&D); BERD = Business expenditure on R&D; GOVERD = Government expenditure on R&D; HERD = Higher education expenditure on R&D; Private non-profit = Private non-profit expenditure on R&D


Note: Data on BERD has been collected on a biennial basis since 2011–12; all figures for HERD from 2000 to 2015 are for calendar years.

Sources: Australian Bureau of Statistics, Cat. No. 8104.0 Research and Experimental Development, Businesses, Australia, 2013–14 (released 4 September 2015); ABS Cat. No. 8109.0 Research and Experimental Development, Government and Private Non-Profit Organisations, Australia, 2014–15 (released 6 July 2016); ABS Cat. No. 8111.0 Research and Experimental Development, Higher Education Organisations, Australia, 2014 (released 17 May 2016); Austrade
### AUSTRALIAN UNIVERSITIES’ ACADEMIC RANKING IN FIVE BROAD SUBJECT FIELDS – 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Natural Sciences and Mathematics</th>
<th>Engineering/Technology and Computer Sciences</th>
<th>Life and Agriculture Sciences</th>
<th>Clinical Medicine and Pharmacy</th>
<th>Social Sciences</th>
<th>Five Broad Subject Fields Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>64</td>
<td>47</td>
<td>77</td>
<td>73</td>
<td>97</td>
<td>358</td>
</tr>
<tr>
<td>China</td>
<td>25</td>
<td>52</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>101</td>
</tr>
<tr>
<td>UK</td>
<td>17</td>
<td>14</td>
<td>21</td>
<td>19</td>
<td>25</td>
<td>96</td>
</tr>
<tr>
<td>Germany</td>
<td>15</td>
<td>6</td>
<td>16</td>
<td>16</td>
<td>7</td>
<td>60</td>
</tr>
<tr>
<td>Australia</td>
<td>9</td>
<td>10</td>
<td>12</td>
<td>9</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Canada</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>11</td>
<td>14</td>
<td>44</td>
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<tr>
<td>Netherlands</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>11</td>
<td>34</td>
</tr>
<tr>
<td>France</td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>Italy</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>Japan</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>Switzerland</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Spain</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>South Korea</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>16</td>
</tr>
<tr>
<td>Belgium</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Denmark</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Israel</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Norway</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Singapore</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Other countries</td>
<td>6</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Note:** The Academic Ranking of World Universities (ARWU) uses six objective indicators to rank world universities, including the number of alumni and staff winning Nobel Prizes and Fields Medals, number of highly cited researchers selected by Thomson Reuters, number of articles published in journals of Nature and Science, number of articles indexed in Science Citation Index – Expanded and Social Sciences Citation Index, and per capita performance of a university. More than 1,200 universities are actually ranked by ARWU every year and the best 500 are published.

**Sources:** The Academic Ranking of World Universities, The Center for World-Class Universities at Shanghai Jiao Tong University (CWCU) ([http://www.shanghairanking.com/index.html](http://www.shanghairanking.com/index.html)); Austrade
PRIORITY SECTORS OF OPPORTUNITY

- Resources and Energy
- Agricultural Science, Food Technology and Processing
- Tourism Infrastructure
- Major Economic Infrastructure
- Advanced Manufacturing, Services and Technology:
  - Material Science
  - Medical Science and Technology
  - Digital Economy
Demand drivers for infrastructure in Australia

There are significant pressures on Australian infrastructure

1. Population growth
   - Urbanisation
   - Congestion
   - Ageing Population

2. Freight growth
   - Strong economic growth
   - Open trade policies
   - Open foreign investment
   - High terms of trade

3. Unique characteristics
   - Vast land distances
   - An island country
Infrastructure development plays a leading role in building the country’s infrastructure, including road and rail networks.

Australian Government has committed over A$50 billion for current and future infrastructure investments for 2013-14 to 2019-20 onwards.

Infrastructure Australia’s 15 year plan for future infrastructure projects and Australian Government released its response on 24 November 2016, supporting 69 of the 78 recommendations made in the 15 year plan.
GROWING PIPELINE OF PROJECTS UNDER CONSTRUCTION

Figure 1: Value of transport projects under construction (> $300m)

Source: March 2017, Deloitte Access Economics, press reports, company data, Credit Suisse estimates
AUSTRALIA’S RAIL PIPELINE

Major Rail Construction Projects - Australia

Investment Opportunities in Australian Rail Infrastructure

Source: Macromonitor
The Australia & New Zealand Infrastructure Pipeline (ANZIP) provides a detailed and informed picture of upcoming infrastructure investment and major construction activity, across Australia and New Zealand.

ANZIP is a joint initiative between the Australian & New Zealand Governments – and Infrastructure Partnerships Australia – an independent infrastructure intelligence unit.

ANZIP provides a respected and credible opinion on major greenfield projects and brownfield transactions, across the Australian and New Zealand markets.

WWW.INFRASTRUCTUREPIPELINE.ORG
OPPORTUNITIES IN RAIL TECHNOLOGY

**Materials and Manufacturing**
- Advanced design
- Low cost manufacturing systems
- High performance materials for heavy haul
- Advanced manufacturing and lightweight materials
- Simulation for materials and manufacturing

**Monitoring and Management**
- Automated health monitoring for infrastructure
- Low cost manufacturing systems
- Advanced asset management systems
- Safety threat detection, intervention
- Advanced data analysis and information systems
- Advanced operations management systems

**Power and Propulsion**
- Energy regeneration
- Advanced braking systems
- Energy use management tolos
- Electric motors and systems
- Emissions reduction technologies
- Gaseous fuels
OPPORTUNITIES IN INTELLIGENT TRANSPORT SYSTEMS (ITS)

Examples:

- Transport for NSW: $400m Smart Motorways project
- Melbourne University: National Connected Multimodal Transport (NCMT) Test Bed
- QLD Transport and Main Roads: Cooperative and Automated Vehicle Initiative
The Australasian Railway Association (ARA) represents all sectors of the rail industry in Australia:

- rail organisations, including private and public,
- passenger and freight operators,
- track owners and managers,
- manufacturers of rolling stock,
- construction companies and
- all other organisations supplying and contributing to the Australasian rail sector.

www.ara.net.au
This map shows a selection of committed and planned rail projects generated by ARA members and government planning agencies and identified in the ARA’s Infrastructure Priority List. The ARA recommends that these projects be rigorously and independently assessed and if found suitable, be delivered through a combination of direct federal funding, co-funding with other jurisdictions and by the private sector through alternative funding mechanisms.
The Rail Manufacturing Cooperative Research Centre (CRC) supports the rail sector by developing new technologies and knowledge to enhance Australia’s rail manufacturing capacity and competitiveness.

RMCR members:
- innovative rail manufacturing multinationals,
- innovative SMEs and
- key research providers.

www.rmcrc.com.au
The Australasian Centre for Rail Innovation (ACRI) is an independent, not for profit organisation formed to undertake research, strategic analysis and economic analysis for the Australasian & New Zealand rail industry and broader transport sector.

Collaboration with Western Europe will assist in accelerating innovative in the Australasian Rail sector.

ACRI collaborates with:
• Research organizations both government and private; and
• Manufacturers of rail technology

www.acri.net.au
<table>
<thead>
<tr>
<th>TOP 5 RAIL INNOVATION IN AUSTRALIA OVER THE LAST DECADE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low maintenance wheel steels</strong></td>
</tr>
<tr>
<td>• development of low-carbon steel alloy more resistant to stress and fatigue</td>
</tr>
<tr>
<td><strong>Energy-saving driver advisory systems</strong></td>
</tr>
<tr>
<td>• tracking and management of energy output</td>
</tr>
<tr>
<td><strong>Rail noise and wear assessment system</strong></td>
</tr>
<tr>
<td>• monitors areas in need of track repair</td>
</tr>
<tr>
<td><strong>Electronically-controlled pneumatic brakes</strong></td>
</tr>
<tr>
<td>• aging rolling stock for heavy haul requires new braking systems</td>
</tr>
<tr>
<td><strong>Train Health Advisory Team (THAS)</strong></td>
</tr>
<tr>
<td>• to detect potential derailments</td>
</tr>
</tbody>
</table>
Investment Opportunities in Australian Rail Infrastructure
The Australian Trade and Investment Commission (Austrade), in cooperation with state and territory governments, provides free and confidential assistance

- National coordination of Australian government investment services
- Information on the Australian business and regulatory environment
- Market intelligence and investment opportunities
- Identification of suitable investment locations and partners in Australia
- Advice on Australian government programs and approval processes
INFRASTRUCTURE LINKS:

• Austrade website, Infrastructure opportunities:

• Infrastructure Australia:

• Infrastructure Partnerships Australia:
  › http://www.infrastructurepipeline.org.au/

• Intelligent Transport Systems Australia
  › www.its-australia.com.au

• Australasian Railway Association:
  › www.ara.net.au

• Rail Manufacturing Cooperative Research Centre (CRC)
  › www.rmcrc.com.au

• The Australasian Centre for Rail Innovation (ACRI):
  › www.acri.net.au

• Advanced Manufacturing Growth Centre – AMGC
  › https://www.amgc.org.au/

• Innovation Australia:
For any further questions, please contact:

**Australian Trade and Investment Commission**

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