



# MINERALS COUNCIL OF AUSTRALIA

SUBMISSION TO SENATE ENVIRONMENT AND  
COMMUNICATIONS REFERENCES COMMITTEE ON  
WATER USE BY THE EXTRACTIVE INDUSTRY

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## EXECUTIVE SUMMARY

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The Minerals Council of Australia, together with the Chamber of Minerals and Energy Western Australia, New South Wales Minerals Council, MCA Northern Territory and Victorian Divisions, South Australian Chamber of Mines and Energy and Queensland Resources Council, welcomes the opportunity to provide a submission to the Senate Environment and Communications Reference Committee inquiry into water use by the extractives industry.

### ***Water use by the minerals industry is comprehensively regulated***

Access and use of Australia's water resources by the minerals industry is subject to more regulation and oversight than most other economic activities in the country.

Regulatory requirements include compliance with water access and licensing arrangements in a given region as well as regulation of water access, use and impacts as part of a development's environmental and project approvals.

Regulation is primarily through state-based instruments in accordance with the Australian Constitution. However, in recent years, legislative amendments have resulted in the Commonwealth assuming a greater – and largely duplicative role – in approval of water use, including as it relates to large scale coal mine and coal seam gas development.

To commence the approvals process, a proponent must develop an environmental assessment based on detailed scientific analysis. Various studies may inform this assessment, including data collection and analysis of potential impacts associated with extraction and use of surface and groundwater resources at a local and catchment level. Detailed water models, integrating local and catchment characteristics, regional water uses and other aspects are also usually developed.

Water aspects are then usually integrated into broader consideration of a project's environmental, social and economic benefits and impacts. Strategies to mitigate potential impacts are also generally required to be included in the environmental assessment.

The project's environmental assessment, including its proposed approach to water management and mitigation of impacts, is then considered and environmental performance conditions imposed by regulators. Regulators may also seek independent technical and specialist advice to inform their decision making. For large and complex projects, this process can take several years.

### ***A high value and comparatively small user of Australia's water resources***

Despite the expansive framework regulating its water use, the industry is a comparatively small user of water nationally. Use by the minerals industry accounted for 3.7 per cent of Australia's water consumption in 2015-16, down from 3.9 per cent in 2014-15.<sup>1</sup>

To put this in perspective, agriculture (including forestry and fishing<sup>2</sup>) accounted for approximately 58 per cent and households accounted for 12 per cent of water consumption during the same period.<sup>3</sup>

In considering this footprint, it is important to note the minerals industry often uses water not suitable for other industrial purposes, including saline and hypersaline water.

The minerals industry also generates very high economic value add per unit of water consumption. Between \$111 million and \$127 million of gross value-add was generated per gigalitre of water used

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<sup>1</sup> Australian Bureau of Statistics, [Water Account, Australia, 2015-16](#), water use tables, ABS catalogue no. 4610.0, released 23 November 2017.

<sup>2</sup> Not including aquaculture.

<sup>3</sup> Australian Bureau of Statistics, [Water Account, Australia, 2015-16](#), water use tables, ABS catalogue no. 4610.0, released 23 November 2017.

for mining in 2015-16.<sup>4</sup> This compares to agriculture (including forestry and fishing), which generated approximately \$4 million per gigalitre.<sup>5</sup>

While its water use represents a comparatively small share of national consumption, the minerals industry continues to work at a site, company and industry-wide basis to further reduce water use. This supports the industry's long-standing commitment to responsible water stewardship.

### ***A long-standing commitment to responsible water stewardship***

Responsible water stewardship incorporates leading practice, research and development and engagement with host communities. In practice, examples of this commitment may include:

- Establishing and participating in dialogues and partnerships with other water users to improve knowledge of local water systems and catchments
- Investing significantly in water infrastructure to support sustainable water use
- Identifying opportunities for beneficial water use by third parties, including for agricultural production and town water supply
- Supporting and investing in research and development to improve scientific knowledge of local water system and catchment health
- Driving leading practice through collaborative forums and development of best practice guidance, such as the MCA Water Accounting Framework.

### ***Opportunity to streamline water approvals – without reducing environmental outcomes***

State and Northern Territory-based water policy has evolved significantly in recent years to include specific mechanisms to assess and manage potential impacts of minerals development on water resources. These mechanisms are robust, taking into account local characteristics and broader state and Territory-based approaches to environmental and project approvals.

At the same time, the case for a sector-specific 'water trigger' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, which was introduced in 2013, remains unclear. Prior to its introduction, agreed protocols were already in place through the National Partnership Agreement for referral of large coal development and coal seam gas projects in New South Wales, Victoria, Queensland, South Australia and the Northern Territory to the Independent Expert Scientific Committee (IESC) for advice where in place.<sup>6</sup> Introduction of the trigger duplicated existing arrangements.

Almost five years after its introduction, it is prudent to reflect on the effectiveness of the water trigger. A recent independent review could not establish whether it had achieved its aim of improved environmental outcomes or enhanced community confidence. And, in 2017 the Senate Select Committee on Red Tape concluded that the water trigger should be removed from the EPBC Act.

These findings further reinforce the weak case for the water trigger and add weight to the compelling case for its repeal.

### ***Supporting the future of minerals development***

Water is a critical business input for the minerals industry, essential for mining, minerals processing and other activities related to mining operations. Stable, streamlined and efficient processes for regulating water access are essential to maintain industry access to affordable and reliable water supplies.

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<sup>4</sup> Australian Bureau of Statistics, [Water Account, Australia, 2015-16](#), monetary tables, ABS catalogue no. 4610.0, released 23 November 2017.

<sup>5</sup> Ibid.

<sup>6</sup> Department of Environment, [National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development](#), 2012, Commonwealth of Australia.

## 1. INTRODUCTION

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The Minerals Council of Australia (MCA) welcomes the opportunity to provide a submission to the Senate Environment and Communications References Committee inquiry into 'water use by the extractive industry'.

This is a joint submission with the Chamber of Minerals and Energy of Western Australia, New South Wales Minerals Council, MCA Northern Territory and MCA Victoria, the Queensland Resources Council and South Australian Chamber of Mines and Energy.

The MCA is the peak industry organisation representing Australia's exploration, mining and minerals processing industry, nationally and internationally, in its contribution to sustainable development and society. The MCA's strategic objective is to advocate public policy and operational practice for a world-class industry that is safe, profitable, innovative, environmentally and socially responsible and attuned to its communities' needs and expectations.

The minerals industry is committed to upholding high standards of environmental protection based on the use of sound science and robust risk-based approaches in the assessment and management of potential environmental impacts, including impacts on water resources.

MCA member companies are signatories to *Enduring Value – the Australian Minerals Industry Framework for Sustainable Development*. Developed in 2006 and updated in 2015, the Enduring Value framework articulates the minerals industry's commitment to sustainable development.

The Enduring Value framework aligns with the International Council on Mining and Metal's (ICMM) 10 Principles of Sustainable Development and translates each principle into verifiable indicators and outcomes in the Australian context. Two of the Enduring Value framework's principles have direct relevance for the minerals industry use of water and for this inquiry:

- Principle 4 – Implement Risk Management Strategies Based on Valid Data and Sound Science
- Principle 6 - Seek Continual Improvement of our Environmental Performance.<sup>7</sup>

Enduring Value is supported by the MCA Water Policy, which articulates principles supported and promoted by industry regarding water use and management. A key principle is recognition of water as a key business asset with social, cultural, environmental and economic values at local, regional and national levels.<sup>8</sup>

While the minerals industry accounted for just 3.7 per cent of Australia's water consumption in 2015-16, water availability and security of supply are a critical business risk.<sup>9</sup> Mining and minerals processing cannot occur without secure access to reliable and affordable water supplies. Limiting availability of water represents a potential constraint on further investment and expansion of the minerals sector at substantial cost to the industry and the broader economy in lost production.<sup>10</sup>

In addition to outlining industry's commitment to responsible water stewardship, this submission confirms the robustness of regulatory frameworks in states and the Northern Territory regulating water use by the minerals industry. It also highlights unnecessary duplication created by the EPBC Act 'water trigger', which comes at significant cost to government and industry and appears to create confusion within the broader community. Further information about the development, operation and limited benefit of the water trigger is provided in this submission.

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<sup>7</sup> Minerals Council of Australia, [Enduring Value](#), MCA, 2015, viewed 4 January 2018.

<sup>8</sup> Minerals Council of Australia, [MCA Water Policy](#), MCA, 2012.

<sup>9</sup> Australian Bureau of Statistics, [Water Account, Australia, 2015-16](#), water use tables, ABS catalogue no. 4610.0, released 23 November 2017.

<sup>10</sup> ACIL Tasman, *Water Reform and Industry*, Department of Industry, Tourism and Resources, April 2007.

Mining is a mature industry that has, over a long period, invested in improved science to better understand and address water-related environmental risks. At the same time, the minerals industry continues to innovate and invest in ways to reduce water use by increasing water re-use and recycling and using water more efficiently, where practical. Examples are included in relevant sections of this submission.

This is one of a number of parliamentary and independent inquiries in recent years to consider water use by the minerals industry. Few industries have had their water use considered as frequently or as thoroughly as the minerals industry.

## 2. AUSTRALIA'S MINERALS INDUSTRY (TOR ITEM A)

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- Australia's minerals industry use represented less than 3.7 per cent of national water consumption in 2015-16.<sup>11</sup>
- In 2015-16 the gross value-add per gigalitre of water used by mining ranged between \$111 million and \$127 million.<sup>12</sup>
- Around 230,000 people – many in regional areas – are directly employed by Australia's minerals industry. This workforce exceeds 1.1 million people and accounts for 10 per cent of jobs in Australia when incorporating the mining equipment, technology and services sector supply chain.<sup>13</sup>

### 2.1 Australian minerals production

Australia is a leading global producer of iron ore, bauxite, gold, zinc, lead and thermal and metallurgical coal. Other metals produced in Australia include minerals sands, such as rutile, copper and antimony.<sup>14</sup>

### 2.2 A small volume and high value water user

On a national scale, Australia's minerals industry is a comparatively small water user. Minerals industry water use represented 3.7 per cent of national water consumption in 2015-16, down from 3.9 per cent in 2014-15.<sup>15</sup> By comparison, agriculture (including forestry and fishing) consumed 58 per cent while households consumed a further 12 per cent.<sup>16</sup>

In addition to using a comparatively small volume of water nationally, the mining industry also generates very high economic value add per unit of water consumption. In 2015-16, the gross value-add per gigalitre of water used by mining ranged between \$111 million and \$127 million, compared to \$4 million value add per gigalitre for agriculture.<sup>17</sup>

### 2.3 Socio-economic contribution

#### Australian economy

The minerals industry is a key driver of Australia's economic prosperity. In 2016-17, mining accounted for 6 per cent of Australia's Gross Domestic Product (GDP), making it the fourth largest contributor to the national economy. Its share of the Australian economy increases to over 15 per cent when including the broader economic contribution of the mine equipment, technology and services (METS) sector.<sup>18</sup>

Around 230,000 people – many in regional areas – are directly employed in the minerals industry. These are high-value, high wage and highly skilled jobs, including engineers, environmental scientists, geologists, tradespeople and operators, which in turn further contributes to Australia's skills base and supports innovation across the broader economy. This workforce exceeds 1.1 million people and accounts for 10 per cent of jobs in Australia when the METS sector is included.<sup>19</sup>

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<sup>11</sup> Australian Bureau of Statistics, [Water Account, Australia, 2015-16](#), water use tables, ABS catalogue no. 4610.0, released 23 November 2017.

<sup>12</sup> Ibid.

<sup>13</sup> Deloitte Access Economics, [Mining and METS: engines of economic growth and prosperity for Australians](#), 29 March 2017.

<sup>14</sup> Ibid, p.5.

<sup>15</sup> Australian Bureau of Statistics, [Water Account, Australia, 2015-16](#), water use tables, ABS catalogue no. 4610.0, released 23 November 2017.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

<sup>18</sup> Australian Bureau of Statistics, [International Trade in Goods and Services ABS Cat No. 5368 Table 3](#); International Monetary Fund, 13 December 2017.

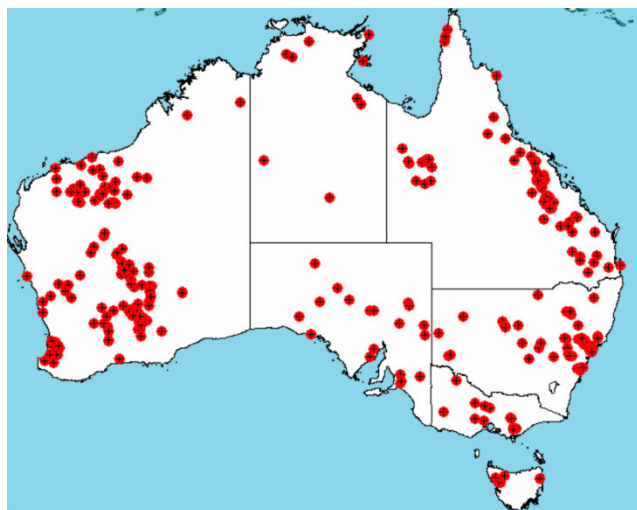
<sup>19</sup> Deloitte Access Economics, [Mining and METS: engines of economic growth and prosperity for Australians](#), 29 March 2017.

While the economic dividends of the minerals industry are shared across Australia, the industry's presence in regional and remote communities is particularly important for supporting local business and creating local jobs.

### Regional Australia

Operating across regional Australia, major mining regions include central and north-western Queensland, the Hunter Valley and central west New South Wales and the Goldfields and Pilbara in Western Australia.

**Figure 1 – Operating mines across Australia**



Source: Geoscience Australia<sup>20</sup>

Recent studies highlight the scale of this contribution:

- In Queensland 2016-17 data indicates the resources sector contributed \$55.1 billion to the state's economy. This included \$16.4 billion in purchases from more than 16,400 Queensland businesses and support for 910 community organisations.<sup>21</sup>
- In Western Australia 2015-16 data indicates 46 minerals and energy companies supported 886 community groups and 6,924 Western Australian businesses, contributing nearly \$20 billion worth of business purchases and direct community contributions.<sup>22</sup>
- In New South Wales, 2015-16 data indicates 25 mining companies directly spent \$10.8 billion on supplier businesses, employees and contractors, community contributions and local and state government payments. This expenditure supported more than 8,000 supplier businesses in NSW.<sup>23</sup>

The importance of mining to regional economies and local jobs has been highlighted in the recent Productivity Commission's study into the transition of regional economies following the resources boom:

Regions whose economic base is large-scale mining have generally had the highest rates of growth in employment since 2005, notwithstanding the end of the investment boom... Incomes in mining regions are generally much higher than the national average.<sup>24</sup>

<sup>20</sup> Geoscience Australia, [Australian mines atlas](#), Australian Government, Canberra, viewed 3 April 2017.

<sup>21</sup> Queensland Resources Council, [What are resources worth to Queensland?](#), viewed 10 January 2018.

<sup>22</sup> Chamber of Minerals and Energy of Western Australia, Resource Sector Operations Economic Contribution: Australia, CMEWA, 2017 <http://www.cmewa.com/images/files/maps/Australia.pdf>, viewed 6 April 2017.

<sup>23</sup> NSW Mining Industry Expenditure Impact Survey 2015/16

<sup>24</sup> Productivity Commission, [Transitioning regional economies – Overview report](#), Canberra, December 2017, p. 12



## Working with communities

Effective stakeholder engagement is a crucial aspect of the minerals industry's commitment to responsible water stewardship. This commitment is articulated in the MCA's policy principles regarding water use and management:

Water is recognised as a key business asset with social, cultural, environmental and economic values at a local, regional and national level.

The minerals industry is committed to active and open engagement with stakeholders including other water users within regions to support regional economic development and diversity and to maximise beneficial re-use of recycled or surplus water.<sup>25</sup>

Approaches to stakeholder engagement regarding a site's water usage are tailored to the interests and needs of host communities as well as the environmental characteristics of the region. Common aspects of these approaches include:

- Publicly reporting water usage, directly with key stakeholders and by making information available online
- Engaging stakeholder focus groups to understand community needs and expectations and support involvement in site water management planning. For example, Newcrest Mining Limited's Cadia Valley Operations held three focus groups with nearby residents and interested stakeholders to understand their views and inform development of the site water management strategy<sup>26</sup>
- Participating in regional and catchment-based water management partnerships. For example, Rio Tinto, Glencore and Peabody actively participate in the Fitzroy Partnership for River Health.<sup>27</sup>

### Box 2: Upper Hunter Mining Dialogue

The Upper Hunter Mining Dialogue provides a collaborative forum which brings together local coal producers, community and business leaders, regulators, environmental groups and other industries to understand and work together to develop and implement solutions to community priorities. To support the dialogue, a number of joint working groups are working to develop and implement projects to address the cumulative impacts of mining.

Goals of the Upper Hunter Mining Dialogue Water Joint Working Group are to:

- Develop a better understanding of the region's water resources and the existing and potential impacts of development on the Hunter Valley catchment
- Demonstrate and promote responsible and efficient use of water in the Hunter Valley.<sup>28</sup>

One of four projects of the Water Joint Working Group involved adoption of a standardised water accounting framework to support consistent reporting of water coming into and leaving mining operations. Two years of results using the MCA Water Accounting Framework are now available and provide 'timely objective information about mining's interaction with water resources in the region, allowing for a more informed discussion.'<sup>29</sup>

Key points from 2015 water usage include:

- Mining operations used less than 1 per cent of water in the Hunter River System
- Farmers, residents and businesses used 21 per cent of water in the system

<sup>25</sup> Minerals Council of Australia, [MCA Water Policy](#), MCA, viewed 4 January 2018.

<sup>26</sup> Cadia Valley Operations, [Water](#), Newcrest Mining Limited, viewed 10 January 2018.

<sup>27</sup> Fitzroy Partnership for River Health, [About Us](#), Fitzroy Partnership, viewed 10 January 2018.

<sup>28</sup> New South Wales Minerals Council, [Latest Projects](#), NSW Minerals Council, viewed 19 December 2017.

<sup>29</sup> New South Wales Mines Council, [Minerals Council of Australia Water Accounting Framework](#), NSW Minerals Council, viewed 19 December 2017.

- 63 per cent of mine water was sourced from onsite runoff and rainfall with 27 per cent of water sourced from deep aquifers of limited alternate use due to high salinity
- 3 per cent of mine water was discharged into the system.

Water usage reports are assessed by the dialogue and inform mining company programs to increase water saving and re-use.

Source: New South Wales Minerals Council, [UMHD 2015 Water Usage Results](#), NSW Minerals Council, viewed 19 December 2017.

### **Box 3: Peabody involvement in the Fitzroy Partnership for River Health**

Owning and operating five coal mines in Queensland's Bowen Basin, Peabody is an active member of the Fitzroy Partnership for River Health.

Established in 2012, the partnership aims to provide a complete picture on the health of the Fitzroy River through funding, resources and data-sharing arrangements to contribute to water quality and health monitoring data. Members of the partnership include the Queensland and local governments, mining and energy companies, the agricultural industry, research institutions and interested community organisations.

In discussing its ongoing participation, Peabody Energy noted the importance of the partnership as a 'trusted, independent body' with its credibility arising from 'the fact that it is a partnership between the resources industry, the agricultural industry, local and State government.'

Source: Fitzroy Partnership for River Health, [Partner Overview – 2016](#), Fitzroy River Health, viewed 10 January 2018.

### 3. INDUSTRY WATER STEWARDSHIP

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- Australia's minerals industry has a long-standing commitment to water stewardship, underpinned by a strong evidence base, stakeholder engagement and transparency.
- Research and development of innovative water management strategies is a priority for Australia's minerals industry. Significant investment in development and application of new technologies, recovery, recycling and beneficial use and re-use of water supports this.
- Leading practice guidance developed by or in partnership with industry is advancing industry practice, and provides guidance for other industries.

#### 3.1 Leading practice

The minerals industry's commitment to leading practice and responsible water management is articulated in *Enduring Value* and the *MCA Water Policy*. Both articulate and underpin the minerals industry's commitment to and practice of responsible water stewardship.

#### MCA Water Policy

The MCA Water Policy articulates the minerals industry's commitment to responsible use of Australia's water resources. It recognises the minerals industry's support and promotion of a range of principles regarding water use and management including:

- Water is recognised as a key business asset with social, cultural, environmental and economic values at a local, regional and national level
- All water planning and management decisions should be based on sound science and stakeholder engagement, be transparent and have agreed and reasonable timeframes for review
- Cultural and environmental water flows should be quantified and secured prior to determining the quantity available for industry's consumption
- Industrial uses should be included in water resource planning to provide opportunities for maximising economic, social and environmental outcomes
- Access arrangements should be 'fit-for-purpose' and account for differences in geological and user characteristics across Australia.<sup>30</sup>

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<sup>30</sup> Minerals Council of Australia, [Water Policy](#), MCA, viewed 3 January 2018.

#### **Box 4: Hillgrove Resources and DC of Mount Barker recycled waste water**

The Kanmantoo Copper Mine is located in the Adelaide Hills region of South Australia. The project contains the old Kanmantoo Copper Mine pit, which was in operation from 1970 until 1976. The mine was reopened by Hillgrove Resources in 2011.

The mine uses treated waste water from the nearby town of Mount Barker. This treated wastewater is sourced from the District Council of Mt Barker's Laratinga Water Treatment Plant via a 15km pipeline that runs through to the Mine site.

This project was developed through a public-private partnership between Hillgrove and the District Council of Mount Barker. Hillgrove Resources funded and procured the infrastructure such as the pipeline and pump stations, and then vested this asset to Council in exchange for a reliable supply of class A recycled water, to be supplied in accordance with the District Council of Mount Barker's waste water pricing policy framework.

This project is providing environmental and community benefits through the removal of low quality water (untreated) discharges to Mt Barker Creek and through sustainable water resources management and the additional use of treated water for other purposes for stakeholders along the pipeline route.

#### **Water Accounting Framework**

The MCA Water Accounting Framework was developed by the MCA, University of Queensland Sustainable Minerals Institute and industry in 2011 to support industry's commitment to responsible water stewardship and transparency at site, company and industry levels.

The framework enables water flows to be accounted for and quantified by source and destination through an input-output model. Standard definitions for both water 'source' and 'destination' categories create uniformity between companies and hence across the sector in how water quality, quantity and purpose is described. Agreed categories also describe the 'level of treatment effort' required to achieve a standard of water quality fit for human consumption. While indicative only and not reflective of end uses, this process supports benchmarking and continuous improvement.

Adopted by MCA member companies from 2011 (and updated in 2013), the framework is widely considered international best practice in water accounting. Accordingly ICMM has adopted the framework as standard with the framework's metrics also reflected in the draft Global Reporting Initiative (GRI) update.<sup>31</sup>

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<sup>31</sup> Minerals Council of Australia, [Water accounting framework for the Australian minerals industry](#), MCA, viewed 4 January 2018.

### **Box 5: Water Accounting Framework at Newcrest's Cadia Valley**

Located in central west New South Wales, Newcrest Mining Limited's Cadia Valley Operations was an early adopter of the MCA Water Accounting Framework and continues to use the framework to support transparency and continuous improvement in water management.

Water is a critical business input at Cadia Valley: it is used for processing, transporting crushed waste rock to tailings and for other operational purposes. Cadia Valley obtains its own water from various sources, including extraction from local rivers and streams, captured rainfall and minor groundwater extraction. Treated effluent from the towns of Orange and Blayney is also used by arrangement.

To support stakeholder engagement, Cadia Valley held three focus groups with local residents to understand community priorities and concerns and inform the operation's water management plan.

Cadia Valley's monthly Groundwater Monitoring Summary is also prepared according to the MCA Water Accounting Framework and published on its website for stakeholders to view. Annual Streamflow Monitoring Reports and maps are also available.

During 2015-16 Cadia Valley analysed options for sourcing water, considering environmental risk, water reliability and cost factors. By reducing its water storage target and reducing evaporation, Cadia Valley is able to use less water and prioritise lower energy dependent water sources. This has resulted in a significant water saving and a 50 reduction in electricity requirements for water extraction.

Sources: Newcrest Mining Limited, [Sustainability Report 2016](#), 2017, Newcrest, Melbourne, Australia, p.53 and Cadia Valley Operations, [Water](#), Newcrest Mining Limited, viewed 10 January 2018.

## **3.2 Research and development**

### **Site and company level research and development**

Water availability and security of supply is a critical business risk for the minerals industry.

The industry faces challenges associated with water access, including variable and limited water supply, use and treatment of poor quality water, mine dewatering and management of excess water. Investments to minimise and improve water use are therefore a priority for mining operations.

### **Box 5: Innovative water technology in Kakadu region**

ERA's operations in the Northern Territory are informed by a comprehensive water management strategy, based on industry-leading monitoring systems and significant investments in water storage, transfer and treatment infrastructure. Innovation and flexibility are key given extended dry periods, extreme weather events and high variability in annual rainfall in the Kakadu region.

Key infrastructure includes a brine concentrator, which uses thermal energy to evaporate water that is then condensed and discharged as clean distilled water. Opened in 2013 the \$220 million brine concentrator allows process water from ERA's Tailing Storage Facility to be treated and discharged. This reduces the amount of process water on site – a key aspect of ERA's progressive rehabilitation activities on site.

Reducing the amount of process water on site also assists ERA to effectively manage its water balance during heavy rainfall.

Source: ERA, [Water Management](#), Energy Resources Australia, viewed 3 January 2017.

### Box 6: Reducing water use at Glencore's Oaky Creek mine

The Oaky Creek coal mining operations is one of Glencore's four mining operations in Queensland. The mine is located in the Mackenzie catchment of the Fitzroy Basin.

Each of Glencore's mines in Queensland have established comprehensive water management strategies to manage high rainfall and drought conditions common in Central Queensland. However, four years of above average rainfall over the 2010–2013 period and limited opportunities to release held water led to an update of Oaky Creek's water management approach.

Drawing on expertise from within Glencore as well as specialist water consultancies, Oaky Creek's updated water management strategy aims to reduce the amount of mine-affected water held on site by up to 40 per cent.

To deliver the strategy, Glencore invested in construction of an \$8.5 million Reserve Osmosis Water Treatment Plant. The plant can treat up to 6 megalitres of mine-affected water daily.

In addition to reducing the volume of mine-affected water held on site, treated water can now be used for mining operations at Oaky Creek – reducing the site's net water usage by 80 per cent each year and significantly reducing the need for Glencore to purchase water from SunWater, allowing river water to be retained for other users and the natural environment.

Other aspects of Oaky Creek's updated water management strategy include:

- Use of evaporative fans to reduce the volume of excess stored water
- Preventing clean water collected during rainfall events from entering mine-affected water storage ponds through improved drainage systems on rehabilitated mine areas and construction of levees and open work area (approximately \$4 million in project value)
- Workforce education to reduce water used during underground operations.

Glencore continues to review opportunities to provide water suitable for use to adjacent agricultural and industrial properties for use in irrigation, stock and industrial use applications. Providing such assistance will assist in reducing the strain on natural water resources by other water users in the area.

Source: Fitzroy Partnership for River Health, [Glencore's water management](#), Fitzroy Partnership viewed 10 January 2018

### Cross-sector research programs

Established in 1992, the Australian Coal Industry's Research Program (known as ACARP) is a mining research program advancing research and development across Australia's black coal sector. The sector owns and funds ACARP through a levy of five cents per tonne on saleable black coal.

Each of the approximately 70 projects supported by ACARP each year is led by a reputable research institution, usually a university, with industry monitors appointed to facilitate engagement and input across industry. This approach ensures academic and scientific rigour and supports sharing and advancement of technical research between producers.<sup>32</sup>

Recent projects focused on responsible water stewardship include:

- Research by University of Queensland to improve understanding of hydraulic connectivity between mines and adjacent river and ground water systems. Focused on the Hunter Valley and coal mining regions the project resulted in development of criteria to assess mining impacts on rivers and aquifers
- Research by Central Queensland University to develop a region-specific tool to assess the condition of temporary streams near Queensland mines. Recognising that existing guidelines and predictive models for river health are usually based on steady conditions, the project

<sup>32</sup> ACARP, [What is ACARP?](#), Australian Coal Research Limited, viewed 3 January 2017.

addresses the need for a specific tool to assess the condition of ephemeral streams at Queensland mines<sup>33</sup>

- Development of a pilot scale desalination technology to increase water recovery and reduce site brine water storage volumes
- Research to develop practical indicators of fish health in riverine ecosystems in coal mining regions. Based around the Fitzroy Basin, the project will assist to improve water health assessments and inform regional water management planning.<sup>34</sup>

### 3.3 Advancing best practice

#### Leading Practice Sustainable Development Program

The Leading Practice Sustainable Development Program produces handbooks on leading practice across a range of themes relating to sustainability, including water stewardship. A multi-stakeholder steering committee chaired by the Commonwealth Department of Industry, Innovation and Science manages the program.<sup>35</sup>

In 2016, the program's Water Stewardship Working Group completed an update of its leading practice water handbook. Its development was supported by the MCA and its membership.

Key guidance provided in the handbook covers:

- Catchment water management - regional and catchment water risks, planning and stakeholder engagement and development of a water management approach incorporating key water features and assistances, climate change and climate variation and environmental flows
- Operational water management – risk-based and adaptive approaches to water management and best practice relating to operational mine water system design and management
- Reporting and accounting processes – information regarding corporate and statutory reporting requirements and the MCA Water Accounting Framework and approaches to inform an effective monitoring and reporting system.<sup>36</sup>

#### Cumulative Environment Impact Assessment Guide

Cumulative environmental impact assessment (CEIA) is an approach to environmental impact assessment (EIA) that aims to consider the effects of multiple actions or impacts collectively on the environment. Understanding the combined effects of activities on the environment supports well-planned, well-managed and sustainable development.

CEIAs are increasingly required as part of regular project specific EIA processes at State/Territory and Commonwealth levels. Terms of reference or guidelines for project-specific environmental assessment also now generally include a requirement to provide information on cumulative impacts of neighbouring or associated projects. However, historically, little best practice guidance was available.

The *Cumulative Environmental Impact Assessment Industry Guide* was prepared by the MCA in July 2015 to address this gap. It provides a set of frameworks and approaches to CEIA general advice relevant within the minerals and resources industry context.<sup>37</sup>

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<sup>33</sup> ACARP, [2016 People and Projects Report](#), ACARP, 2017, p.23.

<sup>34</sup> Ibid, p. 24.

<sup>35</sup> Australian Government, [Resources](#), Department of Industry, Innovation and Science, viewed 4 January 2018.

<sup>36</sup> Australian Government, [Leading Practice Sustainable Development Program Water Handbook](#), Department of Industry, Innovation and Science, Canberra, 2016.

<sup>37</sup> Minerals Council of Australia, [Cumulative Environmental Impact Assessment Industry Guide](#), MCA, July 2015, pp.1-8.

## 4. REGULATION OF MINERALS INDUSTRY WATER USE (TOR ITEM B & C)

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- Water access by the minerals industry is comprehensively regulated under a range of State/Territory and Commonwealth legislation, including water licencing and environmental and project approval requirements.
- While regulatory frameworks are tailored to local context, central to each is the assessment and regulation of potential adverse environmental, social and economic impacts.
- A large coal development project seeking to access water through a water licence or entitlement is likely to require Commonwealth approval in addition to State/Territory approvals. No other water users are subject to these multiple requirements.

### 4.1 Industry water access and use is comprehensively regulated

Australia's minerals industry is subject to more regulatory requirements than most – if not all – other economic activities.<sup>38</sup> No other industry is required to meet the multiple stringent requirements imposed on mining projects.

Constitutional responsibility for the management of water resources rests with the States. To discharge this responsibility, States and the Northern Territory have established comprehensive suites of legislative and policy instruments to regulate water access and use by the minerals industry.

Requirements include compliance with water access and licensing arrangements as well as environmental assessment and regulation of water impacts as part broader environmental and project approvals.

Furthermore, mining projects may require approval under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) relating to water impacts generally (in the case of coal seam gas or large coal mining developments) or in regard to potential impacts on Matters of National Environmental Significance (MNES). This is discussed further in Section 5.

Robust scientific analysis of the impacts of extraction and use of surface and groundwater resources at both a local and catchment scale are required in the development of an environmental assessment. Detailed water models, integrating local and catchment characteristics, water uses and other aspects, are often developed to identify, understand and manage impacts. Information obtained through such studies adds considerably to the understanding of regional water resources.

Mining proponents are often also required – or elect – to integrate the environmental assessment with a broader analysis of the social and economic impacts and benefits associated with a project. For example, in Queensland, the *Environmental Protection Act 1994* provides for an environmental impact statement (EIS) to assess 'potential adverse and beneficial environmental, economic and social impacts of a project, as well as management, monitoring, planning and other measures proposed to minimise adverse environmental impacts.'<sup>39</sup> A similar approach applies in Victoria, which requires a specific agricultural impact study to weigh the benefits of maintaining the area for agricultural use.

Assessments must contain sufficient information to enable authorities to assess the projects on their merits and determine environmental performance requirements.

Environmental assessments are complex, resource-intensive processes that for large or 'greenfields' projects can take several years to complete. Approvals processes, where various regulatory agencies independently assess applications and determine environmental performance conditions, are also lengthy.

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<sup>38</sup> URS, [Update of National Audit of Regulations Influencing Mining Exploration and Project Approval Processes – Prepared for the Minerals Council of Australia](#), MCA, Canberra, 2013

<sup>39</sup> State of Queensland, [EIS TOR Support Guidelines, Department of Environment and Heritage Protection](#), viewed 3 January 2017.



Further information about how water use and potential impacts are assessed by regulators, independent or expert panels and peer reviews, and conditions imposed by various State/Territory and Commonwealth regulators, are outlined in detail below.

## 4.2 State regulation – water access and use

To meet their constitutional responsibility, comprehensive frameworks to manage and protect water resources, have been established by all States and the Northern Territory.

While common features exist across jurisdictions, this approach allows each framework to be tailored to regional characteristics and priorities and the broader whole-of-government project and environmental regulatory regime.

### 4.2.1 Securing a water access entitlement or licence

A water licence is an approval to access water from a river system or aquifer for commercial purposes.<sup>40</sup> Licences may be obtained through a market, or where markets do not exist, obtained through an application in accordance with rules established by the relevant regulator. Markets may not be appropriate in remote or regional catchments with single users.

Licence requirements and conditions are tailored to reflect local water system characteristics. As such, requirements for groundwater and surface water licences may differ.

Of concern is that, under the EPBC Act 'water trigger', a coal seam gas or large coal mining project seeking only to access water is likely to require Commonwealth approval, State/Territory approval and secure the appropriate water licence or entitlement (e.g. through water markets in New South Wales). No other water users are subject to these multiple requirements.<sup>41</sup>

### 4.2.2 Environmental approvals

An environmental approval (which forms part of development or planning approval processes) must be granted before a mining can proceed. An approval will include specific environmental performance conditions for a project, including conditions related to water access, storage, use and discharge. Common aspects of State/Territory environmental and project approval processes include:

- Undertaking comprehensive surface and groundwater studies to identify environmental values and water resources and understand potential impacts on the environmental and other water users. These studies inform a proponent's approach to managing water use, including potential water sources and establishment of surface, groundwater and broader environmental monitoring programs. Study methodologies and outcomes are usually peer reviewed by water and environmental experts.
- An environmental assessment report or environmental impact statement (EIS) is developed, incorporating assessment of potential water impacts and describing how a proponent plans to protect and monitor the environmental value of water and water resources.<sup>42</sup>
- This is usually integrated with analysis of the potential social and economic impacts and benefits of a project, informed by community and stakeholder consultation. Mitigation strategies to minimise impacts are also generally required.
- Once completed, the draft EIS is made available for public comment for a pre-determined period. Further community and stakeholder consultation may also be undertaken.

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<sup>40</sup> State of New South Wales, [About licences](#), NSW Government, viewed 3 January 2017.

<sup>41</sup> For coal seam gas and large coal developments only

<sup>42</sup> For example, in Queensland the proponent is required to demonstrate how the project can 'be operated in a way that minimises harm to the environment, protects the environmental values of wetlands and protects the environmental values of groundwater and any associated surface ecological systems.' State of Queensland, [TOR Guideline Water](#), Department of Environment and Heritage Protection, viewed 3 January 2017.

- The EIS is reviewed by the relevant State/Territory government regulator and/or regulators. Further technical peer review may also be commissioned.
- The State/Territory regulator may refer the project to the Commonwealth Independent Expert Scientific Committee (IESC) for review and advice on potential water impacts and the proposed management approach.
- The proponent is then required to respond to concerns raised through development of a supplementary EIS and/or response to submission. Additional information regarding water resource access, use and management may be included.
- The relevant Minister or delegate may approve the project subject to performance conditions. Many conditions usually relate to environmental and water performance requirements.

### Secondary approvals

In line with conditions of approval, the proponent is required to provide detailed water management plans. Water management plans must be approved by relevant regulatory authorities before development and/or mining can commence.

#### 4.2.3 Additional approvals for agricultural land and water

Assessment of alternate land uses is usually undertaken as part of the EIS. However some States and the Northern Territory have introduced additional and specific assessment and approval requirements regarding use of land for minerals development. Most relate to coexistence between agriculture and mining.

Additional requirements include:

- **New South Wales** – mining projects are subject to the Strategic Regional Land Use Policy which protects mapped strategic agricultural land or critical industry clusters. It requires a scientific assessment of agriculture and water impacts and the development of an agricultural impact statement to be lodged with the development application.<sup>43</sup>
- **Queensland** – strategic cropping or priority agricultural areas are specifically protected under *the Regional Planning Interests Act 2014 (Qld)*. The proponent must apply for a Regional Interest Development Approval under which potential material impacts on strategic agricultural areas are assessed, including defined regionally significant water sources.<sup>44</sup> Queensland's Water Act was also recently amended to expand the scope of the Office of Groundwater Impact Assessment (OGIA) to encompass mining activities with respect to their ability to declare a cumulative impact area and conduct a Groundwater Impact Assessment for all projects in that area.<sup>45</sup>
- **Victoria** – the *Mineral Resources (Sustainable Development) Act 1990 (Vic)* requires the holder of a mining or prospecting licence to prepare a statement of the economic significance of mining. The statement must include an assessment of the economic benefits of the proposed social and economic benefits of minerals development compared to other land uses.

Further information about additional – and often duplicative – approvals required for minerals development in relation to water access in each State/Northern Territory is provided below.

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<sup>43</sup> Department of Planning and Infrastructure, [Strategic Regional Land Use Policy](#), NSW Government, September 2012.

<sup>44</sup> Department of Infrastructure, Local Government and Planning, [Regional Planning Interests Act](#), Queensland Government, 2015

<sup>45</sup> Department of Environment and Heritage Protection, [Underground water](#), Queensland Government, viewed 8 January 2018.

### 4.3 State and Northern Territory regulatory regimes

#### New South Wales

The submission by the New South Wales Minerals Council provides a detailed overview of the regulatory and policy framework governing minerals development and protection of water resources in New South Wales. The table below outlines key aspects of this framework.

Act	Objective
<b><i>Environmental Planning Assessment Act 1979 (NSW)</i></b>	Proper management, development and conservation of natural resources, including water resources.
<b><i>Protection of Environment Operations Act 1997 (NSW)</i></b>	Protect, restore and enhance the quality of the environment, including water resources.  Provides for environmental protection licences, including for the discharge of water.
<b><i>Water Management Act 2000 (NSW)</i></b>	Sustainable and integrated management of the state's water.  Provides for development of water sharing plans for rivers and groundwater systems. Plans set out rules for water sharing between different types of water use.  The plans provide 'water uses with perpetual access licences, equitable conditions, and increased opportunities to trade water through separation of land and water' <sup>46</sup> .  Mining operations must comply with water sharing plans.
<b>Aquifer Interference Policy</b>	Ensures all water taken is properly accounted for, ensures activity addresses minimal impact considerations for 'impacts on water table, water pressure and water quality' and plans for 'measures in the event that actual impacts are greater than predicted.' <sup>47</sup>

Oversight of water access and use by the minerals industry occurs across the New South Wales regulatory regime, with key agencies including:

- **NSW Office of Water** – provides specialist review of all water assessments submitted by proponents
- **NSW Mining and Petroleum Gateway Panel** – the gateway process is a preliminary scientific assessment of the agricultural and water impacts of proposals located on strategic agricultural land before the existing development assessment process. The panel consists of independent agricultural science, water and mining experts and seeks IESC advice when preparing gateway certificates.<sup>48</sup>
- **NSW Department of Planning and Environment** – coordinates assessment of mining and coal seam gas development applications. The agency often commissions its own expert review of water assessments, particularly where water is considered a significant issue.
- **New South Wales Planning Assessment Commission (PAC)** – review and determination of development applications are often delegated to the independent PAC, which includes relevant experts.

<sup>46</sup> Department of Water, [Water Sharing](#), NSW Government, viewed 3 January 2017.

<sup>47</sup> Department of Industry – Water, [Aquifer Interference Policy](#), NSW Government, viewed 3 January 2017.

<sup>48</sup> NSW Government [Strategic Regional Land Use Policy – the Gateway process](#), September 2012

## Queensland

Key aspects of Queensland's framework are described in the table below.

Instrument	Objective
<b>Water Act 2000 (Qld) and Water Regulation 2016</b>	<p>Proper management, development and conservation of natural resources, including water resources.<sup>49</sup></p> <p>Provides Queensland's water planning framework, including underground water management framework and made good provisions</p> <p>The framework requires tenure holders to prepare baseline assessment plans (BAPs), provides for declaration of cumulative management areas (CMAs) and establishes OGIA among other provisions. The office 'oversees the groundwater impacts of the resource industry'.<sup>50</sup></p>
<b>Water plans</b>	<p>Catchment-based water plans are subordinate legislation empowered under the Water Act (Qld).</p> <p>Water plans support allocation of water to meet current and future needs and are prepared based on technical assessments with expert advice and stakeholder engagement regarding social, economic and environmental factors.<sup>51</sup></p>
<b>Environmental Protection (Act 1994 (Qld))</b>	Protect Queensland's environment while allowing for ecologically sustainable development. <sup>52</sup>
<b>Regional Planning Interests (Act 2014( Qld))</b>	<p>'Seeks to manage the impact and support coexistence of resource activities and other regulated activities in areas of regional interest.'<sup>53</sup></p> <p>Central to this is assessment of potential impacts on water resources, including groundwater resources and associated ecosystems.<sup>54</sup></p>
<b>Environmental Protection Policy (Water) 2009</b>	Achieve objective of EP Act by providing water quality guidelines, a decision-making framework and monitoring and reporting on water condition. <sup>55</sup>
<b>Environmental Offsets Act 2014 (Qld)</b>	Establishes Matters of State Environmental Significance (similar to Matters of National Environmental Significance under the EPBC Act), including several which pertain to water such as 'wetlands and watercourses'.

Oversight of water access and use by the minerals industry occurs across Queensland's regulatory regime, with key agencies including:

- **Department of Environment and Science** – responsible for administering the EP Act (Qld)
- **Office of Groundwater Impact Assessment** – established under the Water Act (Qld), the office is an independent entity 'responsible for assessing and managing the impacts of groundwater extraction from resources operations in culmuative management areas (CMAs).'<sup>56</sup> The Water Act (Qld) was amended in 2016 to apply to mining development.<sup>57</sup>

<sup>49</sup> Department of Natural Resources, Mines and Energy, [Changes to water legislation](#), State of Queensland, viewed 3 January 2017.

<sup>50</sup> Department of Environment and Heritage Protection, [Groundwater](#), State of Queensland, viewed 10 January 2017.

<sup>51</sup> Business Queensland, [Water planning framework](#), State of Queensland, viewed 3 January 2017.

<sup>52</sup> Department of Environment and Science, [Environmental policy and legislation](#), State of Queensland, viewed 3 January 2017.

<sup>53</sup> State of Queensland, [Regional Planning Interests Act](#), Department of Local Government, Racing and Multicultural Affairs, viewed 3 January 2017.

<sup>54</sup> *ibid.*

<sup>55</sup> *ibid.*

<sup>56</sup> Business Queensland, [Office of Groundwater Impact Assessment](#), viewed 10 January 2017.

- **Gasfields Commission Queensland** – the independent statutory body supports industry coexistence through a range of functions, including providing advice and recommendations to Minister and government entities regarding the onshore gas industry, landholders and regional communities.<sup>58</sup>
- **Chief executive administering the RPI Act (Qld)** - support the assessing agencies of the Department of Agricultural and Fisheries, Department of Natural Resources, Mines and Energy, Department of Environment and Science and Local Government.

### ***Access to groundwater***

In Queensland, regulation of the extraction of underground water by mining and petroleum and gas activities during operations is separated into two components:

- Non-associated water – the interference or take of water is intentionally (directly) linked to production (such as the taking of water from a bore for dust suppression).
- Associated water – the interference or take of water is unavoidable during production (such as water from an exposed coal seam or layer entering an open pit mine).

While the resources sector has a statutory right (or in some cases a licence) to interfere or take associated water, the sector also has an obligation to comply with the underground water management framework under the Water Act. The framework includes:

- undertaking baseline assessments of water bores
- preparing baseline assessment plans
- preparing underground water impact reports
- entering into make good agreements with landholders, where required.

Proponents must also measure and report to the regulator the volume of associated water taken. Relevant chapters of the EP Act (Qld) specifically refer to requirements for environmental assessment and ongoing management of underground water extraction by resource projects, particularly as they related to impacts on groundwater dependent ecosystems.

The take of non-associated water by the resources sector is required to be licensed as part of Queensland's water planning process.

Box 5 provides a case study showing how companies are working to minimise the collection of water on site, increase water reuse and improve the quality of released water.

### ***Water quality and releases***

During high rainfall conditions significant volumes of water may accumulate on an operating site and can pose a safety risk to personnel and operations. In these instances, proponents may need to release water collected on site into natural watercourses.

Resource companies can only release this water under certain watercourse flow conditions (e.g high flow) and to strict water quality parameters. These requirements are part of a company's approved environmental operating conditions. Companies must also undertake monitoring during the release event and report to the regulator the volume of water released and its quality (e.g. pH and suspended solids).

While releases occur infrequently, information about releases and monitoring results are available in near real time to the general public. This includes in the Fitzroy Basin.<sup>59</sup>

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<sup>57</sup> Ibid.

<sup>58</sup> Gasfields Commission Queensland, [About Us](#), viewed 10 January 2017.

<sup>59</sup> Department of Environment and Heritage Protection, [Water Releases](#), State of Queensland, viewed 10 January 2018.

## South Australia

Key aspects of the South Australian framework are described in the table below.

Act	Objective
<b>Mining Act 1971 (SA)</b>	<p>The <i>Mining Act 1971 (SA)</i> is the principal Act regulating the licencing and approval of mineral projects in South Australia This includes environmental assessment of water; including both surface and underground water and sea water.</p> <p>Approvals for mining activities under the Act require the proponent to complete both a Mining Lease application outlining the operations, impacts and management of the project (as per Regulation 30 in the <i>Mining Regulations 2011</i>), and a Program for Environment Protection and Rehabilitation (PEPR).</p> <p>The PEPR sets out the environmental management procedures for construction, operation, and closure of the proposed mine and outline key measurable criteria against which the environmental outcomes for the mining lease will be evaluated.</p>
<b>Environment Protection Act 1993 (SA)</b>	<p>Promotes ecologically sustainable development through the use, development and protection of the environment.</p> <p>Long and short-term economic, environmental, social and equity aspects are considered when determining matters in relation to environmental protection, restoration and enhancement.</p> <p>Section 25 of the Act establishes a general environmental duty, requiring that activities that pollute or might pollute the environment must not be undertaken unless all reasonable and practicable measures to minimise harm are implemented.</p> <p>Section 36 of the Act requires that works to construct a building or structure for use for an activity of environmental significance must not be undertaken without an environmental licence.</p>
<b>Natural Resources Management Act 2004 (SA)</b>	<p>The <i>Natural Resources Management Act 2004 (NRM Act)</i> promotes sustainable and integrated management of the State's natural resources and makes provision for the protection of the State's natural resources.</p> <p>The NRM Act specifies eight NRM regions in South Australia to manage the Natural Resources in a manner appropriate for a particular area. In areas where there are limited risks to the water resources, high level principles within the statutory NRM Plans, together with specific principles to guide water affecting activities, provide appropriate protection for the resource and dependent ecosystems.</p> <p>Where there are greater risks to the water resources, water allocation plans (WAPs) are prepared. WAPs outlines the maximum consumptive take from the resource, any limitations on purposes of take, rules for trade and other rules for the protection of the resource, dependent ecosystems and third parties. Water licences are issued to existing users and these become a property right able to be traded consistent with the provisions in the WAP.</p> <p>If a proposed mining lease has the potential to impact on natural resources an approval may be required to undertake water-affecting</p>

	activities or to move or keep specified plants or animals in a control area.
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Oversight of water access and use by the minerals industry occurs across the South Australian regulatory regime, with key agencies including:

- **SA Department of Premier and Cabinet, Mineral Resources Division** – Coordinates environmental assessment and approval of mining projects as well as compliance and enforcement. Responsible for oversight of rehabilitation and closure related activities for mining.
- **SA Department of Environment, Water and Natural Resources** – Administers parts of the EP Act (SA) and the Natural Resources Management Act (SA).
- **SA Environment Protection Authority** – provides independent, specialist review and recommendations for all environmental impact assessments and independent advice to Government Departments.

### Northern Territory

Key aspects of the Northern Territory framework are described below.

Act	Objective
<b><i>Environmental Assessment Act 2013 (NT) and Administrative Procedures 2013</i></b>	<p>Provides for the assessment of environmental effects of development proposals and for protection of the environment.</p> <p>Requires all proposed developments/projects (including mineral resources projects) with potential for significant unacceptable environmental impacts to be subject to environmental impact assessment, including impacts on environmental water quality, access to water by other users and water for environmental services.</p>
<b><i>Water Act 2016 (NT) and Water Regulations 2008</i></b>	<p>Primary tools for managing and protecting the Northern Territory's water resources through controls on how water resources are allocated, used and managed.</p> <p>Require licences for certain works and activities (e.g. water extraction).</p> <p>Mining operations are currently exempt from requirements to hold water licenses and permits for extraction of surface and groundwater under the Act; however, the Water Act is currently undergoing substantial revision and when introduced (in 2018 or 2019) operators will be required to obtain water licences to enable the government to monitor water use (e.g. via installation of meters). Operations will also be included in water allocation plans.</p> <p>Reforms will also extend pollution provisions in the Act to mining projects on authorised sites. Regulation of discharges of water from mining operations, within mine site boundaries, currently under the Mining Management Act will be transferred to the revised Water Act.</p> <p>Currently, water pollution emanating from a mine site onto land or water beyond authorised sites is regulated under the Water Act.</p>
<b><i>Mining Management Act 2015 (NT) and Regulations 2013</i></b>	<p>Provides for the authorisation of mining activities, the management of mine sites, and environmental protection on mining sites</p> <p>Offences are imposed for contact of mining wastes with water and</p>

	environmental harm from the pollution of water on a mine site.
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Regulation of access, use and management of water by the minerals sector, including discharges is managed by several key agencies including the following:

- **NT Environment Protection Authority** – provides advice on the environmental impacts of development proposals and advice and regulatory services to encourage effective waste management, pollution control and sustainable practices. It issues licences to regulate activities under the Waste Management and Pollution Control Act (NT) (e.g. waste discharge licences). It also provides advice to the Minister for the Environment and Natural Resources on a range of current and emerging environmental policy issues.
- **NT Department of the Environment and Natural Resources** – includes many of the key functions that foster and protect the environment and natural resources of the NT, including water, land resource management and environmental issues.
  - Water Resources Division implements the Northern Territory’s primary water resource legislation, the Water Act (NT).
  - This includes developing regional water allocation plans for the long-term development of water resources, and administration of permits and licences, providing advice and assistance to ensure water resource use and development are consistent with the Water Act (NT). It also administers the Marine Pollution Act (NT) and Regulations.
- **NT Department of Primary Industry and Resources – Mines Directorate** – has a key role in development and regulation of the minerals sector, managing risk associated with historical mine sites (legacy mines), administering tenure and land access agreements for mining and geothermal exploration and development, and supports economic development and participation for Indigenous people.
  - Responsible for oversight of rehabilitation and closure of mine sites.



## Western Australia

Key aspects of the framework in Western Australia are described below.

Act	Objective
<b><i>Environmental Protection Act 1986</i></b>	<p>The Act establishes the environmental impact assessment process for significant and strategic proposals and schemes within the State and a licensing regime to regulate emissions and discharges from activities on prescribed premises. The minerals industry is frequently subject to both environmental impact assessment and licensing requirements under this Act, both which may relate to interactions between mining activities and water resources.</p> <p>There are numerous opportunities for community and other agency input into these processes.</p> <p>The Act also establishes an independent Environmental Protection Authority, with various advisory functions. Its key function is to conduct environmental impact assessments of significant proposals and make recommendations to the Minister.</p> <p>Compliance with the Act is enforced by the Department of Water and Environmental Regulation.</p>
<b><i>Rights in Water and Irrigation Act 1914</i></b>	<p>The Act provides for rights in water resources to regulation management, use and protection of water resources and for related purposes.</p> <p>This Act requires and regulates surface water and groundwater licensing, water management plans, catchment management and water allocations.</p> <p>It also sets out the matters the Minister should consider when determining an application for a water licence.</p> <p>There are opportunities for third party and other agency input into these processes.</p> <p>Compliance with the Act is enforced by the Department of Water and Environmental Regulation.</p>
<b><i>Mining Act 1978</i></b>	<p>This Act provides for access to land for mining purposes, approval of mining activities and the regulation of rehabilitation and closure.</p> <p>Impacts on the environment, including water resources are regulated through tenement conditions and the approval of programmes of works, mining proposals and closure plans. There are opportunities for third party and agency input into these areas.</p> <p>Compliance with the Act is enforced by the Department of Mines, Industry Regulation and Safety.</p>
<b><i>Biodiversity Conservation Act 2016</i></b>	<p>Provides for the conservation and protection of biodiversity and biodiversity components in Western Australia and the ecologically sustainable use of biodiversity components in Western Australia.</p> <p>Establishes a licensing and permitting system for relevant activities.</p>
<b><i>Conservation and Land Management Act 1984</i></b>	<p>To make better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, to</p>

	establish the Conservation and Parks Commission, to confer functions relating to the conservation, protection and management of biodiversity and biodiversity components, and for incidental or connected purposes.
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Oversight of water access and use by the minerals industry occurs across the Western Australian regulatory regime, with key agencies including:

- **WA Environment Protection Authority** – provides independent, specialist review and recommendations for all environmental impact assessments and independent advice to the Minister for Environment.
- **WA Department of Water and Environmental Regulation** – Administers parts of the Environmental Protection Act (WA) as well as the Rights in Water and Irrigation Act (WA). This includes licensing, compliance and enforcement.
- **WA Department of Mining, Industry Regulation and Safety** – Coordinates environmental assessment and approval of mining projects as well as compliance and enforcement of tenement conditions. Responsible for oversight of rehabilitation and closure related activities for mining.
- **WA Department of Biodiversity, Conservation and Attraction** – responsible for promoting biodiversity and conservation to enrich people’s lives, through sustainable management of Western Australia’s species, ecosystems, lands and the attractions in the department’s care including management of relevant State lands.

## Victoria

Key aspects of the regulatory framework in Victoria are described below.

Instrument	Objective
<b>Mineral Resources (Sustainable Development) Act 1990 (Vic)</b>	Encourages an economically viable mining industry to operate in a way that supports environmental, and social objectives of the State. <sup>60</sup>  Conditions may be imposed on a licence to protect the environment and groundwater.  Requires licensee to seek permission of the Water Authority (under the <i>Water Act 1989</i> ) which manages the land on which mining is to occur.
<b>Environment Protection Act 1970 (Vic)</b>	Requires a works approval/licence from the Environment Protection Authority to discharge water off-site.  Provides for State Environment Protection Policies setting quality objectives for segments of the environment <sup>61</sup>
<b>State Environment Protection Policies (SEPP)</b>	A SEPP must be established to set quality objectives for segments of the environment under the EP Act 1970 (Vic).  SEPPs are statutory instruments and may include a statement of quality objectives, identification of any beneficial users to be protected and measures designed to minimise potential for pollution. <sup>62</sup>
<b>Water Act 1989 (Vic)</b>	Applies to all surface water in Victoria, including rights to water, allocation of water entitlements, protection of groundwater and underground (groundwater disposal).

<sup>60</sup> Department of Economic Development, Jobs, Transport and Resources, [Management of water](#), State of Victoria, viewed 10 January 2017.

<sup>61</sup> Ibid.

<sup>62</sup> Ibid.

	Requires licences for various activities, including for aquifer rejection or dewatering <sup>63</sup>
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Oversight of water access and use by the minerals industry occurs across Queensland’s regulatory regime, with key agencies including:

- **Earth Resources Regulation** – responsible for administering the *Mineral Resources Act (Vic)* and Mineral Resources Regulations (Vic)
- **Department of Environment, Land, Water and Planning and Regional Water Authorities** – responsible for administering the *Water Act (Vic)*
- **Catchment Management Authorities** - established under the *Catchment and Land Protection Act (Vic)*, CMAs include a community board, implementation committees and support staff and are responsible for developing and coordinating regional catchment management strategies. These strategies are considered during assessment by regulators.<sup>64</sup>

To support the comprehensive regulatory frameworks described above, New South Wales, Queensland, South Australia, Victoria and the Northern Territory have agreed protocols in place for seeking advice from the IESC when assessing large coal mining developments.

More information about the role of the IESC in assessing coal development proposals is provided in Section 4.5 and Section 6.

#### 4.4 Commonwealth approvals for water use

In principle, Commonwealth and State/Territory environmental approvals processes are responsible for different but related environmental values. States and the Northern Territory are responsible for regulating intra-State/Territory environmental matters associated with development while the Commonwealth, through the EPBC Act, focuses on nine ‘triggers’ or Matters of National Environmental Significance (MNES).

The nine MNES are world heritage, national heritage, wetlands of international significance, listed threatened species and ecological communities, listed migratory species, Commonwealth marine areas, the Great Barrier Reef Marine Park, nuclear actions and a water resource, in relation to coal seam gas (CSG) development and large scale coal mining development.<sup>65</sup> The ninth trigger relating to water resource was introduced by amendment to the EPBC Act in 2013 without full consideration of the need for or impact of the change through a Regulatory Impact Statement.

Where activities intersect with MNES, minerals developments may require Commonwealth approval under the EPBC Act. Minerals development and/or mining cannot commence until all required EPBC Act approvals have been granted.

This frequently includes assessment of water impacts where water access and use impact on the range of MNES, including water dependent species and/or ecosystems. Impacts on water resources are also assessed under the sector-specific ‘water trigger’ where the proposal involves a CSG or large coal mining development.

Under the EPBC Act, projects assessed under the ‘water trigger’ must be referred to the Independent Expert Scientific Committee (IESC) for advice.

<sup>63</sup> Department of Economic Development, Jobs, Transport and Resources, [Management of water](#), State of Victoria, viewed 10 January 2017.

<sup>64</sup> Ibid.

<sup>65</sup> Department of Environment and Energy, [What is protected under the EPBC Act](#), viewed 30 June 2017.

#### 4.5 Independent Expert Scientific Committee

The IESC was established in 2012 as a statutory body under the EPBC Act to provide advice to decision-makers on potential impacts on water resources of CSG and large coal mine development.

The IESC was supported by a National Partnership Agreement on Coal Seam Gas and Large Coal Mining Development (NPA), of which Queensland, New South Wales, South Australia, the Northern Territory and Victoria were signatories. While the NPA concluded on 30 June 2014, existing arrangements for State and Commonwealth referral to the Committee for advice have continued.<sup>66</sup>

Independent review of NPA operations undertaken in 2014 and 2015 concluded:

The operation and achievements of the Agreement have strengthened the regulation of coal seam gas and large coal mining by enhancing the extent to which decisions have been informed by improved science and independent expert advice<sup>67</sup>

The IESC provides advice to the Commonwealth in accordance with the 2013 amendment to the EPBC Act which introduced impacts on water resources as a new MNES. Under the trigger, which applies only to CSG and large coal mining development projects, all projects that have or are likely to 'have a significant impact on water resources must be referred to the Australian Government regulator for advice'.<sup>68</sup>

#### IESC bioregional assessment program

The IESC's program included a bioregional assessment (BA) program to collate available scientific data to better understand potential impacts of CSG and large coal mining developments on identified water dependent assets. Focused on the cumulative impacts of multiple projects, the final bioregional assessments are used by regulators and/or the IESC to prioritise assessment on areas more likely to be affected by minerals development. Scientific data was provided by Australia's coal sector to support development of the bioregional assessments.

While the bioregional assessments are valuable in terms of better understanding cumulative impacts, the minerals industry has raised concerns that they account for 'impacts' associated with only one type of activity and not the range of activities that may impact on water resources. There is currently no budget allocation to update the BAs.

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<sup>66</sup> Independent Expert Scientific Committee on coal seam gas and coal mining, [IESC advice on coal seam gas and coal mining](#), Department of the Environment, viewed 3 January 2017.

<sup>67</sup> S Hunter, [Independent review of the national partnership agreement on coal seam gas and large coal mining development – Report](#), Department of the Environment, June 2015, p. 4.

<sup>68</sup> Independent Expert Scientific Committee on coal seam gas and coal mining, [Other matters](#), Commonwealth of Australia, viewed 3 January 2018.

## 5. MINERALS INDUSTRY WATER USE (TOR ITEM D)

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- Water use by the minerals industry differs substantially from other industry uses, such as agricultural or manufacturing.
- The atypical characteristics of minerals industry water use reinforce the need for a sophisticated and fit-for-purpose approach to development of water access entitlements.
- The MCA supports the principles of the National Water Initiative, which recognises sector-specific challenges to water access.

### 5.1 Characteristics – industry water use

Water use by the minerals industry can differ substantially from that of other users, including agriculture and manufacturing. This can be driven by the type of operational activity as well as the location and a site's geological characteristics. As a result, water used by the minerals industry is primarily self-sourced and water infrastructure supplied, operated and maintained at a significant cost.

The minerals industry also uses a wide variety of water sources, including surface and ground water, sea water, process water and treated effluent. This water is not always valued by other users or usable for other industrial or household activities.

#### 5.1.1 Saline or hypersaline water

Various water sources of varying quality, including saline and hypersaline water that is not suitable for purpose other than industrial applications, are used by the minerals industry. Existing water planning primarily focuses on the water quality protection for irrigation and other sensitive consumption uses. In contrast, much of the groundwater used by the minerals industry is not fit for these other uses and is only appropriate for use in industrial applications.

For example, in the Western Australian goldfields, deep hypersaline aquifers – which are up to ten times saltier than seawater – are accessed by mining operations to supply water for minerals process. This water is not catchment flow nor is it transferrable to other uses for consumption due to its salinity.

#### 5.1.2 Water accessed to maintain safe operations

The process of dewatering involves extracting water from and surrounding an ore body to enable ore to be accessed safely. This water may or may not be used for operational purposes (such as minerals processing).

Water extracted by dewatering may be managed onsite or, where an operation is licensed to do so, discharged. Such water may be treated to make it suitable for the receiving environment or other beneficial purposes, such as for townships and agricultural purposes.

#### 5.1.3 Contingency licensing

Dewatering volumes can vary from year to year due to local geology, groundwater characteristics, rainfall patterns and other climatic factors. State authorisations, such as licensing, usually require mining operations to hold water licences set at the maximum predicted water intake for any given year over the expected life of an operation. A large contingency volume is often included to enable companies to manage these variations however is not always used by licensees. Contingency volumes are necessary to manage this variability.

For example, at a number of mining operations in the Pilbara, Western Australia, the average annual take for dewatering is only 30 per cent of the licensed water take. The contingency is maintained for manage variability.

#### 5.1.4 Multiple licences for the same water

In some regions where mining is the dominant industry, water 'dewatered' from one operation in upper catchment areas may be captured by downstream operations for use. The same water may then be removed and discharged again downstream. The net result is several mines hold licences for access and use of the same water.

#### 5.2 Beneficial use by other water users

In some circumstances water infrastructure provided and maintained by industry is shared with other stakeholders, including neighbouring communities, farmers and pastoralists, often to their substantial benefit in terms of cost, accessibility and reliability.

Additionally, surplus poorer quality water may be treated by a company at its own cost and then gifted or on-sold to other users, such as farmers. Approval by the relevant environmental regulator is required for this to occur. Supply of water to third parties may also be regulated through a water services licencing regime.

#### Box 7: Beneficial use of high-quality surplus water at Marandoo iron ore mine

An innovative integrated water management scheme at Rio Tinto's Marandoo iron ore mine in Western Australia allows for beneficial uses of high-quality surplus dewatering water in the wider catchment area.

Profiled in the *Leading Practice Sustainable Development Program Water Handbook*, Rio Tinto developed the scheme in close cooperation with regulators and other agencies to responsibly manage the discharge of surplus water associated with the mine's expansion below the water table in 2013.

Surplus dewatering water supplies the Marandoo mine's operations and staff accommodation as well as the nearby Tom Price mine and township. By supplying Tom Price mine and township the area's existing aquifer is allowed to naturally recover after approximately 40 years of ongoing use.

Other surplus water is used by the Hamersley Agriculture Project. Rhodes grass, used as hay fodder for cattle, and oats are grown as part of the project under a pivot irrigation system. In addition to demonstrating the potential for economic diversity through agriculture, the project has reduced the need to import cattle feed from other regions.

Source: Australian Government, [Leading Practice Sustainable Development Program Water Handbook](#), Department of Industry, Innovation and Science, Canberra, 2016, p.25-26.

#### 5.3 National water reform and mining

Water access entitlements and licensing frameworks have evolved over time to address over-allocation of water for agricultural uses and are now well-suited for these applications. However water access arrangements need to consider the characteristics of water use by all users.

The atypical characteristics described above, particularly when compared to agricultural use, demonstrate the importance of a sophisticated and fit-for-purpose approach to water access entitlements for the minerals sector.

The unusual characteristics of water use by the minerals industry has long been recognised in the national water reforms process, including in the 2004 Intergovernmental Agreement on the National Water Initiative (NWI). The minerals industry supports the principles of the NWI and recognises the importance of Clause 34 of the NWI.

Clause 34 acknowledges:

... there may be special circumstances facing the minerals and petroleum sectors that will need to be addressed by policies and measure beyond the scope of this Agreement. In this context, the Parties note that specific project proposals will be assessed according to environmental, economic and social considerations, and the factors specific to resource development projects, such as isolation, relatively short

project duration, water quality issues, and obligations to remediate and offset impacts, may require management arrangements outside the scope of this Agreement.<sup>69</sup>

Consideration of industry water use should be consistent with the core principles of the NWI. Clause 34, therefore, is not about special treatment that would unjustifiably put minerals development on an unequal basis to other activities. Rather it provides for special and careful consideration in recognition of the additional barriers and regulatory hurdles applying to the minerals sector that if not properly considered and addressed would lead to inequitable treatment.

Until water planning and entitlement regimes are sufficiently developed to accommodate these circumstances, Clause 34 provides an important transitional mechanism. As integration of minerals development continues, Clause 34 recognises that the particular requirements of the minerals sector need to be acknowledged in water planning.<sup>70</sup> It should be noted that the minerals industry worked closely with the former National Water Commission to address and overcome these issues and further integrate minerals development until the NWI.

The MCA considers that Clause 34 should be retained for the purpose of identifying these unique circumstances and ensure they are properly accounted for in planning and entitlement regimes and by water markets.

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<sup>69</sup> Australian Government, [Intergovernmental Agreement on a National Water Initiative](#), 2004, p.6-7.

<sup>70</sup> Minerals Council of Australia, [Submission to the Triennial Assessment on the progress of water reforms](#), December, 2013

## 6. EFFECTIVENESS OF THE EPBC ACT ‘WATER TRIGGER’ (TOR ITEM E)

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- The case for a sector-specific EPBC Act water trigger remains weak and there is no scientific basis for expanding the trigger.
- State-based water policy has evolved significantly over recent years with specific arrangements in place to assess and manage the potential impacts of minerals development on water resources.
- Introduction of the water trigger was undertaken contrary to the Council of Australian Governments (COAG) principles of best practice regulation. Potential impacts from only two sectors are considered, despite the potential for common impacts from other sectors. These requirements also duplicate existing state-based regulatory progresses.

### 6.1 Introduction of the water trigger

As noted in Section 4, the ‘water trigger’ for coal seam gas and large coal mining developments was introduced through the addition of a new MNES to the EPBC Act in 2013.

The water trigger was introduced in response to localised community concerns regarding regulatory oversight of the coal seam gas industry in northern New South Wales. Instead of seeking to understand the basis for these concerns, and whether they applied to the coal sector, a decision was made to significantly expand the scope of the EPBC Act.

No Regulatory Impact Statement (RIS) was undertaken prior to its introduction (due to a Prime Ministerial exemption) – contrary to COAG principles of best practice regulation and despite the significant ramifications of a new sector-specific MNES to operation of the EPBC Act. Absence of a RIS prevented careful and objective consideration of existing robust approvals frameworks for minerals development, including as they relate to water resources. An Independent Review (tabled in Parliament in June 2017) served as the Post Implementation Review required by the Australian Government Office of Best Practice Regulation when legislation is introduced without an accompanying RIS.<sup>71</sup>

At the time the water trigger was introduced, the NPA and IESC were operating as intended with relevant projects referred to the IESC for advice.

Ambiguity in design of the water trigger has led to capture of almost all coal mining approvals, including minor amendments to existing mine plans. This places an unnecessary burden on industry resources, delays site improvements and can interrupt continuity of existing operations.

It is also unusual that, under the water trigger, a coal mining operation seeking to purchase water under a market arrangement is likely to require Commonwealth approval under the EPBC Act.

### 6.2 Overlap with State/Territory regulatory regimes

As detailed in Section 4 of this submission, comprehensive and robust state and Northern Territory regulatory frameworks regulate the water, and more broadly, environmental aspects of minerals development.

State-based water policy has also significantly evolved over recent years and major coal mining States, including New South Wales and Queensland, have specific arrangements in place to assess and manage potential impacts of minerals development on water resources.

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<sup>71</sup> Department of Environment and Energy, [Implementation of the Water Trigger under the Environment Protection and Biodiversity Conservation Amendment Act 2013](#), Australian Government, December 2016, p.5.



In addition, following establishment of the IESC in 2012, New South Wales, Victoria, Queensland, South Australia and the Northern Territory established agreed protocols for referring large coal development projects to the Committee for advice.

In effect, both State/Territory and Commonwealth decision-makers rely on the same advice from the IESC, meaning that trigger has simply created a second approval for the same matter.

### **6.3 Weak case for retaining the water trigger**

The MCA recently made a submission to an independent review of the water trigger. The review found additional regulatory costs associated with water trigger borne by industry were significant – estimated at \$47 million annually. The review concluded this was acceptable despite being unable to ascertain whether the water trigger had achieved any of its aims of improved environmental outcomes or enhanced community confidence.

Oddly, the review also concluded duplication created by the water trigger was not a significant issue given it was managed through administrative arrangements. The MCA does not consider the fact that regulators are managing administration of the legislation as well as they can to be a sound basis for this conclusion and hence justification of on-going duplication. Regulatory activity should not be a measure of environmental outcome.

Most recently, the Senate Select Committee on Red Tape considered the water trigger in its recent review into the effect of red tape on environmental assessment and approvals. The committee's interim report recommended the water trigger be removed from the EPBC Act.<sup>72</sup>

The MCA considers the water trigger under the EPBC Act should be repealed, rather than expanded.

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<sup>72</sup> Senate Select Committee on Red Tape, [Recommendations](#), Commonwealth of Australia, viewed 10 January 2018.