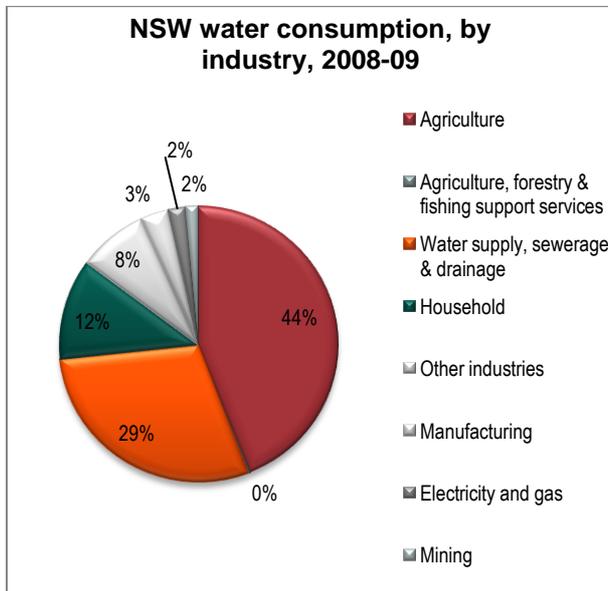




Water Use in the NSW Minerals Industry

How much water is used by the NSW minerals industry?

Mining operations are relatively small consumers of water compared to other sectors in NSW. Out of the 4,562 gigalitres (GL) of total water consumed in NSW during 2008-09, mining operations consumed approximately 66 GL, or 1.5% of the total. This is compared to agriculture (43.9%), water supply, sewerage and drainage (29.1%) and households (11.7%).



Source: ABS Water Account, Australia 2008-09

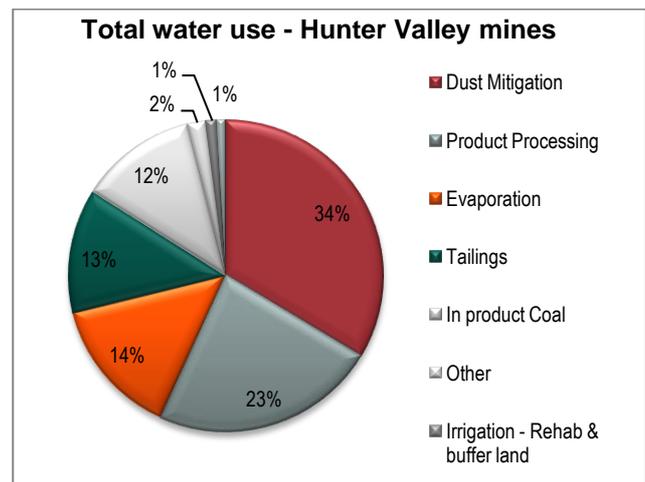
The economic value produced from water used by the minerals industry is higher than any other industry. The minerals industry has an average value of \$80 per cubic metre of water used, compared to \$40/m³ for the industrial sector and \$5/m³ for the agricultural industry.¹

Why does the minerals industry need water?

Water is vital for mining and minerals processing and is used throughout all stages of the mining process including:

- Minerals exploration
- Ore extraction and processing
- Dust suppression
- Irrigation of surrounding lands and rehabilitated areas.

An example of this relative water use is shown in the following graph for the Hunter Valley – the largest mining region in NSW. In the Hunter, dust mitigation is the largest use of water.



Source: Hunter Valley mines' 2005 Annual Environmental Management Reports

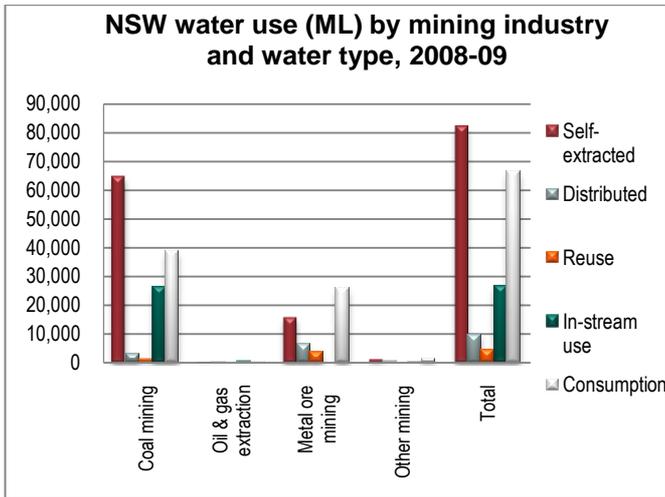
Within the NSW mining industry, coal mining makes up 58% of water use, metal ore mining makes up 39% and other mining makes up 3%.²

Where do mines source their water from?

Mines obtain water from a variety of sources including direct harvesting from the environment (surface water and groundwater), water reused from other sources, on-site recycling and town water supplies in-line with approved water management plans.

Mines often use water that is unsuitable for other uses such as deep saline groundwater or effluent from town sewage. This lower quality water can be used directly, such as for dust suppression, or it can be treated to a higher quality.

In many mines, a large proportion of water is obtained through mine *dewatering* – the removal of excess runoff and groundwater seepage into mines. This water can be used during production, returned to the environment or shared with other local mines, towns or industry.



Source: ABS Water Account, Australia 2008-09

How is water use at mines regulated in NSW?

Extracting water from the environment for mining requires a water extraction licence, just like any other industry. This entitles the licence holder to share available water from a catchment with other users including town water supplies, farmers, industry, government and Aboriginal communities. Many mines buy high security water licences on the open water market to ensure a more consistent water supply, which is essential for mines to operate.

Water access and environmental performance, including mine water discharge, is regulated through a number of government agencies including: the Office of Environment and Heritage; Department of Trade and Investment, Regional Infrastructure and Services; and the Department of Planning and Infrastructure. Approval to mine is issued only after full consideration of possible environmental impacts and measures to minimise any adverse impacts.

Many mining companies also publicly report on water use through voluntary Sustainability Reports.

How is the mining industry improving its water efficiency?

The mining industry is continuing to develop innovative ways to reduce its water consumption in-line with business needs and the expectations of government and the community. Water security is an important business issue and using water more efficiently is an important part of business strategy to ensure secure supplies of water in the future.

The NSW Government requires large water users in the Sydney Metropolitan area, including mines, to produce Water Savings Action Plans. These plans are prepared for nominated sites and determine how water is used. They identify opportunities for efficiency improvements and create a plan for implementing water efficiency measures. Progress against the plan's targets is reported annually.

Many mines recycle a significant amount of their water for reuse on site, with some mines recycling up to 80% of all water used. In other cases, mines source water from external effluent streams, with some mining operations sourcing up to 50% of their water from local effluent. These practices reduce demand on water drawn from the environment.

The industry has also developed extensive water sharing systems between sites and other industries, which reduces

reliance on other forms of fresh water supply. For example, in the Central West the industry provides excess water to power stations and returns it to streams to supplement environmental flows. Case studies involving water use and sharing in the NSW minerals industry are available at: www.nswmin.com.au/Media-Speeches-and-Info/Case-Studies/default.aspx.

The minerals industry invests heavily in research projects to improve water management. Mines sometimes develop water efficient technology that can be deployed across a number of different industries. Research organisations include the Sustainable Minerals Institute based at the University of Queensland: www.smi.uq.edu.au, and ACARP (Australian Coal Association Research Program): www.acarp.com.au.

Glossary of terms

- Aquifer:** an underground body of water
- Dewatering:** a process used to remove excess runoff and groundwater seepage into mines
- Megalitre (ML):** 1 million litres
- Gigalitre:** 1000 million litres

References & more information

- ABS (2010), *Water Account, Australia 2008-09*: www.abs.gov.au
- CSIRO (2007), *Process Magazine*, January 2007: www.csiro.au
- Office of Environment and Heritage: www.environment.nsw.gov.au

Disclaimer: This fact sheet is intended to provide summary information only. It does not intend to be comprehensive or to provide specific legal advice. Given the changing nature of legislation, regulations, program rules and guidelines, there is a potential for inherent inaccuracies and potential omissions in information contained in this fact sheet. All information in this fact sheet is provided "as is" with no guarantee of completeness or accuracy and without warranty of any kind, express or implied. In no event will New South Wales Minerals Council Limited, any related members, consultants or employees thereof be liable to anyone for any decision made or action taken in reliance on the information in this paper or for any consequential damages.

¹ CSIRO (2007), *Process Magazine*

² ABS (2010), *Water Account, Australia 2008-09*