

## THE USE OF WATER IN IRON ORE MINING

As part of our Guiding Principles for Sustainable Mining, the Geraldton Iron Ore Alliance (GIOA) is committed to ensuring responsible use of water resources.

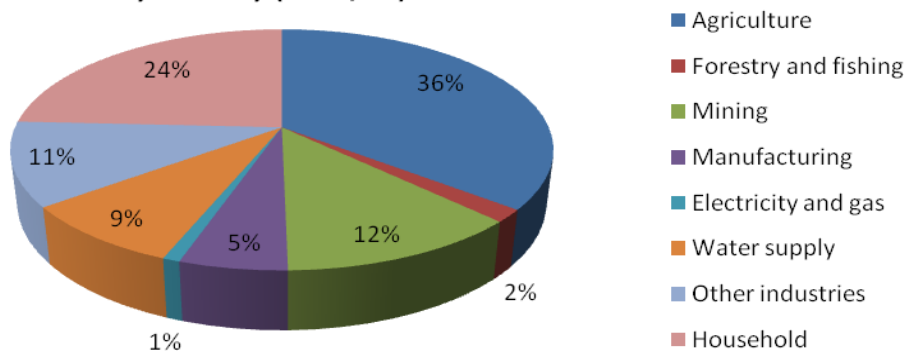
The use of water in iron ore mining in the Mid West needs to be considered alongside the regional social and economic benefits that the industry will deliver. As such, the Alliance commissioned a Water Issues report from Economics Consulting Services in 2009 to examine current water use and sources in the Mid West region and the expected needs of the iron ore industry as it develops.

GIOA member companies are aware of the value of water and the need to use it efficiently; it is in the best interests of the industry to place a high value on water, not only to uphold the overarching principles of sustainability, but also because of the investment that goes into sourcing, developing and managing the resource.

### Western Australia Overview

According to the latest available figures from the Australian Bureau of Statistics, in 2004-05, the agricultural industry consumed the largest volume of water in Western Australia (535 GL or 36%), followed by households (362 GL or 24%). Consumption by the mining industry reached 183 GL or 12%. It is important to note that a significant amount of the water used in the mining industry is of poor quality and unsuitable for other uses without treatment. In addition, the use of water in the *iron ore industry* makes up only a comparatively low proportion of the total amount used by the whole mining industry.

#### WA water use by industry (2004/05)



Source: ABS - Catalogue 4610.0 - Water Account, Australia, 2004-05

The State Government administers water allocation through a comprehensive licensing and environmental assessment process managed by the Department of Water. Water allocations to the mining industry are subject to extremely rigorous assessment, and metering, water level and water quality monitoring programs are intensive.

### Mid West Region Overview

The current level of water use by the iron ore industry is approximately 2% of all water used in the Mid West region. However, over the next decade, it is predicted to grow to a significant 25% of demand, if all planned projects proceed.

Information from the Department of Water indicates that there is almost 250GL of available groundwater, annually and on a sustainable basis, in the Mid West region that has not yet been allocated, committed or requested.

Given the water needs for the iron ore industry in the region over the next 10 years will grow to about 27GL, the size of these estimates of available volumes suggest that new projects will have little difficulty in obtaining the necessary supplies.

#### Why does iron ore mining need water?

Water is required for **dust suppression**, which is essential to reduce impacts on the environment, human health and allow staff to work in a safe workplace. Water is distributed generally by water trucks on haul roads and waste dumps, and by sprays on iron processing equipment such as conveyors and crushers. Water is used for dust suppression when conditions require it - more

frequently in the dry summer season and when there is a high frequency of traffic movement. Locally sourced brackish or saline water is generally used for these purposes.

In addition, for magnetite mining, water is used in **ore processing**, to increase the quality and concentration of iron. After crushing, the dry ore is mixed with water and wet screened. This allows the ore to be directly fed into a steel pellet plant without further treatment.

Some operations also use water to **transport** the ore via a slurry pipeline. Importantly, a significant amount of the water used in processing and transport is recycled.

The nature of mining operations means that the industry seeks groundwater licences that are fixed in volume and duration rather than open ended rights to variable volumes. Mines usually have a limited life and in most locations adequate groundwater exists to meet the short-term requirements. Shortage of water is not an impediment for most mines.

### ***Where is the water used in mining sourced from?***

Water supplies for most iron ore mining operations are generally obtained from groundwater sources with some from mine dewatering operations. The industry provides for its own water needs, locating suitable sources, developing supply facilities (borefields, dams), and building supply pipelines and holding tanks.

The Department of Water manages the sharing of the available groundwater resources, and allocates licences only after environmental and human consumption requirements have been accounted for. When assessing applications to construct bores or make use of groundwater for commercial purposes, the Department of Water considers additional factors including public interest, ecological sustainability, current and future needs for water, alignment with local practices and by-laws, precedent, and consistency with land use planning and the requirements of other agencies or other legislation.

When applying for a licence to use water, mining companies are required to demonstrate that appropriate measures will be taken to ensure efficient water use and protection from environmental impacts. Water licences have enforceable terms, conditions and limits and new licences are only issued where the water resource is within sustainable limits.

### ***What are members doing to manage water resources responsibly?***

Each member company is responsible for developing comprehensive management plans to deliver water balance accounting and efficiencies for all projects. In addition, mining companies are required to account for their water usage in the environmental review, approvals and management process for their operations, which involves a comprehensive period of community consultation.

As an industry body, the GIOA has prepared a strategy to assess and address the water needs of iron ore mining in the Mid West now and into the future.

Some of the initiatives currently being undertaken by members to ensure responsible management of water resources include:

- Supporting local farmers by undertaking bore monitoring processes in areas where extraction for mining is intended
- Protection of existing groundwater-dependent ecosystems in those areas
- Provision of water supply and infrastructure for remote fire-fighting tanks and outlets
- Monitoring of local water bodies
- Responsible use of water on site, including the introduction of innovative industry practices, such as the implementation of dry tailings in magnetite mining
- Assessing whether water obtained from mine de-watering can be re-injected into groundwater aquifers or reused.



**For more information, visit the Geraldton Iron Ore Alliance website, [www.gioa.com.au](http://www.gioa.com.au).**

While Department of Water information determined there is more than adequate water available, water resources in the Mid West are not well known. The Alliance supports the Water Issues report recommendation for a Regional Water Plan to be made a Government priority, in order to quantify the sources and uses of water for the present and to plan for future water needs.