

Minerals Council of Australia (MCA) - Water Accounting Framework for the Minerals Industry

Adoption by MCA Member Companies–What does it mean?

Minerals Council of Australia member companies have endorsed an initial phase of framework adoption which includes:

1. Alignment of company water metrics consistent with the Water Accounting Framework Input-Output Model.
2. Annual public reporting (Company Reporting or similar) on company aggregated water inputs and outputs using the framework definitions and metrics. Reporting requirements may include reporting on volumes against the Global Reporting Initiative:
3. Providing input into MCA surveys on water inputs and outputs for use in broader communication of aggregate mining sector water use by region or jurisdiction.

An overview of the water accounting framework and its use can be found in **Attachment A** and full implementation guidance and a framework can be located at www.wateraccounting.net.au.

What needs to be done to fulfil the company commitment?

1. *Alignment of Company water metrics consistent with the Water Accounting Framework Input-Output Model.*

Of primary importance to the alignment of company water metrics is the adoption of the standard definitions provided within the framework. For example, from Table 1 of the Water Accounting Framework User Guide, the following definitions for inputs and their sources are provided:

Framework Definitions to be adopted

Table 1 - List of Inputs with their Corresponding Sources (Source: WAF User Guide)

Source	Definition	Input
Surface Water	All water naturally open to the atmosphere, except for water from oceans, seas and estuaries	Rainfall and Runoff
		Rivers and Creeks
		External Surface Water Storages
Groundwater	Water beneath the earth's surface that fills pores or cracks between porous media such as soil, rock, coal, and sand, often forming aquifers. For accounting purposes, water that is entrained in the ore can be considered as groundwater	Dewatering of ore body
		Bore Fields
		Ore Entrainment
Sea Water	Water from oceans, seas and estuaries	Estuary
		Sea/Ocean
Third Party	Water supplied by an entity external to the operational facility. Third-party water contains water from the other three sources. When the source is known, the physical source (surface water, groundwater, sea water) should prevail.	Contract/Municipal
		Waste Water

These definitions, along with definitions for individual inputs, Destinations and individual outputs are provided in full in the Water Accounting Framework User Guide and Template.

Along with the standard definitions, standard units should be adopted, Mega-litres (ML). Note: 1 ML = 1 million litres.

2. Annual public reporting (Company Reporting or similar) on company aggregated water inputs and outputs using the framework definitions and metrics.

To promote communication and transparency of minerals industry water use, MCA member Companies are asked to use the water accounting framework to meet their annual public water reporting needs at an aggregated company level.

A company may choose to use the framework to meet its existing water reporting requirements (such as annual sustainability or performance reporting).

Reporting requirements may include using the framework to respond to *Global Reporting Initiative (GRI)* reporting requirements for:

- EN8 – Total Water Withdrawn by Source
- EN21 – Total Water discharged by Quality and Destination

Methods on how to use the framework to satisfy GRI reporting requirements are provided both within the Water Accounting Framework User Guide (Section 6.1) and the User Template provided. For demonstration purposes, GRI maps directly to the water accounting framework as follows:

Table 2: Water Accounting Framework Template with mapped GRI

Input-Output	Element (Source/Destination)	Sub-element (Inputs/Outputs)	
Inputs	Surface Water	Precipitation and Runoff	EN8–Total Water Withdrawn by Source
		Rivers and Creeks	
		External Surface Water Storages	
	Groundwater	Aquifer Interception	
		Bore Fields	
		Entrainment	
	Sea Water	Estuary	
		Sea/Ocean	
	Third Party Water	Contract/Municipal	
		Waste Water	
TOTAL INPUTS			
Outputs	Surface Water	Discharge	EN21–Total Water discharged by Quality and Destination
		Environmental Flows	
	Groundwater	Seepage	
		Reinjection	
	Sea Water	Discharge to Estuary	
		Discharge to Sea/Ocean	
	Supply to Third Party		
	Other	Evaporation	
Entrainment			
Other (define)			
TOTAL OUTPUTS			

3. Providing input into MCA surveys on water inputs and outputs for use in broader communication of aggregate mining sector water use by region or jurisdiction.

For the purpose of broader communication, MCA member companies may be asked from time to time to provide input into water use surveys for use in reporting aggregate water use. Adoption of the framework will facilitate this process.

Attachment A

Quick Reference Guide to the Water Accounting Framework Input Output Model

Overview

The minerals industry water accounting framework provides a consistent methodology for the communication of how an operational facility interacts with water. This methodology is based on the consistent representation of these water interactions, as shown in the figure below:

- (1) Inputs represent the receipt of water to the operational facility;
- (2) Outputs represent the removal of water from the operational facility;
- (3) Diversion represents water that is moved around or through the operational facility;
- (4) The task-treat-store cycle represents what an operational facility does with its water and how it stores it.

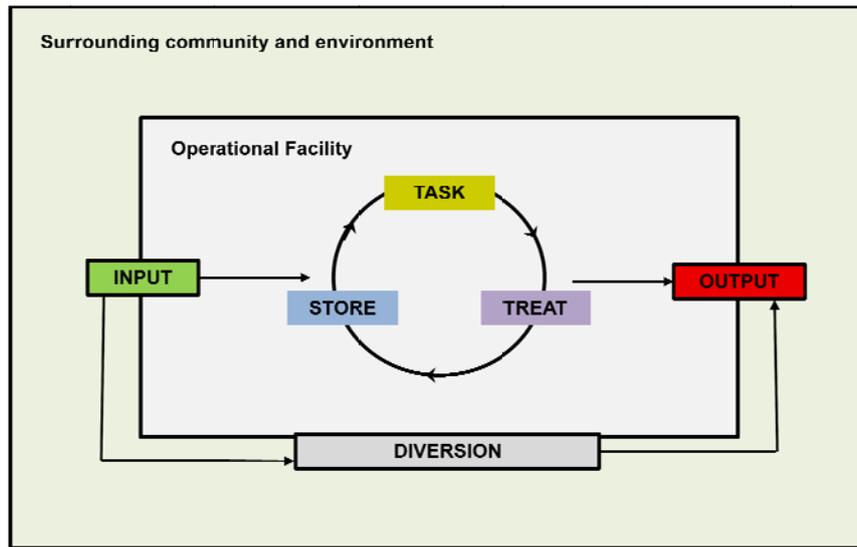


Figure 1 - Consistent representation of the water system of an operational facility

The **Input-Output** model represents the intersection of the facility with the surrounding environment and community. The Input-Output model is a consistent method for reporting a facility's water balance. It lists all inputs by source and all outputs by destination. The Input-Output model does not introduce any new concepts, it simply proposes a consistent way of communicating the water information that most mining companies and operational facilities already collect.

Key information required for the input-Output Model includes:

- Flow volumes into and out of the operational facility by source and destination.
- Diversion flow volumes 'around' the operational facility by source and destination.
- Water quality categorisation of flows (via optional method provided or company defined).
- Assignment of flow accuracy, based upon water accounting framework methodology.
- 'Material' or account relevant information provided through a Contextual Statement and accompanying Notes.

The second component of the water accounting framework is the **Operational Model**, which is a consistent method for the calculation and reporting of water reuse and recycling (store, treat and task cycle within an operation). Given the extensive capacity building required by companies, adoption of the operational model is optional for MCA member companies.

Further Guidance

Framework Guidance and an Input-Output Model Template is available at www.wateraccounting.net.au. For information, a quick reference guide on how to use the water accounting framework input-output model, based upon the format provided in the framework template has been provided in the following **Figure 2**.

Figure 2 Water Accounting Framework for the Minerals Industry Input-Output Model Template Quick Reference Guide

The categories for **Sources** and **Destinations** and their definitions are key to the water accounting framework and cannot be changed, as framework alignment is dependent on their consistency.

A list of individual **Inputs** and **Outputs** has been provided. Additional inputs and output categories may be added as required by operations, but these must fit into an existing Source/ Destination Category and be defined in Notes.

Flow Volumes Data entered here. Water Quality Categories have been provided and defined based upon a set of 'screening' parameters, however their use is optional.
Alignment of Units (ML) is required.

Data accuracy information is required. It is important to note that the aim of the water accounting framework is not to produce perfect water accounts, but to provide information in a consistent way.

Notes are important to include to provide context for entries, including sources or for defining new 'input' and 'output' sub elements.

OPERATIONAL FACILITY (INPUT-OUTPUT)

Input-Output	Element (Source/Destination)	Sub-element (Inputs/Outputs)	Water Quality			Sub-Element Total (ML)	Accuracy (high, medium, low)			Notes (1,2,..)
			Category 1 (ML)	Category 2 (ML)	Category 3 (ML)		Measured	Estimated	Simulated	
Input	Surface Water	Precipitation and Runoff	e.g. 5016	942				Low	1	
		Rivers and Creeks	1452				High		2	
		External Surface Water Storages								
	Groundwater	Aquifer Interception		487			High		2	
		Bore Fields	354				High		2	
		Entrainment		562			Low		3	
	Sea Water	Estuary								
		Sea/Ocean								
	Third Party Water	Contract/Municipal								
		Waste Water		4218			High		2	
TOTAL INPUTS			6822	6209	0					
Output	Surface Water	Discharge								
		Environmental Flows								
	Groundwater	Seepage		301				Medium	1	
		Reinjection								
	Sea Water	Discharge to Estuary								
		Discharge to Sea/Ocean								
	Supply to Third Party									
	Other	Evaporation	5019					High	1	
		Entrainment			4300			Medium		
		Other (define)		222				Medium	5	
TOTAL OUTPUTS			5019	523	4300					

The **Input-Output Model** represents all water which is tasked or treated or stored for intention to use by the operational facility. By definition, this excludes diversions. Which flows are included or excluded in this section of the model will be dependent on where the operational boundary is defined.

DIVERSIONS (INPUT-OUTPUT)¹

Input	Surface Water	Precipitation and Runoff	320				High		6
		Rivers & Creeks		100			Medium		1
	Groundwater	Aquifer Interception (Dewatering)							
	TOTAL DIVERSION INPUTS								
Output	Surface Water	Discharge	370				High		6
	Groundwater	Reinjection		50			High		1
	Supply to Third Party								
	Other	Other (define)							
TOTAL DIVERSION OUTPUTS									

Input-Outputs for **Diversions** are reported separately. Diversions include water which is actively managed but not stored for intention to use, tasked or treated by the operational facility.

¹ Note: Only Commonly used Diversion Source and Destination Categories presented here.