



MAKING WATER WORK



SunWater Dams

SunWater makes a significant contribution to the rural, industrial, energy, mining and urban development of Queensland by providing water solutions.

Over the past 80 years, SunWater has designed and managed the construction of 30 of Queensland's dams, 82 weirs and barrages, 39 reservoirs and balancing storages and rural and bulk water infrastructure systems.

Currently, SunWater owns and manages 19 dams in Queensland and each dam has been strategically built in existing river, stream or creek locations to serve the needs of the region. A dam is a critical component of a water supply scheme which can be made up of weirs and barrages, pumping stations, pipelines and channels, and drains. The overall scheme is designed to supply water for various purposes including town water supply, irrigation, electricity production, industrial i.e. power stations, mines, stock and groundwater supply.



Water Supply Scheme



Legend

SunWater Infrastructure

Purpose of Water Supply

Dam Types

The type of dam is defined by how the dam wall was constructed. Depending on the surrounding environment, SunWater dams can be described as one or more of the following:



Cania Dam

EMBANKMENT

Constructed as an embankment of well compacted clay (earthfill) some with rock on the faces (rockfill).



Boondooma Dam

CONCRETE FACED ROCKFILL

Constructed as an embankment of compacted free-draining granular earth containing large particles of rock with concrete slabs on the upstream face.



Wuruma Dam

MASS CONCRETE GRAVITY

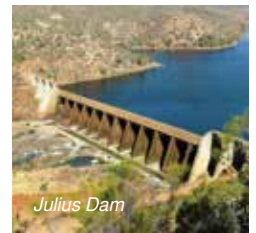
Constructed using a large volume of cast-in-place concrete.



Paradise Dam

ROLLER COMPACTED CONCRETE GRAVITY

Constructed in horizontal layers of dryer than normal concrete mix resulting in a gravity structure.



Julius Dam

MULTIPLE ARCH CONCRETE BUTTRESS

Constructed as concrete horizontal arches supported by small span buttresses (triangular concrete walls).

Spillways, Gates and Outlet Works

Spillways are structures constructed to provide safe passage of excess inflows and/or flood waters as they occur from a dam into a downstream river on which the dam has been constructed. Depending on the location and capacity of a dam, the spillway specifications vary and can sometimes include spillway gates.

The spillway gates are designed to maximise the storage capacity of a dam while increasing the spillway capacity for passing large flood flows if required. They can also be used for environmental releases which are too large to be discharged from the outlet works.

Gates tend to be raised or lowered by winch systems, hydraulic rams, or automatic float systems. Gates can be vertical-lift gates or radial gates.

Many SunWater dams do not have spillway gates; however there are three dams (Callide Dam, Leslie Dam and Coolmunda Dam) that have radial gates and one that has vertical lift gates (Beardmore Dam).

Dam outlet works are not capable of large volume releases. They are designed to deliver customer water demand requirements. As a result making outlet work releases to reduce dam levels would take months of continuous release and still only provide negligible downstream flooding benefits.



Water release via outlet works



Beardmore Dam vertical-lift gates



Callide Dam radial gates

Managing Water Levels

FLOOD EVENTS

All of SunWater's dams are designed principally for water supply purposes, with the exception of Peter Faust Dam in Proserpine which has been designed to provide both water supply and passive flood mitigation. No other SunWater dams are currently designed or operated to provide downstream flood mitigation.

SunWater dams are designed to store water to their intended capacity and then safely pass any excess water inflows through purpose built spillways, release gates or outlet works.

For more information, please refer to

www.sunwater.com.au/sustainability/community/living-near-dams.

PURPOSE OF RELEASES

SunWater makes water releases for two main reasons, such as:

- demand from downstream water entitlement holders and
- for the environment.

A majority of SunWater's water releases are made for customers, such as farmers, towns and industry. These releases are based on customer demand and are regulated through Resource Operations Plans (ROP) for each particular water supply scheme.

The Department of Natural Resources and Mines manage the water resource planning process through development of Water Resource Plans and ROPs in accordance with *Water Act 2000*. The plans are developed through technical and scientific assessment as well as extensive community consultation, to determine the right balance between the economic, social and environmental demands on the state's water resources.

SunWater also makes scheduled water releases for environmental flow purposes and these are based on extensive environmental flow research and fall within each scheme's ROP rules. Sometimes, SunWater makes small water releases through the dam's outlet works based on minor inflows coming in from rainfall across the dam's catchment zone. Any additional ad hoc water releases from a dam would be in breach of ROP rules which have been established to protect water entitlement holders' reliability of supply.

For more information about ROPs or to view a ROP for a specific catchment, please refer to www.dnrm.qld.gov.au/water/catchments-planning/catchments.

Dam Safety

SunWater's experienced dam staff are trained to follow comprehensive and safety-focused operating procedures to ensure our dams pose minimal risk to the general public.

All SunWater dams undergo regular and comprehensive safety assessments to ensure they follow the National and State dam safety guidelines.

SunWater Dam Statistics

DAM NAME	STREAM NAME	LAKE NAME	NEAREST TOWN	STRUCTURE DESCRIPTION	STORAGE LEVEL ABOVE ORIGINAL BED (METRES)	STORAGE CAPACITY (ML)	SURFACE AREA AT FULL SUPPLY LEVEL(HA)	YEAR COMPLETED
E J Beardmore	Balonne River	Lake Kajarabie	St George	Earthfill embankment and mass concrete (vertical lift gates)	12.1	81,700	2850	1972
Bjelke-Petersen	Barker Creek	Lake Barambah	Murgon	Earth and rockfill embankment	26.3	134,900	2250	1988
Boondooma	Boyne River	Lake Boondooma	Proston	Concrete-faced rockfill	47.8	204,200	1815	1982
Burdekin Falls	Burdekin River	Lake Dalrymple	Ravenswood	Mass concrete gravity	40.0	1,860,000	22,000	1987
Callide	Callide Creek	Lake Callide	Biloela	Earthfill embankment and mass concrete spillway (radial gates)	34.8	136,300	1240	1965-88
Cania	Three Moon Creek	Lake Cania	Monto	Earth and rockfill	40.1	88,500	760	1982
Coolmunda	Macintyre Brook	Lake Coolmunda	Inglewood	Earthfill (radial gates)	16.1	69,000	1645	1968
Eungella	Broken River	Eungella Reservoir	Eungella	Earth and rockfill embankment	39.6	112,400	848	1969
Fairbairn	Nogoa River	Lake Maraboon	Emerald	Earthfill embankment	31.7	1,301,000	15,000	1972
Fred Haigh	Kolan River	Lake Monduran	Gin Gin	Earth and rockfill embankment	43.0	562,000	5345	1975
Julius	Leichhardt River	Lake Julius	Mount Isa	Multiple arch concrete buttress	25.2	107,500	1255	1976
Kinchant	Sandy Creek (North Branch) - water harvested from Pioneer River	Lake Kinchant	North Eton	Earthfill embankment	18.1	62,800	920	1977-86
Kroombit	Kroombit Creek	-	Biloela	Earth and rockfill embankment and roller compacted concrete RCC spillway	18.6	14,600	289	1992
Leslie	Sandy Creek	Lake Leslie	Warwick	Mass concrete (radial gates)	28.9	106,200	1288	1965-86
Paradise	Burnett River	Lake Paradise	Biggenden	Roller compacted concrete	37.1	300,560	2950	2005
Peter Faust	Proserpine River	Lake Proserpine	Proserpine	Earth and rockfill embankment	39.6	491,400	4325	1990
Teemburra	Teemburra Creek	-	Finch Hatton	Concrete-faced rockfill	54.0	147,500	1107	1996
Tinaroo Falls	Barron River	Lake Tinaroo	Atherton	Mass concrete	41.8	438,900	3500	1958
Wuruma	Nogo River	Wuruma Reservoir	Eidsvold	Mass concrete	36.6	165,400	1639	1968



For more information:

Visit www.sunwater.com.au, email info@sunwater.com.au or call SunWater's Customer Hotline **13 15 89**