



Photo by Lovegreen Photography

CAIRNS WATER SECURITY STRATEGY

Emergency Water Supply

16 July 2020



OUR WATER SECURITY

The majority of the Cairns Region LGA is supplied by two main water sources: Behana Creek and Copperlode Falls Dam (Lake Morris). As the responsible water service provider for the Cairns Region LGA, Council has a legislative requirement under the *Water Supply (Safety and Reliability Act) 2008* to provide safe and reliable drinking water to the community.

In April 2014, the independently chaired Water Security Advisory Group (WSAG) was set up by Council to canvass future water security options with key stakeholders and the community (April 2014 to March 2015). An outcome from this community consultation process was unanimous agreement by the WSAG for the Mulgrave River Aquifer to be used as an Emergency Water Supply (EWS) only under extreme drought conditions.

The Cairns Water Security Strategy (CWSS) was adopted in September 2015 providing a preferred approach for implementing a series of short, medium and long-term actions to secure adequate water supplies to meet growing demand. These actions were developed in collaboration with the Water Security Advisory Group (WSAG) acknowledging the 2014 decision regarding the Mulgrave Aquifer as the EWS. To advance the CWSS, the following short-term actions were identified:

1. Activities to manage demand

The Demand Management Strategy aims to reduce water demand by 10% over 10 years through:

- driving regulatory and Council-led water saving initiatives (subsidiary meters);
- implementing intelligent water networks (smart water meters, smart sprinklers);
- undertaking water education programs (Water Education Training Van); and
- water efficiency upgrades and retrofits, including to Council infrastructure (system leakage detection and repair).

Council is progressing all of these actions and is currently on track to meet this water saving goal, however we all have a role to play to ensure our precious water resources are available for everyone to use, including for use by the environment.

While we are on track, Council relies on the community to use water wisely in their homes all year round through Permanent Water Conservation measures and to save water during the drier periods when Water Restriction measures are enacted. Through this staged approach, Council is able to manage water demand but is still reliant upon good wet season rain within the catchment of Copperlode Falls Dam.

2. New water source and water treatment plant to augment supplies

Council currently accesses water from Behana Creek as one primary source of supply for the Cairns Region (Copperlode Falls Dam is the other). The Mulgrave River has been chosen as the next source to augment the supply from Behana Creek, with investigations currently underway to determine design specifications for Council's new Water Treatment Plant located at Draper Road (due to be operational in 2026).

It is important to note that these groundwater drilling and testing works will soon commence and are separate and distinct from the investigation works to support short-term action 3 below.

3. Water source solution in an extreme drought situation

Council has developed a Drought Response Plan that details Council's requirements in response to drought conditions affecting the water supply availability from Copperlode Falls Dam and Behana Creek.

The Emergency Water Supply Plan details the actions to be undertaken under extreme drought conditions to provide water security to the community through activating the emergency water supply infrastructure (extracting groundwater from the Mulgrave River Aquifer through water pumping bores with treatment at a temporary short-term plant).

While the likelihood of needing to use the emergency water supply is extremely low, Council's priority is to continue to provide the community with safe and reliable drinking water in the very unlikely event the need arose. Council is simply getting prepared to ensure we can implement the best water source option available in the event of an extreme drought.

CAIRNS REGIONAL COUNCIL DROUGHT RESPONSE APPROACH



WATER CONSERVATION MEASURES

100% General demand management
Permanent water conservation measures

100% Business as usual
operational measures

DROUGHT RESPONSE

80% Level 1 water restrictions – 10% use reduction

70% Level 2 water restrictions – 15% use reduction

60% Level 3 water restrictions – 20% use reduction

50% Level 4 water restrictions – 25% use reduction

60% Advertise tender to construct emergency
water supply infrastructure

50% Award contract to construct emergency water
supply infrastructure, including order for pumps and pipes

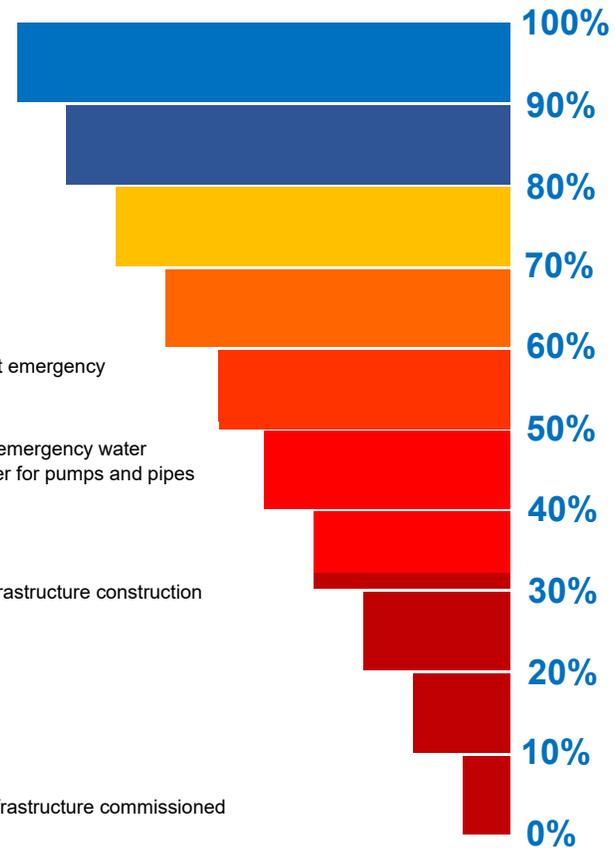
EMERGENCY

32% Level 4 water restrictions continue

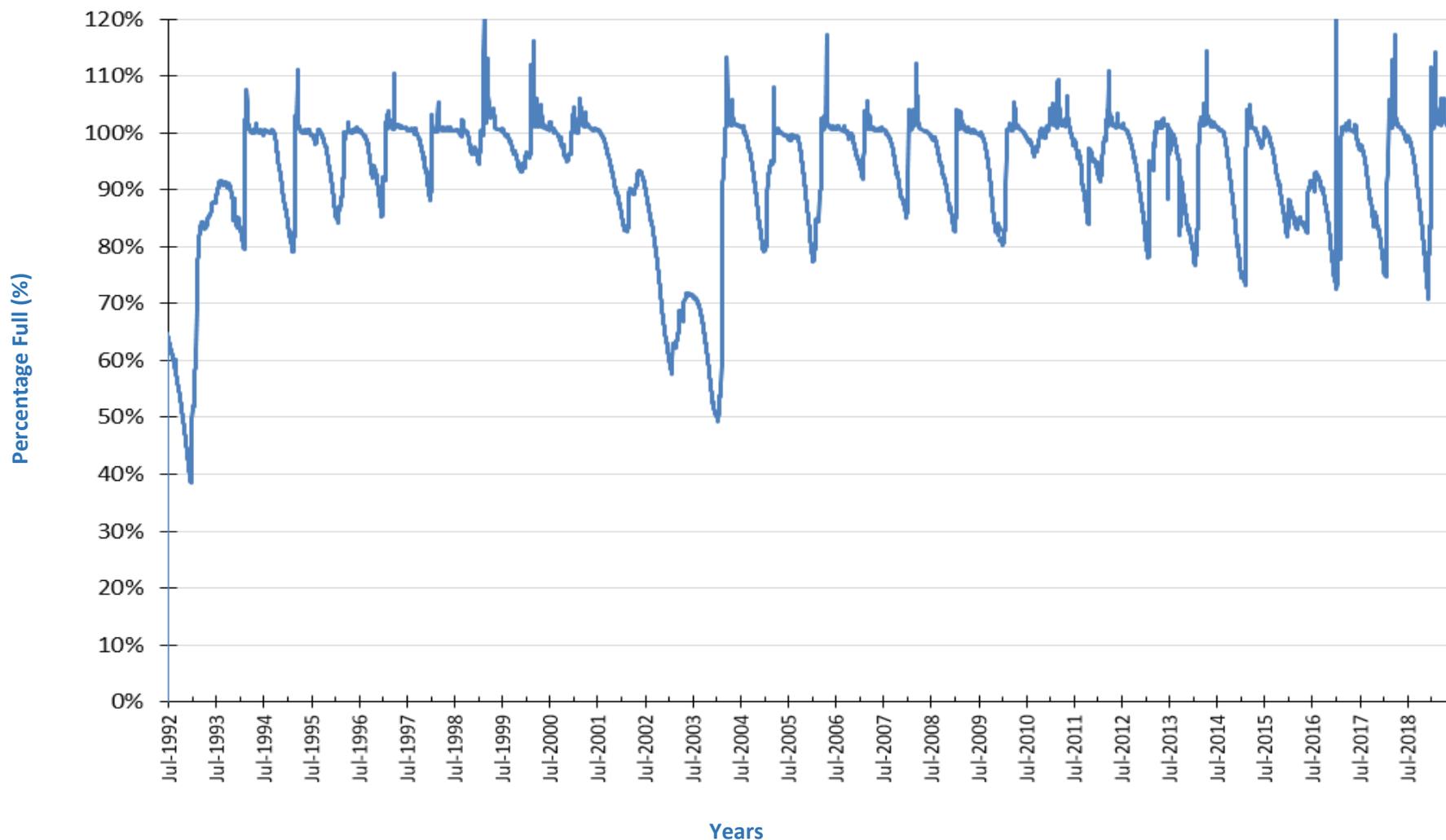
32% Emergency water supply infrastructure construction
commences

0.5% Essential minimum supply volume restrictions
Residential use target 104 L/c/d
Non-residential use target 81 L/c/d

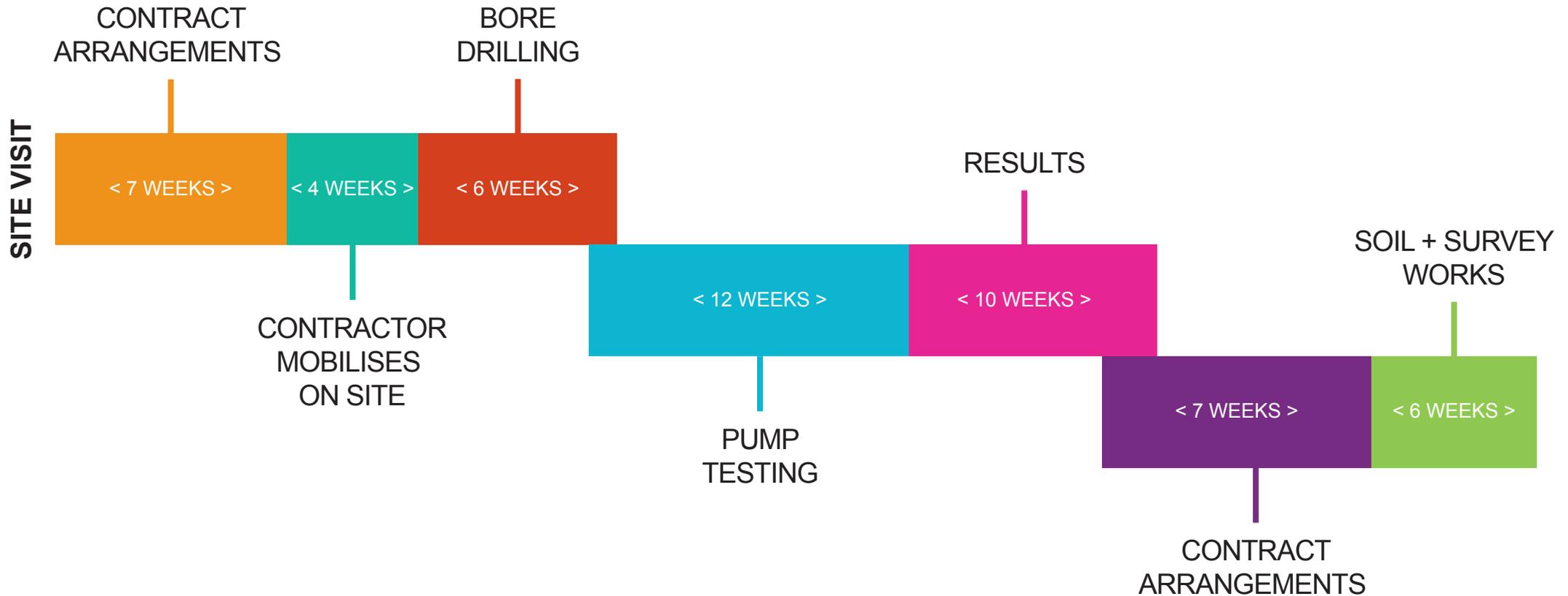
0.5% Emergency water supply infrastructure commissioned
and operational to supply 40 ML/d



COPPERLODE FALLS DAM HISTORICAL STORAGE LEVELS 1982 - 2019



EMERGENCY WATER SUPPLY PROJECT TIMELINE





lat: -17.10290
long: 145.81551

CAIRNS EMERGENCY WATER SUPPLY (EWS) FREQUENTLY ASKED QUESTIONS

Why do we need an emergency water supply?

As the responsible water service provider for the Cairns Region LGA, Cairns Regional Council (Council) has a legislative requirement to provide safe and reliable drinking water to the community, including in an extreme drought situation.

The majority of the Cairns Region LGA is supplied by two main water sources: Behana Creek and Copperlode Falls Dam (Lake Morris). Under extreme drought conditions, these sources of supply may be depleted. While the chance of this happening is extremely small, it is not zero. Our Emergency Water Supply Plan is in place to guide the actions required to provide water security to the community in such circumstances. This includes access to groundwater to ensure water can be provided to the community for essential purposes.

What is groundwater?

Under extreme drought conditions, the activation of the Emergency Water Supply Plan will enable Council to source an emergency supply of water stored beneath the earth's surface. Groundwater is found in crevices, cracks and the spaces between tiny particles of rock and soil in underground streams and aquifers.

Groundwater is an underground collection of water that can produce useful quantities when tapped by a bore and is widely used as the main source of drinking water for many cities and towns throughout Australia and the world.

In the situation of an extreme drought affecting the Cairns Region, the Mulgrave River Aquifer will provide water to the community under water restrictions to ensure there is enough water for essential purposes until Behana Creek and Copperlode Falls Dam are replenished.

What is the likelihood of needing to use the Emergency Water Supply?

While the likelihood of needing to use the emergency water supply is extremely low, it is not zero. Council's priority is to continue to provide the community with safe and reliable drinking water in the very unlikely event the need arose.

Our main water source, Copperlode Falls Dam, would need to be almost empty (approximately 0.5% capacity) before Council would start extracting groundwater from the Mulgrave River Aquifer. Since the dam's construction, the lowest volume of water recorded is just below 40% in 1992.

Council has measures in place to manage water demand and supply to ensure that the Emergency Water Supply is activated only under extreme drought conditions.

What is Council doing to help manage our water supplies?

We all have a role to play to ensure our precious water resources are available for everyone to use, including for use by the environment. Council relies on the community to use water wisely in their homes all year round through Permanent Water Conservation measures and save water during the drier periods when Water Restriction measures are enacted. Through this staged approach, Council is able to manage water demand but is still reliant upon good wet season rain within the catchment of Copperlode Falls Dam.

To secure adequate water supplies to meet future population growth, Council adopted the recommendations of the community-led Water Security Advisory Group (WSAG) as the Cairns Water Security Strategy in 2015. The CWSS details the following short-term actions:

1. Activities to manage demand

The Demand Management Strategy aims to reduce water demand by 10% over 10 years through driving regulatory and Council-led water saving initiatives (subsidiary meters), implementing intelligent water networks (smart water meters, smart sprinklers), undertaking water education programs (Water Education Training Van), and water efficiency upgrades and retrofits, including to Council infrastructure (system leakage detection and repair). Council is progressing all of these actions and is currently on track to meet this water saving goal.

2. New water source and water treatment plant to augment supplies

Council currently accesses water from Behana Creek as one primary source of supply for the Cairns Region (Copperlode Falls Dam is the other). The Mulgrave River has been chosen as the next source to augment the supply from Behana Creek, with investigations currently underway to determine design specifications for Council's new Water Treatment Plant located at Draper Road (due to be operational in 2026).

3. Water source solution in an extreme drought situation

Following extensive community engagement and endorsement from the Water Security Advisory Group (WSAG), Council has developed a Drought Response Plan that details Council's requirements in response to drought conditions affecting the water supply availability from Copperlode Falls Dam and Behana Creek. The Emergency Water Supply Plan details the actions to be undertaken under extreme drought conditions to provide water security to the community through activating the emergency water supply infrastructure (extracting groundwater from the Mulgrave River Aquifer through water pumping bores with treatment at a temporary short-term plant).

Where will the bores be located?

We are getting prepared to ensure we can implement the best water source option available in the event of an extreme drought. Part of the preparation involves construction of test bores in the areas that will provide the most efficient water pumping extractions to monitor below surface conditions and inform further bore locations in the event that the EWS Plan is activated.

All four test bores and 8-12 monitoring bores will also be located in the road reserve with consideration to private land, roads, overhead power lines, train tracks and the natural flow of the underlying groundwater system. Every attempt will be made to minimise visual impact however we cannot guarantee that there will be no visual impact.

What effects will the test bores have on my land?

We do not expect there to be any impacts to your land as a result of withdrawing groundwater from the Mulgrave River Aquifer during the testing phase.

What effects will this have on the environment?

Under extreme drought conditions, investigations have shown that there would be no flow in creeks and rivers, therefore extracting groundwater from a deep level aquifer will have no adverse impacts on the environment above ground. Council has a series of monitoring bores in strategic locations within the area to manage against any environmental impacts both below and above ground.

How we will know when the Emergency Water Supply Plan has been activated?

We all have a role to play to ensure our precious water resource is available for everyone to use. Before Council activates the Emergency Water Supply Plan, all efforts will be undertaken to manage water demand through a staged approach, starting with permanent water conservation measures followed by implementation of water restriction levels 1-4.

What happens when the groundwater runs out?

The Mulgrave River Aquifer is a large underground water system estimated to contain approximately 2,200,000,000ML of water (that's around 55,000 times as big as the capacity of Copperlode Falls Dam at 39,400ML). Within this system, approximately 220,000ML of water moves through on an annual basis – this is known as the average annual water balance. The EWSP proposes that we would need to use approximately 2.5% of the average annual water balance within this system. In an extreme drought situation where the EWSP has been activated, we will have measures in place to ensure that groundwater levels are continuously monitored so a continuity plan can be put in place should it be required.