

Glenmore water treatment plant - Operation and Upgrade

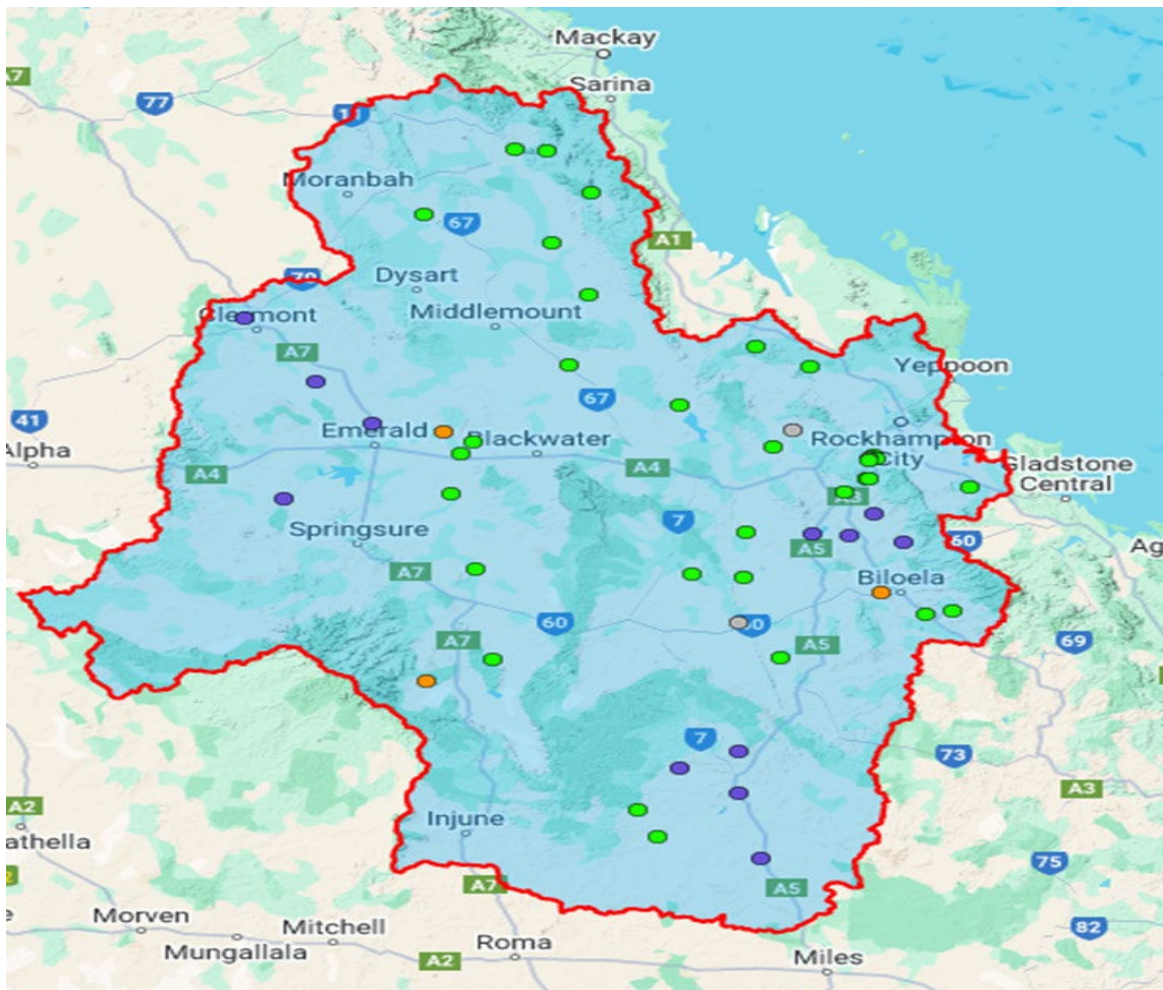
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Abstract

Glenmore water treatment plant (GWTP), built in 1971, is a 24/7 operational facility and capable of treating between 110-140ML/d, depending on Raw water quality...



GWTP sources its raw water from the Fitzroy River, which has a catchment area of approximately 140,000km² and an accessible capacity of around 74,400ML – making it the second-largest catchment in Australia. Water characteristics can change rapidly during a river run, presenting operational challenges due to fluctuations in NTU, Colour, dissolved organic carbon (DOC), natural organic material (NOM), iron/manganese levels, cyanobacteria/pathogens presence, and low alkalinity/pH.



Introduction

Alliance Automation was awarded the contract to upgrade the Glenmore water treatment plant. The project posed significant challenges, as the plant could not be shut down for more than 8-10 hours at a time due to demand constraints. This made the upgrade particularly demanding for operators.

The network system has a total reservoir storage capacity of approximately 130ML. With daily consumption averaging 65ML/d, this provides only two-day storage buffer.

Alliance Automative undertook a comprehensive upgrade, dismantling and replacing key components of the plant, including:

- ACH coagulant dosing pumps
- PAC (carbon) system
- MgO (magnesium oxide) dosing system
- Polymer dosing system

- Chlorine emergency shutoff drive (ESD)
- Lime dosing system
- Backwash pumps
- Air blowers and compressors
- Electrical switchboards
- SCADA interface and control pages

Polymer dosing



PAC and MgO dosing



Filter upgrades

The plant's ten filters were isolated one or two at a time for complete refurbishment. This included:

- Jackhammering out the old underdrains
- Replacing conventional dome nozzles with Triton SS underdrains (1mm slots)
- Installing new filters media as follows:

Layer	Material	Size	Depth
1	Triton underdrain	1mm	150mm
2	Garnet	2.4-4.8mm	75mm
3	Garnet	1.2-2.4mm	75mm
4	Sand (7S)	<1.18mm	275mm
5	Filter coal	1.0mm	500mm



Additional upgrades included:

- Conversion of filter valving from pneumatic to electric
- Installation of level sensors
- Endress + Hauser analysers
- Flow meters
- Individual manual control boards for each filter



Electrical & Control systems

All electrical switchboards were replaced, along with associated components, to support the new automation systems and improve operational reliability.

Laboratory & Control room Refurbishment

As part of the upgrade, the laboratory and control room were also refurbished. This improvement has enhanced both operational efficiency and working conditions for staff, providing modernised workplaces and updated equipment to support monitoring and process control

Conclusion

The upgrade of the Glenmore Water Treatment was a complex and carefully coordinated project, carried out while maintaining continuous 24/7 operations. Despite the challenges posed by limited shutdown windows and high daily demand, the collaboration between Alliance Automation and plant operators resulted in significant improvement to infrastructure, process control, and operational efficiency.

Key outcomes included the replacement of critical dosing systems, filter media and underdrains, electrical and control systems, and the refurbishment of both the laboratory and control room. These upgrades have enhanced the plant's reliability, improved water quality management, and provided operators with modern tools to better respond to changing raw water conditions.

Acknowledgements.

I would like to acknowledge the dedicated efforts of the Glenmore Water Treatment operations team, as well as the mechanical, electrical, and general maintenance crews, whose commitment and adaptability were instrumental throughout the upgrade process.

Special thanks to Alliance Automation for their professionalism and collaborative approach in delivering a complex upgrade under challenging operational constraints.

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