

SELF-CLEANING FLAT PANEL SCREENS

AWMA have custom designed and manufactured over 100m² of Self-cleaning Flat Panel Screens for New Zealand's Rangitata Diversion Race (RDR) Fish Screen Replacement Project.

The hydraulic design of the facility meant the downstream end of the RDR screen bay lacks the area required for cylinder intake screens. No alternative solution was available in the market. AWMA's R&D team worked closely with project partners to develop a suitable option. CFD modelling was conducted to refine a Flat Panel Screen design with prototypes manufactured and Factory Accepted Testing procedures developed. It is standard AWMA practice to conduct numerous in-house testing protocols on all new designs, to ensure products will perform on site, as intended during design. All AWMA Screens have self-cleaning capability, the Flat Screen was to be no exception. The self-cleaning arm utilises one of AWMA's latest technologies to drive the mechanism.

Custom-engineered to 3.5m high x 30m long, the screen is fabricated from sections of stainless steel wedge wire medium with a 2mm slot size (aperture).

The flat panel screen incorporates an innovative, adjustable baffle system, designed to ensure water drawn through the intake panels has a low and evenly distributed approach velocity across the entire screen surface.

The self-cleaning system is a horizontal travelling, vertical, dual brush arrangement. The automated screen cleaning process is programmed to operate one cycle per week, travelling the full length and then returning, taking approximately 26mins. The frequency of the cleaning cycles can easily be adjusted in line with expected debris levels.

The baffle system, combined with suitable aperture sizing and self-cleaning functionality, all contribute to reducing impingement and entrainment on the screen surface. This results in a fish-friendly irrigation diversion that can extract large volumes of water, whilst returning fish safely back to the river. The AWMA screen solution is site specific, engineered for New Zealand conditions and is consistent with the NIWA fish passage guidelines.

AWMA's capabilities lie in specialised design and construct projects to develop water control solutions where no suitable options currently exist.

AWMA's entire fish exclusion screen solution will provide RDR with a total 374m² of screened surface area, over a length of 86m, weighing in excess of 100 tonne.



GENERALLY SPEAKING

Welcome to AWMA's 50th newsletter!

It is very challenging enticing people to open newsletters in such a crowded space however, I regularly receive positive feedback on the newsletters that AWMA produce, which is pleasing.

AWMA work in a what could be considered a niche industry; designing, manufacturing and installing water control infrastructure, flood barriers and self-cleaning inlet screens. There aren't many companies that do what AWMA do. We produce the newsletter to expose as many projects as we can to showcase to the industry what's possible, what we are doing and how we work with clients to achieve and exceed their goals.

What is possible is forever changing; AWMA push the boundaries, extending the 'norm'.

Our engineering team are highly experienced in the areas we operate, so as we innovate, we do it with full consideration of the application and engineering required to decrease risk.

AWMA will ensure that your infrastructure is designed and manufactured in a way that puts you at the leading edge not the bleeding edge.

I hope that you have enjoyed and benefited from our previous newsletters and that newsletter #50 and all future AWMA newsletters, continue to serve you well in staying informed of what is happening and what is possible in our industry.

If you ever have any feedback on our newsletter, we would be very happy to hear from you. The newsletter, like our products and services will always evolve.

Have a great Christmas and a safe 2022.



Brett Kelly
Managing Director

awma
Water Control Solutions

LUGGAGE POINT ISOLATION BULKHEADS

Fulton Hogan engaged AWMA to design, manufacture and supply bulkhead gates, frames and storage racks, for the Luggage Point Outfall Channel remediation project.

As part of Urban Utilities Metro Treatment Plant capital works program, Fulton Hogan was required to complete a sequence of night shift shutdowns with all flow to be isolated to the Luggage Point STP outfall channel.

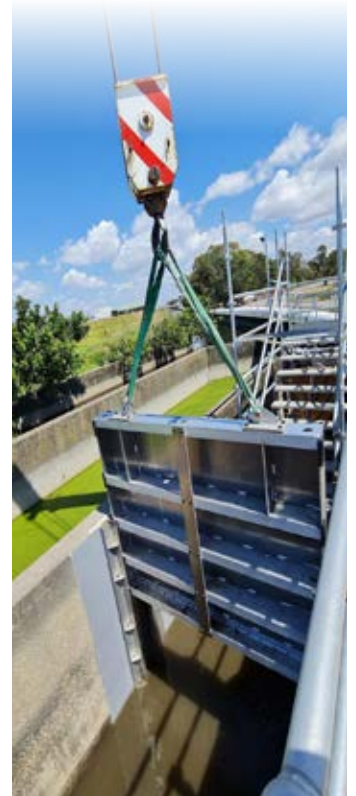
Isolation of the Luggage Point STP required 2 x sliding bulkheads for the main channel, whilst the two channels downstream of the bifurcation point required 1 x sliding bulkhead and 1 x roller bulkhead each.

The isolation bulkheads were custom-designed to retrofit the existing civil structure, accommodate uni-directional sealing and allow insertion under low flow differential water pressure. They were also reversible to facilitate wet commissioning activities.

Whilst Fulton Hogan was responsible for the installation process, they utilised one of AWMA's certified installers to mitigate project risk.

The wet commissioning process delivered a leak-free isolation, ensuring the channels can be successfully and safely remediated.

Delivered safely, on-time and within budget, this project has seen the installation of permanent, independent double isolation bulkheads that will be of on-going benefit for future remediation works.



VIC WWTP UPGRADE

AWMA successfully delivered 30 specialised water control gates for the Drouin WWTP upgrade.

The Central Gippsland region of Victoria has experienced rapid growth. As such, the capacity of the Drouin WWTP is to be increased.

AWMA partnered with Laurie Curran Water, ICON/CCB Envico, Gippsland Water and their designers, KBR, to deliver this project.

As the only Victorian penstock manufacturer, AWMA was able to deliver local content into the project.

Overshot and undershot penstocks (electrically actuated), as well as isolating stop boards and bulkhead gates, were custom-designed, with a 25+ year service life.

Due to the corrosive environment, all equipment was manufactured from grade 316 stainless steel materials.

AWMA equipment undergoes in-house factory acceptance testing and on-site commissioning. It is designed to ensure mechanical equipment can be operated safely over long periods without frequent maintenance or operator intervention.

All gates were delivered on time or earlier to accommodate changes in the installation schedule.

URBAN FLOOD PROTECTION

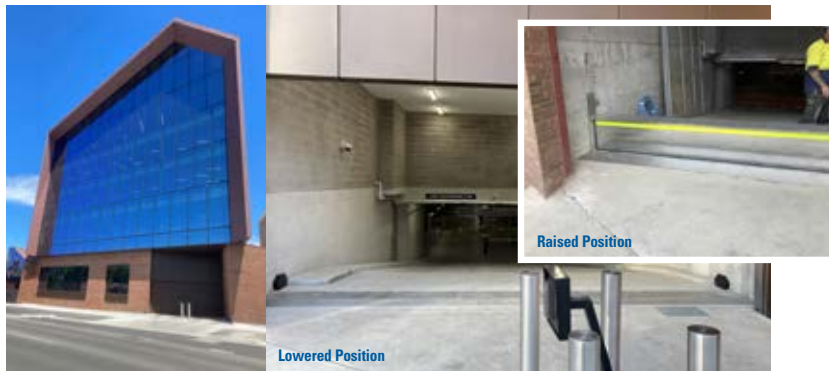
Many urban basement car parks are prone to flash flooding. AWMA's FloodFree range offers proven, Australian made flood barriers, engineered to meet site specific requirements and predicted flood characteristics.

The Victorian Government's new 'Ballarat GovHub' will accommodate up to 1,000 government employees and includes a multi-level basement car park offering approximately 220 car spaces. The large-scale urban project was undertaken by Kane Constructions and Nicholson Construction joint venture who engaged AWMA to design and construct a self-deploying, vertical rising flood barrier.

The Concealed Flood Barrier is a passive, self-actuating barrier which automatically deploys via floatation. As the location of

the GovHub is prone to overland flooding during heavy rain events, it was imperative a self-deploying flood barrier was installed to protect the car park entrance from water ingress. The barrier was manufactured almost 8m wide, to be installed across the entrance to the underground car park. The flood barrier is permanently concealed below the car park driveway.

As a Victorian Government funded project, sourcing locally manufactured products and services that would deliver the required outcomes was important.



AWMA DESIGN BENEFITS

Mulgoa Quarries, engaged AWMA to design an isolating penstock for a new detention basin.

Development discussions led to a custom-designed outlet structure and undershot ULF penstock. By customising the gate and outlet characteristics, significant savings were gained in civil works.

The detention basin has a 1m high weir wall which isolates stormwater downstream of the site. Located on the weir wall, the undershot penstock is manufactured from grade 316 stainless steel and operates via an electric actuator, allowing controlled releases from the detention basin.



PROJECT ANNOUNCEMENTS

Central Interceptor

The Central Interceptor is a major wastewater tunnel being constructed in Auckland, New Zealand.

With the project well underway, AWMA has been engaged by head contractor, Ghella Abergeldie Joint Venture and their client Watercare, to custom-design, manufacture and supply a range of regulating and isolating water control structures.

The Central Interceptor tunnel will run underground for 14.7km. Travelling from Grey Lynn to the Māngere Wastewater Treatment Plant, the tunnel will pass multiple shafts and chambers being constructed as part of the project to connect the existing waste water systems.

AWMA's contribution involves the specialised design, manufacture and supply of gates to be installed in the control and diversion chambers and shafts along the route, which will be used for collecting and transferring wastewater into the tunnel.

The wastewater control gates currently progressing through AWMA's design and engineering phase include hydraulically actuated slide gates, electrically actuated slide gates, stoplogs, stop plates and flap gates.

All water control gates will be manufactured from Duplex 2205 and 2507 stainless steel for strength and longevity in the highly corrosive environment.

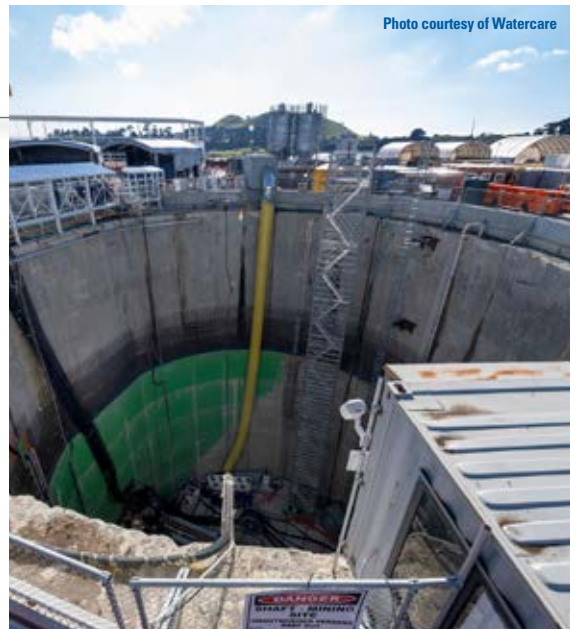


Photo courtesy of Watercare

ROOKWOOD WEIR

The development of Rookwood Weir, 66km south-west of Rockhampton, Queensland, will allow valuable water from the lower Fitzroy River to be captured and used across the region.

After an extensive tender evaluation process, the Acciona and McCosker Contracting joint venture selected AWMA to be the delivery partner for all custom water control gates associated with the fishlock element of the works.

Working with the construction team, Sunwater and GHD, AWMA shall finalise the design for all water control gates which consist of a number of hydraulically actuated stainless steel overshot and undershot penstocks and sidewinder gates, along with various manually deployed bulkheads and stopboards.

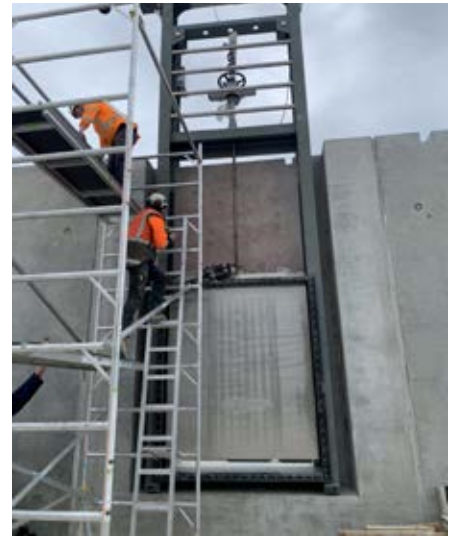
With a yield of 86,000 megalitres, Rookwood Weir will be the largest weir in Queensland when completed, and the largest built in Australia for the past 75 years. Construction has begun, with overall completion expected in late 2023.



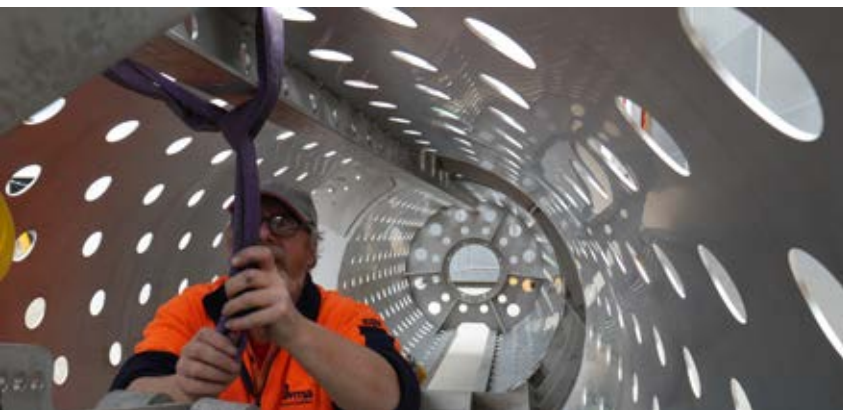
Photo courtesy of Sunwater

RECENT PROJECT GALLERY

INNOVATIVE - CUSTOMISED - SUSTAINABLE



Left- Completed Concealed Flood Barrier
Right- Concealed Flood Barrier during installation



FLOOD | ENVIRONMENTAL | IRRIGATION | WATER TREATMENT | DAMS | ENERGY & RESOURCES



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