RPC

# PERMA-MANHOLE

A new era in manhole construction



**Engineered Solutions for the Future**



RPC has more than 40-years' experience serving major civil, water, energy and mining infrastructure requirements in Australia, New Zealand, South East Asia and around the globe. RPC provides integrated engineered and manufactured solutions to meet specific infrastructure needs from design, manufacture, delivery, site installation and through-life support.

The organisation has highly skilled staff employed throughout Australia (NSW, Victoria and South Australia), New Zealand, and in South East Asia (Indonesia, Singapore, Thailand and Malaysia). RPC prides itself on being able to solve and deliver complex engineering and manufacturing challenges, and meeting project timeframes.

## THE ONLY CHOICE WHEN HIGH PERFORMANCE AND LOW-RISK COUNTS

RPC Technologies Perma-Manhole® is a range of GRP formworks and manhole products and fittings, engineered to serve the growing needs of new and upgrading sewerage networks in Australia, New Zealand and South East Asia.

Compared with conventional methods, RPC's Perma-Manhole® system brings:

- Fast off-site manufacture up to 6m diameter.
- An Integrated design for one-piece manhole, drop pipe and channel invert liner delivery.
- Significantly lessened site risks and public disruption due to ease and speed of installation.
- Improved corrosion resistance.
- An asset life of up to 100 years.



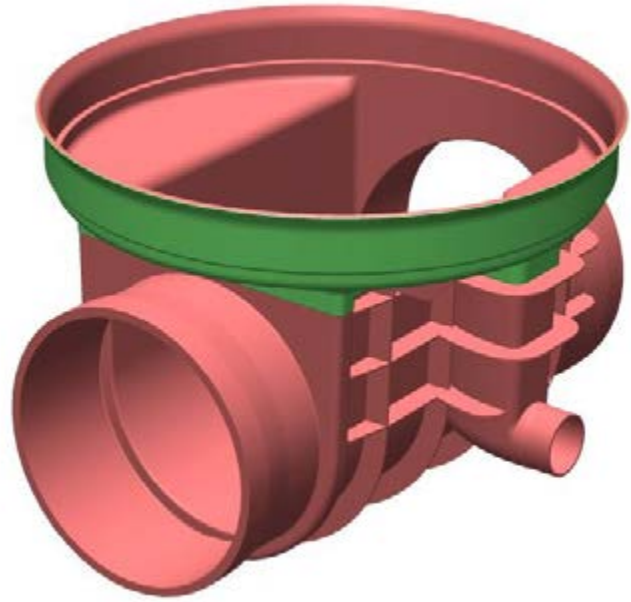
**1.3M diametre Perma-Manhole® being installed in melbourne**

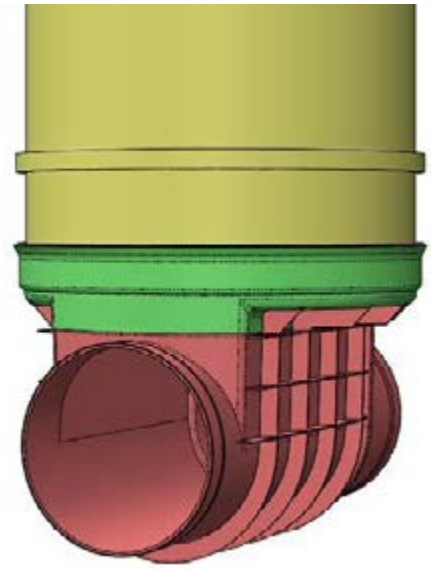
## WHAT IS A PERMA-MANHOLE®?

Designed exclusively by RPC engineers, the RPC Perma-Manhole® is a semi-structural GRP manhole liner with anintegrated channel liner with an O-ring seal designed in accordance with BS EN 13121.3:2008+A1:2010 and AS3571.1 (ISO 10467).

Eliminating the need for in-situ placement of reinforced steel in mass concrete encasement, the RPC solution minimises man-entry requirements and work in confined spaces. Perma-Manhole® and RPC GRP manhole liners can be placed and concrete encased within 24 to 48 hours.

Once the channel liner is installed and the joint tested, the GRP manhole liner can be installed, supported by a steel support frame at ground level.





**PERMA-MANHOLE®**
**DESIGNED EXCLUSIVELY**
**BY RPC TECHNOLOGIES**

## THE COMPOSITE ADVANTAGE OF INCREASED CORROSION RESISTANCE AND LONGER ASSET LIFE

Being virtually immune to long-term corrosion from water and wastewater applications, RPC's Perma-Manhole® provides unsurpassed corrosion resistance and a low-maintenance asset life of up to 100 years. They deliver extraordinary temperature resistance suitable for use with applications over 65°C (the hydration temperature of concrete).

The RPC's GRP in-situ cast-in place formwork resists both short-term construction loads and long-term hydrostatic ground water pressure.



Internal lamination of 5m diameter Perma-Manhole®

## INTEGRATED OFF-SITE MANUFACTURE

Perma-Manhole® is manufactured locally in our purpose-built facility in Geelong, Victoria from 1 metre up to 6 metres in diameter.

Working with our clients to clearly define the scope of their requirements, RPC can design, manufacture and deliver the Perma-Manhole® structure that will present the most efficient installation method.

RPC can factory-install manhole liner ancillaries such as vortex structures, drop pipes, support clamps and ladders providing a Perma-Manhole® assembly that only needs to be dropped into place once delivered to site.



Factory assembly of 3.2m diameter Perma-Manhole®

## RAPID SITE INSTALLATION MINIMISING RISK AND PUBLIC DISRUPTION

One piece delivery is a great benefit to site installation crews as it minimises public interruption and significantly reduces installation time. Work Health and Safety (WH&S) risk is also minimised by avoiding the need for site personnel to access the manhole cavity during installation.

RPC's Perma-Manhole® are lightweight and provide an exceptional weight-to-strength ratio. Joining the liners to the GRP jacking pipes can be done from either inside or outside the GRP channel liner (the lower section of the Perma-Manhole) depending on the construction methodology selected.

RPC liners provide structural formwork that is capable of being placed into the excavations as a single or multipiece segment and continuously concrete-encased in a single pour process. These combined benefits achieve:

- significantly decreased public disruption.
- substantial program efficiencies.
- potentially eliminates the need for the provision of reinforcing steel in the manhole base.



Installation of the 3.6m diameter Perma-Manhole® at Sewerfix Wet Weather alliance at Winmalee, NSW

**Peter Camilleri | SewerFix Wet Weather Alliance Manager | Winmalee, NSW**

*"On behalf of SewerFix Wet Weather Alliance I would formally like to thank all at RPC Technologies for their design, efforts and help in the coordination of such a complicated, yet important delivery for us. All-in-all, these efforts conglomerated into Tuesday's delivery and installation going perfectly, from the first delivery to the final placement of the shaft liner."*

## CONTACT

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