

Keilor Sewer Outlet Main - VIC

SINTAPIPE®: Two Pipelines in One



Objectives:

Melbourne Water was faced with a dilemma. A gravity sewer was required to connect the Keilor Purification plant to the Maribyrnong River main, and after decommissioning of the Keilor purification plant 5 years later, a rising main would be needed to connect the Keilor outlet main to the Maribyrnong River main. The dilemma was that the two pipelines were on the same route but with opposite directions of flow.

The Keilor Outlet main will operate firstly as a drowned gravity sewer with flows from the Keilor Outlet Main to the Maribyrnong River Main and ultimately as a pressure main with flows in the opposite direction. The initial operating conditions resulted in long periods without flow or partial flow resulting in siltation, high slime growth and highly septic sewage. The resulting hydrogen sulphide generation, in conjunction with a partially empty pipe, would expose the main to highly corrosive conditions. In 1998 all raw sewage (600 l/s) from the Keilor catchment was diverted to the Werribee treatment complex via the Keilor Outlet Main and the North Western Sewer.

Having two separate pipelines with one being abandoned after 5 years was economically unviable. What was needed was a material which could operate successfully under both design conditions.

Solution

In January 1994 Melbourne Water decided to proceed with the Keilor Outlet Main, which comprised 5500m of DN 450 sewer pressure pipes. Feasibility studies had determined that the most appropriate alignment for the sewer was through the environmentally sensitive Maribyrnong Valley. The difficult construction access and the unusual operating conditions for the Keilor Outlet Main required the pipeline to meet the criteria of being :

- Structurally robust
- Rubber ring jointed
- Corrosion resistant
- Able to operate at high pressure

Steel Mains was awarded the contract using SINTAPIPE®, mild steel pipe internally lined and externally coated with fusion bonded polyethylene and supplied with rubber ring joints. The pipe chosen was 502mm OD with a 5mm wall thickness in 6 metre lengths.

Achievements

The pipeline was to be laid primarily through Brimbank Park, a park managed by Melbourne Water, Parks and Gardens Division. To avoid disruption of sensitive areas and to facilitate ease of laying, Steel Mains offered Melbourne Water pipe lengths of 1, 1.5 and 3 metre lengths in addition to the standard 6 metres.

Where pipes had to be cut, Steel Mains offered a 48-hour turn-around service for coating reinstatement and delivery back to site. A small section of the pipeline was laid using thrust boring techniques where the SINTAKOTE® coating performed exceptionally well. The balance of the pipe was laid using the open trench method. Melbourne Water personnel keen to ensure a Quality Project attended a Sintakote Pipelines Installation Programme Workshop prior to commencement and received on-site accreditation.

Keilor Sewer Outlet Main

Client Melbourne Water Corporation

Project Gravity Sewer/Rising Main
Keilor to Maribyrnong River

Designer Sinclair Knight Merz

Construction Contractor
Technical Services Division.
Melbourne Water Corporation

Pipelines 5500m of 502 OD × 5mm WT
SINTAPIPE

Construction Period:
October 1994 – February 1995