

REFERENCE PROJECT:

FUTURE-PROOF DRAINAGE FOR ELEVATED RAIL

GEBERIT HDPE IN THE METRONET VIADUCT



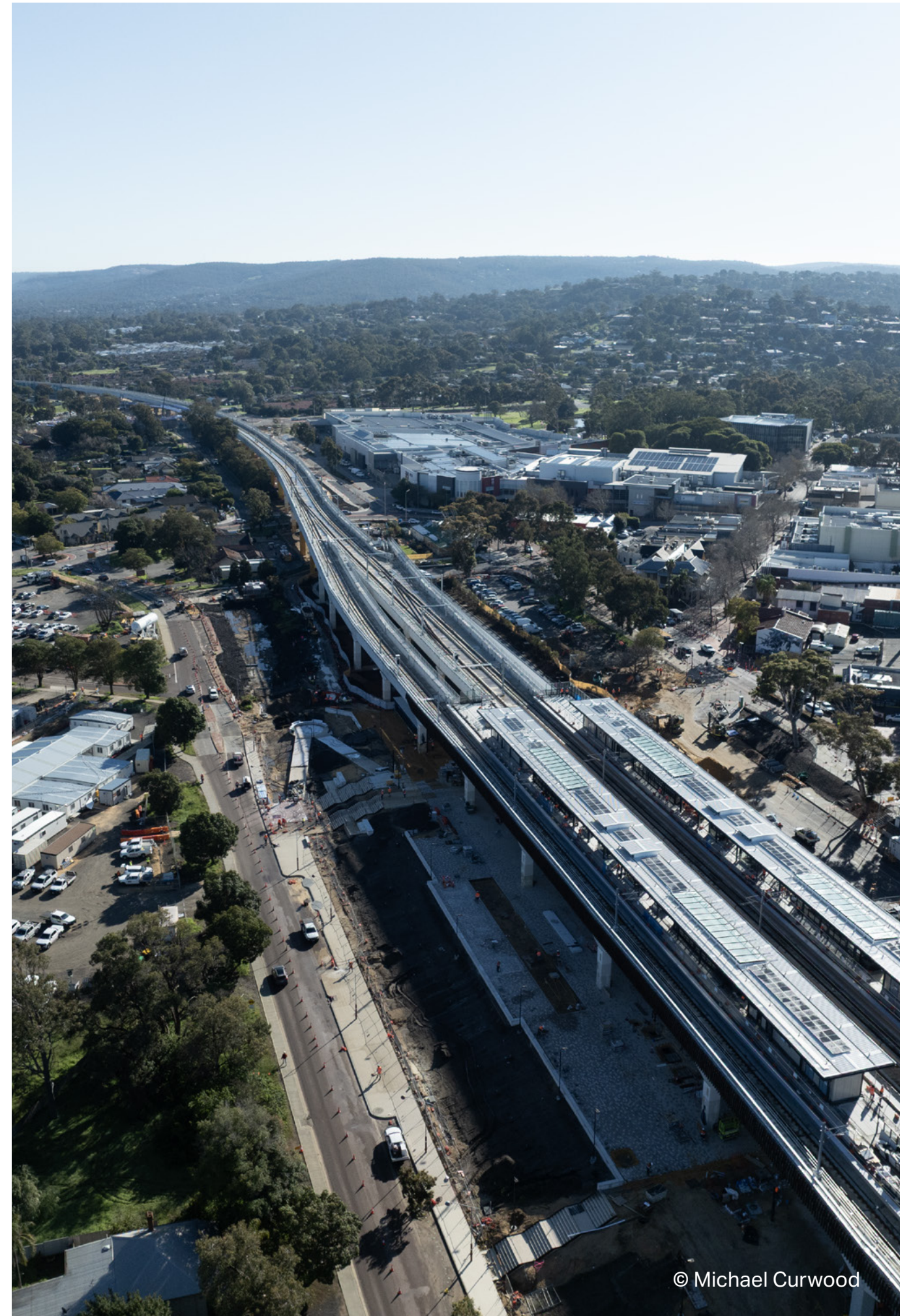
"HDPE's ability to naturally accommodate lateral and vertical movement enhances its suitability for dynamic infrastructure environments."

Brent Marsh,
Technical Solutions Group Leader
Hydraulics, NDY (A Tetra Tech Company)

PROJECT OVERVIEW

The MetroNet Byford Rail Extension is a landmark infrastructure initiative by the Western Australian Public Transport Authority (PTA), designed to enhance public transport connectivity in Perth's rapidly growing southeastern suburbs. A key feature of the project is the 1.5-kilometre elevated viaduct, which supports dual-track rail infrastructure between Armadale and Byford Stations.

Constructed by Laing O'Rourke, with hydraulic design by NDY (a Tetra Tech company) and plumbing installation by Altona Group, the project demanded a drainage solution that could meet stringent technical, environmental, and longevity requirements.



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PROJECT CHALLENGES

Designing and installing a drainage system for an elevated rail viaduct presented a unique set of challenges:

- **Design Life:** Required to exceed 100 years.
- **Environmental Exposure:** High UV radiation, extreme temperatures, and potential hydrocarbon spills from rail operations.
- **Structural Movement:** The viaduct's dynamic nature required a system that could accommodate both lateral and vertical movement.
- **Compliance:** Strict adherence to PTA's earthing and bonding standards.
- **Safety & Security:** Systems needed to deter vandalism, prevent climbing, and avoid bird nesting.
- **Installation Constraints:** Elevated work zones and limited space demanded lightweight, easy-to-install materials.



VIBRATION AND MOVEMENT RESISTANCE, CRUCIAL FOR ELEVATED STRUCTURES

MATERIAL SELECTION PROCESS

In the early design phase, NDY (a Tetra Tech company) conducted a comparative assessment of PVC, 316 Stainless Steel, and Geberit HDPE. While 316 Stainless Steel is the PTA's requirement due to durability, HDPE emerged as the optimal solution due to its:

- Superior adaptability to environmental conditions.
- Resilience to vibration and movement, essential for elevated structures.
- Aesthetic flexibility and ease of integration.
- Three-dimensional movement capacity, critical for viaduct dynamics.



GEBERIT HDPE: THE IDEAL SOLUTION

Geberit HDPE offered a suite of advantages that directly addressed the project's challenges:

- **Lightweight & Flexible:** Simplified handling and installation, especially in elevated environments.
- **Prefabrication Potential:** Enabled offsite assembly, reducing time and risk on-site.
- **Chemical & UV Resistance:** Ensured long-term durability in harsh outdoor conditions.
- **Movement Tolerance:** Naturally accommodates structural shifts without compromising performance.
- **Corrosion Resistance:** Minimises long-term maintenance and extends system lifespan.
- **Bird & Vandal Deterrence:** Smooth surfaces and secure fittings reduce nesting and tampering risks.

"HDPE brought significant advantages to the project. It's lightweight, flexible, allows for prefabrication, and is easy to handle —improving installation efficiency."

Brent Marsh,
Technical Solutions Group Leader
Hydraulics, NDY (A Tetra Tech Company)

COLLABORATIVE EXECUTION

The success of the drainage installation was underpinned by early and ongoing collaboration between all stakeholders. Geberit provided tailored technical support from the outset, aligning with NDY (A Tetra Company), Altona Group, Laing O'Rourke, and Reece Group to ensure compliance and performance. Altona Group leveraged prefabrication to streamline installation and reduce time spent working at heights. NDY received detailed technical data and installation guidance, ensuring the system met all regulatory and performance benchmarks.

"The collaboration with the drainage supplier was professional, responsive, and technically thorough."

Brent Marsh,
Technical Solutions Group Leader
Hydraulics, NDY (A Tetra Tech Company)



GEBERIT HDPE DRAINAGE PIPE

LONG-TERM BENEFITS

The implementation of Geberit HDPE ensures:

- Sustained performance under environmental and structural stress.
- Cost-efficiency through reduced installation time and long-term durability.
- A more sustainable outcome that aligns with modern infrastructure goals.

"HDPE offered a practical, future-proof solution for elevated rail drainage—and that kind of forward thinking is essential in infrastructure like MetroNet."

Cameron Smith,
Section Manager, Laing O'Rourke



CORROSION RESISTANCE REDUCES MAINTENANCE AND INCREASES SYSTEM LIFE

CONCLUSION

The MetroNet Viaduct project exemplifies how Geberit HDPE can meet the complex demands of modern infrastructure. Through strategic collaboration, innovative material selection, and a focus on long-term performance, the project sets a new benchmark for elevated rail drainage systems in Australia.

"Installing HDPE on a project like this really showcases its benefits. It's lightweight, easy to handle, and fits well with the movement tolerances of the structure."

Wesley Cox,
Team Leader, Altona Group



PREFABRICATION ALLOWS OFFSITE ASSEMBLY TO SAVE TIME AND LOWER ON-SITE RISK

PROJECT OVERVIEW:

- **Client:** The Western Australian Government and the Public Transport Authority (PTA)
- **Hydraulic Consultant:** NDY – A Tetra Tech Company
- **Contractor:** MetCONNEX Alliance – Laing O'Rourke
- **Plumber:** Altona Group
- **HDPE Supplies:** Reece Group
- **Infrastructure:** The MetroNet Byford Rail Extension
- **Length:** 8KM Rail track with 1.5KM long elevated viaduct



Scan the QR to watch the video for more information.

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