Restrain® pipe installation underway within the access pit.

Hard Job. Tight Space. Iplex Restrain Solves It

New Zealand First DN375 Iplex Restrain® PVC-U Pipe Enables Trenchless Stormwater Upgrade on a Steep Constrained Residential Site.

Product: Iplex Restrain® PVC-U pipe

Nominal diameter: DN375 (first Restrain® installation at this size in New Zealand)

Stiffness Class: SN16, suited to underground installation at depth and on steep grades

Joint system: Mechanically restrained rubber ring joint (RRJ) for axial load transfer and bidirectional installation

Standards compliance: Manufactured in accordance with AS/NZS 1260:2017 (PVC-U pipes and fittings for drain, waste and vent applications)

Application: Stormwater pipeline in a steep, constrained residential environment

Installation method: Horizontal Directional Drilling (HDD)

Installer: Kerry Drainage & Civil


DN375 Restrain® pipe positioned on site.

The challenge:
Delivering resilient stormwater infrastructure where trenching was not viable

After extreme weather events caused damage and heightened flood risk, Auckland Council prioritised a stormwater upgrade for a residential area affected by flooding and ground instability. The goal was to convey stormwater safely away from the road corridor and nearby homes and discharge it into a downstream creek.

The new pipeline alignment ran down a steep residential driveway (approximately 18°), with limited working room, ongoing property access requirements, and a strong need to preserve the existing surface. Extensive excavation or open-cut trenching was impractical, and the team needed to minimise reinstatement risk.

From a civil perspective, conventional trench-based construction was heavily constrained, and long-term performance under steep grades and ground loading required careful consideration.

Design considerations:
Managing loads, access, and long term performance

On steep stormwater alignments, pipelines can be exposed to longitudinal forces, high ground loads and differential movement especially in areas affected by slips and erosion.

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0800 800 262
iplex.co.nz

The design solution needed to:

- Maintain driveway access and surface integrity in a sensitive residential environment
- Perform reliably at depth and under high ground loads
- Minimise excavation, disruption and reinstatement requirements
- Integrate seamlessly with the existing stormwater network
- Provide confidence in long-term asset performance in challenging ground conditions

Material selection, joint performance and structural stiffness were central to the decision-making process.

The solution:
Restrained PVC-U pipeline, engineered and manufactured in New Zealand

The project team selected New Zealand manufactured Iplex Restrain® PVC-U pipe, produced in accordance with AS/NZS 1260:2017. Building on successful use of other Restrain® sizes across New Zealand, this project marked the first time Restrain® had been manufactured and installed at DN375 expanding local trenchless stormwater capability.

The mechanically restrained rubber ring joint system locks pipe lengths together, allowing axial forces to be transferred through the pipeline rather than relying solely on surrounding ground conditions. This supports installation on steep grades and in constrained corridors while maintaining flexibility during construction.

With a stiffness class of SN16, the pipe system provides structural strength to perform under significant ground loads and at greater installation depths critical given the site's history of flooding and instability.

PVC-U also offers strong performance for stormwater applications, including corrosion resistance and durability for long service life.

Local manufacturing enabled the DN375 solution to be developed, quality-checked and supplied specifically for this project reducing lead-time risk and enabling close technical collaboration between Iplex and the delivery team.

Construction delivery:
Collaboration in a constrained environment

Installation was delivered by Kerry Drainage & Civil, an Auckland-based civil contractor with experience in stormwater infrastructure, large-diameter pipelines and low-impact trenchless methods.

Their approach prioritised maintaining access, minimising disruption and reducing reinstatement. The restrained joint system supported efficient installation between two pits without disturbing the driveway surface.

Iplex provided on-site technical support to assist with installation sequencing and joint assembly particularly important given the steep alignment and the first-of-its-kind DN375 configuration.

Compatibility with existing PVC stormwater infrastructure and DWV fittings helped streamline tie-ins to the wider network, while 3 meter pipe lengths provided practical handling on site.

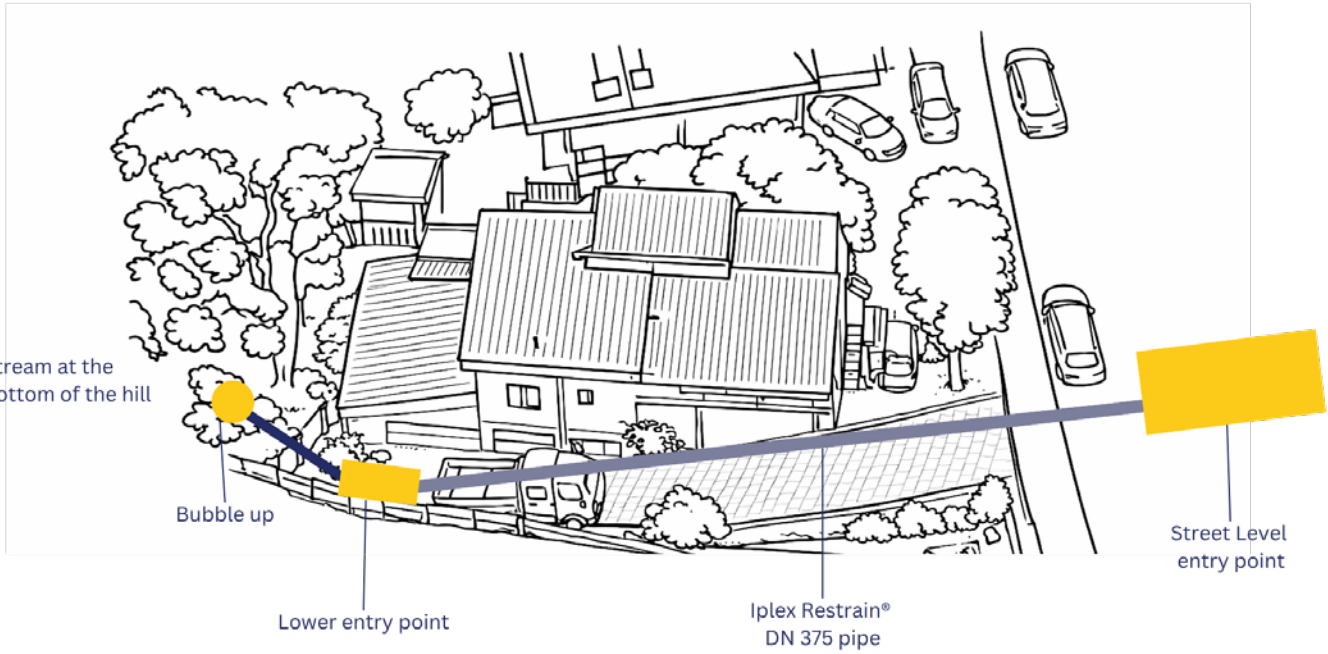
The outcome:
Infrastructure investment with long term value

The completed upgrade delivers a solution that meets today's constraints while improving long-term resilience.

Key outcomes include:

- SN16 PVC-U pipeline performance suited to steep grades, installation at depth and high ground loads
- Trenchless installation that reduced disruption for residents and maintained driveway access
- Reduced reinstatement and remediation compared with open-trench methods
- Standards-based, compliant solution that supports confident asset ownership
- Improved stormwater resilience in an area previously impacted by extreme weather

Street-level access pit used for pipe insertion.



Representation of the job site depicting the installation pathway.

By reducing construction risk and delivering long-life performance underground, the project represents a practical infrastructure investment designed to help protect Auckland communities for years to come.

Why this project matters

This project demonstrates how locally manufactured, technically robust pipeline systems can deliver solutions where site constraints, access limitations and long-term performance requirements intersect.

As the first installation of DN375 Iplex Restrain® PVC-U pipe, it sets a precedent for future civil and stormwater applications particularly on sites where trenching isn't viable and resilience is paramount.

It also highlights the value of partnership between Iplex, Kerry Drainage and Hynds delivering infrastructure that is practical to build, straightforward to specify and reliable over its design life.

"This was a stormwater upgrade to replace a line that was failing. The new pipeline was installed on a drilled alignment. The line was more than 3 metres deep and ran down a private driveway, so open-trench installation would have been complex and costly.

A trenchless approach helped minimise disruption, cost and risk.

We'd installed Restrain® DN300 before, and that experience really helped doing this job without it would have been much harder."

- Kerry Drainage

Uninterrupted driveway over HDD pipeline.

Lower access pit housing the HDD pipe pulling unit.