

Vortex Pipes Limited

‘Underground Construction Technology’ Conference

January 28th -30th, 2014

ASX: VTX

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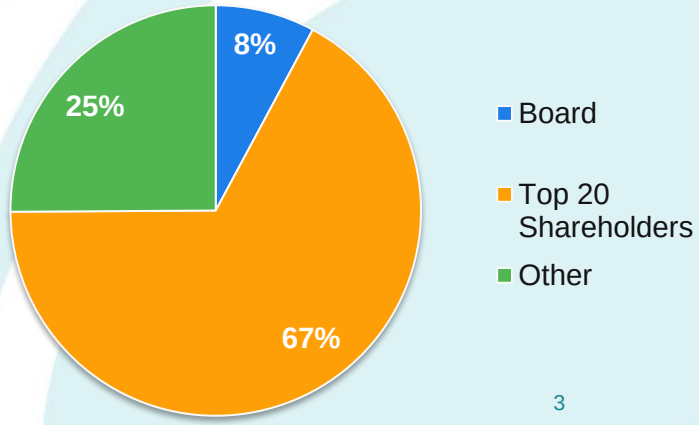
Company Overview

- Vortex Pipes is an Australian ASX-listed company (ASX: VTX) **targeting the global demand for trenchless rehabilitation of vital pipe infrastructure** in the water, oil and gas, and resources industries
- **ShieldLiner System** – a world first, proprietary trenchless pipe rehabilitation technology, developed in-house, which restores the structural integrity and functionality of damaged or ageing pipelines
- Following the Company's successful rehabilitation of pipelines in Australia and the US – **Vortex is now targeting full-scale commercialisation in North America via a strategic distributor.** Other countries to follow.

Key information (ASX: VTX)	
Share Price	$0.0020
Shares on Issue	3,141,972,236
Market Cap (undiluted)	$6,283,944
Options on Issue*	3,125,000,000
52 Week High	$0.0020
52 Week Low	$0.0010

** Ex at $0.00125 on or before 25/10/2015*
Data as at 24/1/14

Shareholder Distribution



Trenchless Pipeline Rehabilitation (TPR)

Vortex Pipes Limited

- TPR is the replacement/repair of underground pipelines with minimum excavation and surface disruption.
  - Cured-in-place pipe (CIPP) is a growing subset of trenchless technology and now has the world's largest market share of other trenchless methods.
  - Vortex's 'ShieldLiner' technology is a world's first true "Insitu CIPP" trenchless rehabilitation system. It rehabilitates and re-strengthens the existing damaged pipeline, without any excavation required



Traditional Open Cut

VS



Trenchless Rehabilitation

High Demand

- Industries recognise trenchless rehabilitation as a solution for the world's aging pipe distribution – providing:
  - Significant cost savings
  - Minimum downtime
  - Minimal social/environmental impact
- Pressure pipeline market is demanding thin liners and superior structural strength
- Currently, there appears to be no variable solution available on the market for trenchless rehabilitation of *'pressure pipelines'*

ShieldLiner Technology

- A world's first true 'Insitu CIPP' trenchless rehabilitation system
- Rehabilitates and re-strengthens the existing damaged pipeline, without any excavation required
- A world-first – ultra thin 3mm liner can withstand 700kg of pull, making it ideal for 'pressure pipelines' and the oil and gas industries
- Recipient of major international 'No Dig' design award (2005)



How ShieldLiner Works

Dry Cloth Installed

A ‘dry cloth’ is installed from one manhole. Air pressure inflates the cloth against the damage pipe

ShieldLiner Installed

ShieldLiner is installed via a second manhole. Epoxy resins are fed and mixed in the tool.

Structural Resins Impregnated

Controlled pressure is used to impregnate structural resins, filling any breaks, joints, and cracks in the pipeline.

3mm Liner Installed

An ultra thin 3mm liner is installed within the host pipe, forming one 'in-situ' pipe. The revolutionary liner can withstand 700kg of pull.

Residual Moisture Removed

Remaining residual moisture between the host pipe and the liner is removed, significantly increasing the strength and lifespan of the pipe.

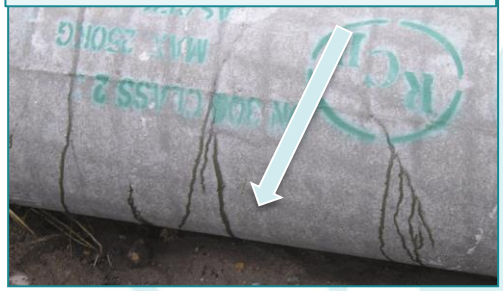
Dry Cloth



ShieldLiner Tool



Resins impregnate cracks



3mm Liner



Resin fills joints

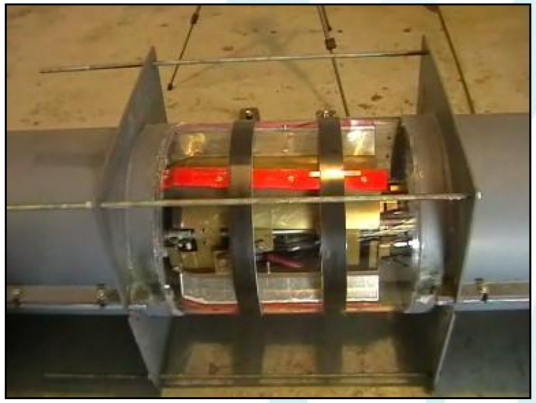
ShieldLiner Applications

- The ShieldLiner tool is extremely versatile. Pressure heads come in 300mm, 450mm and 600mm can be applied to any pipeline.
- This versatility means the tool can re-line different pipes of varying diameters. ShieldLiner can also repair any pipelines with internal diameters ranging from 300mm to 900mm.

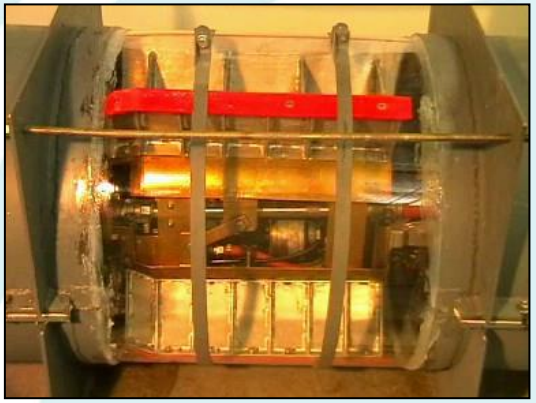
300mm-Module



450mm-Module



600mm-Module



Tested to International Standards

- An adhesion test was conducted on ShieldLiner to a load of greater than 700 kg. Results from the test showed that the concrete pipe cracked, before the 3mm vinyl ester resin liner.
- The data below show ShieldLiner results of ring stiffness, flexural strength, tensile strength for vinyl ester and epoxy resins

Liner Material	Short-term ring stiffness (N/m^2)	50-year ring stiffness (N/m^2)
Vinyl ester resin and quadriaxial fiberglass 2.5 mm thick	702	398

Liner material	Flexural Strength (MPa)	Flexural Modulus (MPa)
Vinyl ester resin and quadriaxial fiberglass	460	11,500
Epoxy resin and quadriaxial fiberglass	433	10,000

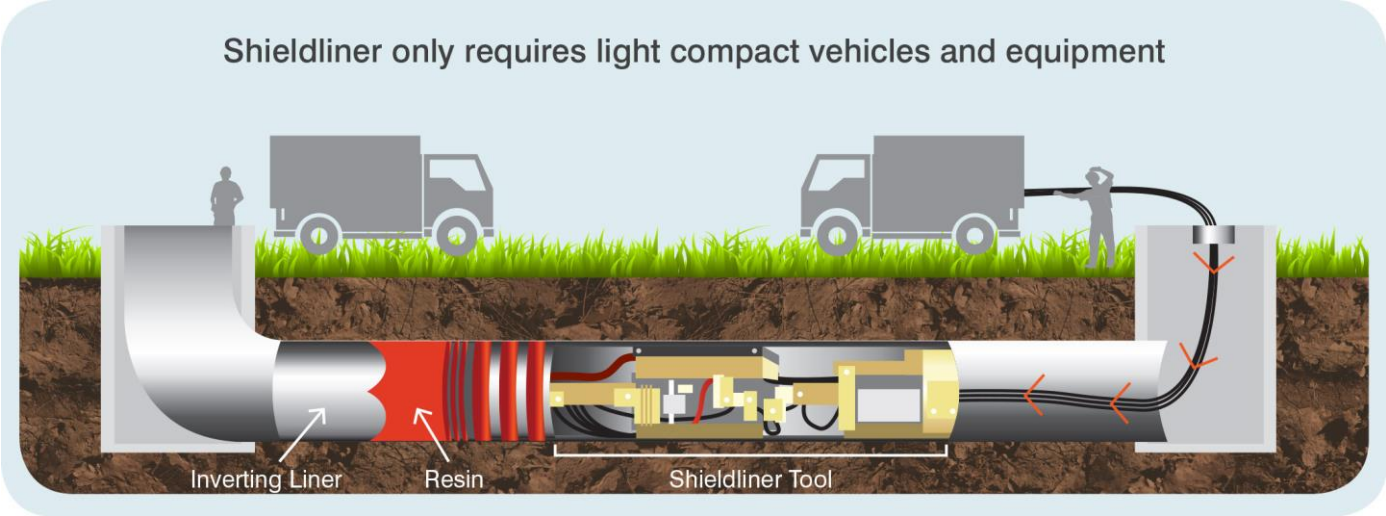
Liner material	Tensile Strength (MPa)	Tensile Modulus (MPa)
Vinyl ester resin and quadriaxial fiberglass	170	11,500
Epoxy resin and quadriaxial fiberglass	240	13,000

Comparison with other CIPP Rehabilitation

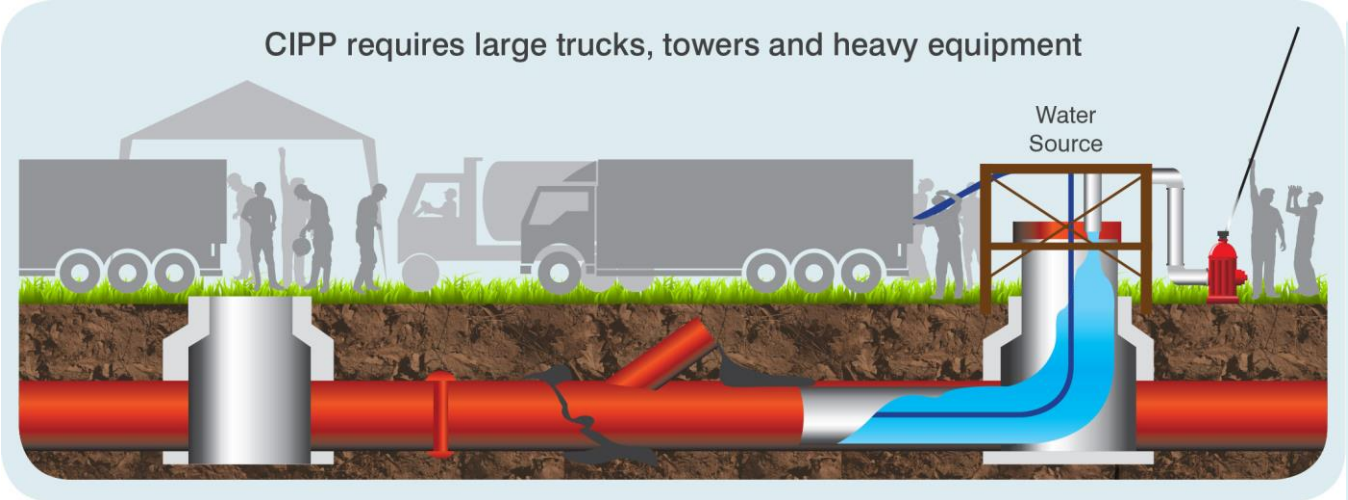
	ShieldLiner	Other CIPP Methods
Installation	**Simple installation:** A dry felt tube is inserted via one manhole.	**Complex installation:** Larger access point required to feed a 'resin wet felt tube'.
Equipment and Manpower	**Minimal equipment & manpower required:** Compact equipment feeds the ShieldLiner tool, controls monitor resins and the pressure.	**Heavy truck and equipment required:** A boiler to pump hot water/steam to cure and expand Liner. More manpower required.
Process	**Original damaged pipe is entirely restored with 3mm thin liner:** Pressurised resins fill holes, joints and cracks. Structural integrity of the old damaged pipe is repaired/restored. Liner can withstand up to 700kg of pull.	**New pipe installed within the old pipe:** Entirely new pipe is installed within the old pipe. Thicker liner (2-4 times thicker than ShieldLiner), reduces ID, higher resin costs, and increases weight and pipe buckling parameters.
Result	**No annulus, new liner bonded:** ShieldLiner with 'no annulus' and the ShieldLiner is bonded	**Additional work required:** Additional time and expense to fill hollows and joints with grout. This only reduces the annulus areas, but new pipe is prone to de-lamination.

Comparison with other CIPP Rehabilitation

ShieldLiner technology



Alternative CIPP methods



Significant Competitive Advantage

Financial Savings:

- Reduced manpower and equipment required
- Major reduction in resin usage
- Less downtime
- Significantly increases the pipeline lifespan
- Minimal excavation cost
- Reduced permitting issues

Superior Operating Performance:

- Simplified installation
- Restores structural integrity of the damaged pipeline
- Liner is 50-80% thinner than minimal structural strength requirement
- Liner bonds to the restored pipeline and resin eliminates moisture, increasing the strength and lifespan of the pipeline

Social and Environmental Benefits:

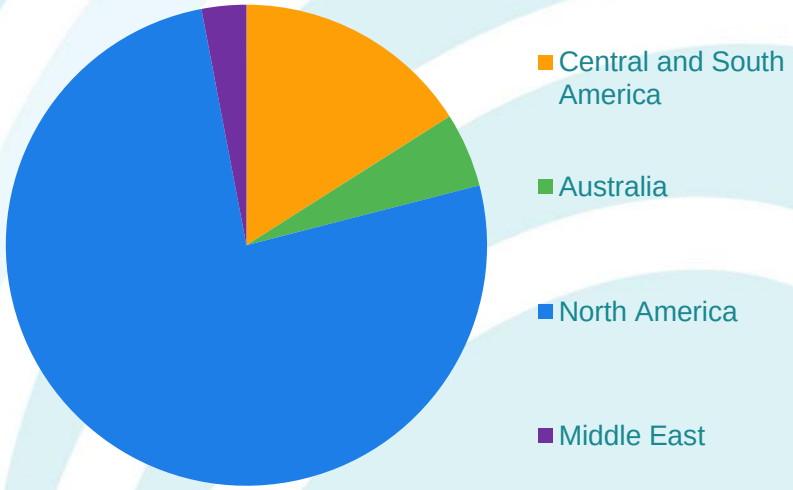
- Process significantly reduces carbon foot, with estimates of 80% less carbon usage over traditional open pit pipe line replacement
- Fast installation reduces noise pollution and social disruptions

‘Triple Bottom Line’ benefits

Significant Global Demand

- **Global growth potential** – pipe systems worldwide are ageing and the load capacities are increasing
  - $1.4 trillion global pipeline CAPEX 2012 - 2017 for Oil & Gas industry alone
- Potential for **application across multiple industries**, including;
  - Water utilities
  - Oil and Gas
  - Resins supply
- **Growing emphasis on the environment** – global initiative to reduce pollution and minimise carbon footprint. Market demand for clean technology pipeline rehabilitation solutions is large and growing - $300 billion a year (*Redefining Cleantech 2013 report*)

$1.4 Trillion Global Pipeline CAPEX 2012-2017*



*Sources: * Pipeline & Gas Journal 2012 Worldwide Pipeline Construction Report; Oil & Gas Journal Vol-110 Issue 3*

Immediate opportunity recognised in USA - Oil & Gas industry

Oil & Gas Market

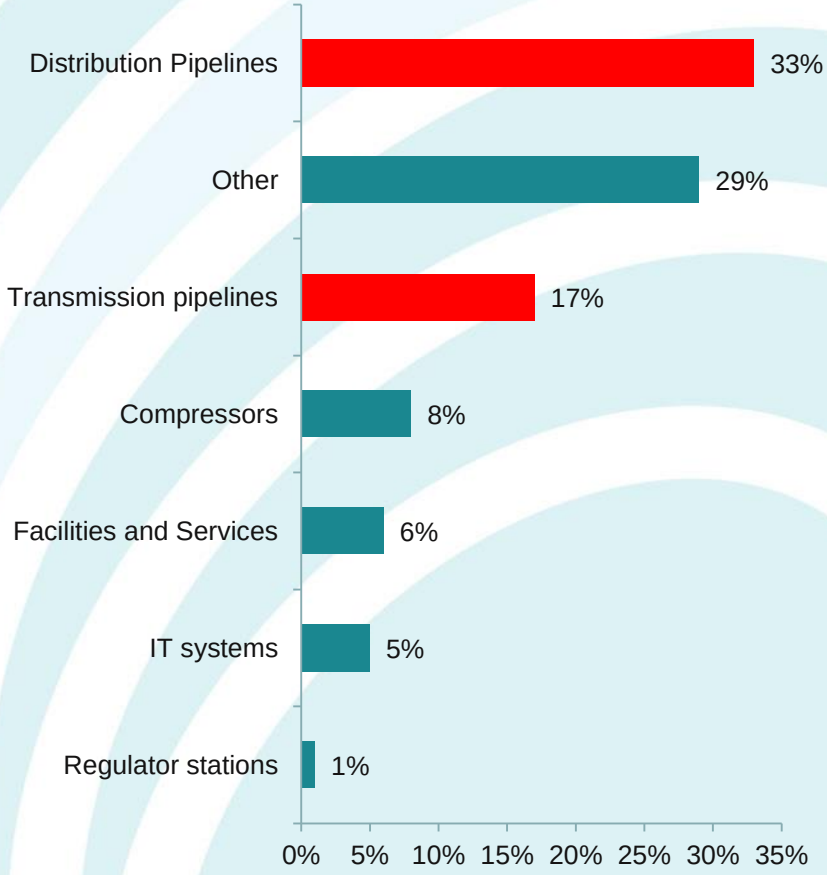
Gas/Oil distribution and transmission pipe lines are receiving the greatest capital investment over the next 5 years (*refer to table*)

› Pipeline expenditures in North America are expected to be 15% of total expenditures for exploration and production of shale gas *(Pipeline & Gas Journal)*

Strong Market Need

› 4 million km of pipelines transport 100% of natural gas, 70% of oil and refined products and other hazardous fluids
› $5 billion of oil products piped daily (AOPL)
› Half of pipelines are at least 50 years old
› Corrosion causes up to 20% of all significant pipeline incidents causing major property and environmental damage (PHMSA)
› Huge market demand for a variable trenchless pipeline rehabilitation solution

USA CAPEX spend over next 5 years



Source: 2013 Strategic Directions In The North American Natural Gas Industry

Immediate opportunity recognised in USA - Water Utilities market

Water Utilities Market

Increasing Government and Corporate Investment

- US Water and Wastewater investment in pipelines is forecast to reach $4.8 trillion over the next 20 years (*US Mayors, 2013 report*)
- Investment in water technology companies set to rise as major oil and gas companies look to meet the growing challenges of water scarcity and regulations

Strong Market Need

- 8 million km of pipeline
- Deteriorating water infrastructure - 240,000 water main leaks per day (Deloitte)
- 75,000 sanitary sewer overflows annually, contaminating recreational waters (EPA)
- Water infrastructure and technologies becoming increasingly important to the future of water sustainability (E&Y, 2013 report)
- High demand for a variable trenchless “pressure pipeline” rehabilitation solution

Path to Commercialisation

Completed

- ✓ Full patent protection process underway in Australia and the USA
- ✓ Validation of superior performance from ShieldLiner technology through commercial applications and excellent condition reports
- ✓ First exposure to US market attracts significant interest

Next Steps

- › Alliance with strategic distributor – targeting the US Oil & Gas and Water Pipeline industries
- › Development and agreement with US Distributor under NDA
- › Development and finalisation of commercial distribution in the US via distributor
- › Full scale US Commercialisation

Long-Term Growth

- › Expansion across other countries and sectors - UK, Japan, Asia and Europe
- › Finalise distributor agreement worldwide

Summary

- **World first proprietary technology** – proven to effectively rehabilitate damaged and/or ageing pipelines via trenchless rehabilitation
- **Huge existing demand** for 'pressure pipeline' trenchless rehabilitation solutions
- **ShieldLiner technology – a superior alternative to traditional rehabilitation techniques** – providing 'a true structural pipeline repair' plus material, financial, operating and environmental benefits
- Significant **global market demand with immediate opportunity in the USA market** (undercapitalised with aged infrastructure, plus planned Government investment)
- Advanced negotiations underway with **strategic distribution partners**



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ASX:VTX

Experienced Board and Management



Trevor Gosatti

Founder

- Over 30 years' experience in civil contracting
- Member of the Australian Institute of Company Directors
- Former National CEO of the Civil Contractors Federation
- President for the Australasian Society for Trenchless Technology



Patrick Corr

Director - Chairman

- Barrister & Solicitor of the Supreme Court of Western Australia
- Extensive management experience of private, public and ASX listed companies
- Experience across a range of industries including IT, software and services and the mineral and natural resources industry in Australia and foreign jurisdictions



Brett Matich

Director – Operations, North America

- President, CEO & Managing Director roles for publicly listed company`s in Australia, UK and Canada, where he led over $300m in financings. Successes included mergers, acquisitions, mining developments and operations.
- Member of American Society of Civil Engineers, North American Society for Trenchless Technology and World Environment Federation.
- Director of three TSX listed companies.



James Robinson

Director - Corporate

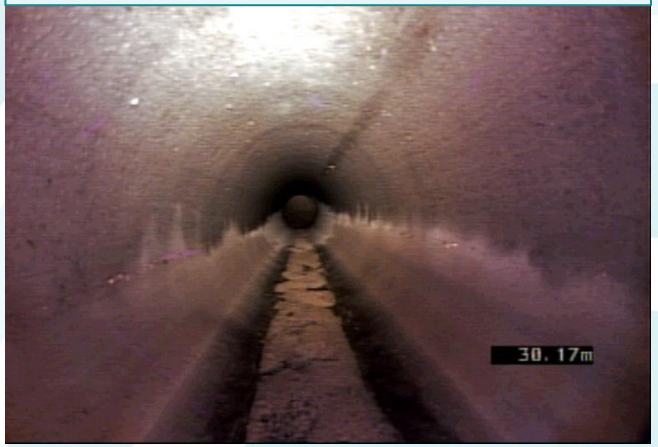
- Extensive management and board experience in companies operating in North America, South America, Europe, Asia and Australia
- Director of a Corporate Advisory firm, a member of the Australian Institute of Company Directors and
- Bachelor of Economics

Case Study – City of Rockingham, Perth

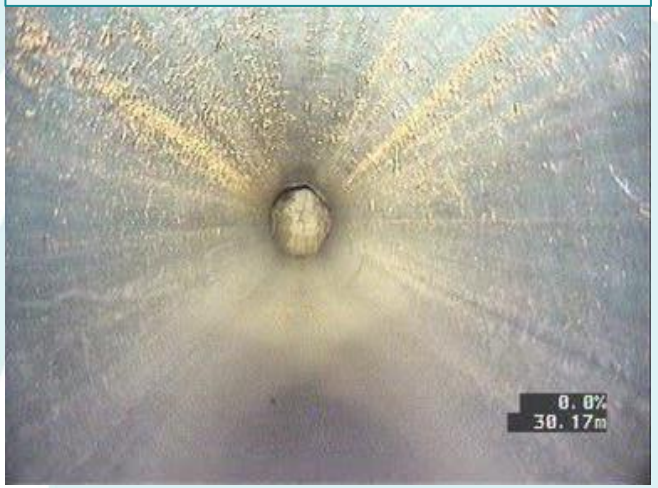
City of Rockingham - Western Australia: Storm water pipe rehabilitation using ShieldLiner, 2008

- **Problem:** 23m of 300mm diameter water pipeline was severely damaged and blocked by tree root infusions
- **Solution:** An ultra-thin 3mm liner was installed using the ShieldLiner system in 2008.
- **Installation:** Access of two manholes the ShieldLiner system using “epoxy resins”, repaired the damaged pipeline and bonded a ultra-thin 3mm liner (2008)
- **Results:** Independent field inspections (2013) showed that the pipeline remained in excellent condition. No faults, subsequent tree root infusions, signs of local flooding or infrastructure ageing were detected in the new in-situ pipe.

December 2008



November 2013



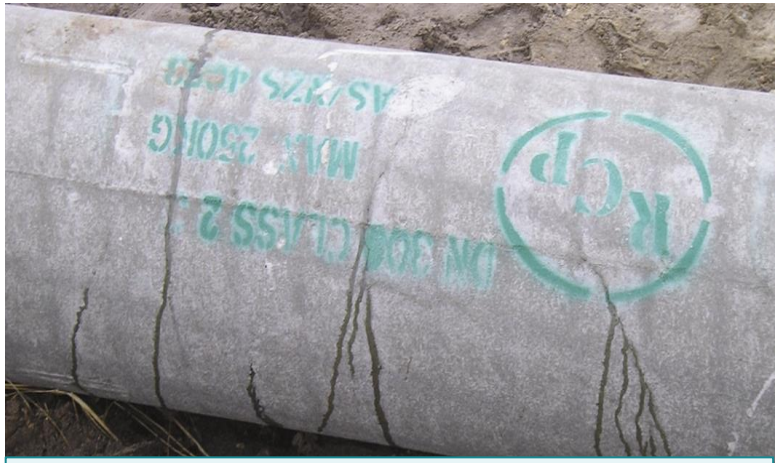
Field Tests and Inspections



Installed in 100 metre concrete host pipe



“Liner Insitu to Pipe” - 700kg pull test



Resins penetrates micro cracks



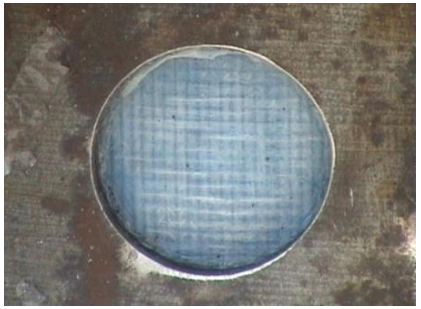
Liner thickness 3mm to 4mm

Pressure Capability Standards

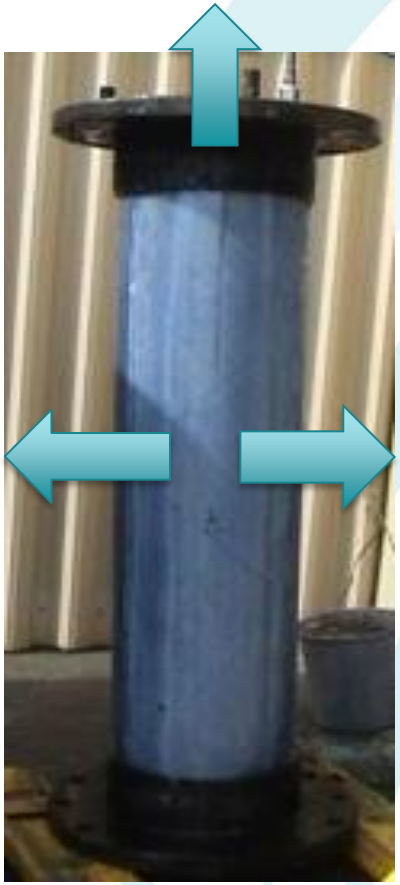
50mm diameter “test hole”
No failure after 3 weeks at 60Bar



Single layer fibreglass - 1mm
1.2t of weight on area of hole



Force 39t on lid &
84t hoop tension
per metre length



Fully structural liner
- failed at test pressure
of 55 Bar



ShieldLiner Components

