Renewal of Deteriorated Sewers. What can and can't be lined?

Interflow®

Limitations due to ....

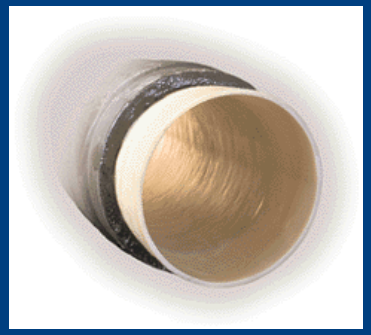
- Type of defect
- Frequency of defect
- Treatment of defects
- Sewer configuration
- Type of liner
  - Limitation of the liner

Types of sewers to be lined

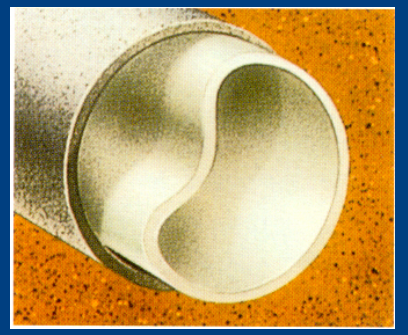
1. Reinforced concrete
2. Vitrified clay
3. Cast iron (unlined)
4. Mild steel
5. Plastic (PVC, Polyethylene, GRP)

Types of Liners

Cured in Place



Fold and Form



Spiral Wound

Typical defects

Corrosion

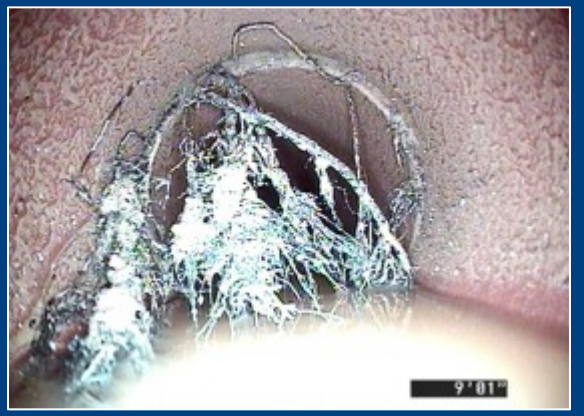
Cracking

Displaced Joints

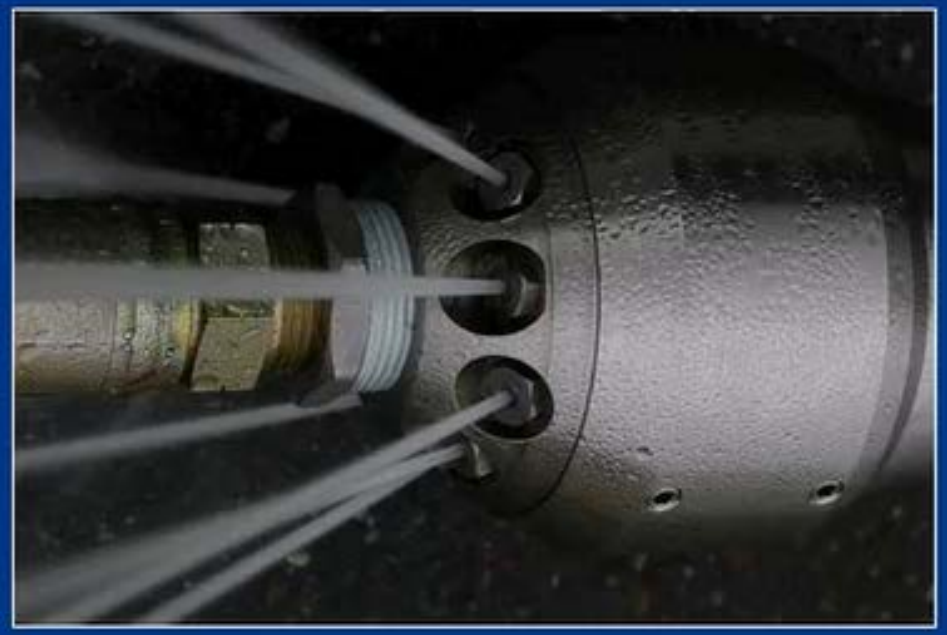
Obstruction

Infiltration

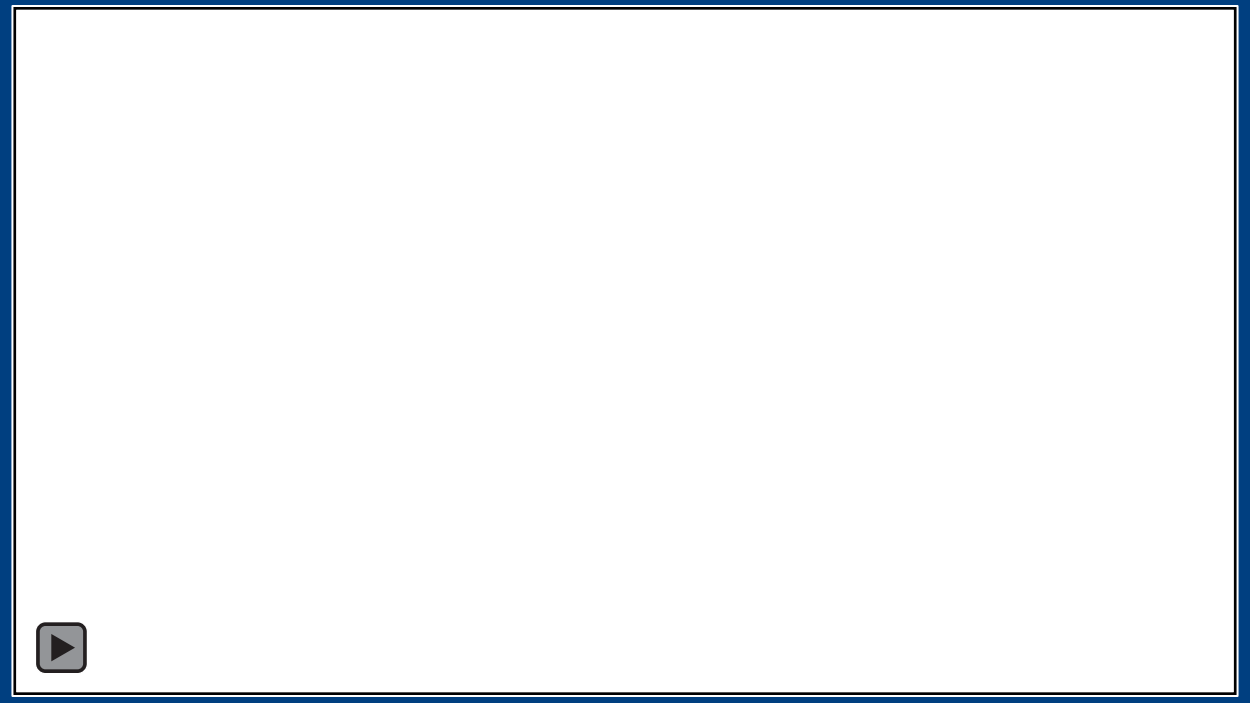
Roots and debris



Cleaning



High performance jetters

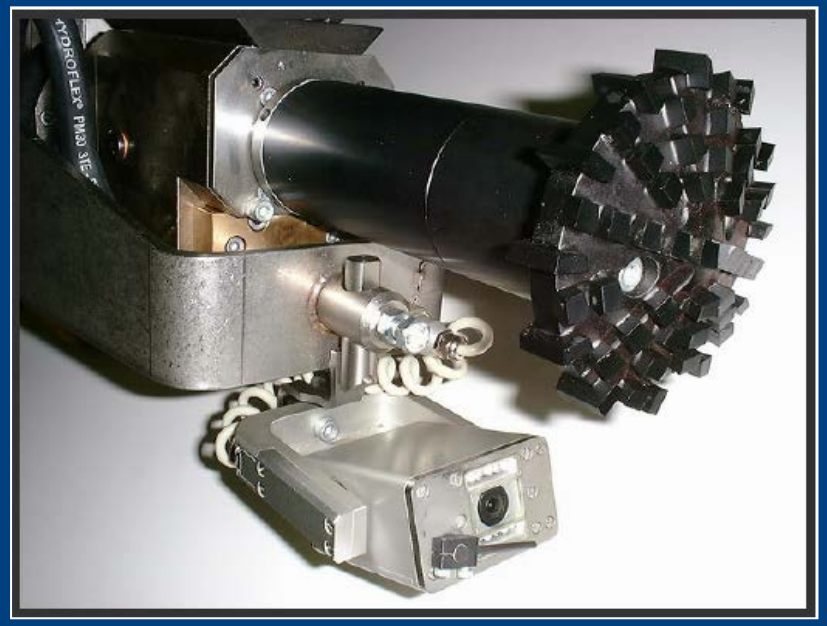


Root Cutters

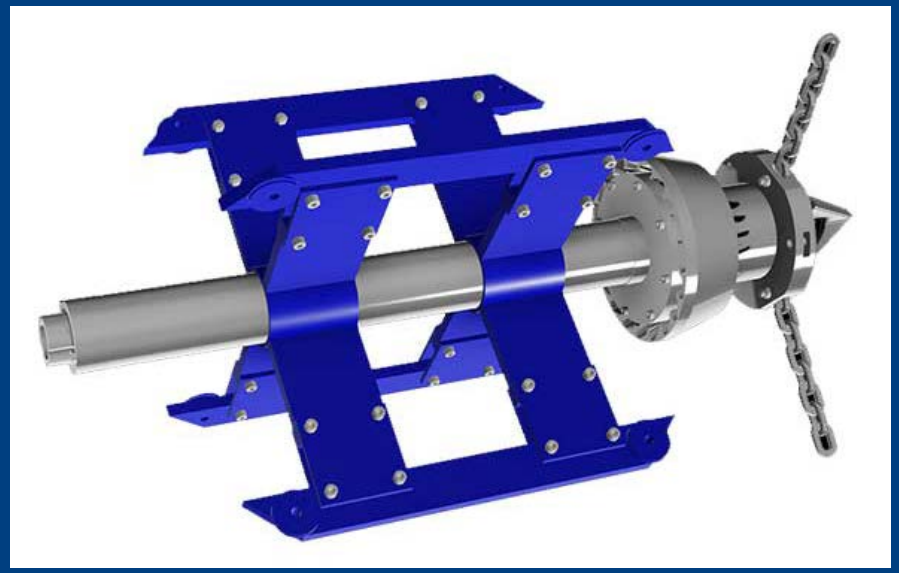
Impact cutters

Calcification movie

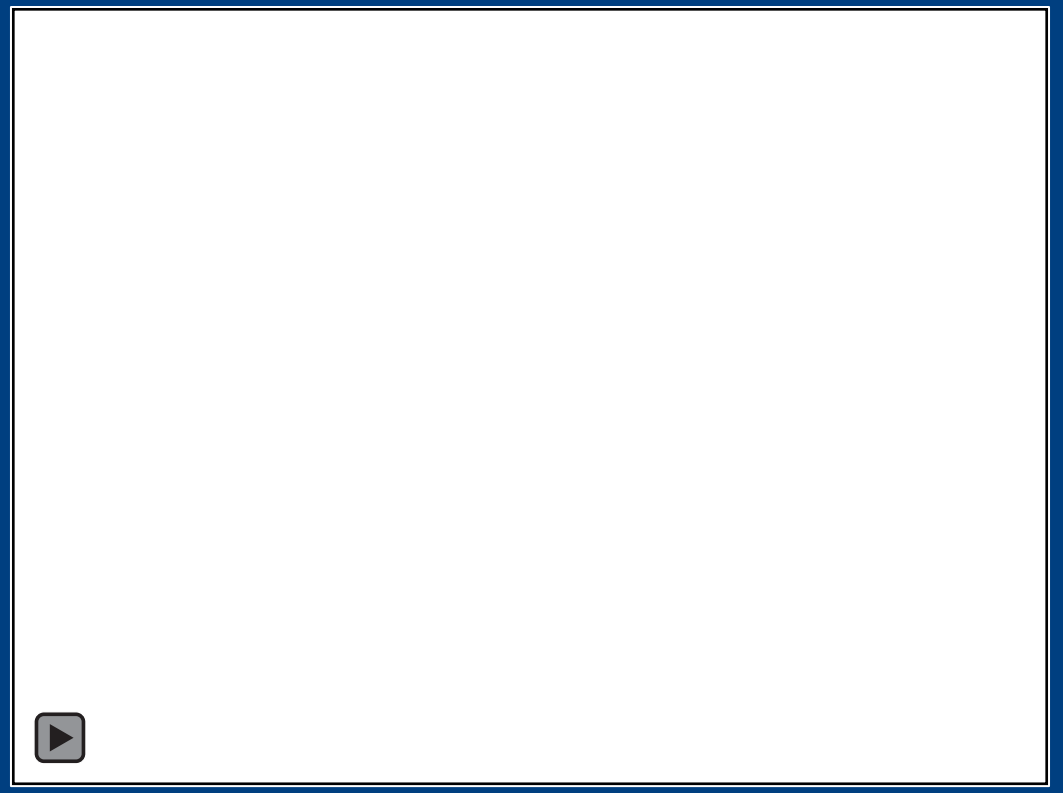
Removing heavy debris



Chain Flail



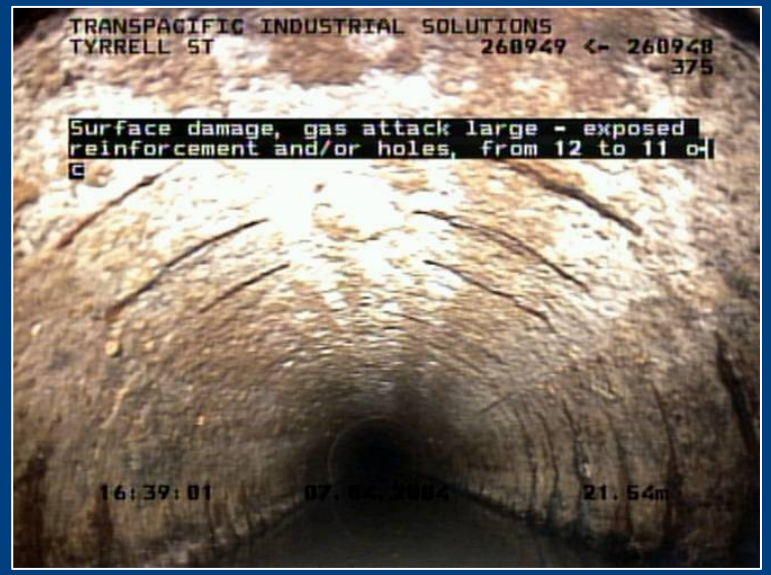
Cleaning cast iron



Vibrating nozzle

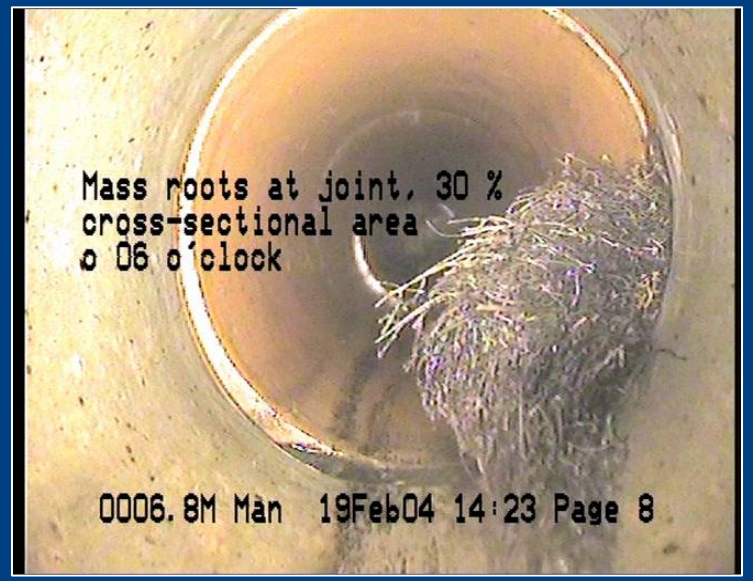
Movie

Suitable for Lining



Suitable for Lining

Suitable for lining, but needs more cleaning



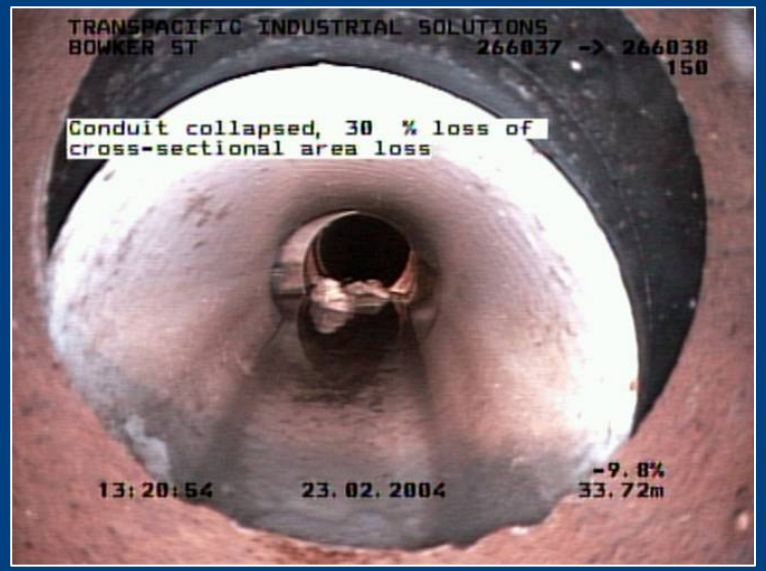
Suitable for Lining???

Subject to minimum diameter Specification

Nominal Diameter	Min clear bore
150	140
225	200
300	275

Line with bend

Pre-Lining Repair Needed



Pre-Lining Repair Needed

Other “non-standard” conditions

- Steep grade, 50m length: Less than 20 degrees (about 1 in 3)
- Steep grade, 50m to 100m: Less than 15 degrees (about 1 in 4)

- Flow velocity: Not faster than 3m per second

- Flow depth: No more than 20%

- Standing water: No more than 50%

Conclusions

- All but the most severely deteriorated sewers can be lined
- Need for pre-lining repairs varies between types of liners
- Essential to keep up-to-date with continual advances
- There is no substitute for experiences
- Resources available in New Zealand and Australia are equal to world leading