WATER MAIN CLEANING

Presentation by
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Introduction

• Why we clean water mains
• What’s in the pipes
• Cleaning techniques
• Our project update
• Videos
• Questions
Why do we clean Water Mains?

• Drinking Water Management Systems
• Public Health
• Customer Expectations
• Smarter Ways of working
What's in the Pipes?

- Other than Water
- Iron
- Manganese
- BioFilm
- Sediments
How can we clean Water Mains?

• Trunk, Transfer & Reticulation Mains
• Flushing
• Air Scouring
• Foam Pigging
• Ice Pigging
Flushed

- Advantages
  - Easy
  - Low set up costs
  - Fixes the problem
- Limitations
  - 0.75m/sec (1.5 – 2.0m/sec preferred)
  - Large volume of water wasted
  - Can stir up other areas
  - Short duration fix
  - Customer Impact time
Air Scouring

**Advantages**
- Widely available
- Low set up costs

**Limitations**
- Customer Impact time
- Potential pipe damage
- Large volume of water wasted
Foam Pigging

- **Advantages**
  - Fixes the problem
  - Average cleaning technique

- **Limitations**
  - Launcher & Catcher required
  - Large volume of water wasted
  - Customer Impact time
  - Lost Pigs
Ice Pigging

**Advantages**
- Quick and easy
- Cleans the main very efficiently
- Cost effective
- No large volumes of water required

**Limitations**
- Perception
- Waste Route
Review & Selection

- Facts
- Experiences
- Costs
- Environment
- Sustainability
- Customer Expectation
- Public Perception
## Table 1: Cleaning Method Cost comparison (Based on 100mm dia main 1000m long)

<table>
<thead>
<tr>
<th>Method</th>
<th>Labour/Plant $</th>
<th>Materials $</th>
<th>Cleaning Frequency</th>
<th>% Silt Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flushing</strong></td>
<td>$233</td>
<td>N/A</td>
<td>Every 6 months</td>
<td>30%</td>
</tr>
<tr>
<td>Based on 30min per hydrant x 1 person</td>
<td>Total</td>
<td>$233</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sponge Pigging</strong></td>
<td>$2592</td>
<td>$3500</td>
<td>Every 5 years</td>
<td>95%</td>
</tr>
<tr>
<td>Based on 2 days labour x 3 people</td>
<td>Total</td>
<td>$6092</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ice Pigging</strong></td>
<td>$324</td>
<td>$2000</td>
<td>Every 8 years</td>
<td>95%</td>
</tr>
<tr>
<td>Based on 3 hours shutdown &amp; ice pigging</td>
<td>Total</td>
<td>$2324</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Given the frequency differences the below shows a cost per annum of each method.*

<table>
<thead>
<tr>
<th>Flushing</th>
<th>Sponge Pigging</th>
<th>Ice Pigging</th>
</tr>
</thead>
<tbody>
<tr>
<td>$466</td>
<td>$1218.40</td>
<td>$290.50</td>
</tr>
</tbody>
</table>
Project Delivery Update

- WSC Year 3 of Ice Pigging
- 2013 72.6Km of water main were cleaned in 113 insertions in 5 weeks
- 2014 81.4Km of water main cleaned in 121 insertions in 7 weeks
- 2015 We have planned to clean 89.7Km of water main cleaned in 145 insertions in 6-8 weeks
Project Delivery Update

- Detailed plans
- Street Schedules
- Interactive Maps
- Customer Notifications

- 10 Tonnes each day
- Up to 12 insertions
Project Delivery Update
Conclusion

- Ice Pigging is a highly effective, straightforward no-dig technique, faster and less disruptive to the customer, uses less water and is more cost effective than the other cleaning techniques.
Ice Pigging Videos

How Does it work?

The Cleaning Power of Ice

Navigating Bends
WATER MAIN CLEANING – Ice Pigging

QUESTIONS?

Thank you