The Chathams: Reducing Fuel Demand in an Isolated Community
August 2011

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Roading Network

Road Grades - 1 = 51km, 2 = 86km, 3 = 49km, 4 = 11km

Chatham Island
• Sealed network 13km
• Unsealed network 160km

Pitt Island
• Unsealed Network 15km

Traffic Loadings
• Light vehicles / cars / vans / utes up to 2t = 80%
• Mid range light commercial between 2t & 5t = 15%
• Heavy plant greater than 5t = 5%
Island Roading History

**Professional Services**
- Commenced 1956 Royds Sutherland & McIay, now MWH
- Professional services contract negotiated annually

**Roading Maintenance**
- Chatham Islands Council Works Unit
- 1993 Downer purchased the CIC works unit
- Maintenance competitively tendered through to 2015
Project Background – 2008/9

Project Drivers
- Unknown pavement layers
- Pavement failure
- Longer haul distances for quality materials
- Low quality materials at site
- Other options available?

Council wanted
- Better quality work
- Innovation/sustainability
Building Experience; Delivering Value

- Quarry - basalt
- Quarry - weathered
- Trial Sites
- Rehab Site
Building Experience; Delivering Value

Actions

Investigations
• Test pits
• Benkelman Beam Testing

Design
• Material testing
• Pavement design
• Construction methods & trials
• Cost of options/innovation

Report to Council
• Testing (repeated)
• Presentation
Site Investigation – Trial Site Test Pits
## Depth to Lime Sand Base Below Surface

<table>
<thead>
<tr>
<th>Site:</th>
<th>Chatham Islands North Road</th>
<th>Trial Site</th>
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</thead>
<tbody>
<tr>
<td>Date:</td>
<td>03/04/2008</td>
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<tr>
<td>Photo Location</td>
<td>RP 2327</td>
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<tr>
<td><strong>RP</strong></td>
<td><strong>LH / CL / RH</strong></td>
<td><strong>Depth to lime sand base below chip seal pavement mm</strong></td>
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<tr>
<td>2198</td>
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<tr>
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<tr>
<td>2437</td>
<td>LH</td>
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</table>
• Weight is applied to the pavement through a loaded 8 tonne truck axle.
• The deflection of the road is measured with a Benkelman beam.
Building Experience; Delivering Value

Options & Estimates

Granular Overlay

- Job cost = $109,800
- Total haul distance = 5,705km

Stabilisation

- Job Cost = $96,100
- Total haul distance = 280km

Note: geogrid option trialled in previous year
North Road LIME Stab Site

North Road Geogrid Site

Distance (m)

Deflection (mm)
Results

• Stabilised surface more stable in inclement weather
• Stabilisation preferred
• Low pavement deflections
• Fuel savings
• Less damage to existing pavements
• Satisfied client
Questions?