FAR NORTH FLOOD DAMAGE

Local Roads Perspective
Contents

• A reflection on the significance of the flood events.
• The steps and process to reinstate the road network.
• Successful Road Reinstatement
Rainfall Graph from 2006 – 2009
Highlighting Significant Peaks

Monthly Rainfall Figures for the Bramleys Auto Site in the Kaeo River Catchment

- **Rainfall (mm)**
- **Months:** Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
- **Legend:**
  - 2006
  - 2007
  - 2008
  - Long Term Mean
Flood Damage Expenditure on Road Repairs

Approved Flood Damage Expenditure

- $2,000,000.00
- $4,000,000.00
- $6,000,000.00
- $8,000,000.00
- $10,000,000.00
- $12,000,000.00
- $14,000,000.00
- $16,000,000.00

Date:
- May-06
- Jul-06
- Sep-06
- Nov-06
- Jan-07
- Mar-07
- May-07
- Jul-07
- Sep-07
- Nov-07
- Jan-08
- Mar-08
- May-08
- Jul-08
Location of Significant Reinstatement Sites
Example Photos of Road Damage

Typical Underslip / Dropout examples
Example Photos of Road Damage ctd.

Typical debris and flooding examples
Example Photos of Road Damage ctd.

Bridge Approach Washouts
Steps Towards Reinstatement

- Initial Site Sheets (example)

**Flood Damage - Initial Site Assessment**

- **Road Name:** West Coast Road
- **Date:** 28/07/2008
- **RP:** 14925
- **Area:** North
- **Site of Failure:** M25
- **Type of Instability:**
  - Porewater Pressure (wet soggy ground)
  - Oversteep Soft weak ground
  - Washout failure
  - Surface Drainage
- **Reason for Failure:**
  - Undermining kerbs
  - Logging route
- **Rough Order of Cost**
  - Initial Cost: $1,500.00
  - Future Cost: $110,000.00
- **Likely Investigation Requirements**
  - Geotechnical Investigation only.
  - Drainage
  - Pole Retaining Wall
  - Land Owner Consultation
  - Geotech Investigation
  - Full Investigation (Geotech Eng)
  - Retaining Wall
  - Drainage Maps
  - Geotech Investigation
- **Other**
  - Ventilation
  - Geotech Investigation
- **Size of Failure:**
  - Width: 2.0 m
  - Height: 2.0 m
  - Depth: 1.0 m
- **Activity:** 1

**Note:**
- Likely investigation requirements for reinstatement.
- Undermining kerb, logging route.
Steps Towards Reinstatement ctd.
Summary of Immediate Response and Permanent Repairs

<table>
<thead>
<tr>
<th>Road Name</th>
<th>RP Type</th>
<th>Size</th>
<th>Immediate Response</th>
<th>Possible Permanent Repair Option</th>
<th>Geotech Report</th>
<th>Permanent Repair Cost</th>
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<tbody>
<tr>
<td>Kohehikarua</td>
<td>O/Slip</td>
<td>clear</td>
<td>8000</td>
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<td>clear</td>
<td>5000</td>
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<td>Trees on 28 roads</td>
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<td>Clear</td>
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<td>31450</td>
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<td>Total for North</td>
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<td>29,800</td>
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<td>884,300</td>
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<td>SOUTH AREA</td>
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<td>Waimatenui / Mataraua</td>
<td>940-2036</td>
<td>U/Slip</td>
<td>Signage, remove Trees, Plantmix to Slump, Washouts</td>
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<td>1930</td>
<td>U/Slip</td>
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<td>Rock spalls</td>
<td>6000</td>
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<td>Remove Trees from Road</td>
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<td>Seal Repairs</td>
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<td>Waipapa Gorge Rd</td>
<td>300-7000</td>
<td>Various small overslips, Overslips</td>
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<td>Clear Water tables &amp; Overslips</td>
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<td>Clear Treas from Road, Overslips &amp; Overslips</td>
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<td>Whangia Rd</td>
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<td>Whareponga Rd</td>
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<td>Overslips, Carriageway repairs to scour damage</td>
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Steps Towards Reinstatement ctd.

Repair Prioritisation – Key items that were considered during Prioritisation.

- Degree of access limitation.
- Road user safety.
- Likelihood of further regression / Failure at site
- Traffic volume.
- Likely Economic and Social impact.
Steps Towards Reinstatement ctd.

- Remedial Options Report
Steps Towards Reinstatement ctd

- Final Design and Contract Packages.
Road Reinstatement Successes

- Rock spalls examples.
Road Reinstatement Successes ctd

- Retreats.
Road Reinstatement Successes ctd

- Shotrods and Colmix
Road Reinstatement Successes ctd

- Shotrods and Colmix
Road Reinstatement Successes ctd

- Retaining Walls
Questions