Benchmarking the readiness of Road Controlling Authorities to meet their obligations under the CDEM Act 2002

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Outline

• CDEM Act 2002 and RCAs
• What is benchmarking and why benchmarking RCAs readiness?
• The NZTA benchmarking project
• The RCAs readiness benchmarking tool
• Results of the web-based survey
• Darfield and Christchurch earthquakes: a real test
CDEM Act 2002 and RCAs
CDEM Act 2002 and RCAs

The CDEM Act 2002 requires that lifeline utilities are “able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency.”

Key Message
Lifeline utilities are expected to plan for and be able to implement procedures to ensure continuity of service to the fullest possible extent – it is not an option to be unprepared.


Available on the website: www.civildefence.govt.nz
What is benchmarking and why benchmarking RCAs readiness?
Benchmarking what and why

The benchmarking process: *Adapted from Bateman (1989, p. 6)*
Identify **standards of performance** in the involved RCAs;

Identify the **relative position** of each RCAs in relation to the other;

**Identify a benchmark**;

Perform a "**gap analysis**" to assess the weakness of non-well performing RCAs
The NZTA benchmarking project
### Key Personnel

<table>
<thead>
<tr>
<th>Role</th>
<th>Expertise</th>
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<tbody>
<tr>
<td><strong>Dr. André Dantas</strong></td>
<td>Project Manager and PI</td>
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<tr>
<td><strong>Dr. Sonia Giovinazzi</strong></td>
<td>Project Scientist</td>
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</table>

### Steering group

- Richard Smith (MCDEM);
- Jacinda Harrison (MoT);
- David Bates (NZTA);
- Ian Cox (NZTA);
- Peter Connors (NZTA);
- Ian Maxwell (Auckland City Council);
- Murray Sinclair (Christchurch City Council);
- Jon Mitchell (ECan–CD);
- John Lamb (Canterbury Engineering Lifelines Group);

### Peer-reviewers

- Dave Brunson (National Engineering Lifelines Co-ordinator)
- Dr. Erica Seville (UC and Risk Strategies Research and Consulting)
- Mr. Stuart Woods (Christchurch City Council)
Research scope

• To develop a “conceptual framework” for benchmarking the level of preparedness of Road Controlling Authorities (RCA) in New Zealand to meet their obligations under the Civil Defence and Emergency Management Act (2002); and

A self-assessment tool for benchmarking readiness to emergency response and recovery

1. Simple and direct;
2. Covering the most important measures of readiness;
3. Immediate feedback to participating RCAs;
The RCAs readiness benchmarking Framework and Tool
Benchmarking Framework

**Step 1 - identifying comparable organisations to be benchmarked**

The main focus is on Road Controlling Authorities (RCA), which can be divided according to their area of influence, namely:

- predominantly rural zones;
- metropolitan areas.

Overall, they can be also categorized as:

- City Councils;
- District Councils; and
- New Zealand Transport Agency
Step 2 - defining what needs to be benchmarked

1. **Management Structures** - RCAs are expected to develop and maintain appropriate management structures;

2. **Management Capability** - RCAs are expected to develop and maintain suitably trained and competent personnel; to exercise coordination and cooperation across the organisation; and enhance the capacity and adequacy of their information sharing; and

3. **Management Capacity** - RCAs are expected to assess the adequacy of their resources in terms of quantity and suitability of equipment facilities, personnel and finances; to assess the adequacy of the road network they are responsible for in terms of robustness and redundancy; to arrange for mutual aid mechanisms and contractual arrangements for emergency response and personnel.
## Expectation 3. Management Capacity

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicators</th>
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</thead>
<tbody>
<tr>
<td><strong>3.1 Robustness and Redundancy of the Road Network</strong></td>
<td></td>
</tr>
<tr>
<td>F1 Processes and procedures for assessing robustness of the road components</td>
<td></td>
</tr>
<tr>
<td>F2 Processes and procedures for assessing redundancy of the road network</td>
<td></td>
</tr>
<tr>
<td><strong>3.2 Rapid Damage Assessment Capacity</strong></td>
<td></td>
</tr>
<tr>
<td>G1 Processes and procedures for quickly assessing the damage to road components</td>
<td></td>
</tr>
<tr>
<td>G2 Characteristic of damage and functional assessment process and procedures</td>
<td></td>
</tr>
<tr>
<td>G3 Identification of response and restoration priority</td>
<td></td>
</tr>
<tr>
<td>G4 Software to support damage assessment and priority</td>
<td></td>
</tr>
<tr>
<td><strong>3.3 Existing Resources</strong></td>
<td></td>
</tr>
<tr>
<td>H1 Management of Critical Resources</td>
<td></td>
</tr>
<tr>
<td><strong>3.4 Contractual Arrangements (CA) and mutual aid mechanisms (MAM) for emergency resources and personnel</strong></td>
<td></td>
</tr>
<tr>
<td>I1 Existence of CA and MAM</td>
<td></td>
</tr>
<tr>
<td>I2 Test and Update of CA and MAM</td>
<td></td>
</tr>
<tr>
<td>I3 Contacted organisations for CA and MAM</td>
<td></td>
</tr>
<tr>
<td>I4 Type of resources provided under CA and MAM</td>
<td></td>
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<tr>
<td>I5 Tailored CA and MAM</td>
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</tbody>
</table>
Benchmarking Framework

Step 4 - determining data collection method

Web-based questionnaire 35 questions (SurveyMonkey)

response formats

• Single-choice
• Multi-choice
• Other or specific answers

1. M Structures (11 indicators)
2. M Capability (11 indicators)
3. M Capacity (13 indicators)

Confidentiality guaranteed (University of Canterbury’s Ethical Standards)
### Benchmarking Framework

**Step 5 - assessing the RCA`s readiness level**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Areas of Significant Shortcoming</td>
<td>Areas requiring further development</td>
<td>Areas of Adequacy</td>
<td>Areas of Strength</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level (score)</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0-1)</td>
<td>area of significant shortcoming</td>
</tr>
<tr>
<td>Ordinary (1-2)</td>
<td>area requiring further development</td>
</tr>
<tr>
<td>Regular (2-3)</td>
<td>area of adequacy</td>
</tr>
<tr>
<td>Excellent (3-4)</td>
<td>area of excellence</td>
</tr>
<tr>
<td>Outstanding (4-5)</td>
<td>area of strength</td>
</tr>
</tbody>
</table>
Results of the web-based survey
Benchmarking Framework

<table>
<thead>
<tr>
<th>Level of completion</th>
<th>Response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Valid</td>
<td>Non Valid</td>
</tr>
<tr>
<td>Fully completed</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Partially completed</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Not Started</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>12</td>
</tr>
</tbody>
</table>
Benchmarking Framework

**The most common areas of significant shortcomings**

1. **Management Structures e.g.**
   - all operational staff should receive a copy of the emergency response plan
   - copies should be distributed to all operational staff external to the RCA
   - the emergency response plan should be exercised...

2. **Management Capability e.g.**
   - expand information sharing practices to include consultants and contractors
   - test and approve information-sharing tools and standards to consider intra- and inter organisational needs

3. **Management Capacity e.g.**
   - Robustness and redundancy of the road network: improve vulnerability analysis estimation of the time and cost of unavailability of the at risk routes
   - analysis of the connectivity, traffic capacity, traffic type, average traffic speed for alternative routes.
Darfield and Christchurch earthquakes: a real test
Validation

Approx. epicentre of Feb 22nd Mw6.3 Earthquake

Closed due to liquefaction induced effects & flooding

Closed to public due to rock falls

Courtesy of Peter Connors, NZTA Canterbury State Highways Operations Manager
C3) How often does your organisation participate in scenario-based exercises with other lifelines utilities and CDEM groups in emergency events? (single choice)

☐ Whenever the exercises take place; 100
☒ Every 6 months; 100
☐ 6-12 months; 80
☐ Every year; 70
☐ 1-5 years; 60
☐ Never; 0
☐ Other (please specify).
Thank You

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