A new approach to speed limit setting in Queensland

Andrew Pine, Principal Engineer (Department of Transport and Main Roads QLD)
Agenda

1. Current speed limit review process
   *Why change?*

2. Revised speed limit review process
   *What are the changes?*

3. Practical Demonstration
   *What are the benefits?*
Current Speed Limit Review Process

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Current Speed Limit Review Process

Need for Speed Limit Review Identified

Evaluate and Monitor

Approval and Implementation

Speed Limit Technical Processes (objective analysis)

Road Safety Considerations (subjective analysis)
Aim of the project

- Simplify the Process and include Criteria Based Speed Limits
- Incorporate road safety considerations within the technical process
- Consistent and credible speed limits
- Speed limit review process to take a step towards Vision Zero / Safe System

“Develop a methodology for speed limit setting that aims to improve safety outcomes without unreasonably reducing efficiency.”
Revised Speed Limit Review Process

1. Need for Review Identified?
   - Yes
   - No

2. Any Criteria Based Speed Limits apply?
   - Yes
   - No

3. Determine Risk Assessed Speed Limit

4. Determine Speed Data Speed Limit

5. Option Selection

6. Engineer Recommendation

7. Approve and Implement

8. Monitor and Evaluate

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Revised Speed Limit Review Process

1. Need for Review Identified?
   - Yes
     2. Any Criteria Based Speed Limits apply?
       - No
         3. Determine Risk Assessed Speed Limit
       - Yes
         4. Determine Road Risk Metric (RRM)*
         5. Determine Road Environment and Road Classification
         6. Determine Crash Risk Rating (CRR)
         7. Determine Infrastructure Risk Rating (IRR)
         8. Engineer Recommendation
     9. Option Selection
     10. Engineer Recommendation
     11. Approve and Implement
     12. Evaluate and Monitor

* If RRM is high, program road infrastructure improvements to improve road safety in the future. The improvements are recommended, but they are not part of the speed limit setting process.

Determine Risk Assessed Speed Limit

1. Obtain Relevant Infrastructure and Crash Data
2. Determine Crash Risk Rating (CRR)
3. Determine Infrastructure Risk Rating (IRR)
4. Determine Road Risk Metric (RRM)*
5. Determine Road Environment and Road Classification
6. Determine Risk Assessed Speed Limit

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Revised Speed Limit Review Process

1. Need for Review Identified?
   - Yes
   - No

2. Any Criteria Based Speed Limits apply?
   - Yes
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3. Determine Risk Assessed Speed Limit

4. Determine Speed Data Speed Limit

5. Option Selection

6. Engineer Recommendation

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8. Evaluate and Monitor

Determine Speed Data Speed Limit

1. Collect and Analyse Speed Data

2. Does Speed Data Correlate with Speed Limit?
   - No
   - Yes

3. Determine Speed Limit Based on Speed Data

4. Existing Speed Limit is Speed Data Speed Limit
Revised Speed Limit Review Process

1. Need for Review Identified?

2. Any Criteria Based Speed Limits apply?
   - Yes
   - No

3. Determine Risk Assessed Speed Limit

4. Determine Speed Data Speed Limit

5. Option Selection
   - 1. Does SDSL Correlate with RASL?
     - No
     - Yes
   - 2 Is RASL higher than SDSL?
     - No
     - Yes

6. Engineer Recommendation

7. Approve and Implement

8. Evaluate and Monitor

Option Selection

RASL – Risk Assessed Speed Limit
SDSL – Speed Data Speed Limit

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Revised Speed Limit Review Process

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Practical Demonstration of the Speed Limit Review Processes
Practical Demonstration

Background Information

Total Length: ~5.8km
Traffic Volume: ~2,460
Speed Limit: 100km/h
80km/h Buffer Speed
Limit at Southern End
Practical Demonstration

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Total Length: ~5.8km
Traffic Volume: ~2,460
Speed Limit: 100km/h
80km/h Buffer Speed
Limit at Southern End

<table>
<thead>
<tr>
<th>Crash Type (DCA Group)</th>
<th>F</th>
<th>H</th>
<th>MT</th>
<th>MI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head-on (2)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off Carriageway, On Curve, Hit Object (19)</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Out of Control, On curve (20)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (21)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Site 1:
Mean Speed: 92km/h
Pace Speed: 85-100
In Pace: 58%

Site 2:
Mean Speed: 83km/h
Pace Speed: 77-92
In Pace: 52%

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Practical Demonstration

Current Speed Limit Review Process
Practical Demonstration

Current Speed Limit Review Process

Typical Speed Limit
Road Function: Rural Trunk Collector Road
Typical Speed Limit: 90 or 100 km/h

Analysis of Speed Data
Site 1: Conforms with existing (100km/h) speed limit
Site 2: 90km/h speed limit is suggested

Assessment of Speed Environment
QLIMITS suggests 100km/h Speed Limit

Site 1:
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“consider interim speed limit”
Practical Demonstration

Revised Speed Limit Review Process

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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)

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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
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Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating

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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating
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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating – Medium-High

- Moderate Roadside Risk
- Curved Alignment
- Moderate Roadside Risk

- Very Narrow Shoulders
- Medium Lane Widths
- Two-lane undivided

- 5 to <10 accesses/km
- 1000 to <6000 vpd

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Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating – Medium-High
Road Risk Metric

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Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating – Medium-High
Road Risk Metric – High

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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating – Medium-High
Road Risk Metric – High
Road Function – Rural Trunk Collector

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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating – Medium-High
Road Risk Metric – High
Road Function – Rural Trunk Collector

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Low RRM</th>
<th>Medium RRM</th>
<th>High RRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Trunk Collector</td>
<td>100km/h</td>
<td>100km/h</td>
<td>80km/h</td>
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Practical Demonstration

Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
Crash Risk Rating – High
Infrastructure Risk Rating – Medium-High
Road Risk Metric – High
Road Function – Rural Trunk Collector
Risk Assessed Speed Limit: 80km/h

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Revised Speed Limit Review Process

Risk Assessed Speed Limit (RASL)
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Infrastructure Risk Rating – Medium-High
Road Risk Metric – High
Road Function – Rural Trunk Collector
Risk Assessed Speed Limit: 80km/h

Speed Data Speed Limit (SDSL)

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Option Selection
RASL < SDSL

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Option Selection
RASL < SDSL

“program road infrastructure to improve road safety in the future”
Practical Demonstration

Existing Speed Limit Review Process

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100
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“consider interim speed limit”

Revised Speed Limit Review Process

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80
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“program road infrastructure to improve road safety in the future”
✓ Simplify the Process and include Criteria Based Speed Limits

✓ Incorporate road safety considerations within the technical process

✓ Consistent and credible speed limits

✓ Speed limit review process to take a step towards Vision Zero / Safe System
Thank you and stay connected

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