Adaptable Management of Queensland’s Infrastructure Corridors

Kerry Sutton, Centrogen Pty Ltd, Townsville
15 September 2015

Outline
- Understanding the subject area
- Collecting the data
- Ground truthing
- Analysing management areas/statistics
- Defining specifications
- Applying programming

Key requirements
- Consistency of outcomes across the network
- Seasonal / climatic responsiveness
- Budget and scheduling flexibility
- An ongoing process of mapping, monitoring, review and improvement

Queensland’s Infrastructure Corridors
Assessing the scope:
You can’t manage what you don’t measure

Queensland’s Infrastructure Corridors
- Queensland has an area of almost 2 million km²
- Distance of 1,700km from Brisbane to Cairns
- Distance of 900km from coast to Mt Isa
- Highly variable climate, topography, biogeography and land usage

Roads, Utilities, Rail

Queensland has an area of almost 2 million km²
- Distance of 1,700km from Brisbane to Cairns
- Distance of 900km from coast to Mt Isa
- Highly variable climate, topography, biogeography and land usage
Climatic Variability

Land tenures
- Urban / Rural
- Leasehold / Freehold
- Reserves
- Industrial
- Commercial
- Residential...

Collecting the data
- Mapping management polygons
- Overlaying external data
- Analysing and collating

Collecting the data
- Digitising from imagery

Collecting the data
- Groundtruthing

Collecting the data
- Overlaying vector data
Collecting the data

Analysing and collating

<table>
<thead>
<tr>
<th>Section</th>
<th>From (km)</th>
<th>To (km)</th>
<th>Section Length (km)</th>
<th>Area Mowed (ha)</th>
<th>Number of Mows Maintained</th>
<th>Total Number of Crootings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail corridor</td>
<td>1347</td>
<td>1822</td>
<td>475</td>
<td>199,55</td>
<td>3</td>
<td>58</td>
</tr>
<tr>
<td>Urban mowing</td>
<td>80</td>
<td>50</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural mowing</td>
<td>0.8</td>
<td>8.2</td>
<td>7.4</td>
<td>202.37</td>
<td>3</td>
<td>98</td>
</tr>
<tr>
<td>Ground Total</td>
<td></td>
<td></td>
<td>75</td>
<td>202.37</td>
<td>3</td>
<td>98</td>
</tr>
</tbody>
</table>

Restoration Standard:

A set of specifications for each management scenario for consistency of outcomes across the network

For example:
- Urban high speed train corridors
- Rural road/rail crossings
- Urban fence lines
- Rural high speed train corridors

Specification:

Desired vegetation outcomes for each management scenario

For example:
- Urban high speed train corridors:
  - Slash full width of corridor fence to fence (or 15m from centre line)
  - Maintain grass height below 150 – 200 mm over 70% of the section
  - Finish cut length to be 50 – 75 mm height

Defining specifications

For each management area
- Central West
- Far North
- South East QLD etc

Each infrastructure type
- High speed corridors
- Low speed corridors
- Crossings
- Yards
- Turnouts
- Monitoring sites...

Strategy:

Scheduling of maintenance activities to achieve Restoration Standards

Strategy

= Growth factors
  (climate, species, soil type etc) +

Standard

(required outcome)
Example Specifications for Crossings

Undertake vegetation control at Level Crossings to:
- Provide good sight distance for motorists, pedestrians and train drivers; and
- Provide access for track works.

Example Specifications for Crossings

Restoration Standards:
- Slash vegetation the full width of the corridor to the Whistle boards or 300m, whichever is the greater, so as to:
  - Provide “motorists” with adequate entering site distances at all rail crossings.

Rural:
- Brush cut or apply herbicide to all vegetation within a minimum of 1 m around all signage, guardrails and infrastructure.
- Vegetation to be cut to < 100mm in height in Rural Areas.
- No debris is to be thrown within the ballast area.

Urban:
- Brush cut or apply herbicide to all vegetation within a minimum of 2 m around all signage, guardrails and infrastructure.
- Vegetation to be cut to < 75mm in height in Urban Areas.

Example strategy

<table>
<thead>
<tr>
<th>Incentive Schedule</th>
<th>Task</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stencil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crossing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yews</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WILD sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access/Permeable Grading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perforated Burning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>On-Track Spraying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wood Treatment (Large Broadleaf)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wood Treatment (Woody Weeds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example strategy

<table>
<thead>
<tr>
<th>Weed Treatment</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woody weeds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Concluding notes:

- Strategies are based on seasonal norms.
  - In particularly dry years, fewer activities may be required to achieve the same outcomes.
  - In wetter years, additional activities may be required.
  - Some regions may experience greater than average growth, with others below average.

As long as the specifications are met, funds and scheduling can be transferred between regions to achieve required outcomes within standard budgets.

Concluding notes:

- Ongoing data collection and reporting is vital to progressive management.
- Verification of mapping, analysis of herbicide usage, climate forecasting and monitoring for weed incursions will assist in informing future strategies.
- Data sharing between land managers is recommended as part of a holistic approach.
Centrogen

Head Office
64 – 66 Crocodile Crescent,
Bohle Townsville, QLD 4818

Phone: (07) 4774 8266
Fax: (07) 4774 8366
Email: info@centrogen.com.au

Regional Depots
- Brisbane
- Cairns
- Dubbo
- Sydney
- Townsville