Campbelltown City Council’s (CCC) Sustainable Pavement Management Strategy

Mahbub Hossain, Coordinator, Asset Management
Campbelltown City Council, NSW
Introduction To Campbelltown, NSW

- Location: 55Km southwest of Sydney
- Land Size: 354 Square Kilometers
- Population: 170,000 people
- 350,000 Assets In the System
- 740Km of Roads
- 224 Buildings
- 340 Parks
- 24,000 SW Pits
- 105 Play Equipment
- 620Km SW Pipes Etc.
Pavement Management Issues

• 740 km of roads (4300 segments) with $280m Replacement Value.
• 88% is urban, 12% Rural
• Community Expectation: Smooth Surfacing
• Budget Constraint: requires significant investment to maintain the whole network at acceptable standard.
• **Overall Challenge is to ensure all roads are fit over long periods of time at a minimum lifecycle cost.**
Factors Considered

Considering
- Transparent Levels of Services
- engineering suitability,
- minimum life-cycle cost,
- budget Constraint
- community expectations for smooth and safe roads.

Council developed and adopted a sustainable pavement management strategy to ensure that the most appropriate treatment type is selected in the future for each road.
CCC Road Management Process

Road Asset Management Plan
(Road management Objective + L.O.S)

1. Segmentation
2. Inventory Data
3. Condition Data

1. Record all completed Treatments

1. Data Management and Processing (PMS)
2. Apply Maintenance Strategies

No Funding Restriction
1. Ideal Scenario
2. Determine Funding Gaps
3. List of Renewal Backlog Works

Apply Funding Strategy
1. Program of Works
2. Prioritisation of works
3. Effectiveness of Treatments
**CCC-Road Condition Data Collection**

- **Condition Survey:** 20% network annually.
- **Data Collected:** Visual, Roughness, Rutting, Deflection (Remaining Life), GPR information.
- **Data stored in PMS.**
- **Condition Data:** Used for
  - Asset Valuation, Renewal Backlog Calculation
  - Pavement Management Strategy Development
  - Project/ Network Level Modelling.
  - developing Technical Levels of Services.
**Road Condition: PCI (-100 to 10)**

Condition is measured by Pavement Condition Index-PCI, Range: -100 to 10

<table>
<thead>
<tr>
<th>PCI Range</th>
<th>Condition Description</th>
<th>NAMS Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 0.2</td>
<td>Very Poor Condition</td>
<td>5</td>
</tr>
<tr>
<td>0.2 to 1.5</td>
<td>Poor Condition</td>
<td>4</td>
</tr>
<tr>
<td>1.5 to 4.5</td>
<td>Average Condition</td>
<td>3</td>
</tr>
<tr>
<td>4.5 to 8</td>
<td>Good Condition</td>
<td>2</td>
</tr>
<tr>
<td>8 to 10</td>
<td>Very Good Condition</td>
<td>1</td>
</tr>
</tbody>
</table>
## Acceptable PCI (LOS)

<table>
<thead>
<tr>
<th>Naasra Class</th>
<th>Hierarchy</th>
<th>Urban Class</th>
<th>Acceptable PCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 6</td>
<td>Regional Road</td>
<td>Urban</td>
<td>7.0</td>
</tr>
<tr>
<td>Class 6</td>
<td>Regional Road</td>
<td>Rural</td>
<td>6.5</td>
</tr>
<tr>
<td>Class 7</td>
<td>Collector Road</td>
<td>Urban</td>
<td>6.75</td>
</tr>
<tr>
<td>Class 7</td>
<td>Collector Road</td>
<td>Rural</td>
<td>6.5</td>
</tr>
<tr>
<td>Class 8</td>
<td>Residential Street</td>
<td>Urban</td>
<td>6.5</td>
</tr>
<tr>
<td>Class 8</td>
<td>Residential Street</td>
<td>Rural</td>
<td>6.0</td>
</tr>
<tr>
<td>Class 9</td>
<td>Cul De Sac</td>
<td>Urban</td>
<td>6.5</td>
</tr>
<tr>
<td>Class 9</td>
<td>Cul De Sac</td>
<td>Rural</td>
<td>6.0</td>
</tr>
</tbody>
</table>

**Council’s Acceptable: average network PCI = 6.75**
A variety of failure modes or intervention triggers are assessed as part of the council strategy to link life cycle to whole of life extension.
CCC Road Maintenance Applications

Crack Seal

Heavy Patching
CCC Road Maintenance Applications

Rejuvenation

Reseal
CCC Road Maintenance Applications

Thin Asphalt Overlay

Asphalt Overlay
CCC Road Maintenance Applications

Mill and Fill

Insitu Stabilisation
Strategy Development

Combine Condition/Defects with Maintenance Applications
- Rejuvenation
- Microsurfacing
- Reseal
- Asphalt Resurfacing
- Rehabilitation
CCC selects and uses a broad range of treatments based on failure modes (intervention Level), PCI & life extensions outcomes.
Treatment Gap (Identified in 2012)
Introduced New Treatment (Microsurfacing) to fill up the Gaps

Microsurfacing
Revised Maintenance Strategy from 2013

- Excellent
- Good
- Fair
- Poor
- Very Poor
- Failed

Pavement PCI, Life Expectancy and Treatment

- Rejuvenation
- Spray Sealing
- Microsurfacing
- Microsurfacing with Interlayer Seal
- Thin Asphalt Overlay
- Asphalt Overlay
- Pavement Stabilisation
- Pavement Reconstruction
- Crack Filling (as needed)

Life Expectancy - Years
Treatment Selection Broken into 3 distinct Phases

**Phase 1: Preservation** *(early intervention maintenance)*

**Phase 2: Standard Resurfacing Program*

**Phase 3: Rehabilitation** *(higher Level expenditure/intervention)*
Funding Strategy

- **Phase 1**: 100% funded, cheaper and keep the good conditioned road in good condition for a long time. (allocation 20%)
- **Phase 2**: Maximum projects in this category; Fund the worst projects first so that remaining projects do not go to Phase 3 (allocation 65%)
- **Phase 3**: Long term Planning. Eliminate this in 5/10 years. No increase in number. Allow some funding for reactive (allocation 15%)
Phase 1: Pavement Preservation Program

- Treatments: Rejuvenation, Enrichment, Reseal and Microsurfacing
- Rejuvenation: Cost $2/m², expected life 4 to 6 years
- Microsurfacing: Cost $7.75/m², Asphalt-like surface, good in shape correction, expected Life from 10 to 12 years
- Saved significant amount of money in comparison to Thin Asphalt ($7.75/m² Vs $20/m²)
## PMS Outputs - Phase 1

Treatments selected by PMS model.

### CAMPBELLTOWN

<table>
<thead>
<tr>
<th>Scenario: 21</th>
<th>2018-19 works program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub network: SUB_ALL_MOD</td>
<td>ALL ROAD SECTIONS MODELLLED</td>
</tr>
<tr>
<td>Rule Base: TREAT_2018_PRESERVATION</td>
<td>RULEBASE FOR PHASE 1 TREATMENT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road No.</th>
<th>Block</th>
<th>Road Name</th>
<th>Block Name</th>
<th>Code</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1008.0000</td>
<td>10.0000</td>
<td>JET PLACE</td>
<td>AQUAMAR - END CUL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$1,240.00</td>
</tr>
<tr>
<td>1023.0000</td>
<td>10.0000</td>
<td>ARGO WAY</td>
<td>RIVERSI - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$5,236.00</td>
</tr>
<tr>
<td>1071.0000</td>
<td>10.0000</td>
<td>DELAEO PLACE</td>
<td>BUGATTI - FIAT PL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$1,708.00</td>
</tr>
<tr>
<td>1106.0000</td>
<td>10.0000</td>
<td>BOWERS PLACE</td>
<td>AMUNDSE - END CUL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$1,931.00</td>
</tr>
<tr>
<td>1141.0000</td>
<td>10.0000</td>
<td>HAYEKER PLACE</td>
<td>MIKAGE - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$3,492.00</td>
</tr>
<tr>
<td>1163.0000</td>
<td>10.0000</td>
<td>COSMOS PLACE</td>
<td>HELIOIA - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$2,696.00</td>
</tr>
<tr>
<td>1186.0000</td>
<td>10.0000</td>
<td>TURROS PLACE</td>
<td>WYANGAL - END CUL</td>
<td>PS1</td>
<td>1 coat PMB Rejuvenation with fine agggr</td>
<td>$1,441.00</td>
</tr>
<tr>
<td>1208.0000</td>
<td>10.0000</td>
<td>CARTER PLACE</td>
<td>DOBELL - T-JUNCT</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$2,768.00</td>
</tr>
<tr>
<td>1234.0000</td>
<td>130.0000</td>
<td>GLENROY DRIVE</td>
<td>RAMSAY - NORMAN</td>
<td>MS4</td>
<td>Microsurfacing with 7mm aggregates</td>
<td>$5,323.00</td>
</tr>
<tr>
<td>1248.0000</td>
<td>20.0000</td>
<td>HARRROW ROAD</td>
<td>GAZBELLE - BULLOD</td>
<td>MS4</td>
<td>Microsurfacing with 7mm aggregates</td>
<td>$7,936.00</td>
</tr>
<tr>
<td>1248.0000</td>
<td>50.0000</td>
<td>HARRROW ROAD</td>
<td>KARUIS - CHAMPIO</td>
<td>MS4</td>
<td>Microsurfacing with 7mm aggregates</td>
<td>$7,936.00</td>
</tr>
<tr>
<td>1279.0000</td>
<td>10.0000</td>
<td>LACOCKE WAY</td>
<td>MERINO - END CUL</td>
<td>PS1</td>
<td>1 coat PMB Rejuvenation with fine agggr</td>
<td>$3,013.00</td>
</tr>
<tr>
<td>1337.0000</td>
<td>10.0000</td>
<td>COOSA PLACE</td>
<td>EUCLALP - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$4,065.00</td>
</tr>
<tr>
<td>1338.0000</td>
<td>10.0000</td>
<td>MULGA PLACE</td>
<td>BERRIGA - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$3,063.00</td>
</tr>
<tr>
<td>1405.0000</td>
<td>10.0000</td>
<td>APPLE PLACE</td>
<td>FUCHSIA - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$3,063.00</td>
</tr>
<tr>
<td>1452.0000</td>
<td>10.0000</td>
<td>BUNYA PLACE</td>
<td>EUCLALP - END CUL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$1,366.00</td>
</tr>
<tr>
<td>1475.0000</td>
<td>10.0000</td>
<td>ALFA PLACE</td>
<td>LANCIA - END CUL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$1,366.00</td>
</tr>
<tr>
<td>1509.0000</td>
<td>10.0000</td>
<td>LINUM STREET</td>
<td>GROUNDS - END CUL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$7,151.00</td>
</tr>
<tr>
<td>1513.0000</td>
<td>10.0000</td>
<td>HOWE STREET</td>
<td>END CUL - BROWNE</td>
<td>PS1</td>
<td>1 coat PMB Rejuvenation with fine agggr</td>
<td>$1,033.00</td>
</tr>
<tr>
<td>1579.0000</td>
<td>10.0000</td>
<td>RANGERS ROAD</td>
<td>WEDDERB - LYNWOOD</td>
<td>H10</td>
<td>10mm High Stress Seal 835E</td>
<td>$12,920.00</td>
</tr>
<tr>
<td>1683.0000</td>
<td>10.0000</td>
<td>HANSENS ROAD</td>
<td>JUNOTIO - WESTMOR</td>
<td>H10</td>
<td>10mm High Stress Seal 835E</td>
<td>$27,180.00</td>
</tr>
<tr>
<td>1683.0000</td>
<td>30.0000</td>
<td>HANSENS ROAD</td>
<td>BEN LOM - MORETON</td>
<td>H10</td>
<td>10mm High Stress Seal 835E</td>
<td>$24,008.00</td>
</tr>
<tr>
<td>1683.0000</td>
<td>50.0000</td>
<td>HANSENS ROAD</td>
<td>GROVES - DUNCAN</td>
<td>MS4</td>
<td>Microsurfacing with 7mm aggregates</td>
<td>$23,256.00</td>
</tr>
<tr>
<td>1683.0000</td>
<td>60.0000</td>
<td>HANSENS ROAD</td>
<td>DUNCAN - END CUL</td>
<td>HS7</td>
<td>7mm High Stress Seal 835E</td>
<td>$31,794.00</td>
</tr>
<tr>
<td>1685.0000</td>
<td>60.0000</td>
<td>BELMONT ROAD</td>
<td>HARROW - HIDES S</td>
<td>MS4</td>
<td>Microsurfacing with 7mm aggregates</td>
<td>$10,853.00</td>
</tr>
<tr>
<td>1703.0000</td>
<td>10.0000</td>
<td>PLUMES CLOSE</td>
<td>FUCHSIA - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$2,365.00</td>
</tr>
<tr>
<td>1721.0000</td>
<td>10.0000</td>
<td>RELIANCE WAY</td>
<td>GREENG - END CUL</td>
<td>PS1</td>
<td>1 coat PMB Rejuvenation with fine agggr</td>
<td>$1,300.00</td>
</tr>
<tr>
<td>1755.0000</td>
<td>10.0000</td>
<td>ANTILL WAY</td>
<td>GREENG - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$5,331.00</td>
</tr>
<tr>
<td>1781.0000</td>
<td>10.0000</td>
<td>ROMNEY WAY</td>
<td>SOUTHDO - END CUL</td>
<td>MS1</td>
<td>Microsurfacing 5mm</td>
<td>$5,171.00</td>
</tr>
<tr>
<td>1814.0000</td>
<td>10.0000</td>
<td>SAUTERNES PLACE</td>
<td>EPPING - END CUL</td>
<td>PS2</td>
<td>2 Coat Rejuvenation with fine agggr</td>
<td>$7,322.00</td>
</tr>
</tbody>
</table>
Microsurfacing Program (Progressive Increase)-450 Streets -13% of our network

<table>
<thead>
<tr>
<th>Financial year</th>
<th>Area of microsurfacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>157,792m²</td>
</tr>
<tr>
<td>2015-2016</td>
<td>179,566m²</td>
</tr>
<tr>
<td>2016-2017</td>
<td>206,877m²</td>
</tr>
<tr>
<td>2017-18</td>
<td>252,327m²</td>
</tr>
</tbody>
</table>
Microsurfacing – Campbelltown Council
Microsurfacing-Sedgwick Street, Leumeah

Before

After
Microsurfacing-Norfolk Street, Ingleburn

Before

After
Rural Road-Seal with Microsurfacing

Mercedes Road, Ingleburn
Phase 2: Standard Resurfacing Program

Treatments:

• Interlayer Seal with Microsurfacing-$12/m2
• Interlayer Seal with Asphalt Overlay-$30/m2
• Hot In Place Asphalt Recycling-$18/m2
### Phase 2: Standard Resurfacing Program

Treatment selected by PMS Model

---

**Works Program**

<table>
<thead>
<tr>
<th>Road No</th>
<th>Block</th>
<th>Road Name</th>
<th>Block Name</th>
<th>Code</th>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1011.0000</td>
<td>10.0000</td>
<td>MAY PLACE</td>
<td>RUTHERG - END CUL</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$5,242.00</td>
</tr>
<tr>
<td>1026.0000</td>
<td>10.0000</td>
<td>HELMAN PLACE</td>
<td>WILKINS - END CUL</td>
<td>FA2</td>
<td>HP + 10mm Fibredge Seal+50mm AC14</td>
<td>$5,875.00</td>
</tr>
<tr>
<td>1033.0000</td>
<td>10.0000</td>
<td>HUMBER PLACE</td>
<td>END CUL - BUGATTI</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$12,667.00</td>
</tr>
<tr>
<td>1115.0000</td>
<td>10.0000</td>
<td>BLOOMFIELD PLACE</td>
<td>END CUL - INGERS PEACE</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$5,990.00</td>
</tr>
<tr>
<td>1129.0000</td>
<td>10.0000</td>
<td>SHRIKE PLACE</td>
<td>KINGS R - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$9,235.00</td>
</tr>
<tr>
<td>1150.0000</td>
<td>10.0000</td>
<td>JARLEY PLACE</td>
<td>CRISPSP - END CUL</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$10,062.00</td>
</tr>
<tr>
<td>1168.0000</td>
<td>10.0000</td>
<td>AMANDA PLACE</td>
<td>SACKVI - CLIFFOR</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$8,366.00</td>
</tr>
<tr>
<td>1179.0000</td>
<td>10.0000</td>
<td>CRINUM PLACE</td>
<td>FIFTH A - END CUL</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$4,391.00</td>
</tr>
<tr>
<td>1211.0000</td>
<td>10.0000</td>
<td>CELTI Place</td>
<td>MELALEU - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$5,782.00</td>
</tr>
<tr>
<td>1213.0000</td>
<td>20.0000</td>
<td>CROTON PLACE</td>
<td>CROTON - END CUL</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$5,678.00</td>
</tr>
<tr>
<td>1233.0000</td>
<td>10.0000</td>
<td>MCLEAN ROAD</td>
<td>CHAMBER - ROSALIN</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$9,576.00</td>
</tr>
<tr>
<td>1233.0000</td>
<td>20.0000</td>
<td>MCLEAN ROAD</td>
<td>ROSALIN - RONALD</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$21,798.00</td>
</tr>
<tr>
<td>1234.0000</td>
<td>160.0000</td>
<td>GLENROY DRIVE</td>
<td>JULIAN - FULLWOOD</td>
<td>FA2</td>
<td>HP + 10mm Fibredge Seal+50mm AC14</td>
<td>$21,144.00</td>
</tr>
<tr>
<td>1244.0000</td>
<td>20.0000</td>
<td>BROOKS ROAD</td>
<td>KEATING - FREEWAY</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$10,062.00</td>
</tr>
<tr>
<td>1247.0000</td>
<td>10.0000</td>
<td>OBERON ROAD</td>
<td>JUNCTIO - KANANOR</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$15,523.00</td>
</tr>
<tr>
<td>1255.0000</td>
<td>10.0000</td>
<td>LOFTUS ROAD</td>
<td>FAWCETT - END CUL</td>
<td>FA2</td>
<td>HP + 10mm Fibredge Seal+50mm AC14</td>
<td>$13,030.00</td>
</tr>
<tr>
<td>1303.0000</td>
<td>330.0000</td>
<td>THE PARK WAY</td>
<td>ASH PLA - OLYMPIC</td>
<td>MS2</td>
<td>HP + Microsurfacing with Fibredge Seal</td>
<td>$14,268.00</td>
</tr>
<tr>
<td>1326.0000</td>
<td>10.0000</td>
<td>MANAM PLACE</td>
<td>END CUL - TROBRIA</td>
<td>MS3</td>
<td>HP + Microsurfacing with Fibredge Seal</td>
<td>$14,689.00</td>
</tr>
<tr>
<td>1339.0000</td>
<td>10.0000</td>
<td>REIBY PLACE</td>
<td>ALLIOTT - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$7,690.00</td>
</tr>
<tr>
<td>1339.0000</td>
<td>10.0000</td>
<td>REIBY PLACE</td>
<td>ALLIOTT - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$6,374.00</td>
</tr>
<tr>
<td>1379.0000</td>
<td>10.0000</td>
<td>DAVIES PLACE</td>
<td>SIRIOUS - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$5,753.00</td>
</tr>
<tr>
<td>1390.0000</td>
<td>10.0000</td>
<td>WONGA PLACE</td>
<td>KOOKABU - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$5,611.00</td>
</tr>
<tr>
<td>1399.0000</td>
<td>10.0000</td>
<td>ROBIN PLACE</td>
<td>END CUL - GREEVES</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$7,344.00</td>
</tr>
<tr>
<td>1490.0000</td>
<td>10.0000</td>
<td>OXLEY PLACE</td>
<td>LYSAGHT - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$9,072.00</td>
</tr>
<tr>
<td>1496.0000</td>
<td>10.0000</td>
<td>DOVE PLACE</td>
<td>KINGFIS - END CUL</td>
<td>SM7</td>
<td>HP + 7mm SBS Seal with 30mm AC10</td>
<td>$6,321.00</td>
</tr>
<tr>
<td>1505.0000</td>
<td>10.0000</td>
<td>POPE PLACE</td>
<td>BYRON A - END CUL</td>
<td>SM3</td>
<td>HP + Microsurfacing with Fibredge Seal</td>
<td>$6,191.00</td>
</tr>
<tr>
<td>1534.0000</td>
<td>10.0000</td>
<td>EARN PLACE</td>
<td>ABERFEL - END CUL</td>
<td>MS2</td>
<td>HP + Microsurfacing with Emulsion Seal</td>
<td>$6,178.00</td>
</tr>
</tbody>
</table>
2017: Introduced New Treatment in Phase 2
Hot in Place Asphalt Recycling
Phase 2 Examples

- HIPAR-Junction Road
- AC Overlay-Eagleview Road
Phase 3: Pavement Rehabilitation

- Treatments: Mill & Fill, Stabilisation and Reconstruction

- 99% cases we use pavement Stabilisation for pavement rehabilitation as it is the most cost effective pavement rehabilitation treatment.
Phase 3 Treatments: Rehabilitation

- Treatment selected by PMS model
Railway Parade Stabilisation Project
Example: Road Rehabilitation

- Before
- After

Pavement Stabilisation at Benham Road, Minto
Performance Data for 281 Projects

• Stabilised 281 projects in the last 18 years
• The current condition of 281 Projects
  – 81% is still in Very Good condition
  – 13% in Good Condition
  – 4% in Average Condition
  – 2% are in a Poor Condition.
Savings Achieved from 281 Stabilisation Projects

- Reduced Construction Traffic, Time and Pollution
- $17m Direct Cost
- 200,000T Material from disposal
- Reduced Damage to Local Road from Trucking
- Significant Energy Savings
- 150,000T Material from Importing
Wollondilly Shire Council

STRATEGY TESTING
WSC: Existing Strategy
What they have been doing?

Near 100% Reconstruction
Modeled Existing Strategy for Consequences
Immediate Change in Strategy

- **Excellent**: Predominately reconstruction but some heavy patching and resealing.
- **Good**
- **Fair**
- **Poor**
- **Very Poor**
- **Failed**

**Pavement Age (years)**

- **Phase 1**: Little maintenance - scheduled reseals ~$6/sqm
- **Phase 2**: Heavy Patching & Reseals ~$30/sqm
- **Phase 3**: Reconstruction ~$90/sqm

[Image of a graph showing the relationship between pavement condition index (PCI) and pavement age.]
Strategy for 2018-19

Balanced program between reconstruction and preventative treatments

- Phase 1. Little maintenance - scheduled reseals ~$8/sqm
- Phase 2. Heavy Patching & Reseals ~$30/sqm
- Phase 3. Reconstruction ~$90/sqm

Pavement Condition Index (PCI)

Pavement Age (years)
Long Term Strategy

- **Excellent**: Phase 1. Little maintenance – scheduled reseals ~$8/sqm
- **Good**
- **Fair**
- **Poor**: Phase 2. Heavy Patching & Re-Seals ~$30/sqm
- **Very Poor**
- **Failed**: Phase 3. Reconstruction ~$90/sqm

*Note: Pavement Condition Index (PCI)*

*Note: Pavement Age (years)*
PCI Movement with Strategy

PCI Movement

- PCI-CCC Strategy
- PCI Current Strategy

Years: 2016 to 2028
PCI: 0 to 9
Backlog Increase/Reduction with no Funding Increase

Backlog Movement

- Backlog ($M) for Existing Strategy
- Backlog ($M) with new strategy
Pavement Management Strategy - Campbelltown City Council

Achievements
Current Network Condition Distribution
Network Condition Improvement

Results below graph the overall network PCI and the influence increased use of Pavement Preservation strategies have provided over the last decade.
New Funding Strategy
Renewal Backlog Reduction 2000 vs 2018

Financial modeling comparisons on budget costings between projected backlog in FY 2000 compared to FY 2018 show a trend of decreased backlog cost required to elevate the PCI at network level. This result is a correlation and reflection of increased investment in Pavement Preservation and earlier intervention moving away from a worst first approach.
CCC applied a simple philosophy with considerable success.

1. Delivering an increase in the number of roads treated annually within current budget constraints.
2. Maximising asset useful life at the lowest life cycle cost.
3. Council senior management is now aware of the level of funding required to maintain the safe and resilient road network.
4. Over Time the funding strategy has been shifted to a more preventative model.
5. Council has managed to upgrade and maintain its whole road network in good condition.
Summary: Pavement Management Strategy
Can the Strategy be transferred to another council or organisation?

- Yes, as this was done for Wollondilly
- The key for success is to collect the right data to make informed decisions for the particular circumstances;
- And then bravely assess where we are and develop strategies to determine where we want to be.
Strategy Recognition

This Strategy was recognised by International Slurry Surfacing Association as outstanding contributions to Pavement Management in January 2016.
CCC is the winner of ISSA 2016 Award for Excellence in Pavement Preservation - Intl
Further Recognition

- At the Sustainability in Public Works 2016 Conference, this paper was awarded Editor’s choice of the paper on ‘Campbelltown City Council - Sustainable Pavement Management Strategy’

- http://www.ipwea.org/publications/special-technical-reports
IPWEA Special Technical Report

Sustainable Stormwater, Parks & Pavements
An IPWEA Special Technical Report
Further Recognition—...
Winner of 2016 IPWEA Engineering Excellence Award

Category 2: New or Improved Techniques including: Innovation and/or Introduction of Techniques or Outstanding Management Initiatives or Outstanding Achievement in Asset Management
Winner of 2017 Local Government Excellence Award
Internationally

• This paper was presented to the Pavement Preservation & Recycling Summit, PPRS 2018 in Nice, France, March 26 -28.

• This will also be presented at the 2018 APWA Public Works Expo (PWX).

The details are as below:

• Session Title: International Perspective Presentation/Lightning Round: Asset Management in Australia Part 2.
• Session Date: Tuesday, August 28, 2018, 9:45 – 11:00 a.m.
• Location: Kansas City Convention Center, Kansas City, Missouri, USA
Thank You