

Bundaberg SCI & PCI calculation method

The following describes procedure taken in calculating the Surface Condition Index (SCI) and the Pavement Condition Index (PCI) for Bundaberg road network.

1. Data input.

The results of 2010 survey of Bundaberg road network were used as calculation data input. This includes:

- Data collected from MLP
 - Roughness
 - Rutting
- Video rating data
 - Crocodile cracking – severity & extent
 - All other cracking – severity & extent
 - Patches
 - Stripping
 - Potholes

2. Data aggregation

Survey data are collected at 10m interval, and reported at road section level which requires data aggregation.

- For numerical fields such as Roughness and Rutting an average value for the section was used
- For non numerical fields, typical of video rating fields, rating result were translated to numerical format and then averaged for the section, using the following translation table

Defect	Condition as rated	Converted Score
Crocodile Cracking - Sevr	None	0
	<2mm	1
	2-5mm	2
	>5mm	3
Crocodile Cracking - Ext	None	0
	1-5%	1
	5-15%	2
	15%+	3
All other Cracking - Sevr	None	0
	<2mm	1
	2-5mm	2
	>5mm	3
All other Cracking - Ext	None	0
	1-5%	1
	5-15%	2
	15%+	3
Patches	none	0
	1-5%	1
	5-10%	2
	10-20%	3
	20%+	4
Stripping	none	0

	1-5%	1
	5-10%	2
	10-20%	3
	20%+	4
Potholes	none	0
	1-5%	1
	5-10%	2
	10-20%	3
	20%+	4

3. Weighting

The following table was used to allocate appropriate defect mode which effected road surface and pavement condition accordingly.

Calculation component	Max Condition Score	Weighting		
		Urban	Rural	short sections – less than 150m
SCI				
Roughness	6	30	60	15
All other cracking Severity	3	10	5	10
All other cracking Extent	0.5	25	15	25
Stripping	1	5	5	10
Potholes	1	30	15	40

PCI				
Roughness	6	35	50	17.5
Rutting	25	10	10	10
Croc cracking Severity	1	10	5	22.5
Croc cracking Extent	0.5	20	10	10
Patches	0.5	25	25	40

For each defect mode, a maximum possible defect score and was determined. The contribution of each defect to the calculation of SCI and PCI was also determined by assigning a weight to each defect.

A separate weighting system was used in recognizing a different contribution each defect has for urban and rural roads. Road roughness was recognized to less affect SCI and PCI in urban roads compared to in rural roads. A different set of weighting was also used for short sections (road less than 150m), to minimize the effect of high roughness reading which often encountered in short section.

4. SCI & PCI

The final SCI and PCI score for each road section was obtained by:

- Calculating the 'individual defect score' using the following formula:
(Defect condition value/Max. condition score) x Weighting
- Total SCI or PCI for the section was obtained by adding all the individual defect score