

Society of Chief Officers of Transportation in Scotland – follow up information from 2 October 2019 meeting on pre-budget/financial scrutiny on roads maintenance in Scotland

ROAD CONDITION PERFORMANCE INDICATOR

The RCI, Road Condition Indicator

The following defects are currently used to calculate the Road Condition Index, RCI:

- Rut Depth
- 3m Profile Variance
- 10m Profile Variance
- Texture Depth
- Whole Carriageway Cracking Intensity

The RCI provides information about which sections of a network should be considered for planned maintenance soon, which sections should be investigated to determine the optimum time for maintenance and which sections are generally in a good state of repair (these three categories are colloquially known as “red”, “amber”, and “green” lengths. The Road Condition Index in Scotland is the proportion of the network falling within Red and Amber. Definitions of the Red, Amber and Green carriageway condition in the RCI.

- "RED" = Lengths in poor overall condition which are likely to require planned maintenance soon (i.e. within a year or so) on a "worst first" basis (although there may be justification for postponing major repairs, and only carrying out minor repairs to keep the road safe and serviceable, in order to minimise whole life costs. i.e. economic prioritisation").
- "AMBER" = Lengths where some deterioration is apparent which should be investigated to determine the optimum time for planned maintenance treatment. (Where there may be justification for carrying out a lesser maintenance treatment sooner, rather than more extensive treatment later, in order to minimise whole life costs. i.e. "economic prioritisation").
- "GREEN" = Lengths where the carriageway is generally in a good state of repair.

Calculation of the RCI for each 10m length is based on the sum of a score derived from the severity of each defect measured and a weighting applied to the defect. A defect only scores if it exceeds a lower threshold value and is allocated a maximum score when it reaches an upper threshold level. Between the lower and upper thresholds the score increases in a linear fashion from 0 to the maximum score. The defects, thresholds and weightings used in the current RCI calculation are shown in the following 4 tables. There are different thresholds for A, B, C and U roads.

Example calculation of the score for one defect contributing to the RCI:

Rut depth = 15mm on an A class road

Lower threshold is 10mm and upper threshold is 20mm and the maximum score at 20mm is 100.

Score will = $(15-10)/(20-10) * 100 = 50$

The Red Amber and Green conditions associated with each score are shown below; these scores apply irrespective of the road class.

Condition of sub-section	Total Score
RED	Total ≥ 100
AMBER	40 \geq Total \leq 100
GREEN	Total \leq 40

ROAD NETWORK

Table 4.6 Local authority road network condition ^{1, 2}

	A roads		B roads		C roads		Unclassified		All roads	
	Condition		Condition		Condition		Condition		Condition	
	Red	Amber	Red	Amber	Red	Amber	Red	Amber	Red	Amber
(a) in each Council area: 2018-19										<i>percentage</i>
Aberdeen City	4	21	3	18	4	22	5	27	5	25
Aberdeenshire	3	24	3	22	3	20	5	26	4	23
Angus	3	24	6	32	5	27	6	28	5	28
Argyll & Bute	9	33	21	42	19	41	16	36	16	38
Clackmannanshire	2	22	2	20	5	26	7	33	5	29
Dumfries & Galloway	5	29	6	30	11	36	18	39	12	35
Dundee City	2	19	2	21	1	13	4	26	4	23
East Ayrshire	3	18	5	28	9	32	11	32	9	30
East Dunbartonshire	4	23	3	23	4	23	6	30	6	28
East Lothian	4	28	7	36	4	30	5	28	5	30
East Renfrewshire	2	15	4	26	8	26	10	34	8	31
Edinburgh, City of	4	24	3	20	6	27	7	32	7	30
Eilean Siar	7	28	6	32	8	42	7	40	7	36
Falkirk	3	23	5	30	6	30	6	32	6	30
Fife	5	26	6	29	4	28	4	28	4	28
Glasgow, City of	3	26	2	18	2	18	4	27	4	25
Highland	4	25	6	30	10	31	11	31	9	30
Inverclyde	2	17	3	26	10	33	8	31	7	30
Midlothian	4	23	5	28	6	32	6	31	6	30
Moray	3	25	2	23	4	24	5	26	4	25
North Ayrshire	8	29	7	33	12	37	6	28	7	31
North Lanarkshire	2	16	3	20	3	23	5	30	4	26
Orkney Islands	2	22	3	20	2	13	1	18	2	19
Perth & Kinross	7	30	5	31	5	29	6	31	6	30
Renfrewshire	3	20	2	22	10	28	7	30	7	28
Scottish Borders	6	32	8	37	6	34	11	41	9	37
Shetland Islands	1	16	7	29	3	29	8	39	6	30
South Ayrshire	6	30	7	31	9	33	9	33	8	33
South Lanarkshire	3	21	3	22	6	31	5	28	4	27
Stirling	4	25	6	32	8	32	16	34	10	31
West Dunbartonshire	4	25	2	20	5	28	5	30	5	29
West Lothian	2	19	4	26	11	36	4	25	4	26
Scotland	4	26	6	29	7	29	8	31	7	29

(b) for Scotland as a whole: 2005-06 to 2018-19 (New RCI Series) ²

2005-06	4	27	4	28	4	31	..	..	..	..
2006-07	4	29	4	29	4	32	..	..	..	..
2007-08	5	29	6	34	5	33	..	..	..	..
2008-09	5	28	5	34	5	33	7	37	6	34
2009-10	6	30	6	35	5	33	8	39	7	36
2010-11	6	30	7	36	7	35	10	42	8	38
2011-12	6	30	8	36	8	36	8	38	8	36
2012-13	5	24	7	28	7	28	9	30	7	29
2013-14	5	24	7	28	8	28	9	30	8	29
2014-15	5	24	7	29	9	29	9	30	8	29
2015-16	4	25	6	29	6	28	9	31	7	29
2016-17	4	25	6	29	6	28	9	31	7	29
2017-18	4	26	6	29	7	29	8	31	7	30
2018-19	4	26	6	29	7	29	8	31	7	29

(b) for Scotland as a whole: 2002-03 ³ to 2007-08 (Old SPI Series)

2002-03 ⁴	9	37	..	..	..	..	..	..	..	..
2003-04	7	33	12	45	8	37	18	52	13	45
2004-05 ⁵	6	31	10	43	5	31	15	50	11	42
2005-06	6	31	9	40	4	29	14	51	10	42
2006-07	6	34	11	35	5	29	18	57	13	47
2007-08	6	34	10	46	6	36	16	53	12	46

Source: Scottish Road Maintenance Condition Survey - Not National Statistics

- From 2007-08 the basis of the statutory road performance indicator in Scotland changed to the UK Standard Road Condition Indicator.
- While it has been possible, following the change to the indicator, to calculate the equivalent RCI value for all classified roads from 2005-06, it has not been possible to do this in a reliable manner for unclassified roads, owing to a lack of cracking data for those years. As unclassified roads represent a significant part of the total road network, RCI data for the network is similarly not available for this period. It is important to note that owing to the different formulation, no valid comparison can or should be made between the two series.
- The categories used to indicate the condition of the road are in brief:
amber - further investigation should be undertaken to establish if treatment is required.
red - the road has deteriorated to the point at which it is likely repairs to prolong its future life should be undertaken.
- Information for 2002-03 is available only for A roads.
- The SPI figures for Scotland in 2004-05 exclude Glasgow, as the survey in Glasgow was undertaken on a different basis in that year.