

UK Pavement Management System



UKPMS Technical Note 38 (2007/08)

*Production of the Best Value Performance Indicator Report for
BV224b - Condition of Non-Principal Unclassified Roads*

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Document Information

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Document History

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01.02	Revised	RAC	29/06/2007	Incorporating feedback from internal review
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Introduction

DfT Performance Indicators for Best Value include BV224b to measure the Condition of Local Non-Principal Unclassified road Carriageways.

This Technical Note provides guidance on the production of BV224b and consists of three parts:

Part 1 summarises the requirements for BV224b and is aimed primarily at local authorities. It forms the guidance on the DfT website and therefore necessarily refers to this Technical Note 38.

Part 2 provides more detailed guidance on the calculation of BV224b and is aimed primarily at UKPMS system suppliers.

Part 3 summarises the requirements for all UKPMS-based Best Value Performance Indicators for 2007/08.



Part 1 - Summary

Guidance on Condition Surveys for BV224b

Authorities are required to carry out a visual survey of a proportion of their unclassified road network (minimum 25% per year) using either a UKPMS Coarse Visual Inspection Survey (CVI) or an equivalent Detailed Visual Inspection survey (DVI). Visual surveys must be carried out in accordance with “Visual Data Collection for UKPMS”, Volume 2 of the UKPMS User Manual.

Note that all inspectors carrying out visual surveys for BV224b and all Data Capture Device (DCD) software used to collect data must be accredited in accordance with the current UKPMS accreditation procedures. Further information is available from the UKPMS Support Consultant, telephone 01483 304364 or see www.ukpms.com for further information.

It is the intention that any survey data collected on or after 1st April 2008, and used for BV224b, should have been collected by inspectors that have been accredited under the new UKPMS inspector accreditation scheme, set up by the UKPMS Steering Group. Full details of the accreditation scheme are available on the UKPMS web site.

Concrete or part-covered roads should be included in the visual survey for BV224b.

If DVI surveys are to be used as the basis for the survey, they should be converted to a ‘CVI-equivalent’ survey using the current version of the UKPMS HMDIF Conversion Software, and processed as a CVI survey. The current version of the HMDIF Conversion software is available from the UKPMS web site.

Where CVI and DVI results are combined, CVI data must not be mixed with unconverted DVI data.

From 2007/08, authorities are required to base their BV224b survey result on data for their entire (unclassified) network and the minimum survey coverage is 90%. All data used for the 2007/08 result must have been collected since 31 March 2004, and it should include at least 25% of data collected since 31 March 2007.

The intention in future years is that authorities should continue to maintain a database covering the entire unclassified network, and update this by a fresh survey (minimum 25% per year).

Note that the cross sectional position (XSP) level used for any section should remain consistent over the four year cycle. Data should not be collected using a mixture of Minimal and Full XSPs for the same section.

Data should be processed using a UKPMS system accredited by the UKPMS Annual Health Check to produce BV224b for 2007/08 and configured using UKPMS Rules and Parameters 8.01*. The processing should use using variable length processing and default



inventory. Users of Tranche 3 accredited systems should note that, at this stage, condition projection is not required to be used.

BV224b Calculation

The length of unclassified carriageway for which at least one of the UKPMS Rules and Parameters 8.01* Condition Index thresholds shown in the following table have been equalled or exceeded, divided by the total length of unclassified carriageway network. The indicator result should be expressed to the nearest whole percentage.

UKPMS RP8.01* Condition Index	Threshold Value
Structural CI	85
Edge CI	50
Wearing Course CI	60

Authorities should also provide the following information to support the BVPI:

UKPMS System & Version	
Version of Rules & Parameters Used	
Name(s) of Inspector(s) & Accreditation Date(s)	
DCD Software & Version Used	
CVI or DVI Used?	
Reasons for reduced survey coverage (if applicable)	
Other Comments	

The details of the calculation that the software should perform to produce this PI report are contained in Part 2 of UKPMS Technical Note 38. The Technical Note can be obtained from the UKPMS website at www.ukpms.com.

**** - UKPMS Rules and Parameters Version 8.01 will be the version of the UKPMS Rules and Parameters released to UKPMS Developers on 30 September 2007 for implementation by 31 December 2007. UKPMS Rules and Parameters Version 8.01 will form the basis of both the BVPIs for 2007/08 and the 2007 UKPMS Annual Health Check.***



Part 2 - Technical Detail not Included Above

Introduction

This part is intended to provide more detailed guidance for System Developers. The format for reporting of BV224b (the “PI Report”) from a UKPMS Tranche 3 accredited system approved by the DfT is attached. This standard report has been accepted by DfT if produced as output from a system that has successfully undergone Tranche 3 UKPMS testing and subsequent Annual Health Check testing of BV224b for 2007/08, and that has been configured to use rule set RP8.01; the version of the UKPMS Rules and Parameters released to UKPMS Developers on 30 September 2007 for implementation by 31 December 2007¹. These notes are intended to assist developers and to ensure that the important PI statistics produced for such a report are calculated in a consistent manner.

Scope and Survey Requirements

Users are instructed by DfT to carry out road condition surveys in the approved manner in order to ensure consistency of PI's.

The surveys and the required indicator apply to Unclassified Road Carriageways.

The instructions from DfT allow some flexibility in terms of the surveys input to UKPMS that may be acceptable in producing the Performance Indicator:

- The ‘default’ PI is derived from a UKPMS CVI, or
- An alternative PI will be permitted based on UKPMS DVI converted to a CVI-equivalent survey using the current version of the UKPMS Conversion Software and processed using the Rules and Parameters for CVI surveys. DVI surveys should use the standard 20m aggregation length.

BV224b covers local Unclassified Roads. All surveys used for producing the indicator should have been carried out in April 2004 or later and at least 25% of the Unclassified network length should have been surveyed in April 2007 or later.

Note that although either Full or Minimal XSPs can be used, it is not permissible to mix Full and Minimal XSPs for the same section even in different years. So, for example, a section should not be surveyed using XSP code ‘C’ in 2005 and then resurveyed using XSP codes ‘CL1’ and ‘CR1’ in 2007.

Calculation of the Performance Indicator

For the Unclassified Roads indicator, the emphasis is on a range of condition indices relevant to rural and urban roads, and with some weight given to factors other than structural deterioration. The PI is the percentage of the network where at least one of the

¹ UKPMS Rules and Parameters Version 8.01 will form the basis of both the BVPIs for 2007/08 and the 2007 UKPMS Annual Health Check.



Structural, Edge and Wearing Course condition indices matches or exceeds the thresholds shown in Table 1.

UKPMS Condition Index	Threshold Value
Structural CI	85
Edge CI	50
Wearing Course CI	60

Table 1- Condition Index Thresholds for Unclassified Roads

The basic run parameters for the automatic pass to produce a PI report are as follows;

1. Version 8.01 of the Default UKPMS Rules and Parameters Rule Set must be used for both the specification of the defects that comprise the UKPMS Visual Inspection survey and for the automatic pass processing.
2. Standard Merge Method 3 (Variable Intervals) is to be used, with a condition index tolerance of 12 and a percentage tolerance of 10%.
3. The default inventory should be used.
4. Selective report by Feature - for Carriageway only
5. CVI survey types should be selected

The selection of treatments and the calculation of their associated cost estimates are NOT required by the DfT. However, some authorities may wish to see cost estimates on an extension of the same report, and this could be an 'optional extra' to the PI report.

If DVI data has been used, it must be converted to a CVI-equivalent survey using the current version of the UKPMS Conversion Software, so that this will appear as a CVI survey when the automatic pass is invoked.

Since UKPMS Visual Surveys may use either 'Full' or 'Minimal' cross-sectional positions, the survey length on the network, the actual length surveyed and the length over which the relevant CI exceeds the threshold value must be calculated with caution. It is not sufficient to assume that the full length (and all lanes, if using 'full' XSP method) of all the 'sections within survey' have actually been surveyed. Although the DfT requirement is for all of the unclassified road length to be surveyed, in practice this will not be possible and so the minimum coverage requirement is 90%. The 'excluded length' should not be included in the PI calculation, and for the avoidance of doubt, the PI Report layout suggests that the excluded (non-surveyed) length is separately tabulated.



Calculation of Reported Values

Notes:

1. *Other than that the report should be presented in the two parts given below, the following is not intended to give guidance on the layout or format of the report merely to show what content should be included and how that content should be derived.*
2. *All calculations are performed only for the 'carriageway' feature.*

Part 1 - Background Information

A. Total length of Selected Network i.e. Non-Principal Unclassified Roads (in Carriageway-km)

Simply, the sum of all Section Lengths on the selected network converted to km (i.e. divided by 1000) and displayed to three decimal places. These Sections are identified as having a DoT Classification of 6 for Unclassified Roads.

B. Total Possible Survey Length, in Lane-km

C1. In Survey Period April 2004 or later for BV224b (all lanes covered, on all XSPs applicable)

The sum of Section Lengths on the selected network for sections which have been surveyed using Minimal XSPs plus the sum of all Section Lengths multiplied by the number of lanes for sections which have been surveyed using Full XSPs. If a section has data collected using both Full and Minimal XSPs then a warning should be issued. In cases where no observations have been recorded for the surveyed section then Minimal XSPs should be assumed. It is strongly recommended that in this situation a warning is issued.

Note that any section/XSP that has been surveyed more than once within this four year period should only be included once in this calculation.

Using the data actually processed by the Automatic Pass for each section/XSP, the length of any "Not Assessed" defects are then deducted from the combined length to derive the total length surveyed. Note that it is important to use the data actually processed so that if a section/XSP is surveyed and then in a later survey recorded as "Not Assessed" the latter is not included in this calculation, as this will be ignored in favour of the data recorded earlier.

Note that this assumes that "Not Assessed" defects are accurately recorded and that those lengths where no defects are recorded are implicitly "Not Defective".

C2. In Survey Period April 2007 or later for BV224b (all lanes covered, on all XSPs applicable)

This is calculated as for C1, but using only that part of the network which has been surveyed from April 2007 onwards. Note that if "Not Assessed" defects have been



recorded in this time period they should be taken account of in the calculation, unless the section/XSP has been surveyed earlier in the C2 time period. This is to ensure that C2 gives the length actually surveyed since April 2007. The following example illustrates this point. Suppose that a section/XSP was surveyed on 10 May 2007 and subsequently “Not Assessed” in a survey on 28 Sept 2007. In this case the “Not Assessed” data would be ignored in the calculation of C2. If, however, the date of the survey was 10 May 2006, then the “Not Assessed” data would be used in the C2 calculation as the previous survey lies outside the time period used for C2.

This may lead to situations where some “Not Assessed” data is used in the C2 calculation but ignored in the C1 calculation.

Part 2 - Performance Data

D. Processed Network Length within CI Type

Calculated as the Sum of Defect Lengths converted to km, greater than or equal to the relevant threshold for each Structural, Wearing Course and Edge CI (respectively) in each defect length.

E. Percentage Length Where Significant Treatment Should Be Considered

This is the PI itself, and is calculated as the sum of all defect lengths for which one or more of the CI thresholds has been equalled or exceeded, divided by Length Surveyed in Survey Period (“C1” above) multiplied by 100 (and rounded to the nearest whole number).

$$PI = \frac{[(\sum \text{Defect Lengths exceeding one or more threshold}) \times 100]}{\text{Total Length Surveyed}}$$



Part 1: Background Information

Authority:	Oldshire CC
UKPMS:	Bloggs PMS v2.45
Road Categories selected:	U

Run Details:	
Automatic Pass Run Reference:	2007 PI Run 3
Automatic Pass Run Date:	10 th November 2007
Rule Set:	RP8.01
Feature:	Carriageway
Pavement Type(s):	All
Selected Merging Method:	Standard Merge Method 3 (Variable Intervals)
Inventory Used:	Default
Condition Index Merge Tolerance:	12
Percentage Merge Tolerance:	10
Structural CI Exception Level:	85
Wearing Course CI Exception Level:	60
Edge CI Exception Level:	50

Survey Input Processed:			
Total Length of Selected Network (carriageway-km):	203.560km		
Total Possible Survey Length (XSP-km):	350.400km		
Comprising;			
	Valid Survey Period:	1 st April 2004	to 31 st March 2008
		<u>Selected Survey Type</u>	<u>Length (km)</u> <u>% network</u>
Length surveyed in Survey Period (XSP-km):		CVI	327.300 93.4%
Un-surveyed length (XSP-km):			23.100 6.6%
			100.0%
Of which;			
	Length surveyed in current year (XSP-km):	1 st April 2007	to 31 st March 2008
		<u>Selected Survey Type</u>	<u>Length (km)</u> <u>% network</u>
		CVI	92.694 26.5%



Part 2: Performance Data

Total length exceeding threshold;	Processed Network Length within CI band (km)	PERFORMANCE INDICATOR Percentage Length which has exceeded the point at which surface or structural repair of the carriageway should be considered
Any of the 3 thresholds below	92.500	28%
Structural CI >= 85	24.400	7.5%
Wearing Course CI >= 60	77.700	23.7%
Edge CI >= 50	26.400	8.1%

Notes;

1. The Performance Indicator is given to the nearest whole percentage, and other percentages are given to 1dp. All lengths are given in km to 3dps.
2. It should be noted that the sum of the individual lengths of CI's exceeding a threshold will usually not be the same as the performance indicator value, because on many lengths more than one CI will be exceeded at the same time, but the length is counted only once for the PI.
3. Costs are not required for the BVPIs, and cost rates are not included in the UKPMS Default Rules and Parameters. However, it is expected that local costs rates will be set up and used by Authorities when producing the maintenance section of Local Transport Plans using the UKPMS-based performance indicator.



Part 3 - UKPMS-Based BVPI Summary for 2007/08

Carriageways

BVPI:	BVPI 223 (SCANNER)	BVPI 224(a) (SCANNER)	BVPI 224(b) (Visual)
Road Class:	Principal	Non-principal classified	Unclassified
DfT class:	3	4 & 5	6
Amount:	100% both directions (Minimum 90%)	DfT class 4: 100% both directions (Minimum 90%) DfT class 5: 100% one direction (Minimum 80%)	Minimum 90% At least 25% collected since 1 Apr 07
Dates Surveys Carried Out:	2 years 1 Apr 06 to 31 Mar 08	2 years 1 Apr 06 to 31 Mar 08	4 years 1 Apr 04 to 31 Mar 08
Survey type:	SCANNER	SCANNER	CVI or CVI-equivalent (DVI)
CI Thresholds (any or all of):	N/A	N/A	Structural CI >= 85 Wearing course CI >=60 Edge CI >=50
Merge Method:	N/A	N/A	Standard Merge Method 3 (Variable Intervals)
CI Merge Tolerance:	N/A	N/A	12
% Merge Tolerance:	N/A	N/A	10
Rule Set:	RP8.01*	RP8.01*	RP8.01*
Weighting Set:	WS223v02nn	WS224av02nn	N/A

* - UKPMS Rules and Parameters RP8.01 is the formal release for the calculation of BVPIs and undertaking of the Annual Health Check during 2007/2008. RP8.01 is released to Developers by 30th September 2007 for implementation by 31st December 2007.



Footways

BVPI:	BVPI 187
Hierarchy:	1a, 1 and 2 Footways
Amount:	At least 50% collected since 1 Apr 07 Entire network since 1 Apr 06 (minimum 90%)
Dates:	1 year 1 Apr 07 to 31 Mar 08
Survey type:	DVI
CI Threshold:	Overall CI ≥ 20
Merge Method:	Standard Merge Method 3 (Variable Intervals)
Merge Tolerances:	12 (Condition Index) 10 (Percentage)
Rule Set:	RP8.01*

* - UKPMS Rules and Parameters RP801 is the formal release for the calculation of BVPIs and undertaking of the Annual Health Check during 2007/2008. RP8.01 is released to Developers by 30th September 2007 for implementation by 31st December 2007.