UK Pavement Management System

Technical Note 43

Welsh PI guidance notes for UKPMS Developers

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Document Information

Title (Sub Title)	Technical Note 43 Welsh PI guidance notes for UKPMS Developers
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Description	This Technical Note provides guidance for UKPMS Developers to allow them to produce PAM/020, PAM/021 and PAM/022, the Welsh PI reports.

Document History

Version No	***Status***	***Author***	***Date***	***Changes from Previous Version***
0.01	Draft	RAC	18.06.13	First draft based on 2012/13 version but revised to remove date specific references so that the Technical Note applies to any year from 2013/14 onwards until further notice.
0.02	Draft	RAC	01.07.13	Transferred to new template.
0.03	Draft	RAC	04.07.13	Template changes.
0.04	Draft	RAC	15.07.13	Reviewed by JMG
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1.01	Draft	RAC	14.01.19	The website references have been updated
1.02	Draft	RAC	18.01.19	Reviewed by CCS
1.03	Draft	RAC	14.02.19	Revised following review by Data Cymru to replace THS/011 by PAM/020 to PAM/022 and to drop THS/012
2.00	Issue	RAC	18.02.19	Ratified by Claire Rolph for Data Cymru
2.01	Draft	RAC	17.03.20	Revised following review by Data Cymru to change the dates in the examples so that they are in keeping with the introduction of PAM/020 to PAM/022
2.02	Draft	RAC	18.03.20	Reviewed by CCS
3.00	Issue	RAC	24.03.20	Ratified by Claire Rolph for Data Cymru
3.01	Draft	RAC	02.02.21	Draft based on version 3.00 but revised as follows: ▪ Website references updated
3.02	Draft	RAC	10.02.21	Reviewed by CCS
4.00	Issue	RAC	01.03.21	Ratified by Claire Rolph for Data Cymru

Document Owner

The owner of this document is Data **Cymru**.

Document Support

Support for this document is provided by Linhay Consultancy Ltd and Hyperion Infrastructure Consultancy Ltd who can be contacted via ukpms@hyperion-uk.com. These organisations have been appointed as the UKPMS system accreditors by the UK Roads Board.

This document can be found online on the RCMG website.

Introduction

This Technical Note provides guidance for UKPMS Developers to allow them to produce PAM/020, PAM/021 and PAM/022, the Welsh PI reports. It provides:

- **Changes since the last version**
- **Background Information** on survey coverage
- **Processing & Reporting Requirements** including an example report

Changes since last version

The website references have been updated.

Background Information

PAM/020, PAM/021 and PAM/022, the Welsh PIs, are based on SCANNER data collected annually according to the road class as follows:

- **Principal A Roads:** Either 100% of the surveyable network in one direction or 50% in both directions. Principal (A) roads not surveyed in the previous year must be surveyed in the present year. The indicator must be defined from surveys covering a minimum of 90% of the 'possible survey lane length' over the last two financial years.
- **Non-principal classified B Roads:** Either 100% of the surveyable network in one direction or 50% in both directions. Non principal classified B roads not surveyed in the previous year must be surveyed in the present year. The indicator must be derived from surveys covering a minimum of 90% of the 'possible survey lane length' over the last two financial years.
- **Non-principal classified C Roads:** Either 50% of the surveyable network in one direction or 25% in both directions. Non principal classified C roads not surveyed in the previous year must be surveyed in the present year. The indicator must be derived from surveys covering a minimum of 80% of the 'possible survey lane length' over the last four financial years.

Further details for the particular year in question are available from Data Cymru's website (http://www.data.cymru).

Processing & Reporting Requirements

The data are processed using the SCANNER Road Condition Indicator (RCI) with a user-specified weighting set. The RCI should use data collected over the last two financial years for A and B roads (e.g. 1 Apr 19 to 31 Mar 21 for the 2020/21 results) and over the last four financial years for C roads (e.g.1 Apr 17 to 31 Mar 21 for the 2020/21 results).

The Welsh PI results are calculated separately for principal A roads, B roads and C roads to give PAM/020, PAM/021 and PAM/022 respectively.

The formula used is:

$$\frac{\text{Numerator} \times 100}{}$$

Denominator

For PAM/020:

Numerator: the total length of principal A roads greater than or equal to the Red threshold.
Denominator: the total surveyed length of principal A roads.

For PAM/021:

Numerator: the total length of non-principal classified B roads greater than or equal to the Red threshold.
Denominator: the total surveyed length of non-principal classified B roads.

For PAM/022:

Numerator: the total length of non-principal classified C roads greater than or equal to the Red threshold.
Denominator: the total surveyed length of non-principal classified C roads.

All lengths shown on the reports are given in km to 3 decimal places and all percentages including the PI results are given to 1 decimal place.

Confidence limits are not specified for PAM/020, PAM/021 or PAM/022.

Notes:

- *The road classification is fundamental to this report. It is important that this section attribute is populated accurately.*
- *The report excludes roundabouts. In general SCANNER data are not collected on roundabouts, but if such data are present, they should not be included in any of the figures on the report. Roundabouts are defined using the 'Road Type' section attribute.*
- *All road surface types are included.*
- *On occasion some of the SCANNER parameters used in the RCI calculation may be missing from individual subsections. Such subsections are excluded from the report. That is, the report is based only on those subsections where all the SCANNER parameters used by the weighting set have been recorded.*
- *If the data are not provided on coincident subsections then the SCANNER RCI is not valid and it is not possible to produce the PI. [The RCI calculation is based on the premise that all data for a section within a particular survey are provided using the same subsection breakdown. So suppose Survey 123 on Section A345 uses subsections 0-7, 7-17, 17-27 etc for rutting data (say). All other measured parameters for that survey on that section must use the same subsections. In the past there have been problems due to cracking data using a different set of subsections from the other measured parameters.]*

Content of the Reports

Other than that the reports should be presented in the three 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.

Part 1 – Run Details & Data Selected

This part of the report contains the details and identifiers for the runs used to process the data for principal (A) roads, non-principal B roads and non-principal C roads.

Ref	***Description***	***Example***		
1.1	Authority	Cambria CBC		
1.2	UKPMS System	Rhys PMS		
1.3	UKPMS System Version	2.45		
	Road Classification	A	B	C
1.4	Run Identifier	Run34	Run06	Run12
1.5	Run Date	05/04/2021	10/04/2021	07/04/2021
1.6	Weighting Set Identifier	WSPrinv0201	WSBCv0202	WSBCv0202
1.7	Rule Set Identifier	RP10.01	RP10.01	RP10.01
1.8	From Date	01/04/2019	01/04/2019	01/04/2017
1.9	To Date	31/03/2021	31/03/2021	31/03/2021
1.10	Combination method	Sum	Sum	Sum
1.11	Threshold type	Bin	Bin	Bin

Users of the report are encouraged to check the UKPMS System and Version on the RCMG website to ensure that the version of the UKPMS system being used to produce the results is accredited to produce valid results for PAM/020, PAM/021 and PAM/022 for the relevant year.

Note:

- *For those Developers who choose to implement the RCI as a type of Automatic Pass, the Run Identifier is simply the Automatic Pass identifier.*

Part 2 – Surveyed Network

This part of the report gives the possible survey lane length together with the length which has actually been surveyed.

Ref	***Description***	***Example***		
		A roads	***B roads***	***C Roads***
2.1	Selected network sections	91	218	526
2.2	Selected network length	75.838	165.438	426.838
2.3	Possible survey lane length	127.113	321.445	846.193
2.4	Actual survey lane length	120.030	316.650	710.129
2.5	Percentage of selected network surveyed in survey period	94.4%	98.5%	83.9%

The selected network sections figure is the number of sections in the selected network (i.e. with DfT classification 3 for A roads, with DfT Classification 4 for B roads and with DfT Classification 5 for C roads).

The selected network length is the sum of the *Section Length Number* for the selected network.

Note:

- *Any sections which are roundabouts should be excluded from these figures (Ref 2.1 and Ref 2.2) and from all other figures on the report.*

The possible survey lane length is calculated as:

∑(*Section Length Number* multiplied by *Nearside Multiplier* for the section Road Type),for the selected network.

The actual survey lane length is the sum of all subsection lengths with eligible data. (The definition of 'eligible' here is that the data satisfy the date criteria and the road classification criteria; only those subsections with all SCANNER parameters for the weighting set are eligible).

The percentage (Ref 2.5) is calculated as actual survey lane length (Ref 2.4) divided by possible survey lane length (Ref 2.3) expressed as a percentage. For A roads and B Roads this figure should be at least 90% and for C roads at least 80%.

In addition to providing the above statistics a breakdown of the network on the basis of Rural/Urban/Undefined is also required.

Ref	***Description***	***Example***		
		A roads	***B roads***	***C Roads***
2.6	Rural surveyed network	82.321	260.123	440.346
2.7	Urban surveyed network	36.674	55.647	268.143
2.8	Undefined surveyed network	1.035	0.880	1.640
2.9	Total surveyed network percentage	158.3%	191.4%	166.4%

The rural surveyed network is the sum of all rural subsection lengths with eligible data; similarly the urban surveyed network is the sum of the urban subsection lengths with eligible data. The undefined network length is the sum of all those subsections with eligible data but which are neither urban nor rural. Together the rural, urban and undefined figures should add to give the actual survey lane length (Ref 2.4).

The total surveyed network percentage is the actual survey lane length (Ref 2.4) expressed as a percentage of the selected network length (Ref 2.2).

Note:

- *As all road classes are surveyed in both directions this figure is normally greater than 100%.*

Part 3 – Welsh PI Results

This part of the report contains the PAM/020, PAM/021 and PAM/022 results.

As the weighting set uses a Bin type threshold, the length and percentage in each bin is given.

Ref	Description	Example		
		A roads	B roads	C Roads
3.1	Bin description	Red	Red	Red
3.2	Bin threshold	>=100	>=100	>=100
3.3	Length (km) in bin	33.020	15.516	130.271
3.4	Percentage in bin	27.5%	4.9%	18.3%

Note that the sum of the length in all bins should total to give the actual survey lane length (Ref 2.4) for that road class, and the sum of the percentages should be 100% (subject to rounding errors).

PAM/020 – PAM/022 is the percentage in the Red bin for the relevant road class.

Ref	Description	Example		
		PAM/020	PAM/021	PAM/022
3.5	PAM/020 – PAM/022	27.5%	4.9%	18.3%

Example Report: PAM/020, PAM/021 and PAM/022

Run Details & Data Selected						
Authority:		Cambria CBC				
UKPMS:		Rhys PMS v2.45				
Road classification:		A		B		C
Run Identifier:		Run34		Run06		Run12
Run Date:		05/04/2021		10/04/2021		07/04/2021
Weighting Set ID:		WSPrinv0201		WSBCv0202		WSBCv0202
Rule Set ID:		RP10.01		RP10.01		RP10.01
Dates:		From 01/04/2019 to 31/03/2021		From 01/04/2019 to 31/03/2021		From 01/04/2017 to 31/03/2021
Combination method:		Sum		Sum		Sum
Threshold type:		Bin		Bin		Bin
Surveyed Network						
Selected network sections:		91		218		526
Selected network length:		75.838 km		165.438 km		426.838 km
Possible survey lane length:		127.113 km		321.445 km		846.193 km
Actual survey lane length:		120.030 km	94.4%	316.650 km	98.5%	710.129 km	83.9%
Rural surveyed network:		82.321 km		260.123 km		440.346 km
Urban surveyed network:		36.674 km		55.647 km		268.143 km
Undefined surveyed network:		1.035 km		0.880 km		1.640 km
Total surveyed network:		120.030 km	158.3%	316.650 km	191.4%	710.129 km	166.4%
PI results						
Green	(<40)	44.669 km	37.2%	218.488 km	69.0%	283.313 km	39.9%
Amber	(>=40)	42.341 km	35.3%	82.646 km	26.1%	296.545 km	41.8%
Red	(>=100)	33.020 km	27.5%	15.516 km	4.9%	130.271 km	18.3%
		PAM/020	**27.5%**	**PAM/021**	**4.9%**	**PAM/022**	**18.3%**