

# **UK Pavement Management System**



## **Technical Note 47**

### ***Footway Network Survey: Network Performance Reports***

**Version Number 4.00 – Issue**

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## Document Information

<b>Title (Sub Title)</b>	Technical Note 47 Footway Network Survey: Network Performance Reports
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<b>Description</b>	This Technical Note provides guidance for UKPMS Developers to allow them to produce the FNS Network Performance reports.

## Document History

<b>Version No</b>	<b>Status</b>	<b>Author</b>	<b>Date</b>	<b>Changes from Previous Version</b>
2.05	Draft	RAC	24.01.19	Draft based on issued version 2.04 but revised as follows: <ul style="list-style-type: none"><li>▪ Transferred to new template</li><li>▪ Website references updated</li></ul>
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3.02	Draft	RAC	10.02.21	Reviewed by CCS
4.00	Issue	RAC	02.03.21	Ratified by Andy Pickett for FCMG

## Document Owner

The owner of this document is the Footway Condition Management Group (FCMG).

## 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](mailto: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 the Footway Network Survey (FNS) Network Performance reports. It provides:

- **Changes since the last version**
- **Background Information** about collecting and using FNS data together with advice about survey coverage and setting the footway hierarchy.
- **Reporting Requirements** including report contents and example reports.

## Changes since last version

The website references have been updated.

## Background Information

The Footway and Cycletrack Management Group (FCMG) intends the FNS to be a primary condition survey of footways, and to be sufficiently cost-effective to allow authorities to apply it to the whole of their footway network at a frequency that fully supports asset management and performance monitoring. It also provides the data needed to assess and target maintenance schemes or to identify where more detailed investigations are needed, using DVI for example. The FNS has been available for use within UKPMS from April 2010. Further information about the FNS survey, including definitions of the defects collected, is given in the UKPMS User Manual Volume 2, Chapter 9.

Previously the Headline Indicator was defined on the basis of the treatment required. In order to provide a more stable and transparent indicator this has been replaced by a definition using footway condition (rather than treatments). The advantages of this new approach are that:

- The new FNS Headline Condition Indicator is independent of changes to the treatment rules (which may well be refined and improved during the early years of the survey).
- It will be easier to compare results from different variants of the FNS.

The FNS Headline Condition Indicator is defined as the percentage of the surveyed length of footway at Condition Level 4 (Structurally Unsound) or Condition Level 3 (Functionally Impaired).

In addition to the required FNS Network Performance reports, which are based on footway condition, UKPMS Developers are also encouraged to provide reports on treatments. The specific functionality for treatment reports is not specified. However, when using colour coding for treatments within map based reporting it is recommended that a colour scheme is selected which is different from that already used for reporting carriageway condition (which typically uses 'traffic light' Red/Amber/Green colour coding).



When reporting, there is no specific requirement for a minimum extent of the footway network to be covered by the FNS or any requirements about the age of the survey data. Users enter a date range (time window) when running the reports and this is used to select the data used in the report. The report date range is included on the FNS Performance reports together with information about the extent of the network being reported on.

Although users have been given advice about survey frequency and the age of the data, the reports must allow users to include older data if they feel that such data are representative of their footway network condition.

The reports are designed only for use with FNS data; other survey types should not be included within the reports.

UKPMS provides for the allocation of footway hierarchy at two levels, a “default” hierarchy for the whole section and a more detailed hierarchy linked to inventory which allows the different characteristics of footways within a section to be accounted for. **In order to use the reports all sections must be allocated a footway hierarchy at the section level.** Sections with no footways should have this section footway hierarchy set to ‘ND’ (Not Defined). Any section with a footway on one or both sides should have the section footway hierarchy set to the highest<sup>1</sup> hierarchy for any footway present within the section.

*Note: where footway inventory data have been recorded this may be used to help to provide information to populate the section footway hierarchy.*

## Reporting Requirements

There are two related reports; the first (the Survey Coverage report) gives details of the lengths of FNS data, within financial years, and the second (the FNS Headline Condition Indicator report) gives a summary of condition based upon the FNS data. These two reports may be combined into a single FNS Network Performance report by the UKPMS Developer if they wish.

### Note that:

1. All calculations are based on the most recent observation lengths within the relevant date range (i.e. financial year or report time window) for each section/feature/XSP.
2. The reports use only FNS data with a feature type of ‘FW’.
3. The total footway length surveyed given on the Survey Coverage report (item 1.2.4) should be the same as the footway length surveyed (item 2.2.16) on the FNS Headline Condition Indicator report.

The contents for each report are listed below, and this is followed by an example report.

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<sup>1</sup> The “highest” footway hierarchy is 1a, then 1, 2, 3, 4 and ND.



## Report 1 – Survey Coverage Report

### Report Contents

#### Part 1: Run Details and Data Selected

<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
1.1.1	Authority	Oldshire CC	
1.1.2	Report Run Date	22/07/2012	
1.1.3	UKPMS System	Bloggs PMS	
1.1.4	UKPMS System Version	3.21	
1.1.5	Rule Set Identifier	RP10.01	
1.1.6	From Date	01/01/2010	Entered by the user
1.1.7	To Date	21/07/2012	Entered by the user
1.1.8	Number of Sections with Footways	723	Total no of sections with Section Footway Hierarchy of 1a, 1, 2, 3 or 4 at time of report run.
1.1.9	Network Length of Sections with Footways	235.095km	Calculated as the sum of the Section Lengths of sections with a Section Footway Hierarchy of 1a, 1, 2, 3 or 4 at time of report run.

#### Part 2: Financial Year Breakdown

The report contains figures for each financial year wholly or partly within the report time window, as well as total figures for the entire date range (report time window). The following items are required:

<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
The following three items repeat for EACH financial year i.e. 1 Apr to 31 Mar (inclusive)			
1.2.1	Footway Length Surveyed	130.132km	Calculated as the sum of the most recent observation lengths for FNS data with a feature type of "FW" for each section/feature/XSP surveyed within the reported financial year and within the report time window.
1.2.2	Network Length Surveyed	79.412km	Calculated as the Sum of Section Lengths for Sections with FNS data collected with a feature type of "FW" surveyed within the reported financial year and within the report time window.



<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
1.2.3	Percentage Network Length Surveyed	33.8%	1.2.2 as a percentage of 1.1.9
The following three items are total coverage figures			
1.2.4	Total Footway Length Surveyed	265.983km	Calculated as the sum of the most recent observation lengths for FNS data with a feature type of "FW" for each section/feature/XSP, surveyed within the report time window.
1.2.5	Total Network Length Surveyed	155.382km	Calculated as the Sum of Section Lengths for Sections with FNS data collected with a feature type of "FW" surveyed within the report time window.
1.2.6	Total Percentage Network Length Surveyed	66.1%	1.2.5 as a percentage of 1.1.9

Note that, if any section/feature/XSP has been surveyed more than once within the report time window in different financial years then the 'Total Coverage' figures will not be the sum of the corresponding figures for each of the contributing financial years. This is because any section/feature/XSP which has been surveyed in more than one financial year will only contribute once to the 'Total Coverage' figure.

All lengths are given in km rounded to 3dp before calculating the percentages and all percentages are rounded to 1dp.



## Example Report

### **FNS Performance Report 1: Survey Coverage**

Authority: **Oldshire County Council**  
Report Run: **22<sup>nd</sup> July 2012**  
UKPMS System: **Bloggs PMS Version 3.21**  
Rule Set Identifier: **RP10.01**  
Total No of Sections with Footways at time report run: **723**  
Total Network Length of Sections with Footways at time report run: **235.095km**  
Survey Data Included from: **1<sup>st</sup> April 2010 to 21<sup>st</sup> July 2012**

<b>Financial Year</b>	<b>Footway Length Surveyed</b>	<b>Network Length Surveyed</b>	<b>Percentage Network Length Surveyed</b>
2010/11	157.213km	88.513km	37.6%
2011/12	130.132km	79.412km	33.8%
2012/13	0.000km	0.000km	0.0%
<b>TOTAL COVERAGE</b>	<b>265.983km</b>	<b>155.382km</b>	<b>66.1%</b>



## Report 2 – FNS Headline Condition Indicator Report

### Report Contents

#### Part 1: Run Details and Data Selected

<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
2.1.1	Authority	Oldshire CC	
2.1.2	Report Run Date	22/07/2012	
2.1.3	UKPMS System	Bloggs PMS	
2.1.4	UKPMS System Version	3.21	
2.1.5	Rule Set Identifier	RP10.01	
2.1.6	From Date	01/01/2010	Entered by the user
2.1.7	To Date	21/07/2012	Entered by the user
2.1.8	Number of Sections with Footways	723	Total no of sections with Section Footway Hierarchy of 1a, 1, 2, 3 or 4 at time of report run.
2.1.9	Network Length of Sections with Footways	235.095km	Calculated as the sum of the Section Lengths of sections with a Section Footway Hierarchy of 1a, 1, 2, 3 or 4 at time of report run.

Note the Part 1 information for this report is the same as the Part 1 information for the Survey Coverage report.

#### Part 2: Footway Condition

The calculations for this part of the report are described in terms of two formulae; Formula 1 and Formula 2. The definitions for these two formulae and other notes for the report are given below the report definition.

<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
2.2.1	Footway hierarchy	1a	
The following 14 items repeat for EACH footway hierarchy using the Section Footway Hierarchy at the time of the report run			
2.2.2	Footway Length Surveyed	1.163km	Formula: 1 Footway hierarchy: 2.2.1 Condition Level: All
2.2.3	Condition Level 1 (As New) Length	0.625km	Formula: 1 Footway hierarchy: 2.2.1 Condition Level: 1
2.2.4	Condition Level 1 (As New) Length Percentage	53.7%	2.2.3 as a percentage of 2.2.2





<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
2.2.5	Condition Level 2 (Aesthetically Impaired) Length	0.218km	Formula: 1 Footway hierarchy: 2.2.1 Condition Level: 2
2.2.6	Condition Level 2 (Aesthetically Impaired) Length Percentage	18.7%	2.2.5 as a percentage of 2.2.2
2.2.7	Condition Level 3 (Functionally Impaired) Length	0.145km	Formula: 1 Footway hierarchy: 2.2.1 Condition Level: 3
2.2.8	Condition Level 3 (Functionally Impaired) Length Percentage	12.5%	2.2.7 as a percentage of 2.2.2
2.2.9	Condition Level 3 (Functionally Impaired) Average Extent	44.1%	Formula: 2 Footway hierarchy: 2.2.1 Condition Level: 3
2.2.10	Condition Level 4 (Structurally Unsound) Length	0.175km	Formula: 1 Footway hierarchy: 2.2.1 Condition Level: 4
2.2.11	Condition Level 4 (Structurally Unsound) Length Percentage	15.0%	2.2.10 as a percentage of 2.2.2
2.2.12	Condition Level 4 (Structurally Unsound) Average Extent	45.6%	Formula: 2 Footway hierarchy: 2.2.1 Condition Level: 4
2.2.13	Condition Level 4 (Structurally Unsound) PLUS Condition Level 3 (Functionally Impaired) Length	0.320km	Formula: 1 Footway hierarchy: 2.2.1 Condition Level: 3 and 4
2.2.14	Condition Level 4 (Structurally Unsound) PLUS Condition Level 3 (Functionally Impaired) Length Percentage	27.5%	2.2.13 as a percentage of 2.2.2
2.2.15	Condition Level 4 (Structurally Unsound) PLUS Condition Level 3 (Functionally Impaired) Average Extent	44.9%	Formula: 2 Footway hierarchy: 2.2.1 Condition Level: 3 and 4



<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
The following 14 items are totals for ALL footway hierarchies			
2.2.16	Footway Length Surveyed	265.983km	Formula: 1 Footway hierarchy: All Condition Level: All
2.2.17	Condition Level 1 (As New) Length	111.479km	Formula: 1 Footway hierarchy: All Condition Level: 1
2.2.18	Condition Level 1 (As New) Length Percentage	41.9%	2.2.17 as a percentage of 2.2.16
2.2.19	Condition Level 2 (Aesthetically Impaired) Length	62.980km	Formula: 1 Footway hierarchy: All Condition Level: 2
2.2.20	Condition Level 2 (Aesthetically Impaired) Length Percentage	23.7%	2.2.19 as a percentage of 2.2.16
2.2.21	Condition Level 3 (Functionally Impaired) Length	56.161km	Formula: 1 Footway hierarchy: All Condition Level: 3
2.2.22	Condition Level 3 (Functionally Impaired) Length Percentage	21.1%	2.2.21 as a percentage of 2.2.16
2.2.23	Condition Level 3 (Functionally Impaired) Average Extent	47.1%	Formula: 2 Footway hierarchy: All Condition Level: 3
2.2.24	Condition Level 4 (Structurally Unsound) Length	35.363km	Formula: 1 Footway hierarchy: All Condition Level: 4
2.2.25	Condition Level 4 (Structurally Unsound) Length Percentage	13.3%	2.2.24 as a percentage of 2.2.16
2.2.26	Condition Level 4 (Structurally Unsound) Average Extent	49.4%	Formula: 2 Footway hierarchy: All Condition Level: 4
2.2.27	Condition Level 4 (Structurally Unsound) PLUS Condition Level 3 (Functionally Impaired) Length	91.524km	Formula: 1 Footway hierarchy: All Condition Level: 3 and 4



<b>Ref</b>	<b>Description</b>	<b>Example</b>	<b>Notes</b>
2.2.28	Condition Level 4 (Structurally Unsound) PLUS Condition Level 3 (Functionally Impaired) Length Percentage	34.4%	This is the FNS Headline Condition Indicator 2.2.27 as a percentage of 2.2.16
2.2.29	Condition Level 4 (Structurally Unsound) PLUS Condition Level 3 (Functionally Impaired) Average Extent	48.0%	Formula: 2 Footway hierarchy: All Condition Level: 3 and 4

All lengths are given in km rounded to 3dp before calculating the percentages and all percentages are rounded to 1dp.

### Calculations

Formula 1 is the sum of the eligible observation lengths:

$$\sum (L_E - L_S)$$

Formula 2 is the length weighted average extent:

$$\frac{\sum((L_E - L_S) \times E)}{\sum(L_E - L_S)}$$

Where:

$L_E$  is the end chainage of the observation,  
 $L_S$  is the start chainage of the observation, and  
E is the extent code (i.e. width percentage)

For each part of the report the sum is over a different subset of observations as indicated in the notes for each of the report values above.

Also note that:

1. The relevant defect codes for each part of the report are given in the table below:

<b>Condition Level</b>	<b>Defect Codes</b>
1: As New	FBAN, FCAN, FFAN, FKAN, FUAN
2: Aesthetically Impaired	FBAI, FCAI, FFAI, FKAI, FUAI
3: Functionally Impaired	FBFI, FCFI, FFFI, FKFI, FUFU
4: Structurally Unsound	FBSU, FCSU, FFSU, FKSU, FUSU

2. The average extent is not produced for condition levels 1 or 2 because for these it is always 100%.



## Example Report

### **FNS Performance Report 2: FNS Headline Condition Indicator**

Authority: **Oldshire County Council**  
 Report Run: **22<sup>nd</sup> July 2012**  
 UKPMS System: **Bloggs PMS Version 3.21**  
 Rule Set Identifier: **RP10.01**  
 Total No of Sections with Footways at time report run: **723**  
 Total Network Length of Sections with Footways at time report run: **235.095km**  
 Survey Data Included from: **1<sup>st</sup> April 2010 to 21<sup>st</sup> July 2012**

### **FNS Headline Condition Indicator:**

**Percentage Length with functionally impaired or structurally unsound defects: 34.4%**

Footway Hier.	Survey'd Length	Condition												
		1: As New		2: Aesthetically Impaired		3: Functionally Impaired			4 Structurally Unsound			3: Functionally Impaired PLUS 4: Structurally Unsound		
		km	%	km	%	km	%	Average Extent	km	%	Average Extent	km	%	Average Extent
1a	1.163	0.625	53.7%	0.218	18.7%	0.145	12.5%	44.1%	0.175	15.0%	45.6%	0.320	27.5%	44.9%
1	17.104	11.200	65.5%	3.452	20.2%	1.652	9.7%	51.3%	0.800	4.7%	48.6%	2.452	14.3%	50.4%
2	29.534	10.965	37.1%	11.463	38.8%	3.428	11.6%	39.7%	3.678	12.5%	51.4%	7.106	24.1%	45.8%
3	83.460	31.100	37.3%	24.580	29.5%	16.680	20.0%	48.6%	11.100	13.3%	32.2%	27.780	33.3%	42.0%
4	134.722	57.589	42.7%	23.267	17.3%	34.256	25.4%	46.9%	19.610	14.6%	58.8%	53.866	40.0%	51.2%
<b>ALL</b>	<b>265.983</b>	<b>111.479</b>	<b>41.9%</b>	<b>62.980</b>	<b>23.7%</b>	<b>56.161</b>	<b>21.1%</b>	<b>47.1%</b>	<b>35.363</b>	<b>13.3%</b>	<b>49.4%</b>	<b>91.524</b>	<b>34.4%</b>	<b>48.0%</b>