Technical Note 3

HMDIF File Structures and Content

Ninth Edition

This Edition supersedes the previously issued versions of this document

Introduction

This document specifies the HMDIF format for the following types of files:

Network Referencing
Item Inventory
Visual Condition Data (CVI)
Visual Condition Data (DVI)
Machine Collected Rutting Data (CRUT)
Machine Collected Rutting Data (DRUT)
Deflectograph Data
HRM Data
SCRIM Data
GripTester Data
Works Record Data
Pavement Sample Data

Appendix A provides an HMDIF specification for Radar Record HMDIF files.

Appendix B gives the current version of each HMDIF and a summary of changes since the last version.

Note that the HMDIF specification for SCANNER data is given in *SCANNER HMDIF Specification* (UKPMS document 71).

File Syntax and Semantics

The following is based on an extract of relevant paragraphs from the Highways Agency document on Highways Maintenance Data Interchange Format (HMDIF) Standard, *File Ref. HCSL 2/13/78, Document No L3-TS-02*, issued on *7th January 1994* and can be used as a guide to the requirements for the production of systems to generate and read HMDIF files for the purposes of the UKPMS Comparability Tests.

The HMDIF file is an ASCII file, containing only the ASCII codes in the range 32 - 126, 13 and 10.

The maximum length of each record (including spaces and the end record character) is 255 characters.

Each record is terminated by a Carriage Return / Line Feed pair. With the exception of the HMSTART record the carriage return must be preceded by the record_id_term_value, which is normally defined as a semi-colon (;)

The HMDIF file consists of two components:

- Template Block, which describes the record types and attributes which the receiving application can expect to be included in the data records.

- Data Block, which contains the actual data to be transferred to the receiving system.

Records, identified by a record mnemonic previously described in the Template Block, contain the attribute values in the same positional sequence as the attribute identifiers described in the Template Block.

The HMDIF includes three record counts as follows:

1. TEND record count of the Template Block records.
2. DEND record count of the Data Block records.
3. HMEND record count of the HMDIF file.

The record count TEND and DEND must include the TSTART/DSTART and TEND/DEND records. The HMEND record count is the sum of TEND and DEND plus 2 (the HMSTART and HMEND records).

All HMDIF files must have the following syntactical structure:

HMSTART record
TSTART record
template record
{template record}
TEND record
DSTART record
data record
{data record}
DEND record
HMEND record

There must be no blank lines in the HMDIF import file.

The HMSTART record identifies the start of the HMDIF file and includes the following data items separated by spaces and with no terminating record end symbol:

hmdif_id_code	file identification code
hmdif_version_no	version number of the file
text_start_id_value	the text character used to identify the start of a block of text.
text_end_id_value	the text character used to identify the end of a block of text.
record_end_term_value	the text character used to identify the end of a record
attr_end_term_value	the text character used to identify the end of a data item
record_id_term_value	the text character used to identify the end of a record identification code.

The TSTART record identifies the start of the Template Block and consists of the mnemonic TSTART followed by the *record_end_term_value*.

A Template Block record has the following syntactical structure:
<record mnemonic> <record_id_term_value> <data mnemonic>
{ <attr_end_term_value> <data mnemonic> } <record_end_term_value>

e.g. NETSECT1\LABEL,LENGTH,SDATE,EDATE;

The TEND record identifies the end of the Template Block and consists of the mnemonic TEND followed by the *record_id_term_value* then the record count of the template records, and finally the *record_end_term_value*.
e.g. TEND\12;

The DSTART record identifies the start of the Data Block of records and consists of the mnemonic DSTART followed by the *record_end_term_value*.

A data record has the following syntactical structure:
<record mnemonic> < record_id_term_value > <data item>
{<attr_end_term_value> <data item>} <record_end_term_value>

The DEND record identifies the end of the Data Block of records and consists of the mnemonic DEND followed by the *record_id_term_value*, then the record count of the Data Block of records and finally the *record_end_term_value*.
e.g. DEND\5;

The HMEND record identifies the end of the HMDIF file and consists of the mnemonic HMEND followed by the *record_id_term_value*, then the record count of the HMDIF file and finally the *record_end_term_value*.
e.g. HMEND\23;

Note: The HMEND record count is also the sum of the TEND and DEND record counts plus 2 (the HMSTART and HMEND records).

'HMDIF-Generating' Applications

Applications which generate HMDIF files must:

- Generate files which contain only the ASCII codes 10,13,32-126

'HMDIF-Receiving' Applications

'HMDIF-Receiving' Applications must:

- Be able to process leading and trailing spaces in all data items (except text strings, where they are considered to be part of the string). All other spaces must be maintained.
- Handle files where the records are in any logical order.
- Merge new data with existing data or overwrite existing data. The user must be able to select the option required and, if practical, the software should be able to deduce and select the option from the data type/structure.
- Ignore records and data in the file which are inappropriate to the application. This requirement is needed to allow evolution of HMDIF file structures (i.e. the feeder system will be producing data required by a later version of the target application) and the potential for an HMDIF output file to have more than one target application.

HMDIF File Contents

Permissible codes and value ranges will depend upon the validation rules adopted by sending/receiving systems. The valid codes are available in the UKPMS Data Model, issued as the Rules and Parameters database.

Network Referencing HMDIF

The first data record should always be NETWORK. This is optionally followed by either NETSECT1 or NETNODE1.

The NETSECT records can optionally be followed by SECATTR and/or SECNODE records. Any number of SECATTR records can be supplied but with no repeat of individual attributes allowed. Again, for SECNODE, any number can be supplied but only one start and one end node as defined by the attribute TYPE may be present.

For the NETNODE records, NETNODE1 is obligatory and NETNODE2 is optional.

Note that version 002 of this HMDIF allows a Footway Hierarchy Code to be entered, optionally, for each section via the FWAYHIER attribute of the NETSECT6 record.

Item Inventory HMDIF

Record type SSEC is used to define the section. This section must be present in the database in the current network and must be effective on the survey date. Either the section label or the section number must be included but, if both are present, then they must be consistent. This section remains the current section until another SSEC is encountered.

Each SSEC record is followed by one or more ITEM records and each item record may be followed by zero, one or more ATTR records associated with the current feature. The ITEM record defines the next feature to be added to the database and contains the locational information related to this item.

A given feature on a particular section at a certain location may have associated with it zero, one or more attributes which are read from ATTR records. Each attribute may only occur once for an occurrence of a feature. A given attribute may take the form of either a numeric value or an option code from a list of valid codes according to the characteristics of the attribute concerned.

Visual Condition Data HMDIF

The first record should always be SURVEY. Record type SECTION is used to define the section within the survey. This section must be present in the database in the current network and must be effective on the survey date.

Either the section label or the section number must be included and, if both are present, they must

be consistent. This SECTION remains the current section until another SECTION is encountered.

Each SECTION record is followed by one or more OBSERV records and each OBSERV record is followed by one or more OBVAL records associated with the current observation.
Also associated with the current observation may be zero, one or more OBNOTE records.

When CVI data has been collected then it should be post processed prior to producing the HMDIF file (see *Technical Note 40: Rules for Post-processing CVI Surveys for Loading to UKPMS*).

Machine Collected Rutting Data HMDIF

The first record should always be SURVEY. Record type SECTION is used to define the section within the survey. This section must be present in the database in the current network and must be effective on the survey date.

Either the section label or the section number must be included and, if both are present, they must be consistent. This SECTION remains the current section until another SECTION is encountered.

Each SECTION record is followed by zero, one or more OBSERV records and each OBSERV record is followed by one or more OBVAL records associated with the current observation.
Also associated with the current observation may be zero, one or more OBNOTE records.

Deflectograph Data HMDIF

The first record should always be SURVEY. Record type SECTION is used to define the section within the survey. This section must be present in the database in the current network and must be effective on the survey date.

Either the section label or the section number must be included and, if both are present, they must be consistent. This SECTION remains the current section until another SECTION is encountered.

Each SECTION record is followed by one or more OBSERV records and each OBSERV record is followed by one or more OBVAL records associated with the current observation.

HRM Data HMDIF

The first record should always be SURVEY. Record type SECTION is used to define the section within the survey. This section must be present in the database in the current network and must be effective on the survey date.

Either the section label or the section number must be included and, if both are present, they must be consistent. This SECTION remains the current section until another SECTION is encountered.

Each SECTION record is followed by one or more OBSERV records and each OBSERV record is followed by one or more OBVAL records associated with the current observation.

Rut, Texture and Profile Variance data for a single survey are combined within a single file.

SCRIM Data HMDIF

The first record should always be SURVEY. Record type SECTION is used to define the section within the survey. This section must be present in the database in the current network and must be effective on the survey date.

Either the section label or the section number must be included and, if both are present, they must be consistent. This SECTION remains the current section until another SECTION is encountered.

Each SECTION record is followed by one or more OBSERV records and each OBSERV record is followed by one or more OBVAL records associated with the current observation.

Both THRESHLD data (each record specifying one defined site) and OBSERV records for a single survey are combined within a single file.

GripTester Data HMDIF

The first record should always be SURVEY. Record type SECTION is used to define the section within the survey. This section must be present in the database in the current network and must be effective on the survey date.

Either the section label or the section number must be included and, if both are present, they must be consistent. This SECTION remains the current section until another SECTION is encountered.

Each SECTION record is followed by one or more OBSERV records and each OBSERV record is followed by one or more OBVAL records associated with the current observation.

Both THRESHLD data (each record specifying one defined site) and OBSERV records for a single survey are combined within a single file.

Works Record HMDIF

Record type SSEC is used to define the section. This section must be present in the database in the current network and must be effective on the survey date. If no start date is present, then the assumption is that the occurrence of the label at the load date applies.

Each SSEC record is followed by one or more WORKS RECORD records and each item record may be followed by zero, one or more WORKS RECORD LAYER records associated with the current WORKS RECORD. The layer number associated with the WORKS

RECORD LAYER, denotes the sequence from the uppermost layer at the time the works were carried out.

Pavement Sample HMDIF

Record type SSEC is used to define the section. This section must be present in the database in the current network and must be effective on the survey date. If no start date is present, then the assumption is that the occurrence of the label at the load date applies.

Each SSEC record is followed by one or more PAVEMENT SAMPLE records and each item record may be followed by zero, one or more PAVEMENT SAMPLE LAYER records associated with the current PAVEMENT SAMPLE record. The layer number associated with the PAVEMENT SAMPLE LAYER, denotes the sequence from the uppermost layer at the time the HMDIF is created.

HMDIF / UKPMS Data Dictionary

In order to map the standard interchange format mnemonics to UKPMS attributes (or fields) a data dictionary is included here for reference. Field widths ('Record Size', specified in characters) are given for guidance. The UKPMS Data Model is provided in the Rules and Parameters database which contains table and field definitions for UKPMS. Some attributes in the HMDIF file are not defined in the UKPMS Data Model but have been retained for optional use.

Network Referencing HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
NETWORK	CODE	Char	6	SECTION	Not defined
NETSECT1	LABEL	Char	30	SECTION	Section Label Code
NETSECT1	LENGTH	Float		SECTION	Section Length Number
NETSECT1	SDATE	Char	8	SECTION	Section Start Date
NETSECT1	EDATE	Char	8	SECTION	Section End Date
NETSECT2	DESCRP	Text	40	SECTION	Section Description
NETSECT2	RDNUMB	Char	10	SECTION	Road Number
NETSECT3	RDNAME	Text	30	SECTION	Road Name
NETSECT3	AREA	Text	20	SECTION	Area Name
NETSECT3	TOWN	Text	20	SECTION	Town Name
NETSECT4	DISTRICT	Char	6	SECTION	District Code
NETSECT4	AGENT	Char	6	SECTION	Not defined
NETSECT4	DTPCLASS	Char	2	SECTION	Dot Classification Code
NETSECT4	HIER	Char	2	SECTION	Road Hierarchy Code
NETSECT4	SPEED	Char	5	SECTION	Speed Limit Code
NETSECT4	OWNER	Char	6	SECTION	Not defined
NETSECT4	URBANRURAL	Char	1	SECTION	Urban Or Rural
NETSECT4	DEPOT	Char	6	SECTION	Not defined
NETSECT4	NOMINATED	Char	1	SECTION	Nominated Indicator
NETSECT4	RDTYPE	Char	5	SECTION	Road Type Code
NETSECT4	OFFCWXSP	Char	1	SECTION	Not defined *(See Note 1)*
NETSECT4	CWXSP	Char	1	SECTION	Not defined *(See Note 1)*
NETSECT4	FUNDORG	Text	20	SECTION	Funding Organisation Code
NETSECT5	EOCOMMENT	Text	60	SECTION	Not defined
NETSECT6	RESTRICTWORK	Char	6	SECTION	Not defined
NETSECT6	STEPLEVEL	Char	3	SECTION	Step Level Code
NETSECT6	FWAYTIED	Char	3	SECTION	Off Carriageway Tied Indicator
NETSECT6	FWAYTRAF	Char	1	SECTION	Footway Vehicle Traffic Code
NETSECT6	FWAYOPEN	Char	1	SECTION	Footway Opening Frequency Code
NETSECT6	DRNCODE	Char	1	SECTION	Drainage Status Code
NETSECT6	DIVERSION	Char	5	SECTION	Diversion Quality Code
NETSECT6	NORMDIR	Char	1	SECTION	Normal Survey Direction Indicator
NETSECT6	TRAFFIC	Char	6	SECTION	Traffic Level
NETSECT6	FWAYHIER	Char	2	SECTION	Footway Hierarchy Code
SECNODE	LABEL	Char	30	NODE WITHIN SECTION	Node Code
SECNODE	CHAIN	Float		NODE WITHIN SECTION	Node Chainage Number
SECNODE	TYPE	Char	1	NODE WITHIN SECTION	Node Type Code
SECATTR	CODE	Char	6		Not defined
SECATTR	OPTION	Char	8		Not defined
SECATTR	VALUE	Float			Not defined
SECATTR	DESCRP	Text	6		Not defined
SECATTR	DATE	Char	8		Not defined
NETNODE1	LABEL	Char	30	NODE	Node Code
NETNODE1	DESCRP	Text	60	NODE	Node Description
NETNODE2	NODEATTR	Char	1	NODE	Node Attribute Code
NETNODE2	COMMENT	Text	60	NODE	Node Comment
NETNODE2	OSGRE	Integer			Not defined
NETNODE2	OSGRN	Integer			Not defined

Note 1: Sections are no longer assigned to an XSP referencing model.

Item Inventory HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SSEC	SURVDTE	Char	8	INVENTORY ITEM	Inventory Survey Date
SSEC	NETCODE	Char	6	INVENTORY ITEM	Not defined
SSEC	SECTNO	Integer		INVENTORY ITEM	Section Surrogate
SSEC	SECTLAB	Char	30	SECTION	Section Label Code
SSEC	DIRECT	Char	1	*See Note 1*	
SSEC	MEASLEN	Float		*See Note 2*	
ITEM	OWNER	Char	6	INVENTORY ITEM	Not defined
ITEM	FEATURE	Char	5	INVENTORY ITEM	Feature Code
ITEM	SCHAIN	Float		INVENTORY ITEM	Inventory Start Chainage Number
ITEM	ECHAIN	Float		INVENTORY ITEM	Inventory End Chainage Number
ITEM	CROSSXP	Char	4	INVENTORY ITEM	Cross Section Position Code
ITEM	SEQNUM	Integer		INVENTORY ITEM	Inventory Sequence Num
ITEM	WIDTH1	Float		INVENTORY ITEM	Inventory Item Start Width Number
ITEM	WIDTH2	Float		INVENTORY ITEM	Inventory Item End Width Number
ITEM	FWHIER	Char	5	INVENTORY ITEM	Feature Hierarchy Code
ATTR	ATTRIB	Char	4	ITEM ATTRIBUTE	Feature Attribute Code
ATTR	OPTION	Char	5	ITEM ATTRIBUTE	Feature Attribute Option Code
ATTR	NUMVAL	Float		ITEM ATTRIBUTE	Value Number
ATTR	COMTEXT	Text	30	ITEM ATTRIBUTE	Not defined

Note 1: DIRECT is used to determine if the inventory item should be reversed on loading into UKPMS.
Note 2: MEASLEN is used to determine if the inventory item should be stretched or shrunk on loading into UKPMS.

Visual Condition Data HMDIF

The CVI HMDIF should contain post-converted data.

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SURVEY	TYPE	Char	5	SURVEY	Survey Type Code
SURVEY	VERSION	Integer		SURVEY	Not defined
SURVEY	NUMBER	Integer		SURVEY	Survey Number
SURVEY	NAME	Text	40	SURVEY	Survey Name Text
SURVEY	SUBSECT	Char	5	SURVEY	Sub Section Length Code
SURVEY	CWXSPUSED	Char	1	SURVEY	Not defined *(See Note 1)*
SURVEY	OFFCWXSPUSED	Char	1	SURVEY	Not defined *(See Note 1)*
SECTION	NETWORK	Char	6	SECTION WITHIN SURVEY	Not defined
SECTION	NUMBER	Integer		*See Note 2*	
SECTION	LABEL	Char	30	*See Note 2*	
SECTION	NORMDIR	Char	1	*See Note 3*	
SECTION	SURVDIR	Char	1	SECTION WITHIN SURVEY	Survey Direction Indicator
SECTION	MASTER	Char	1	*See Note 4*	
SECTION	LENGTH	Float		SECTION WITHIN SURVEY	Measured Length Number
SECTION	COMMENT	Text	80	SECTION WITHIN SURVEY	Not defined
SECTION	SDATE	Char	8	SECTION WITHIN SURVEY	Survey Section Start Date
SECTION	EDATE	Char	8	SECTION WITHIN SURVEY	Survey Section End Date
SECTION	STIME	Char	5	SECTION WITHIN SURVEY	Survey Section Start Time
SECTION	ETIME	Char	5	SECTION WITHIN SURVEY	Survey Section End Time
SECTION	INSP	Char	5	SECTION WITHIN SURVEY	Survey Inspector Initials Text
OBSERV	NUMBER	Integer		OBSERVATION	Observation Number
OBSERV	DEFECT	Char	4	OBSERVATION	Defect Type Code
OBSERV	VERSION	Integer		OBSERVATION	Not defined
OBSERV	XSECT	Char	4	OBSERVATION	Cross Section Position Code
OBSERV	SCHAIN	Float		OBSERVATION	Observation Start Chainage Number
OBSERV	ECHAIN	Float		OBSERVATION	Observation End Chainage Number
OBVAL	PARM	Integer		OBSERVATION VALUE	Parameter Number
OBVAL	OPTION	Integer		OBSERVATION VALUE	Option Number
OBVAL	VALUE	Integer		OBSERVATION VALUE	Observation Parameter Value Number
OBVAL	PERCENT	Char	1	OBSERVATION VALUE	Observation Value Parameter Value or Percent Indicator *(See Note 5)*
OBNOTE	NOTE	Char	6		Not defined
OBNOTE	COMMENT	Text	80		Not defined

Note 1: Surveys are no longer assigned to an XSP referencing model
Note 2: The Section Label or Section Number are used to derive the Section Surrogate to populate the Section within Survey Table on loading of the HMDIF.
Note 3: The Section Normdir is used to validate the Survey against the Normal Survey Direction Indicator (in the Section Table) on loading of the HMDIF.
Note 4: The Section Master is used to merge master and partial surveys on loading of the HMDIF.
Note 5: PERCENT may be "P" indicating that the VALUE is a percentage, or "V" indicating that the VALUE is a numeric value, or Null, indicating that an OPTION is specified but no VALUE.
Note 6: At least one observation should be recorded for each feature and XSP surveyed within a section. This observation may be 'Not Defective'.

Machine Collected Rutting Data HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SURVEY	TYPE	Char	5	SURVEY	Survey Type Code
SURVEY	VERSION	Integer		SURVEY	Not defined
SURVEY	NUMBER	Integer		SURVEY	Survey Number
SURVEY	NAME	Text	40	SURVEY	Survey Name Text
SURVEY	SUBSECT	Char	5	SURVEY	Sub Section Length Code
SURVEY	CWXSPUSED	Char	1	SURVEY	Not defined *(See Note 1)*
SURVEY	OFFCWXSPUSED	Char	1	SURVEY	Not defined *(See Note 1)*
SECTION	NETWORK	Char	6	SECTION WITHIN SURVEY	Not defined
SECTION	NUMBER	Integer		*See Note 2*	
SECTION	LABEL	Char	30	*See Note 2*	
SECTION	NORMDIR	Char	1	SECTION WITHIN SURVEY	Not defined
SECTION	SURVDIR	Char	1	SECTION WITHIN SURVEY	Survey Direction Indicator
SECTION	MASTER	Char	1	SECTION WITHIN SURVEY	Not defined
SECTION	LENGTH	Float		SECTION WITHIN SURVEY	Measured Length Number
SECTION	COMMENT	Text	80	SECTION WITHIN SURVEY	Not defined
SECTION	SDATE	Char	8	SECTION WITHIN SURVEY	Survey Section Start Date
SECTION	EDATE	Char	8	SECTION WITHIN SURVEY	Survey Section End Date
SECTION	STIME	Char	5	SECTION WITHIN SURVEY	Survey Section Start Time
SECTION	ETIME	Char	5	SECTION WITHIN SURVEY	Survey Section End Time
SECTION	INSP	Char	5	SECTION WITHIN SURVEY	Survey Inspector Initials Text
OBSERV	NUMBER	Integer		OBSERVATION	Observation Number
OBSERV	DEFECT	Char	4	OBSERVATION	Defect Type Code
OBSERV	VERSION	Integer		OBSERVATION	Not defined
OBSERV	XSECT	Char	4	OBSERVATION	Cross Section Position Code
OBSERV	SCHAIN	Float		OBSERVATION	Observation Start Chainage Number
OBSERV	ECHAIN	Float		OBSERVATION	Observation End Chainage Number
OBVAL	PARM	Integer		OBSERVATION VALUE	Parameter Number
OBVAL	OPTION	Integer		OBSERVATION VALUE	Option Number
OBVAL	VALUE	Integer		OBSERVATION VALUE	Observation Parameter Value Number
OBVAL	PERCENT	Char	1	OBSERVATION VALUE	Observation Value Parameter Value or Percent Indicator *(See Note 3)*
OBNOTE	NOTE	Char	6		Not defined
OBNOTE	COMMENT	Text	80		Not defined

Note 1: Surveys are no longer assigned to an XSP referencing model
Note 2: The Section Label or Section Number are used to derive the Section Surrogate to populate the Section within Survey Table on loading of the HMDIF.
Note 3: PERCENT may be "P" indicating that the VALUE is a percentage, or "V" indicating that the VALUE is a numeric value, or Null, indicating that an OPTION is specified but no VALUE.

Deflectograph Data HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SURVEY	OWNER	Char	6	SURVEY	Not defined
SURVEY	TYPE	Char	5	SURVEY	Survey Type Code
SURVEY	VERSION	Integer		SURVEY	Not defined
SURVEY	NUMBER	Integer		SURVEY	Survey Number
SURVEY	SUBSECT	Char	5	SURVEY	Sub Section Length Code
SURVEY	MACHINE	Char	5	SURVEY	Machine Code
SURVEY	PREPROC	Char	6	SURVEY	Pre Processor Code
SURVEY	REQLIFE	Integer		SURVEY	Required Life Number
SURVEY	WTRACK	Char	1	SURVEY	Wheeltrack Code *(See Note 1)*
SURVEY	XSPUSED	Char	1	SURVEY	Not defined *(See Note 2)*
SECTION	NETWORK	Char	6	SECTION WITHIN SURVEY	Not defined
SECTION	LABEL	Char	30	*See Note 3*	
SECTION	SNODE	Char	30	*See Note 3*	
SECTION	LENGTH	Float		SECTION WITHIN SURVEY	Measured Length Number
SECTION	SDATE	Char	8	SECTION WITHIN SURVEY	Survey Section Start Date
SECTION	EDATE	Char	8	SECTION WITHIN SURVEY	Survey Section End Date
SECTION	STIME	Char	5	SECTION WITHIN SURVEY	Survey Section Start Time
SECTION	ETIME	Char	5	SECTION WITHIN SURVEY	Survey Section End Time
OBSERV	DEFECT	Char	4	OBSERVATION	Defect Type Code
OBSERV	VERSION	Integer		OBSERVATION	Not defined
OBSERV	XSECT	Char	4	OBSERVATION	Cross Section Position Code
OBSERV	SCHAIN	Float		OBSERVATION	Observation Start Chainage Number
OBSERV	ECHAIN	Float		OBSERVATION	Observation End Chainage Number
OBVAL	PARM	Integer		OBSERVATION VALUE	Parameter Number
OBVAL	OPTION	Integer		OBSERVATION VALUE	Option Number
OBVAL	VALUE	Integer		OBSERVATION VALUE	Observation Parameter Value Number
OBVAL	PERCENT	Char	1	OBSERVATION VALUE	Observation Value Parameter Value or Percent Indicator *(See Note 4)*

Note 1: WTRACK test data has been supplied as WHEELTRACK_CODE = "C" (Combined).
Note 2: Surveys are no longer assigned to an XSP referencing model
Note 3: The Section Label and Start Node are used to derive the Section Surrogate and the Survey Direction Indicator to populate the Section within Survey Table on loading of the HMDIF.
Note 4: PERCENT may be "P" indicating that the VALUE is a percentage, or "V" indicating that the VALUE is a numeric value, or Null, indicating that an OPTION is specified but no VALUE.

HRM Data HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SURVEY	OWNER	Char	6	SURVEY	Not defined
SURVEY	TYPE	Char	5	SURVEY	Survey Type Code
SURVEY	VERSION	Integer		SURVEY	Not defined
SURVEY	NUMBER	Integer		SURVEY	Survey Number
SURVEY	COMPARE1	Integer		SURVEY	Not defined
SURVEY	COMPARE2	Integer		SURVEY	Not defined
SURVEY	SUBSECT	Char	5	SURVEY	Sub Section Length Code
SURVEY	MACHINE	Char	5	SURVEY	Machine Code
SURVEY	PREPROC	Char	6	SURVEY	Pre Processor Code
SURVEY	XSPUSED	Char	1	SURVEY	Not defined *(See Note 1)*
SECTION	NETWORK	Char	6	SECTION WITHIN SURVEY	Not defined
SECTION	LABEL	Char	30	*See Note 2*	
SECTION	SNODE	Char	30	*See Note 2*	
SECTION	LENGTH	Float		SECTION WITHIN SURVEY	Measured Length Number
SECTION	SDATE	Char	8	SECTION WITHIN SURVEY	Survey Section Start Date
SECTION	EDATE	Char	8	SECTION WITHIN SURVEY	Survey Section End Date
SECTION	STIME	Char	5	SECTION WITHIN SURVEY	Survey Section Start Time
SECTION	ETIME	Char	5	SECTION WITHIN SURVEY	Survey Section End Time
OBSERV	DEFECT	Char	4	OBSERVATION	Defect Type Code
OBSERV	VERSION	Integer		OBSERVATION	Not defined
OBSERV	XSECT	Char	4	OBSERVATION	Cross Section Position Code
OBSERV	SCHAIN	Float		OBSERVATION	Observation Start Chainage Number
OBSERV	ECHAIN	Float		OBSERVATION	Observation End Chainage Number
OBVAL	PARM	Integer		OBSERVATION VALUE	Parameter Number
OBVAL	OPTION	Integer		OBSERVATION VALUE	Option Number
OBVAL	VALUE	Integer		OBSERVATION VALUE	Observation Parameter Value Number
OBVAL	PERCENT	Char	1	OBSERVATION VALUE	Observation Value Parameter Value or Percent Indicator *(See Note 3)*

Note 1: Surveys are no longer assigned to an XSP referencing model
Note 2: The Section Label and Start Node are used to derive the Section Surrogate and the Survey Direction Indicator to populate the Section within Survey Table on loading of the HMDIF.
Note 3: PERCENT may be "P" indicating that the VALUE is a percentage, or "V" indicating that the VALUE is a numeric value, or Null, indicating that an OPTION is specified but no VALUE.

SCRIM Data HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SURVEY	OWNER	Char	6	SURVEY	Not defined
SURVEY	TYPE	Char	5	SURVEY	Survey Type Code
SURVEY	VERSION	Integer		SURVEY	Not defined
SURVEY	NUMBER	Integer		SURVEY	Survey Number
SURVEY	SUBSECT	Char	5	SURVEY	Sub Section Length Code
SURVEY	MACHINE	Char	5	SURVEY	Machine Code
SURVEY	PREPROC	Char	6	SURVEY	Pre Processor Code
SURVEY	SVC	Integer		SURVEY	Survey Category SCRIM Number *(See Note 1)*
SURVEY	XSPUSED	Char	1	SURVEY	Not defined *(See Note 2)*
SECTION	NETWORK	Char	6	SECTION WITHIN SURVEY	Not defined
SECTION	LABEL	Char	30	*See Note 3*	
SECTION	SNODE	Char	30	*See Note 3*	
SECTION	LENGTH	Float		SECTION WITHIN SURVEY	Measured Length Number
SECTION	SDATE	Char	8	SECTION WITHIN SURVEY	Survey Section Start Date
SECTION	EDATE	Char	8	SECTION WITHIN SURVEY	Survey Section End Date
SECTION	STIME	Char	5	SECTION WITHIN SURVEY	Survey Section Start Time
SECTION	ETIME	Char	5	SECTION WITHIN SURVEY	Survey Section End Time
THRESHLD	FTXSECT	Char	4	FUNCTIONAL THRESHOLD	Cross Section Position Code
THRESHLD	FTSCHAIN	Integer		FUNCTIONAL THRESHOLD	FT Start Chainage Number
THRESHLD	FTECHAIN	Integer		FUNCTIONAL THRESHOLD	FT End Chainage Number
THRESHLD	FTSDATE	Date		FUNCTIONAL THRESHOLD	Not defined
THRESHLD	FTNUM	Float		FUNCTIONAL THRESHOLD	Functional Threshold Number
THRESHLD	PIFIND	Char	1	*See Note 4*	
THRESHLD	SCODE	Char	5	FUNCTIONAL THRESHOLD	Site Category Code
OBSERV	DEFECT	Char	4	OBSERVATION	Defect Type Code
OBSERV	VERSION	Integer		OBSERVATION	Defect Version Num
OBSERV	XSECT	Char	4	OBSERVATION	Cross Section Position Code
OBSERV	SCHAIN	Float		OBSERVATION	Observation Start Chainage Number
OBSERV	ECHAIN	Float		OBSERVATION	Observation End Chainage Number
OBVAL	PARM	Integer		OBSERVATION VALUE	Parameter Number
OBVAL	OPTION	Integer		OBSERVATION VALUE	Option Number
OBVAL	VALUE	Integer		OBSERVATION VALUE	Observation Parameter Value Number
OBVAL	PERCENT	Char	1	OBSERVATION VALUE	Observation Value Parameter Value or Percent Indicator *(See Note 5)*

Note 1: The values for the SVC data item are defined in the Stationary Office document 'Design Manual for Roads and Bridges (Volume 7), Document Ref. HD 28/04'. All SCRIM survey data supplied by the consultant will be SVC=1 (MSSC values).
Note 2: Surveys are no longer assigned to an XSP referencing model
Note 3: The Section Label and Start Node are used to derive the Section Surrogate and the Survey Direction Indicator to populate the Section within Survey Table on loading of the HMDIF.
Note 4: The value of the PIFIND data item could be either M (Mandatory) or D (Desirable). In the case of the test data, all SCRIM thresholds have been defined as Desirable.
Note 5: PERCENT may be "P" indicating that the VALUE is a percentage, or "V" indicating that the VALUE is a numeric value, or Null, indicating that an OPTION is specified but no VALUE.

GripTester Data HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SURVEY	TYPE	Char	5	SURVEY	Survey Type Code
SURVEY	VERSION	Integer		SURVEY	Not defined
SURVEY	NUMBER	Integer		SURVEY	Survey Number
SURVEY	SUBSECT	Char	5	SURVEY	Sub Section Length Code
SURVEY	MACHINE	Char	5	SURVEY	Machine Code
SURVEY	XSPUSED	Char	1	SURVEY	Not defined *(See Note 1)*
SECTION	LABEL	Char	30	*See Note 2*	
SECTION	SNODE	Char	30	*See Note 2*	
SECTION	LENGTH	Float		SECTION WITHIN SURVEY	Measured Length Number
SECTION	SDATE	Char	8	SECTION WITHIN SURVEY	Survey Section Start Date
SECTION	EDATE	Char	8	SECTION WITHIN SURVEY	Survey Section End Date
SECTION	STIME	Char	5	SECTION WITHIN SURVEY	Survey Section Start Time
SECTION	ETIME	Char	5	SECTION WITHIN SURVEY	Survey Section End Time
THRESHLD	FTXSECT	Char	4	FUNCTIONAL THRESHOLD	Cross Section Position Code
THRESHLD	FTSCHAIN	Integer		FUNCTIONAL THRESHOLD	FT Start Chainage Number
THRESHLD	FTECHAIN	Integer		FUNCTIONAL THRESHOLD	FT End Chainage Number
THRESHLD	FTSDATE	Date		FUNCTIONAL THRESHOLD	Not defined
THRESHLD	FTNUM	Float		FUNCTIONAL THRESHOLD	Functional Threshold Number
THRESHLD	PIFIND	Char	1	*See Note 3*	
THRESHLD	SCODE	Char	5	FUNCTIONAL THRESHOLD	Site Category Code
OBSERV	DEFECT	Char	4	OBSERVATION	Defect Type Code
OBSERV	XSECT	Char	4	OBSERVATION	Cross Section Position Code
OBSERV	SCHAIN	Float		OBSERVATION	Observation Start Chainage Number
OBSERV	ECHAIN	Float		OBSERVATION	Observation End Chainage Number
OBVAL	PARM	Integer		OBSERVATION VALUE	Parameter Number
OBVAL	OPTION	Integer		OBSERVATION VALUE	Option Number
OBVAL	VALUE	Integer		OBSERVATION VALUE	Observation Parameter Value Number
OBVAL	PERCENT	Char	1	OBSERVATION VALUE	Observation Value Parameter Value or Percent Indicator *(See Note 4)*

Note 1: Surveys are no longer assigned to an XSP referencing model
Note 2: The Section Label and Start Node are used to derive the Section Surrogate and the Survey Direction Indicator to populate the Section within Survey Table on loading of the HMDIF.
Note 3: The value of the PIFIND data item could be either M (Mandatory) or D (Desirable). In the case of the test data, all GripTester thresholds have been defined as Desirable.
Note 4: PERCENT may be "P" indicating that the VALUE is a percentage, or "V" indicating that the VALUE is a numeric value, or Null, indicating that an OPTION is specified but no VALUE.

Works Record HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SSEC	NETCODE	Char	6	WORKS RECORD	Not defined
SSEC	SECTLAB	Integer		*See Note 1*	
SSEC	SDATE	Char	8	WORKS RECORD	Not defined
WORKS RECORD	FEATURE	Char	5	WORKS RECORD	Feature Code
WORKS RECORD	START CHAINAGE	Float		WORKS RECORD	Start Chainage Number
WORKS RECORD	END CHAINAGE	Float		WORKS RECORD	End Chainage Number
WORKS RECORD	CROSS SECTION POSITION	Char	4	WORKS RECORD	Cross Section Position Code
WORKS RECORD	DATE	Integer		WORKS RECORD	Works Date
WORKS RECORD	DESCRIPTION	Char	80	WORKS RECORD	Description
WORKS RECORD	GENERIC TREATMENT	Char	8	WORKS RECORD	Generic Treatment Code
WORKS RECORD	TREATMENT TYPE	Char	8	WORKS RECORD	Treatment Type Code
WORKS RECORD	TREATMENT	Char	8	WORKS RECORD	Treatment Code
WORKS RECORD	DESIGN LIFE	Integer		WORKS RECORD	Design Life
WORKS RECORD	WORKS COST	Integer		WORKS RECORD	Works Cost
WORKS RECORD	CONTRACTOR	Char	80	WORKS RECORD	Contractor
WORKS RECORD LAYER	LAYER NUMBER	Integer		WORKS RECORD LAYER	Layer Number
WORKS RECORD LAYER	LAYER THICKNESS	Integer		WORKS RECORD LAYER	Layer Thickness
WORKS RECORD LAYER	LAYER TYPE	Char	80	WORKS RECORD LAYER	LayerType
WORKS RECORD LAYER	LAYER MATERIAL	Char	80	WORKS RECORD LAYER	Layer Material
WORKS RECORD LAYER	CONTRACTOR	Char	80	WORKS RECORD LAYER	Contractor

Note 1: The Section Label is used to derive the Section Surrogate to populate the Works Record Table on loading of the HMDIF.

Pavement Sample HMDIF

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE	UKPMS DATA MODEL NAME	
				Table Name	Field Name
SSEC	NETCODE	Char	6	PAVEMENT SAMPLE	Not defined
SSEC	SECTLAB	Integer		*See Note 1*	
SSEC	SDATE	Char	8	PAVEMENT SAMPLE	Not defined
PAVEMENT SAMPLE	FEATURE	Char	5	PAVEMENT SAMPLE	Feature Code
PAVEMENT SAMPLE	CHAINAGE	Float		PAVEMENT SAMPLE	Chainage
PAVEMENT SAMPLE	CROSS SECTION POSITION	Char	4	PAVEMENT SAMPLE	Cross Section Position Code
PAVEMENT SAMPLE	SAMPLE DATE	Integer		PAVEMENT SAMPLE	Sample Date
PAVEMENT SAMPLE	DESCRIPTION	Char	80	PAVEMENT SAMPLE	Description
PAVEMENT SAMPLE	DISTANCE FROM KERB	Integer		PAVEMENT SAMPLE	Distance From Edge
PAVEMENT SAMPLE LAYER	LAYER NUMBER	Integer		PAVEMENT SAMPLE LAYER	Layer Number
PAVEMENT SAMPLE LAYER	LAYER THICKNESS	Integer		PAVEMENT SAMPLE LAYER	Layer Thickness
PAVEMENT SAMPLE LAYER	LAYER TYPE	Char	80	PAVEMENT SAMPLE LAYER	LayerType
PAVEMENT SAMPLE LAYER	LAYER MATERIAL	Char	80	PAVEMENT SAMPLE LAYER	Layer Material
PAVEMENT SAMPLE LAYER	CONDITION	Char	80	PAVEMENT SAMPLE LAYER	Layer Condition

Note 1: The Section Label is used to derive the Section Surrogate to populate the Pavement Sample Table on loading of the HMDIF.

HMDIF Examples

Example Network Referencing HMDIF

The version number is now 002 as the structure of the file has been changed.

```
HMSTART ukPMS 002 " " ; , \
TSTART;
NETWORK\CODE;
NETSECT1\LABEL,LENGTH,SDATE,EDATE;
NETSECT2\DESCRP,RDNUMB;
NETSECT3\RDNAME,AREA,TOWN;
NETSECT4\DISTRICT,AGENT,DTPCLASS,HIER,SPEED,OWNER,URBANRURAL,DEPOT,NOMINATED,RDTYPE,OFFCWXSP,CWXSP,FUNDO
RG;
NETSECT5\EOCOMMENT;
NETSECT6\RESTRICTWORK,STEPLEVEL,FWAYTIED,FWAYTRAF,FWAYOPEN,DRNCODE,DIVERSION,NORMDIR,TRAFFIC,FWAYHIER;
SECNODE\LABEL,CHAIN,TYPE;
SECATTR\CODE,OPTION,VALUE,DESCRP,DATE;
NETNODE1\LABEL,DESCRP;
NETNODE2\NODEATTR,COMMENT,OSGRE,OSGRN;
TEND\13;
DSTART;
NETWORK\UKPMS;
NETNODE1\1005263,"R\a Exit A22";
NETNODE2\N,"",,0;
NETNODE1\101799L,"Laser Board";
NETNODE2\N,"",,0;
NETNODE1\101800L,"Laser Board";
NETNODE2\N,"",,0;
.
.
.
NETSECT1\UKPMSA22/213,140,280896,;
NETSECT2\"R\a Exit A22 to Laser Board",A22;
NETSECT3\"Godstone Bypass","Tandridge","Godstone";
NETSECT4\10,,3,2,70,LA,,,N,,,,LA;
NETSECT6\,,N,1,3,P,,F,,1a;
SECNODE\1005263,0,S;
SECNODE\101799L,140,E;
NETSECT1\UKPMSA22/214,1350,280896,;
NETSECT2\"Laser Board to Laser Board",A22;
NETSECT3\"Godstone Bypass","Tandridge","Godstone";
NETSECT4\10,,3,2,70,LA,,,N,,,,LA;
NETSECT6\,,N,,,,,F,,2;
SECNODE\101799L,0,S;
SECNODE\101800L,1350,E;
.
.
DEND\820;
HMEND\835;
```

Example Item Inventory HMDIF

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SSEC\SURVDTE,NETCODE,SECTNO,SECTLAB,DIRECT,MEASLEN;
ITEM\OWNER,FEATURE,SCHAIN,ECHAIN,CROSSXP,SEQNUM,WIDTH1,WIDTH2,FWHIER;
ATTR\ATTRIB,OPTION,NUMVAL,COMTEXT;
TEND\5;
DSTART;
SSEC\101090,UKPMS,,UKPMSB364/2618,N, 400 ;
ITEM\LA,CW,0,50,C,1,4.9,4.9,;
ATTR\SUTY,RASH,,"";
ITEM\LA,VG,0,50,L1,1,0.5,0.5,;
ITEM\LA,CW,50,100,C,1,4.8,4.8,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,20,100,R1,1,0.5,0.5,;
ITEM\LA,VG,100,200,R1,1,0.5,0.5,;
ITEM\LA,CW,100,200,C,1,4.4,4.4,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,50,200,L1,1,0.5,0.5,;
ITEM\LA,CW,200,300,C,1,4.6,4.6,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,200,300,L1,1,0.5,0.5,;
ITEM\LA,VG,200,300,R1,1,0.5,0.5,;
ITEM\LA,VG,300,334,R1,1,0.5,0.5,;
ITEM\LA,CW,300,350,C,1,4.4,4.4,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,334,370,R1,1,0.5,0.5,;
ITEM\LA,CW,350,370,C,1,4.8,4.8,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,370,385,R1,1,0.5,0.5,;
ITEM\LA,CW,370,385,C,1,5.2,5.2,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,300,400,L1,1,0.5,0.5,;
ITEM\LA,CW,385,400,C,1,7.2,7.2,;
ATTR\SUTY, RASH,,"";
ITEM\LA,VG,385,400,R1,1,0.5,0.5,;
DEND\30;
HMEND\37;
```

Example Condition Data HMDIF (Coarse Visual Inspection)

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\TYPE,VERSION,NUMBER,NAME,SUBSECT,CWXSPUSED,OFFCWXSPUSED;
SECTION\NETWORK,NUMBER,LABEL,NORMDIR,SURVDIR,MASTER,LENGTH,COMMENT,SDATE,EDATE,STIME,ETIME,INSP;
OBSERV\NUMBER,DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
OBNOTE\NOTE,COMMENT;
TEND\7;
DSTART;
SURVEY\CVI,235,5,"Sample CVI",,,;
SECTION\UKPMS,,UKPMSA244/1205,F,F,M,321,"",220996,220996,,,"SJB";
OBSERV\192,BCKJ,235,C,0,220;
OBVAL\1,3,,;
OBSERV\193,BCKJ,235,C,220,321;
OBVAL\1,2,,;
OBSERV\194,FBMD,235,L,280,321;
OBVAL\1,2,,;
OBSERV\195,FFND,235,L,0,100;
OBVAL\1,3,,;
OBSERV\196,FBMD,235,R,0,321;
OBVAL\1,1,,;
DEND\14;
HMEND\23;
```

Example Condition Data HMDIF (Detailed Visual Inspection)

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\TYPE,VERSION,NUMBER,NAME,SUBSECT,CWXSPUSED,OFFCWXSPUSED;
SECTION\NETWORK,NUMBER,LABEL,NORMDIR,SURVDIR,MASTER,LENGTH,COMMENT,SDATE,EDATE,STIME,ETIME,INSP;
OBSERV\NUMBER,DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
OBNOTE\NOTE,COMMENT;
TEND\7;
DSTART;
SURVEY\DVI,235,7,"1996 DVI Survey No 1",20M,,;
SECTION\UKPMS,,UKPMSA244/4917,F,F,M,20,"",251096,251096,,,"PJM";
OBSERV\9150,YKTS,235,L1,0,20;
OBVAL\15,1,,;
OBSERV\9151,AUTS,235,LE,0,20;
OBVAL\15,1,,;
OBSERV\9152,VBTS,235,L1,0,20;
OBVAL\15,1,,;
OBSERV\9153,BCHJ,235,CL1,0,20;
OBVAL\1,,12,V;
OBSERV\9154,BCHJ,235,CL2,0,20;
OBVAL\1,,8,V;
OBSERV\9155,BCHJ,235,CL3,0,20;
OBVAL\1,,25,V;
OBSERV\9156,BFAN,235,CL2,0,20;
OBVAL\1,,25.5,V;
OBSERV\9157,BFAN,235,CL1,0,20;
OBVAL\1,,25.5,V;
OBSERV\9158,BFAN,235,CL3,0,20;
OBVAL\1,,24,V;
OBSERV\9159,BRUT,235,CL1,0,20;
OBVAL\6,,10,V;
OBSERV\9160,BRUT,235,CL2,0,20;
OBVAL\6,,10,V;
OBSERV\9161,BRUT,235,CL3,0,20;
OBVAL\6,,12,V;
OBSERV\9162,FCCJ,235,L1,0,20;
OBVAL\1,,7.5,V;
OBSERV\9163,FFDF,235,L1,0,20;
OBVAL\1,,1.5,V;
DEND/32;
HMEND/41;
```

Example Machine Collected Rutting Data HMDIF (CRUT)

Machine measured rutting should be collected using the 'unknown' pavement type.

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\TYPE,VERSION,NUMBER,NAME,SUBSECT,CWXSPUSED,OFFCWXSPUSED;
SECTION\NETWORK,NUMBER,LABEL,NORMDIR,SURVDIR,MASTER,LENGTH,COMMENT,SDATE,EDATE,STIME,ETIME,INSP;
OBSERV\NUMBER,DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
OBNOTE\NOTE,COMMENT;
TEND\7;
DSTART;
SURVEY\CRUT,,5,"Sample Rutting Survey",10M,,;
SECTION\UKPMS,,Sample/001,F,F,M,48,"",010402,010402,,,"TRL";
OBSERV\1,LCRT,,CL1,0,10;
OBVAL\20,,60,V;
OBSERV\2, LCRT,,CL1,10,20;
OBVAL\20,,7,V;
OBSERV\3, LCRT,,CL1,20,30;
OBVAL\20,,15,V;
OBSERV\4, LCRT,,CL1,30,40;
OBVAL\20,,38,V;
OBSERV\5, LCRT,,CL1,40,48;
OBVAL\20,,13,V;
DEND\14;
HMEND\23;
```

Example Machine Collected Rutting Data HMDIF (DRUT)

Machine measured rutting should be collected using the 'unknown' pavement type.

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\TYPE,VERSION,NUMBER,NAME,SUBSECT,CWXSPUSED,OFFCWXSPUSED;
SECTION\NETWORK,NUMBER,LABEL,NORMDIR,SURVDIR,MASTER,LENGTH,COMMENT,SDATE,EDATE,STIME,ETIME,INS
P;
OBSERV\NUMBER,DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
OBNOTE\NOTE,COMMENT;
TEND\7;
DSTART;
SURVEY\DRUT,,5,"Sample Rutting Survey",10M,,;
SECTION\UKPMS,,Sample/001,F,F,M,56,"",010402,010402,,,"TRL";
OBSERV\1,LDRT,,CL1,0,10;
OBVAL\13,,6,V;
OBSERV\2, LDRT,,CL1,10,20;
OBVAL\13,,7,V;
OBSERV\3, LDRT,,CL1,20,30;
OBVAL\13,,15,V;
OBSERV\4, LDRT,,CL1,30,40;
OBVAL\13,,8,V;
OBSERV\5, LDRT,,CL1,40,56;
OBVAL\13,,13,V;
DEND\14;
HMEND\23;
```

Example Deflectograph HMDIF

```
HMSTART ukPMS 001 "" ; , \
TSTART;
SURVEY\OWNER,TYPE,VERSION,NUMBER,SUBSECT,MACHINE,PREPROC,REQLIFE,WTRACK,XSPUSED;
SECTION\NETWORK,LABEL,SNODE,LENGTH,SDATE,EDATE,STIME,ETIME;
OBSERV\DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
TEND\6;
DSTART;
SURVEY\LA,DEF,1,10,10M,CBCD1,PAN,20,C,,;
SECTION\UKPMS,UKPMSA244/4916,050579L,,35,191093,191093,,,;
OBSERV\LIFE,1,CR1,0,10;
OBVAL\13,,,7,V;
OBSERV\LIFE,1,CR1,10,20;
OBVAL\13,,,9,V;
OBSERV\LIFE,1,CR1,20,30;
OBVAL\13,,,26,V;
DEND\10;
HMEND\18;
```

Example HRM HMDIF

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\OWNER,TYPE,VERSION,NUMBER,COMPARE1,COMPARE2,SUBSECT,MACHINE,PREPROC,XSPUSED;
SECTION\NETWORK,LABEL,SNODE,LENGTH,SDATE,EDATE,STIME,ETIME;
OBSERV\DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
TEND\6;
DSTART;
SURVEY\LA,HRM,1,11,,,10M,HRM01,HRM,,;
SECTION\UKPMS,UKPMSA244/1206,020296N,60,040993,040993,,,;
OBSERV\LRUT,1,CR1,0,10;
OBVAL\13,,,9.77,V;
OBSERV\LRUT,1,CL1,0,10;
OBVAL\13,,,3.17,V;
OBSERV\LRUT,1,CR1,10,20;
OBVAL\13,,,5.76,V;
OBSERV\LRUT,1,CL1,10,20;
OBVAL\13,,,4.12,V;
OBSERV\LRUT,1,CR1,20,30;
OBVAL\13,,,7.75,V;
OBSERV\LRUT,1,CL1,20,30;
OBVAL\13,,,8.18,V;
OBSERV\LRUT,1,CR1,30,40;
OBVAL\13,,,3.73,V;
OBSERV\LRUT,1,CL1,30,40;
OBVAL\13,,,9.18,V;
OBSERV\LRUT,1,CR1,40,50;
OBVAL\13,,,4.74,V;
OBSERV\LRUT,1,CL1,40,50;
OBVAL\13,,,3.87,V;
DEND\24;
HMEND\32;
```

Example SCRIM HMDIF

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\OWNER,TYPE,VERSION,NUMBER,SUBSECT,MACHINE,PREPROC,SVC,XSPUSED;
SECTION\NETWORK,LABEL,SNODE,LENGTH,SDATE,EDATE,STIME,ETIME;
THRESHLD\FTXSECT,FTSCHAIN,FTECHAIN,FTSDATE,FTNUM,PIFIND,SCODE;
OBSERV\DEFECT,VERSION,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
TEND\7;
DSTART;
SURVEY\LA,SCRIM,1,14,10M,D437W,SKID,1,;
SECTION\UKPMS,UKPMSA244/1213,050182S,60,210693,210693,,;
THRESHLD\CL1,0,50,210693,0.6,D,H1;
THRESHLD\CL1,50,60,210693,0.35,D,C;
THRESHLD\CR1,0,60,210693,0.35,D,C;
OBSERV\SFC,1,CR1,0,10;
OBVAL\12,,0.44,V;
OBSERV\SFC,1,CL1,0,10;
OBVAL\12,,0.49,V;
OBSERV\SFC,1,CL1,10,20;
OBVAL\12,,0.48,V;
OBSERV\SFC,1,CR1,10,20;
OBVAL\12,,0.46,V;
OBSERV\SFC,1,CR1,20,30;
OBVAL\12,,0.48,V;
OBSERV\SFC,1,CL1,20,30;
OBVAL\12,,0.48,V;
OBSERV\SFC,1,CR1,30,40;
OBVAL\12,,0.47,V;
OBSERV\SFC,1,CL1,30,40;
OBVAL\12,,0.46,V;
OBSERV\SFC,1,CR1,40,50;
OBVAL\12,,0.45,V;
OBSERV\SFC,1,CL1,40,50;
OBVAL\12,,0.41,V;
OBSERV\SFC,1,CR1,50,60;
OBVAL\12,,0.45,V;
OBSERV\SFC,1,CL1,50,60;
OBVAL\12,,0.39,V;
DEND\31;
HMEND\40;
```

Example GripTester HMDIF

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SURVEY\ TYPE,VERSION,NUMBER,SUBSECT,MACHINE,XSPUSED;
SECTION\ LABEL,SNODE,LENGTH,SDATE,EDATE,STIME,ETIME;
THRESHLD\FTXSECT,FTSCHAIN,FTECHAIN,FTSDATE,FTNUM,PIFIND,SCODE;
OBSERV\DEFECT,XSECT,SCHAIN,ECHAIN;
OBVAL\PARM,OPTION,VALUE,PERCENT;
TEND\7;
DSTART;
SURVEY\GRIP,,12,10M,GT290,;
SECTION\A244/1213,050182S,100,211104,211104,,;
THRESHLD\CL1,0,50,,0.65,D,S1;
THRESHLD\CL1,50,60,,0.41,D,C;
THRESHLD\CL1,60,70,,0.59,D,G2;
THRESHLD\CL1,70,100,,0.53,D,Q;
OBSERV\GPN,CL1,0,10;
OBVAL\33,,0.43,V;
OBSERV\GPN,CL1,10,20;
OBVAL\33,,0.49,V;
OBSERV\GPN,CL1,20,30;
OBVAL\33,,0.49,V;
OBSERV\GPN,CL1,30,40;
OBVAL\33,,0.60,V;
OBSERV\GPN,CL1,40,50;
OBVAL\33,,0.61,V;
OBSERV\GPN,CL1,50,60;
OBVAL\33,,0.57,V;
OBSERV\GPN,CL1,60,70;
OBVAL\33,,0.56,V;
OBSERV\GPN,CL1,70,80;
OBVAL\33,,0.54,V;
OBSERV\GPN,CL1,90,100;
OBVAL\33,,0.53,V;
DEND\26;
HMEND\35;
```

Example Works Records HMDIF

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SSEC\NETCODE,SECTLAB,SDATE;
WORKS RECORD\FEATURE,START CHAINAGE,END CHAINAGE,CROSS SECTION POSITION,DATE,DESCRIPTION,GENERIC
TREATMENT,TREATMENT TYPE,TREATMENT,DESIGN LIFE,WORKS COST,CONTRACTOR;
WORKS RECORD LAYER\LAYER NUMBER,LAYER THICKNESS,LAYER TYPE,LAYER MATERIAL,CONTRACTOR;
TEND\5;
DSTART;
SSEC\UKPMS,UKPMSA244/1266,191090;
WORKS RECORD\CW,0,30,C,041094,"225m north of Green Lane R/A, Lane 1, N/S W/T","","","",,,"";
WORKS RECORD LAYER\1,5,"Surface Dressing","Hardstone","","";
WORKS RECORD LAYER\2,25,"Hot Rolled Asphalt Wearing Course","Hardstone","","";
WORKS RECORD LAYER\3,70,"Hot Rolled Asphalt Base Course","Gravel","";
WORKS RECORD LAYER\4,240,"Lean Concrete","Gravel","";
SSEC\UKPMS,UKPMSA309/1703,191090;
WORKS RECORD\CW,0,220,CL1,010190,"","","","",,,"";
WORKS RECORD LAYER\1,40,"Hot Rolled Asphalt Wearing Course","Hardstone","";
WORKS RECORD LAYER\2,55,"Dense Macadam Wearing Course","Limestone","";
WORKS RECORD LAYER\3,80,"Dense Macadam Base Course","Gravel","";
WORKS RECORD LAYER\4,80,"Dense Macadam Base Course","Gravel","";
WORKS RECORD LAYER\5,200,"Macadam Road Base","Gravel","";
WORKS RECORD\CW,220,227,CL1,010190,"","","","",,,"";
WORKS RECORD LAYER\1,45,"Hot Rolled Asphalt Wearing Course","Hardstone","";
WORKS RECORD LAYER\2,70,"Dense Macadam Wearing Course","Limestone","";
WORKS RECORD LAYER\3,65,"Dense Macadam Base Course","Gravel","";
WORKS RECORD LAYER\4,70,"Dense Macadam Base Course","Gravel","";
WORKS RECORD LAYER\5,200,"Macadam Road Base","Gravel","";
WORKS RECORD\CW,227,510,CL1,010190,"","","","",,,"";
WORKS RECORD LAYER\1,50,"Hot Rolled Asphalt Wearing Course","Hardstone","";
WORKS RECORD LAYER\2,50,"Hot Rolled Asphalt Wearing Course","Hardstone","";
WORKS RECORD LAYER\3,290,"Dense Macadam Base Course","Gravel","";
WORKS RECORD LAYER\4,200,"Dense Macadam Road Base","Limestone","";
DEND\26;
HMEND\34;
```

Example Pavement Sample HMDIF

```
HMSTART ukPMS 001 " " ; , \
TSTART;
SSEC\NETCODE,SECTLAB,SDATE;
PAVEMENT SAMPLE\FEATURE,CHAINAGE,CROSS SECTION POSITION,SAMPLE DATE,DESCRIPTION,DISTANCE FROM
KERB;
PAVEMENT SAMPLE LAYER\LAYER NUMBER,LAYER THICKNESS,LAYER TYPE,LAYER MATERIAL,CONDITION;
TEND\5;
DSTART;
SSEC\UKPMS,UKPMSA24/521,191090;
PAVEMENT SAMPLE\CW,500,C,010393,"Core Sample",;
PAVEMENT SAMPLE LAYER\1,40,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\2,75,"Hot Rolled Asphalt Base Course","Hardstone","";
PAVEMENT SAMPLE LAYER\3,105,"Dense Macadam Base Course","Limestone","";
PAVEMENT SAMPLE LAYER\4,70,"Dense Macadam Base Course","Limestone","";
PAVEMENT SAMPLE LAYER\5,200,"Dense Macadam Base Course","Limestone","";
PAVEMENT SAMPLE\CW,1000,C,010393,"Core Sample",;
PAVEMENT SAMPLE LAYER\1,40,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\2,85,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\3,85,"Dense Macadam Base Course","Limestone","";
PAVEMENT SAMPLE LAYER\4,70,"Dense Macadam Base Course","Limestone","";
PAVEMENT SAMPLE LAYER\5,200,"Dense Macadam Road Base","Limestone","";
SSEC\UKPMS,UKPMSA244/1208,191090;
PAVEMENT SAMPLE\CW,89,CL1,,"Core Sample",;
PAVEMENT SAMPLE LAYER\1,5,"Surface Dressing","Hardstone","";
PAVEMENT SAMPLE LAYER\2,25,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\3,30,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\4,100,"Dense Macadam Base Course","Slag","";
PAVEMENT SAMPLE LAYER\5,30,"Dense Macadam Base Course","Hardstone","";
PAVEMENT SAMPLE LAYER\6,200,"Dense Macadam Road Base","Limestone","";
SSEC\UKPMS,UKPMSA244/1231,191090;
PAVEMENT SAMPLE\CW,74,CR1,,"Core Sample",;
PAVEMENT SAMPLE LAYER\1,10,"Surface Dressing","Hardstone","";
PAVEMENT SAMPLE LAYER\2,40,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\3,55,"Dense Macadam Base Course","Limestone","";
PAVEMENT SAMPLE LAYER\4,200,"Dense Macadam Road Base","Gravel","";
PAVEMENT SAMPLE\CW,222,CL1,,"Core Sample",;
PAVEMENT SAMPLE LAYER\1,10,"Surface Dressing","Hardstone","";
PAVEMENT SAMPLE LAYER\2,40,"Hot Rolled Asphalt Wearing Course","Hardstone","";
PAVEMENT SAMPLE LAYER\3,35,"Dense Macadam Wearing Course","Gravel","";
PAVEMENT SAMPLE LAYER\4,200,"Dense Macadam Road Base","Gravel","";
PAVEMENT SAMPLE LAYER\5,115,"Dense Macadam Road Base","Gravel","";
DEND\35;
HMEND\42;
```

Appendix A: Radar Records

Introduction

This appendix provides a format for Radar Record data. This allows pavement construction data obtained from radar to be loaded into UKPMS. While it is not mandatory for UKPMS systems to load radar data, if they do so the following format must be used.

HMDIF File Contents

Record type SSEC is used to define the section. This section must be present in the database in the current network and must be effective on the survey date. If no start date is present, then the assumption is that the occurrence of the label at the load date applies.

Each SSEC record is followed by one or more RADAR RECORD records and each item record may be followed by zero, one or more RADAR RECORD LAYER records associated with the current RADAR RECORD. The layer number associated with the RADAR RECORD LAYER denotes the sequence from the uppermost layer at the time the survey was carried out.

HMDIF / UKPMS Data Dictionary

In order to map the interchange format mnemonics to the UKPMS attributes (or fields) a data dictionary is included here for reference. Field widths ('Record Size', specified in characters) are given for guidance.

RECORD IDENTIFIER	ATTRIBUTE MNEMONIC	RECORD TYPE	RECORD SIZE
SSEC	NETCODE	Char	6
SSEC	SECTLAB	Char	30
SSEC	SURVEY DATE	Char	8
RADAR RECORD	FEATURE	Char	5
RADAR RECORD	START CHAINAGE	Float	
RADAR RECORD	END CHAINAGE	Float	
RADAR RECORD	CROSS SECTION POSITION	Char	4
RADAR RECORD	REPORT DATE	Char	8
RADAR RECORD	DATA SUPPLIER	Char	80
RADAR RECORD LAYER	LAYER NUMBER	Integer	
RADAR RECORD LAYER	LAYER THICKNESS	Integer	
RADAR RECORD LAYER	LAYER DESCRIPTION	Char	80
RADAR RECORD LAYER	*USER DEFINED 1*		
RADAR RECORD LAYER	*USER DEFINED 2*		
RADAR RECORD LAYER	*USER DEFINED 3*		

The user defined fields may be set to attributes such as Interpretation Confidence and Pavement Condition.

Attribute Descriptions

Layer Descriptions

Typical lists of layer descriptions that can be obtained from radar surveys are as follows:

- Bituminous Material
- Lean Mix Concrete

- Pavement Quality Concrete
- Reinforced Pavement Quality Concrete
- Continuously Reinforced Concrete Pavement
- Setts
- Subbase
- Subgrade

Interpretation Confidence

The quality of construction data obtained from radar is primarily a function of the electrical properties of the pavement. For example in certain situations such as a salty wet concrete all of the radio energy could be absorbed during transmission through the concrete: this would result in no signals being reflected from the base of the concrete. These effects cannot be totally overcome, as they are a result of the physics of the situation. The radar hardware, analysis software and survey and analysis methodology used by different radar specialists has a secondary effect on the quality of the construction data.

In order to reflect the nature of the construction data obtained from radar the following confidence levels have been recommended to TRL and HA for inclusion in the Highways Design Manual as part of the Radar Working Group. The confidence levels act as labels to tell the engineer about the quality of the data rather than as proven statistical confidence limits. It does however give some idea of the confidence associated with the interpretation of the radar data.

Confidence Label	Description
90%	High resolution radar data[1] with good correlation to cores[4]
80%	High resolution radar data[1] with moderate correlation to cores[5]
70%	Moderate resolution radar data[2] with good correlation to cores[4]
60%	Moderate resolution radar data[2] with moderate correlation to cores[5]
50%	High resolution radar data[1] with no core calibration[6]
40%	Moderate resolution radar data[2] with no core calibration[6]
30%	Poor resolution radar data[3] with moderate correlation to cores[5]
20%	Poor resolution radar data[3] with no core calibration[6]

Notes:

[1] High resolution radar data implies that the various material boundaries forming the pavement are clearly resolved over at least 70% of the pavement

[2] Moderate resolution radar data implies that the various material boundaries forming the pavement are clearly resolved over 30 to 70% of the pavement

[3] Poor resolution radar data implies that the various material boundaries forming the pavement are clearly resolved over less than 30% of the pavement

[4] Good correlation implies that the cores from the reported section of pavement match the material type and depth identified in the radar data

[5] Moderate correlation implies that the cores from radar data with similar characteristics within the network correlate fairly closely to the radar data from the reported section

[6] No core calibration implies that no core data is available and the radar data shares no similar characteristics with any of the data gathered from else where within the network

It should be noted that the term Core in this context includes any exposure data such as trial pits.

This scale allows engineers to make informed decisions about whether the available construction data (radar and exposures) at any point is fit for his purposes (eg designing remedial work) or whether further investigation is required. If, for example the confidence label is 50% (High resolution radar data with no core calibration) then core data could be supplied to the radar test house to increase the confidence label to 80% or 90%.

Poor correlation between radar data and cores can arise due to a number of factors including:

- relocation errors between the two techniques
- the fact that cores are a point sample whereas radar represent the depth averaged over footprint of the radar antenna
- material loss from the core
- terminating the core short by incorrectly identifying an internal asphalt boundary, for example as the base of the asphalt

Pavement Condition

The pavement condition attribute is intended as a general field to contain various types of condition data obtained from radar including comments such as “voiding beneath Pavement Quality Concrete”.

HMDIF Example

This example file presents fictional data at 0.5m centres along 5m of carriageway in the first section followed by summary construction data over variable lengths in the second section.

```
HMSTART UKPMS 001 "";,\
TSTART;
SSEC\NETCODE,SECTLAB,SURVEY DATE;
RADARRECORD\FEATURE,START CHAINAGE,END CHAINAGE,CROSS SECTION POSITION,REPORT DATE,DATA SUPPLIER;
RADAR RECORD LAYER\LAYER NUMBER,LAYER THICKNESS,LAYER DESCRIPTION,INTERPRETATION
CONFIDENCE,CONDITION;
TEND\5;
DSTART;
SSEC\UKPM2,20302882/15,060900;
RADAR RECORD\CW,0,0,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,150,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,200,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,300,“SUBBASE”,30,“”;
RADAR RECORD\CW,0.5,0.5,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,155,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,312,“SUBBASE”,30,“”;
RADAR RECORD\CW,1,1,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,160,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,308,“SUBBASE”,30,“”;
RADAR RECORD\CW,1.5,1.5,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,163,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,307,“SUBBASE”,30,“”;
RADAR RECORD\CW,2,2,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,155,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,312,“SUBBASE”,30,“”;
RADAR RECORD\CW,2.5,2.5,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,153,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,308,“SUBBASE”,30,“”;
RADAR RECORD\CW,3,3,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,250,“BITUMINOUS MATERIAL”,90,“”;
RADAR RECORD LAYER\2,340,“SUBBASE”,40,“”;
RADAR RECORD\CW,3.5,3.5,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,253,“BITUMINOUS MATERIAL”,90,“”;
RADAR RECORD LAYER\2,335,“SUBBASE”,40,“”;
RADAR RECORD\CW,4,4,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,256,“BITUMINOUS MATERIAL”,90,“”;
RADAR RECORD LAYER\2,324,“SUBBASE”,40,“”;
RADAR RECORD\CW,4.5,4.5,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,258,“BITUMINOUS MATERIAL”,90,“”;
RADAR RECORD LAYER\2,315,“SUBBASE”,40,“”;
RADAR RECORD\CW,5,5,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,270,“BITUMINOUS MATERIAL”,90,“”;
RADAR RECORD LAYER\2,320,“SUBBASE”,40,“”;
SSEC\UKPM2,20302882/20,060900;
RADAR RECORD\CW,0,235,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,150,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,200,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,300,“SUBBASE”,30,“”;
RADAR RECORD\CW,235,367,CL1,070900, “ACONTRACTOR”;
RADAR RECORD LAYER\1,155,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,312,“SUBBASE”,30,“”;
RADAR RECORD\CW,367,781,CL1,070900, “ACONTRACTOR”;
```

```
RADAR RECORD LAYER\1,160,“BITUMINOUS MATERIAL”,80,“”;
RADAR RECORD LAYER\2,204,“LEAN MIX CONCRETE”,60,“”;
RADAR RECORD LAYER\3,308,“SUBBASE”,30,“”;
DEND\55;
HMEND\62;
```

Appendix B: Summary of changes

This appendix lists the version for each HMDIF file and provides a note of changes (if any) to the structure of that file.

File	Version	Structure changes	Notes
Network Referencing	002		
Item Inventory	001		
Visual Condition Data	001		
Machine Collected Rutting Data	001		
Deflectograph Data	001		
HRM Data	001		
SCRIM Data	001		
GripTester	001		
TTS Data	001		See *SCANNER HMDIF Specification* (Document 71)
Works Record Data	001		
Pavement Sample Data	001		

Note that the following updates and amendments have also been made:

- The specification for TTS data has been removed as this is now given in the *SCANNER HMDIF Specification* (Document 71).
- The document has been generally updated, for example to update references to obsolete documents and to update field sizes to reflect the current UKPMS Data Model (as issued via the Rules and Parameters database).
- The implications of Technical Note 34 (065v0102) which deals with dropping the distinction between Full & Minimal XSPs have been included.
- A note has been added that visual condition data (CVI & DVI) must contain at least one observation for each feature and XSP surveyed within a section. This observation may be 'Not Defective'.
- The advice regarding the HMDIF for Radar Records has been clarified; while it is not mandatory for UKPMS systems to be able to load Radar Records, if they do so then the format specified in this technical note must be used.