UK LINK BUSINESS DOCUMENTS

UKLBD3

UK LINK STANDARDS GUIDE

VERSION CONTROL

Version	COR	Date of Change	Changes	Author
9 Live	-	January 2015	Addition of 'Special Characters' Appendix	David Addison
10 Live	-	10th July 2015	General planned review. Addition of further detail regarding record treatment – referred to as 'Glossary' information. Inserted Section 6 reflects "Standards Guide v10 A 20150608 - Interface File Definition". Expanded explanation of File Level Rejections.	David Addison
11 Live	-	12th February 2016	Amendment to references of SPA rejection code list and application level rejections as file, record and application level rejections are now in one rejection code list.	Rachel Hinsley
12 Approved		14th April 2016	Amendment to deal with integers in decimal fields and the treatment of decimal values.	Lee Harrison
13 Approved		2nd August 2016	Amendment to provide consistent referencing to unique file name submission. Number of occurrences for the E01 (ERR) and S72 (FRJ) file formats updated Removal of detail regarding file naming convention so that this is inserted into the File Transfer Guide	Rachel Hinsley
14 Approved		8th September 2016	Amendment to provide consistent referencing to unique file name submission.	Shanna McCann
15 Approved		10th November 2016	Amendment to Appendix A	Rachel Hinsley
16 For Approval		3rd March 2017	Amendments to: • General review in line with revised governance (UNC Modification 0565A refers). • Remove references to EFT, IXN, I'X. Insert references to UK Link Network. • CDSP referenced.	Rachel Hinsley
16.1 For Approval		6th July 2017	Amendments following UNC 0613S representation cycle.	David Addison
16.2 For Approval		July 2017	Amendments following peer review	Jayne McGlone

Version: [ ]

Effective Date: [ ]

1.1 This document (Document) is the UK Link Business Document UKLBD3 – UK Link Standards Guide, referred to in paragraph 1.5.3 (d) (iii) of the UK Link Manual Framework Document.

1.2 This Document is an integral part of and is incorporated in the UK Link Manual.

1.3 The version of this Document that is in force and the date from which it is in force, are as stated on the first page of this Document.

1.4 In this Document:

(a) terms defined in the DSC Terms and Conditions and not otherwise defined in this Document shall have the meaning given in the DSC Terms and Conditions;
(b) terms defined in any other CDSP Service Document and not otherwise defined in this Document shall have the meaning given in the CDSP Service Document;
(c) terms defined in the UK Link Framework Document and not otherwise defined in this Document shall have the meaning given in the UK Link Manual Framework Document; and
(d) the further provisions of the DSC Terms and Conditions as to interpretation apply.

1.5 This Document may be changed in accordance with the applicable procedures contained in the Change Management Procedures.

1.6 The purpose of this Document is to provide guidance to UK Link Users on:
a) File Naming and Routing Principles;
b) File Naming Standards for UK Link Communications:
c) Interface File Definition for File Definition:
d) Interface File Definition for Record Definition;
e) Interface File Definition for Record Standards;
f) Error Reporting; and
g) Version Control.

1.7 The scope of this Document includes all files which are transferred to or from the CDSP.

1.8 1.6 c) – g) as set out above do not apply if the intended destination of a file is to another UK Link User.

1.9 For the purposes of this Document, references to a UK Link User or UK Link Users exclude the CDSP.

1.10 In the case of the any conflict between the provisions of this Document and the UK Link Terms and Conditions the UK Link Terms and Conditions shall prevail.

1.11 UNC GT D5.2.3 does not apply in respect of this Document, and accordingly the provisions of this Document are not binding on UK Link Users.

2. FILE NAMING AND ROUTING PRINCIPLES

2.1 Principles

The successful routing of files to their correct destination requires a suitable form of addressing technique. This needs to be adopted and applied by all applications and all UK Link Users. If it is not adopted correctly the files may not be transferred.

The approach is to construct a file name whose constituent parts when interpreted uniquely identify the destination address of the recipient (routing information). **UKLAD3 – UK Link File Transfer Definition** defines how to assemble the file name.

It is important and more efficient that the operation of the **File Transfer Server** is restricted to obtaining the routing information from the file name without having to interrogate the header record of the file.

Adopting this approach ensures that UK Link system applications only access import data files intended for the CDSP.

In order for the proposed standard to succeed both the applications and **UK Link Network** must adhere to a common set of file type codes. These file types are defined in the **UKLCD3 – UK Link Interface** (referred to as the **Interface Documents** in this document) that form part of the UK Link Manual.

2.2 File Name Structure

For simplicity, a single format file name has been defined for both export and import files.

All File names are FIXED format. The file name structure consists of the levels: <level_1>.<level_2>.<level_3>
Use characters 0-9 and/or A-Z to pad fields (if necessary) [note that each level must begin with an alphabetic character].

A <level_1><level_2> directory exists for each message type, live and test, to be received.

A <level 3> contains the file type.

Adopting this strategy enables a static file hierarchy to be set up in advance of application file transfers; i.e. it is possible to know in advance the file type a sending application is to transmit to a receiving application, and the identity of the sender.

From an operational viewpoint a simple and uniform file structure is maintained irrespective of the underlying hardware platform.

3. FILE NAMING STANDARDS - UK LINK COMMUNICATIONS

The file naming standards that apply to **UK Link Communications** conveyed over the UK Link Network (also known as Information 'Xchange Network or IXN) are defined in **UKLAD3 – UK Link File Transfer Definition**.

4. INTERFACE FILE DEFINITION – FILE DEFINITION

The Interface Documents, as set out for individual UK Link User groups provide the definition of the interface records and files. **Any example records shown within this document are for illustration only.** UK Link Users should assure themselves they are using the correct version by reference to the Interface Documents.

4.1 Recording File Definitions / Hierarchy Diagrams (Interface Entity Format (IEF))

All files will be defined in a diagram that sets out the records that may be contained within the file. Rather than use a standard IEF protocol (as shown below in Figure 1), a simplified view is provided as shown in Figure 2:

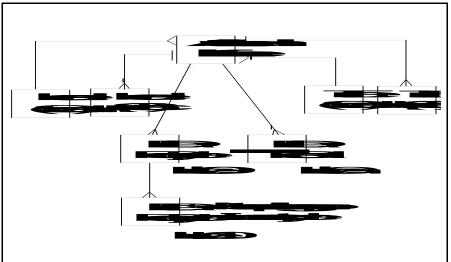Figure 1: IEF Diagram
Please note, the UK Link Standards were proposed and agreed to be amended during the UK Link Programme consultation period – Quarter 4 2014. Where files were changed as a result of the Programme these adopted the amended Standard. Subsequent file changes will transition to the new standards as changes are required.
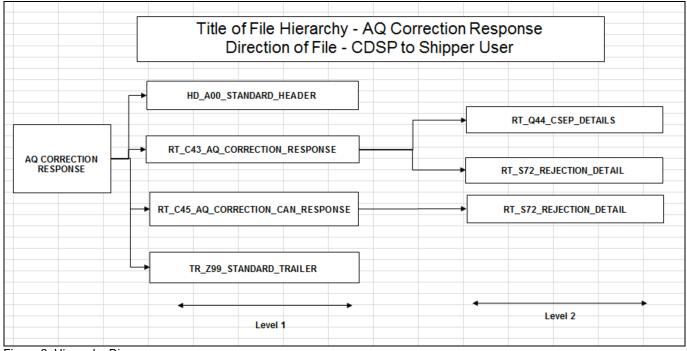

Figure 2: Hierarchy Diagram

For each interface file:

Entity Type Name / Direction of File:	A single entity type prefixed with AI_I_ , AI_O_ AI_I_ means Automated Interface Imported to the CDSP AI_O_ means Automated Interface Output - exported - from the CDSP and internal Automated Interface and named to indicate the file purpose. Or statement to define 'Direction of File' – e.g. CDSP to Shipper User, or Shipper User to CDSP.
Title / Description:	Title. May be supplemented to contain a brief description of the interface.

Associated with each Automated Interface entity type will be:

Header Entity Type	Each file always has a standard header record and the format of that header record is common across all classes of interface files thus the cardinality of the relationship is 1:m.
Trailer Entity Type	Each file always has a standard trailer record and the format of that trailer may be the same for a number of interface files thus the cardinality of the relationship is 1:m.
Application Specific Header & Trailer Records	Can be included as additional entity types, where required.
Detail Record Entity Type	Where any detailed records are required these must be defined in the hierarchy. Each record is defined in the interface document.

For each interface file definition it is proposed that the following information is provided to assist UK Link Users to understand the potential volumetrics and optionality of records within the file:

TITLE OF FILE FORMAT/RECORD		AQ CORRECTION RESPONSE (.AQR)	
DIRECTION OF FILE		CDSP TO SHIPPER USER	
Level	**Record Name**	**Occurrence**	**Optionality**
1	HD_A00_STANDARD_HEADER	1	M
1	RT_C43_AQ_CORRECTION_RESPONSE	Up to1000	O
2	RT_Q44_CSEP_DETAILS	Up to1000	O
2	RT_S72_REJECTION_DETAIL	Up to15	O
1	RT_C45_AQ_CORRECTION_CAN_RESPONSE	Up to1000	O
2	RT_S72_REJECTION_DETAIL	Up to15	O
1	TR_Z99_STANDARD_TRAILER	1	M

Figure 3: Hierarchy Optionality and Occurrence Table.

Note: In some instances record formats are published as consolidated file interface definitions (i.e. the header, detail record entities, and footers in a concatenated form). The convention is that the above table is included within these documents.

4.2 Version Control

A control table will be included within the hierarchy to define the version.

Further information is provided in the section 8 Version Control below.

5. INTERFACE FILE DEFINITION – RECORD DEFINITION –

The Comma Separated Variable (CSV) format is the agreed standard for all files passed via the UK Link Network. CSV format will apply to all files (except delivery receipts) sent via the UK Link Network.

Each file transmitted may include multiple record types as specified in the hierarchy diagrams described above.

The definition convention for each UK Link User is detailed within the appendices to this document.

For each interface file the standard Header and Trailer information is mandatory. An example standard header and footer[1] is provided within the appendices.

5.1 Header Attributes:

The format defines the relevant attributes, additional information is provided below to assist UK Link Users.

Transaction_Type: Permitted value: A00.

Organisation_Identifier: Permitted values: must be a recognised UK Link Organisation. This will contain the UK Link User Organisation ID i.e. the numeric sequence for both import and export files.

File_Type: Permitted values: must be a recognised file type as defined within the Interface Documents, and must match the file type in the file name.

Creation_Date: Permitted values: must not be a future date and must conform to the values. Domain standards are listed in section 6..

Creation_Time: Permitted values: must conform to the permitted values defined in section 6.

Generation: Description: number unique to the production of an occurrence of the file to assist in processing control, this must be the same as the generation number in the file name.

5.2 Trailer attributes:

Transaction_Type: Permitted value: Z99.

Detail_Record_Count: Definition: the total number of all data records contained in the file, excluding the Standard Header and Trailer records (if there are any application specific Headers and Trailers these must be included in the count).

5.3 Application Specific Header/Trailer Attributes

These headers/trailers are optional and should be included where specified.

Transaction_Type: Definition: an optional additional trailer record specific to one or more files
Permitted values: A01-A99 for header, Z00 - Z98 for Trailer.

Other Attributes: As defined by the application.

5.4 Detail Record

These detail records are application specific and define the structure of the file. These are defined in the Interface Documents. Additional information is provided to assist in understanding the context.

Transaction_Type: Permitted values: must be a recognised record type as defined within the Interface Documents.

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[1] The standard header and trailer records are unlikely to change, but Users should reference the Interface Documents to extract the correct version.

Historically when registering the record, the project will seek to utilise record types specific to the UK Link functional group for Shipper Interface records. These are provided as guidance only.

S00-S99; T00-T99	SPA
I00-I99; J00-J99; K20-K99	Invoicing
M00-M99; K00-K19; N00-N99	Sites & Meters
U00-U20	User provided Meter Reading

Note: These should not be viewed as the definitive list as exceptions will exist.

Other Attributes: As defined within each record.

6. INTERFACE FILE DEFINITION – RECORD STANDARDS

6.1 FILE DEFINITION PARAMETER FORMAT.

Each record type within a file will be described by one parameter record.

Each parameter record will begin with a three character record type (values A00 to Z99, example ranges are provided below). This value shall appear in the Interface Documents as the 'TRANSACTION_TYPE'. The characteristics of every field within the record must be defined within the parameter record.

Each field must be defined in the following manner:

Field Name
The field name should succinctly describe the information contained within this field. If further explanation or context is required this should be provided in the Description. Where a data entity appears in multiple record definitions the field name should be consistent – other aspects of the definition may differ in the context of the record.

Optionality
(Abbreviated to 'OPT' within Interface Documents)
Permitted values: M – Mandatory; O - Optional

This indicates whether the field must be provided. Where a field in an import (UK Link User to CDSP) record is defined as mandatory and it is not populated this will result in the file to fail validation.

Domain
(Abbreviated to 'DOM' within Interface Documents)
Permitted values: D - Date; M – Time; N - Numeric; T – Text

Indicates the type of field expected. Specific format rules and conventions are required for the Domain types. These are described in the section below.

Length
(Abbreviated to 'LNG' within Interface Documents)

The length of the field will be defined.

Decimal Places
(Abbreviated to 'DEC' within Interface Documents)

The length of the field will be defined.

Description

This provides additional information that cannot be conveyed in the Field Name. If additional context is required this is provided. Where a defined set of allowable values is expected these should be set out within this field unless a supplementary document defines these values.

6.2 Domain Format Rules and Conventions

Date   - All dates are numeric in the format YYYYMMDD unless otherwise stated in the record description. YYYY represents the Year, MM the month and DD the day. For example the 10th March 2017 would be shown as 20170310

Time   - All time fields are numeric in the format HHMMSS unless otherwise stated in the record description.

Numeric   – Leading zeroes are removed from numeric fields except where explicitly detailed within the file formats.

- Numeric fields are only separated by commas and not enclosed in double quotes (").
- Zero value numeric fields will reduce to a single zero (0) if the field is mandatory.
- If an optional numeric field exists at the end of a record the final character prior to the newline character will be a comma.
- Signed numerics - numerics can be signed. One extra character, for the sign, has been included in all fields which may be negative. The description shall state whether the field could be negative. The sign will only be included where the value is negative, positive values will be sent with a 0 in the signed place which will be removed consistent with treatment of numeric values. The sign, if applicable, will be the first character in the numeric field.-

Decimal Places
- Decimals are defined as numeric.
- The field will contain decimals with an explicit decimal point which is not included in the definition of the field length. Where an integer value is provided within a decimal field at least one zero will be populated following the decimal point,
- Where the value is less than one a leading zero will be included before the decimal point.
- The decimal values will be left hand justified. Zeros may be removed consistent with treatment of numeric values or will be used to pad the value. For example, 0.10 will be provided as 0.1 or 0.10 where the field allows two decimal places.

Text
- All text fields must be enclosed in double quotes ("...text...")

Example Field Definition – Numeric Field with Decimals including Potential Negative Values

RECORD / FIELD NAME	OPT	DOM	LNG	DEC	DESCRIPTION
INVOICE AMOUNT	M	N	14	2	DEFINITION: Holds sum of net value of credit and debit amount due for all invoice items on the invoice (VAT exclusive). VALUE: Monetary value from -9,999,999,999.99 to 9,999,999,999.99.

6.3 General Conventions

The following general conventions must also be followed.
- All fields must be separated by commas.
- Each new record will be separated by a newline character.
- A newline character should follow a standard trailer record

6.4 Specific Field Type Conventions

The following conventions are specific to certain field types:

Currency / Monetary
- All currency / monetary values are pounds sterling – unless otherwise stated in the field description.

Rates
- Any field that defines a rate the unit should be stated in the field description as this will change with the field context.

Energy
- All energy values are kilowatt hours (kWh) – unless otherwise stated in the field description. Fields such as Capacity, Standard Offtake Quantity, Standard Hourly Quantity and Annual Quantity (AQ) will follow this principle.
Example:
K50 Record – Lower_Band_Limit and Upper_Band_Limit – will utilise AQ therefore will be in kWh.
Q45 – Offered_Tranche_Capacity will be in kWh.

Volume
- All volume values will be in cubic meters (m^3) – unless otherwise stated in the field description.

6.5 Version Control

A control table will be included within the record to define the version, Change Order Reference (COR), description of change, date and author. Detail regarding the file at the status of 'for approval' and 'approved' will be contained in the 'Changes' column within the version control table. Once the document is set to live the version control table will reflect the incremental changes between the previous live version and the implemented version and the additional lines, no longer required, will be removed.

6.6 Further Documentation

Where data items are repeated across multiple record entities, and there are extended allowable values these may be expanded into documents separate to the record entities. Examples of such arrangements are:

- Invoice Charge Types – In order to provide visibility of the relevant charge descriptions a separate document – 'Comprehensive Invoices and Charge Types' - is published. This document is amended by 28 day notification to the Invoicing Operations Contact Distribution List. Where no negative representations are received the amended document is deemed approved and published on the UK Link Document website. Approval is not required at **DSC Change Management Committee** but a one month courtesy notification is provided to the UK Link Distribution Lists. Charge Types are not required to be included within the record definitions.

- Rejection Codes – Multiple reasons exist for file level, record level and application level rejections. A consolidated list of rejection reasons is maintained for all UK Link Users. These documents are not approved by DSC Change Management Committee,but new or amended rejection codes to be added as a result of a UK Link System change are included within each Change Summary provided.

7. ERROR REPORTING

Import files received will be assessed to ensure that these are correctly formatted prior to presentation to the application.

File Level Validation
Once an input file is received in UK Link, validation is performed at a file level. Any failures at this level are reported in the *.FRJ or *.ERR file. The differences between these files and the respective validations are given below:

7.1 FRJ File

The FRJ file deals with the file level validations, such as the file name, header and trailer records.

Validations

- The file name must conform to the naming convention set out in UKLAD3 – UK Link File Transfer Definition.
- The file name should be 5.8.3 format, as defined in UKLAD3 – UK Link File Transfer Definition.
- The Short Code in the file name should match with the ORGANISATION_ID present in the header record.
- The file type in the file name should match with the type in header record.
- The generation number in the file name should match with the generation number in the header record.
- If a file is received where the file name is not unique – i.e. the number must be unique to the **organisational node** and suffix, this file will be rejected regardless of whether the original file was successfully processed by the application (regardless of the outcome of individual records) or was rejected at a File Level (FRJ or ERR).
- Incorrectly formatted date, time, timestamp in the transaction record will result in the corresponding record being rejected.
- Organisation ID on Header / Short code on file name should be of valid organisation in UK Link.
- The number of records in the file should match the record count given in the trailer record.

FRJ File format
The FRJ file format is given below:-
"A00", org id, "FRJ", date, time, File Gen No
"S71","File Name"
"S72","Rejection code"
"Z99", record count

If there are multiple errors, then all the errors will be reported in single *.FRJ file. One S71 and up to fifteen S72 records will be issued within an FRJ file

A single error will cause the entire file to fail.

If there are multiple errors, then all the errors will be reported in a single *.FRJ file. The number of errors, S72 records reported from the file is 'up to 15'.

7.2 ERR File
The ERR file will contain record level validation, which will validate each record/fields in file with CSV file format.

Validations

Following are the validations that are done on the detailed records.
- All mandatory fields should be present.
- The text/numeric fields should be given in the correct format.
- The length of the fields and also the definition of the fields should match with the predefined format.
- There shouldn't be multiple occurrences of header / trailer records.
- The file should contain only predefined Record Type.

- The records should be sequenced as per the file format.
- Mismatch between file type and record type. For example - *.NOM file contains records associated with *.CNF file.
- Text field should be enclosed in "".
- Number and date fields should not be enclosed in double quotes.
- Fields should be comma separated.

ERR File Format
"E01"," Rejection code "," File Name", "ERROR: Invalid field - record no, field no"
Then entire input file's contents.

The contents of the original file received will be appended to the error file and sent back to the UK Link User via the UK Link Network.

A single error will cause the entire file to fail.

If there are multiple errors, then all the errors will be reported in single *.ERR file. The number of errors, E01 records reported from the file is 'up to 50'.

Application Level Validation

Application level validations are conducted. A consolidated list of rejection reasons including file and record level rejection reasons is contained within the document entitled 'UK Link Rejection Codes'.

8. VERSION CONTROL

8.1 Principles

The principle that will be adopted if changes are being made in accordance with the Change Management Procedure is that the first implemented version of each document or product (e.g. record, hierarchy, etc) is published as Version 1 Live.

Any subsequent changes to this document or product should, once approved (including documentation only changes), increment to the next whole number – e.g. Version 2 Live.

Mark ups will be shown in the Live version against the previous Live version.

Application

When a Change Summary is issued to UK Link Users via the UK Link Distribution Lists this will be issued with the version status of 'For Approval'. This will be issued as '(Current 'Live' Version +1) For Approval'. For example, where the current live version is 'Version 1 Live', this should be issued as 'Version 2 For Approval'.

Following approval in accordance with the Change Management Procedure this will be published on the UK Link Documentation website with the version status of 'Approved'. Using the example above, this would be 'Version 2 Approved', awaiting implementation.

When implemented this would become 'Version 2 Live'.

Where further changes are identified during the UK Link Modification lifecycle that impact the products these will be reissued for approval. In order to maintain a single 'Live' version increment at implementation, the product will be incremented by the 'For Approval' Version + 0.1 where the format has yet to be approved. Where this has been approved it will be issued 'For Approval', the version number will increment based upon the 'Approved' Version +0.1). Once approved, this will increment the 'Approved' version by 0.1. The 'Live' version will still increment as Current Live Version +1.

For example:
- Current Live Version – v2 Live (L)
- Issue product within Change Summary within UK Link Change Pack – v3 For Approval (FA)
- Representations received resulting in an amended Change Summary – v3.1FA
- Approved at DSC Change Management Committee – v3 Approved (A)
- Implementation of Change
- Published as new Live version – v3L

The version control table[2] will be maintained during the UK Link Modification process to identify differences between each version. Where this is achieved by mark ups within the product this detail will not be repeated within the version control table. At implementation, the version control table will be simplified to show relevant changes between the current and previous Live versions.

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[2] *Please note, insertion of a version control table was first introduced during the UK Link Programme consultation period – Quarter 4 2014. Where files were changed as a result of the Programme these adopted the amended Standard. Subsequent file changes will transition to the new standards as changes are required.*

9. APPENDIX A. TREATMENT OF SPECIAL CHARACTERS

A.1 Introduction

This section is intended to provide UK Link Users with an understanding of the treatment of 'special characters' (i.e. those characters restricted to a domain or potentially used delimiters) received by the CDSP.

The following characters, delimited by a comma, are identified as being characters that may be domain restricted that UK Link Users may benefit from further guidance upon:

Meaning:	Character
Exclamation mark	!
Double quotation mark / Speech Mark	"
Pound Sterling sign	£
Dollar sign	$
Percentage	%
Caret	^
Ampersand	&
Asterisk	*
Opening parenthesis	(
Closing parenthesis	)
Logical not sign	¬
Accent	`
Equals sign	=
Hyphen / Minus / negative sign	-
Plus / positive sign	+
Underscore	_
Semi colon	;
Colon	:
Apostrophe / single quotation mark	'
At sign	@
Hash / pound sign	#
Tilde operator	~
Less than	<
Greater than	>
Question mark	?
Solidus / oblique / slash	/
Comma	,
Full stop / period	.
Vertical bar		
Back slash	\

A.2 Treatment within Date Fields

Where these characters are provided in a date field (within the body of the file*) any of the above characters will cause a file failure. The error CSV00012 (Invalid numeric field) will be passed to UK Link Users within the ERR file.

A.3 Treatment within Text Fields

Provided that the text field follows the convention of being contained within speech marks, the above characters are accepted, with the exception of " " (speech mark). The error CSV00018 (Invalid field) will be passed to UK Link Users within the ERR file.

A.4 Treatment within Numeric Fields

Where these data items are provided in a numeric field (within the body of the file*) any of the above characters will cause a file failure. The error CSV00012 (Invalid numeric field) will be passed to UK Link Users within the ERR file.

Where the numeric field* is not configured for negative values provision of ' – ' (negative sign) or ' + ' (positive sign) will generate ERR error CSV00012 (Invalid numeric field).

*Note: If these characters are provided in the header or footer of the file FRJ rejection code FIL00011 (Record contains incorrectly formatted data) will be generated.

10. APPENDIX B. STANDARD HEADER AND TRAILER RECORD EXAMPLE FORMATS

HD_A00_STANDARD_HEADER

RECORD/FIELD_NAME *Occurs Max 1*	OPT	DOM	LNG	DEC	DESCRIPTION
TRANSACTION_TYPE	M	T	3	0	DEFINITION: A code identifying the type of request that this record represents. **VALUE: A00**
ORGANISATION_ID	M	N	10	0	DEFINITION: A reference which uniquely identifies a UK Link User/Organisation.
FILE_TYPE	M	T	3	0	DEFINITION: An application specific code used to identify the structure and the usage of the file.
CREATION_DATE	M	D	8	0	DEFINITION: The date on which the file was generated. **FORMAT: YYYYMMDD**
CREATION_TIME	M	M	6	0	DEFINITION: The time at which the file was generated (within the Creation Date). **FORMAT: HHMMSS**
GENERATION_NUMBER	M	N	6		

TR_Z99_STANDARD_TRAILER

RECORD/FIELD_NAME *Occurs Max 1*	OPT	DOM	LNG	DEC	DESCRIPTION
TRANSACTION_TYPE	M	T	3	0	DEFINITION: A code identifying the type of request that this record represents. **VALUE:Z99**
RECORD_COUNT	M	N	10	0	DEFINITION: The number of detail records contained within the file. This should not include the Standard Header (A00) and Standard Trailer (Z99) but should include any file specific Headers and Trailers specified for this file type.
Total			**13**		

11. APPENDIX C. METER POINT REFERENCE CHECK DIGIT ROUTINE

Meter Point Reference Check Digit Routine

A **check digit** is a form of redundancy check used for error detection. Check digits are applied to the Meter Point Reference Numbers within UK Link Systems to assist in validation and control.

The Meter Point Reference Check Digit Routine derives the last two digits to be applied to the Meter Point Reference Number. This is based on a variant of the Modulus 11 Check Digit routine.

Example Ten Character Meter Point Reference

8 digit sequence no. = **12345678**
Sum = (**1** multiplied by index position of the digit) + (**2** multiplied by index position of the digit) +… (**8** multiplied by index position of the digit)

Therefore the total sum for **12345678** is = **1***8 + **2***7 + **3***6 + **4***5 + **5***4 + **6***3 + **7***2 + **8***1
                                = **120**

The last two digits are derived by dividing the sum by 11 and the remainder is the last two digits of the full MPRN no.
        = **120**/11 the remainder is **10**.

Hence the complete 10 digit MPRN for **12345678** is **1234567810.**