Code-Point®

User guide and technical specification

Code-Point

User guide

Contents

v2.1 – 05/2006

Preface

This user guide (hereafter referred to as the guide) is designed to provide an overview of Code-Point (hereafter referred to as the product). If you find an error or omission in this guide, or otherwise wish to make a comment or suggestion as to how we can improve the guide, please contact us at the address shown below under contact details or complete the product and service performance report form at Annexe A and return it to us.

Contact details

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The product makes use of Royal Mail PAF files and Postzon, OSNI, ONS and GROS health authority codes.

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Back-up provision of the product

You are advised to copy the supplied data to a back-up medium.

Using this guide

The documentation is supplied in portable document format (PDF) only. Free Adobe® Acrobat Reader® software, which displays the guide, incorporates search and zoom facilities and allows you to navigate within. Hyperlinks are used to navigate between associated parts of the guide and to relevant Internet resources by clicking on the blue hyperlinks and the table of contents.

The guide provides an introduction to the structure and content of the product and assumes a general knowledge of geographic information. It also gives guidelines and advice on how a customer might derive the maximum benefit from the product.

If you are unfamiliar with any words or terms used and require clarification please refer to the glossary at the end of the document.

Chapter 1 Introduction

Using this user guide

A glossary of words and terms used in this user guide can be found at annexe A.

Code-Point features

With each coordinated point, Code-Point products provide:

- information about the number and type of postal delivery points in the postcode;
- a positional quality indicator (PQI), which indicates the quality of the data underlying the Code-Point location coordinate (CPLC);
- the country indicator (either England, Scotland, Wales or Northern Ireland);
- the postcode type;
- the National Health Service region and area codes; and
- the local government county, district and ward codes.

Applications of Code-Point

Code-Point provides a comprehensive base of geographically located data on which a wide range of applications can be built. Typical applications include:

- market analysis, lifestyle analysis;
- risk analysis for insurance, financial and environmental services;
- site location analysis for retailing; and
- approximate site location for route planning.

Chapter 2 Overview of Code-Point

Data overview

Code-Point is recreated quarterly using updates from Ordnance Survey field surveys and Gridlink® (a consortium made up of Royal Mail®, Ordnance Survey, the Office of National Statistics (ONS), Ordnance Survey of Northern Ireland® (OSNI®) and the General Register Office for Scotland (GROS), via ADDRESS-POINT® and Boundary-Line™.

ADDRESS-POINT contains postal address data for approximately 26 million postal delivery points. These delivery points may be premises that are shown in Land-Line® data, such as buildings, or they might be features that do not form part of the Land-Line specification such as PO boxes, caravan parks, buildings under railway arches, temporary buildings and houseboats. All postcode units in PAF® (Postcode Address File) at the time of creation, which have valid and current postal delivery points, will be in Code-Point.

Basic principles

- Each postcode unit will be allocated a National Grid reference (NGref) of a point that falls within the notional extent of the postcode unit – there may be a small number of instances where coordinates cannot be allocated.
- Multiple postcodes in a single block of flats or offices will share one NGref – these may be either large users or small users, or both.
- Administrative area codes are allocated using the Boundary-Line polygon that the CPLC falls within; currency is that of the latest available Boundary-Line data. Where addresses in a postcode fall in two or more administrative areas, only the codes for the area in which the CPLC falls are given.
- NHS codes are allocated using the premise that NHS areas are always supersets of administrative areas.

Application overview

Uses of Code-Point

Code-Point forms a nationally consistent postcode reference and is a standard link between databases and GIS. Identified below are some of the applications for Code-Point:

Retail

Market analysis and profiling
Sales analysis by store
Competitor analysis
Customer buying profiles
Store location
Targeting promotions

Insurance

Market analysis and profiling
Geological and flood-risk analysis
Personal and household risk assessment
Incident area management

Health

Targeting of services to population needs
Resource allocation
Epidemiology
Analysis of What if...? scenarios

Utilities

Market profiling
Consumption analysis
Pressure-zone analysis
Transport
Location finding

Government

Statistical demographic analysis
Crime analysis
Flood warnings
Pollution monitoring

Scenarios

Medical research for health authorities

It is necessary for health authorities to be able to analyse and identify the effects and potential implications of contamination. Is the incidence of bronchitis uneven throughout a health authority's area?

Customer survey for market-research purposes

A questionnaire has been distributed to all houses within a large geographical area. The results and the relationships between groups of customers need to be analysed.

Incident analysis for emergency services

An ambulance service wishes to assess the efficiency and value of various mobile unit locations in reducing call-response times.

Insurance for financial services

An insurance company has been asked to quote structural insurance for a potential customer within the Southampton (SO) area. SO has been labelled, geographically, as a clay area and therefore insurance companies could charge higher premiums because of the potentially higher incidence of subsidence.

Chapter 3 Code-Point explained

Postcode

Postcodes are an alphanumeric abbreviated form of address. Postcode units are unique references and identify an average of 15 addresses. In some cases, where an address receives a substantial amount of mail, a postcode will apply to only one address (a large user postcode). The maximum number of addresses in a postcode is 100.

The postcode is held in Code-Point as a seven character field. Although, when used in an address, the inward code (incode) should be separated from the outward code (outcode) by a single space, within Code-Point data there may be 0, 1 or 2 spaces between these elements of the postcode. The following is a list of the valid formats of postcode held. An A indicates an alphabetic character, an N indicates a numeric character.

Format

Outcode	Incode	Example postcode	Example as held in Code-Point
AN	NAA	M2 5BQ	M2 5BQ
ANN	NAA	M34 3AB	M34 3AB
AAN	NAA	DN5 7XY	DN5 7XY
AANN	NAA	DN16 9AA	DN169AA
ANA	NAA	W1A 4WW	W1A 4WW
AANA	NAA	EC1A 1HQ	EC1A1HQ

Postcode example:

Area	District	Sector	Unit
KY	12	8	UP

Please refer to the glossary for a further description of postcode.

Position

Code-Point location coordinate (CPLC)

Code-Point provides an NGref, to a resolution of 1 metre, for each postcode unit in Great Britain and Northern Ireland, and is known as the CPLC. A CPLC is normally allocated to a point that falls within the extent of the postcode unit. The point is given the ADDRESS-POINT coordinates of the nearest delivery point to the calculated mean position of the delivery points in the unit. A lower positional quality CPLC will be allocated to postcode units awaiting a surveyed position, or which relate to addresses that will not have a surveyed position.

Where several postcode units apply to one surveyed position, for example, a block of flats or offices, there is an identical CPLC for each. However, there may be instances where the CPLC position is imprecise or approximate due to the manual allocation by Royal Mail of a postcode outside the recognised geographical extent of that postcode.

When discovered or notified to Ordnance Survey by customers (using annexe A), these will be referred to Royal Mail for possible improvement.

Positional quality indicator (PQI)

The importance of checking the PQI, to establish CPLC positional quality, cannot be overemphasised.

It indicates the positional accuracy of the Code-Point coordinates. There are seven PQI values for the positional quality of CPLCs. The order shown indicates the level of quality associated with the PQI, PQ10 is the most accurate and PQ90 the least. The PQI assigned to the CPLC will depend on the coordinates available in ADDRESS-POINT to generate the CPLC. If the ADDRESS-POINT PQI is PQ3 then the Code-Point PQI will be PQ10.

PQI Description of source ADDRESS-POINT data

10 Within the building of the matched address closest to the postcode mean determined automatically by Ordnance Survey or Ordnance Survey of Northern Ireland (OSNI)(BT® postcode area only).

20 As above, but determined to visual inspection by GROS (General Register Office for Scotland).

30 Approximate to within 50 m of true position (postcodes relating to developing sites may be within 100 m of true position).

40 The mean of the positions of addresses previously matched in ADDRESS-POINT but which have subsequently been deleted or recoded (very rarely used).

50 Estimated position based on surrounding postcode coordinates, usually to 100 m resolution, but 10 m in Scotland.

60 Postcode sector mean (direct copy from ADDRESS-POINT). See glossary for additional information.

90 No coordinates available.

Attributes

Attribute	Description
Postcode	Contains elements for postal area, district, sector and unit. See Postcode in this chapter.
Positional quality	Indicates the source of the data indicator used and, hence, the quality of the coordinates provided for each record. It is determined by the best available data in ADDRESS-POINT.
PO box indicator	Denotes if the postcode is a PO box.
Total delivery points	The total number of both matched and unmatched delivery points in the postcode. Not in BT data for Northern Ireland.
Delivery points used to the CPLC where the PQI value is 10 or 20	Number of matched addresses in the postcode unit of the same positional quality in ADDRESS-POINT as the PQI for that postcode in Code-Point, provided that the Code-Point record has a PQI value of 10 or 20. Not in BT data for Northern Ireland.
Domestic delivery points	Number of non-PO box delivery points that have no PAF organisation name. Not in BT data for Northern Ireland.
Non-domestic delivery	Number of non-PO box delivery points that have a PAF organisation name. Not in BT data for Northern Ireland.
PO box domestic delivery points	Number of PO box delivery points. Not in BT data for Northern Ireland or where PQI is 20 in Scotland.
Matched addressed premises	Number of PQ3 ADDRESS-POINT delivery points in buildings or building subdivisions, after exclusion of duplicated coordinate pairs. Not in BT data for Northern Ireland or where PQI is 20 in Scotland.
Unmatched delivery points	Number awaiting improvement to PQ3 ADDRESS-POINT. Not in BT data for Northern Ireland or where PQI is 20 in Scotland.
Easting	Distance in metres east of National Grid origin.
Northing	Distance in metres north of National Grid origin.
Country code	Code used by ONS to identify the country in which the Code-Point georeference lies. See glossary.
NHS regional health authority code	NHS region in which CPLC falls.
NHS health authority code	NHS area in which CPLC falls.
Administrative county code	County in which CPLC falls.
Administrative district code	District in which CPLC falls.
Administrative ward code	Ward in which CPLC falls.
Postcode type	Indicates whether the user is large, L, or small, S. Large postcode type users receive more than 25 items in rural areas, 50 in towns or 100 in large towns or cities.

Administrative and health authority codes

Administrative and health authority codes allocation to postcode is by point in polygon comparison against Boundary-Line data.

For administrative/NHS codes a look-up table in Gridlink is used.

In the case of unitary authorities, 00 is given for administrative county; the authority code appears as the district code.

Where a district or unitary authority is divided into electoral districts, the code appears as the ward code. Postcodes with a PQI of 90 or 60 are not allocated codes.

Lineage

Code-Point is derived from Gridlink data – ADDRESS-POINT, which was initially created from a comparison of the Royal Mail Postal Addressing File (PAF), Land-Line and the ROADS database datasets from Ordnance Survey and administrative and national health area codes created by ONS, OSNI and GROS, but allocated using Ordnance Survey Boundary-Line data and positioned with an Ordnance Survey NGref.

It also contains the BT postcodes for Northern Ireland, locations for which are supplied by OSNI.

Currency

Currency is a measure of the real world change included in Code-Point. Monthly postcode updates from the Royal Mail Postzon® and PAF, and inputs received from ONS, GROS and OSNI, together with improvements derived from Ordnance Survey field activity, are included in each version of Code-Point.

Positional accuracy

Each CPLC is coordinated on the National Grid, with eastings and northings quoted to a resolution of 1 metre. The accuracy of each postcode unit coordinate pair is defined by the PQI, which provides a quality statement of that Code-Point record.

Attribute accuracy

The representation of postcode attributes is checked as part of Royal Mail maintenance of PAF and by Ordnance Survey when coordination and quality assurance of ADDRESS-POINT is carried out during field survey activity.

Logical consistency

Logical consistency is a measure of the degree to which Code-Point data agrees with its specified structure. Data is monitored to ensure that attributes are present in the correct format and in valid combinations.

Completeness

Code-Point contains coordinates for all available postcode units supplied to Ordnance Survey from the Royal Mail PAF. Resources are directed towards continually improving attribute and positional accuracy. Deleted postcodes are not included. Errors and omissions that are identified by customers can be referred to Ordnance Survey for investigation and, where appropriate, onward notification to Royal Mail.

Annexe A Product and service performance report form

Ordnance Survey welcomes feedback from its customers about Code-Point.

If you would like to share your thoughts with us, please print a copy of this form and when completed post or fax it to the address below.

Your name: .....

Organisation: .....

Address: .....

.....

.....

Postcode: .....

Phone: .....

Fax: .....

Email: .....

Quotation or order reference: .....

Please record your comments or feedback in the space below. We will acknowledge receipt of your form within three (3) working days and provide you with a full reply or a status report within 21 working days.

If you are posting this form, please send it to:

Code-Point Product Manager, Ordnance Survey, Romsey Road, SOUTHAMPTON, SO16 4GU.

If you wish to return it by fax, please dial 023 8079 2615.

Any personal information that you supply with this report form will be used by Ordnance Survey only in the improvement of its products and services. It will not be made available to third parties.

Code-Point

Technical specification

Contents

v2.1 – 05/2006

Introduction

Purpose of this specification and disclaimer

This is the technical specification (hereafter referred to as the specification) referred to in the Framework Direct Licence, Specific Use Framework Partner Licence or your other customer contract.

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The documentation is supplied in portable document format (PDF) only. Free Adobe® Acrobat Reader® software, which displays the specification, incorporates search and zoom facilities and allows you to navigate within. Hyperlinks are used to navigate between associated parts of the specification and to relevant Internet resources by clicking on the blue hyperlinks and the table of contents.

Ordnance Survey is committed to providing customers with consistently high quality geographic information. As such Ordnance Survey regularly applies several data quality measures to the product and the associated documentation. These quality measurements are based on the principles identified in ISO 19113, Geographic Information-Quality principles (2002).

NOTE: According to North America Standards Institute, although ISO 19113:2002 is applicable to digital geographic data, its principles can be extended to many other forms of geographic data such as maps, charts and textual documents.

ISO 19113:2002 does not attempt to define a minimum acceptable level of quality for geographic data.

If you are unfamiliar with any words or terms used and require clarification please refer to the glossary at the end of the document at annexe A (attached to this specification).

Chapter 1 Introducing Code-Point

Requirements to utilise Code-Point

What you need to use Code-Point

Code-Point is a data product and does not include software for analysis, but can be used with a variety of programs. Code-Point can be loaded onto any desktop PC. Consult your geographical information system (GIS) vendor to establish actual system requirements.

Supply definition

Code-Point is only available as national cover of Great Britain and Northern Ireland and is supplied on CD-ROM containing CDF and NTF data.

Code-Point is available in:

- BS 7567 (NTF v2.0) Level 2; and
- Comma Delimited File (CDF).

Update

Code-Point is recreated quarterly using updates from Ordnance Survey field surveys and Gridlink® (a consortium made up of Royal Mail® (RM), Ordnance Survey, the Office of National Statistics (ONS), Ordnance Survey of Northern Ireland (OSNI) and the General Register Office for Scotland (GROS)), via ADDRESS-POINT® and Boundary-Line™.

Updates are supplied quarterly. Updates are provided as a complete resupply, but do not include deleted postcodes.

File sizes

File sizes for GB are as follows: NTF 262 Mb CSV 140 Mb

Code-Point data structure

The Code-Point CD-ROM contains two folders in the root directory: Info and Data.

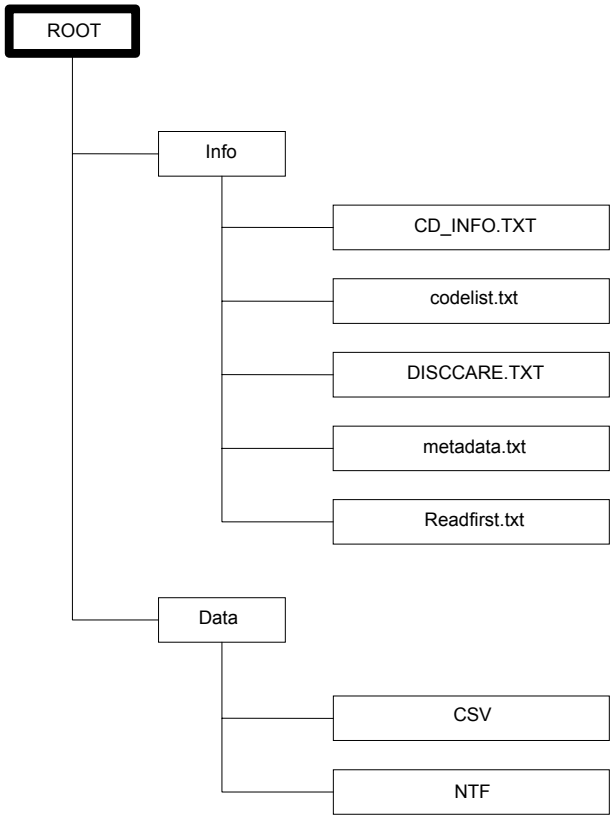
The Info folder contains the following files:

- Readfirst – a file summarising copyright and licensing information that must be read and understood before any data files are opened.
- CD_INFO – a file summarising the content and file structure of the CD-ROM.
- DISCCARE.TXT – a file summarising recommendations on the handling and storage of CD ROMS.
- Codelist.txt – a list of the ONS county, district and ward codes and their full text equivalents.
- Metadata.txt – derived from Boundary-Line, lists the numbers of postcode units in each postcode area and the date of the most recent version of the Royal Mail PAF that has been incorporated into the data.

The Data folder contains the following sub-folders:

- CSV – Contains 121 postcode area files in CSV format.
- NTF – Contains 121 postcode area files in NTF.

Structure of Code-Point CD-ROM



Code-Point content

Code-Point provides the following data:

- administrative county code;
- administrative district code;
- administrative ward code;
- country code;
- National Grid CPLC;
- National Health Service regional health authority code;
- National Health Service health authority code;
- postcode type;
- PQI; and
- postcode unit.

- number of delivery points with the same PQI as the postcode unit itself;
- number of delivery points that are PO boxes;
- number of domestic delivery points;
- number of non-domestic delivery points;
- number of premises with a matched address;
- number of unmatched delivery points;
- PO box indicator; and
- total number of delivery points within postcode unit.

Formats

Code-Point is available in BS 7567 (NTF v2.0) Level 2 and Comma Separated Values (CSV).

NTF

NTF is the standard transfer format for most of Ordnance Survey's digital map data products. Code-Point is supplied in NTF v2.0 Level 2, which has been formally recognised as a British Standard – BS 7567.

For convenience, BS 7567 (NTF v2.0) Level 2 is referred to as NTF throughout. The structure of Code-Point supplied in NTF is described in chapter 2 and chapter 3 of the technical specification.

CSV

CSV is a standard method for delivering data. It is a common interchange format for spreadsheets and databases, and facilitates simplistic use of Code-Point.

For convenience, this is referred to as CSV throughout. The structure of Code-Point supplied in CSV is described in chapter 4 and chapter 5 of the technical specification.

Chapter 2 NTF explained

An overview of the data in NTF

Introduction

This chapter gives an outline of the data structure of Code-Point in NTF. It should be read in conjunction with chapter 3.

There are certain conventions used in the record examples, which are:

[ ] Square brackets are placed around record names, for example, [VOLHDREC].

{ } A pair of braces denote field names, for example, {REC_DESC} is the record descriptor field.

[ ] 21 A two digit number following square brackets denotes the record descriptor, which uniquely identifies the record name between the brackets.

<S> This is the space character (ASCII code 32).

<3S> This denotes three successive space characters.

% The percentage character (ASCII code 37).

Record size

NTF data is written to the supply media in variable length records, with a maximum physical record length of 80 characters, which includes {CONT_MARK} continuation mark and {EOR} record terminator.

Continuation mark {CONT_MARK}

Continuation records are used where the maximum physical record length of 80 characters does not permit a logical record to be transferred wholly within one physical record. The presence of a continuation record is indicated by the value of the continuation mark {CONT_MARK) that immediately precedes the record terminator {EOR}. The value of {CONT_MARK} is 1 if there is a continuation record present and 0 if there is not.

Record terminator {EOR}

The last character of each physical record is the end of record terminator, which is the percent character (%) (ASCII 37).

Transfer set

A transfer set normally equates to a single file.

Transfer set structure

Volume records

Each transfer set starts with a compulsory Volume Header Record [VOLHDREC] and terminates with a compulsory Volume Terminator Record [VOLTERM].

Database records

Database records transfer information common to all data and their presentation in the subsequent section(s). An NTF transfer set will comprise one database. The database commences with a Database Header Record [DBHREC], which sets up the database. It will be followed by a number of Attribute Description Records [ATTDESC] and Feature Classification Records [FEATCLASS].

Database Header Record [DBHREC]

This mandatory record indicates the commencement of a database and gives details of:

- the database name;
- NTF release date;
- the supply option; and
- creation date that applies to the whole transfer set.

Attribute Description Record [ATTDESC]

These records list and give descriptions of the attributes that can be applied to the features within the transfer set.

Feature Classification Record [FEATCLASS]

These records list and give descriptions of the feature codes that can be present within the transfer set.

Section records

The section records contain the Code-Point data within the postcode area being transferred by that section. It starts with the Section Header Record [SECHREC] and is followed by a number of Section Data Records that contain data on all the postcode units within the section. In Code-Point these data records consist of a sequence of three logical records, which is repeated for each postcode unit within the section.

Section Header Record [SECHREC]

This mandatory record starts a section. It contains information and parameters essential for understanding, interpreting and processing some of the fields within the data. It establishes the unit of measure for X and Y coordinates, origins and other constants.

Point Record [POINTREC]

This record identifies the start of the data for a single postcode unit and contains a feature serial number that is unique within any one section.

Geometry Record [GEOMETRY1]

This record contains the coordinate position of the postcode unit identified in the previous point record. All coordinate values within Code-Point are given with a precision of 1 metre.

Attribute Record [ATTREC]

The Attribute Record gives the attributes or details of the postcode unit, for example, the postcode itself, PQI and so on. This logical record may have one or more continuation records to transfer all the attribute information.

Supply of data on media

Formatted media

Data requested on logically formatted media such as CD ROM, as defined by current Ordnance Survey product specifications, will be written directly to the output device. The data files will be written to the medium sequentially.

See also chapter 3 in the technical specification.

Chapter 3 Record structures for the transfer of Code-Point in NTF

NTF record list

This list comprises the valid record types used in the Code-Point NTF transfer set.

Descriptor	Description	Record name
01	Volume Header Record – defines the donor and data type.	[VOLHDREC]
02	Database Header Record – transfers data about the database.	[DBHREC]
40	Attribute Description Record – defines attribute descriptions and their fields.	[ATTDESC]
05	Feature Classification Record – defines data classifications.	[FEATCLASS]
07	Section Header Record – coordinate and structure types, unit scale factors and so on.	[SECHREC]
15	Point Record – identifies the definition of a postcode unit.	[POINTREC]
21	Geometry Record – defines the two-dimensional geometry for a postcode unit.	[GEOMETRY1]
14	Attribute Record – defines the attributes or details of a postcode unit.	[ATTREC]
99	Volume Terminator Record – defines the end of the transfer set.	[VOLTERM]

Volume Header Record [VOLHDREC] 01

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	01	Record type identifier
DONOR	03:22	A20	ORDNANCE SURVEY<5S>	
RECIPIENT	23:42	A20	<20S>	Not used
TRANDATE	43:50	D8	20051110	Date of processing CCYYMMDD
SERIAL	51:54	I4	0000	Customer sequence number
VOLNUM	55:56	I2	01	Volume number (always 01)
NTFLEVEL	57:57	I1	2	NTF Level 2
NTFVER	58:61	R4,2	0200	NTF Version 2.00
NTFOR	62:62	A1	V	Variable length records
EOR	63:63	A1	%	Sets {EOR} to % on formatted media
DIVIDER	64:64	A1	\	Divider used to terminate variable length text fields
CONT_MARK	65:65	I1	0	No continuation record
EOR	66:66	A1	%	Record terminator

Record example:

```
01ORDNANCE SURVEY                        2005111000000120200V \0%
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Database Header Record [DBHREC] 02

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	02	Record type identifier
DBNAME	03:22	A20	CODE_POINT_2005.4.0<S>	Database name – Code-Point dataset version
DDNAME	23:42	A20	DEFAULT_02.00<7S>	Standard NTF data dictionary name
DDDATE	43:50	D8	19920515	Date of standard data dictionary
DDBASE	51:70	A20	<20S>	Not used
DDBDATE	71:78	D8	00000000	Not used
CONT_MARK	79:79	A1	1	Continuation record follows
EOR	80:80	A1	%	Record terminator

Continuation of Database Header Record

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	00	Continuation record identifier
FCNAME	03:22	A20	CODE_POINT_03.02<4S>	Code-Point specification version 3.02 (see note)
FCDATE	23:30	D8	20051104	Creation date of dataset
DQNAME	31:50	A20	<20S>	Not used
DQDATE	51:58	D8	00000000	Not used
DATA_MODEL	59:60	I2	02	Data model type – spaghetti
CONT_MARK	61:61	A1	0	No continuation record
EOR	62:62	A1	%	Record terminator

NOTES: The Code-Point specification version number gives the major version before the decimal point (3 in the above example) and after it the supply option (2 in the example).
CODE_POINT_03.02 = Code-Point product

Record example:

```
02CODE_POINT_2002.1.0 DEFAULT_02.00       19920515                    000000001%
00CODE_POINT_03.02    19990401                    00000000020%
```

```
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Attribute Description Record [ATTDESC] 40

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	40	Record type identifier
VAL_TYPE	03:04	A2	PR	Attribute mnemonic, for example, PO box indicator
FWIDTH	05:07	A3	001 or <3S>	Fixed width of attribute or three spaces if variable width
FINTER	08:12	A5	A1<3S>	Interpretation of field (A* if variable width)
ATT_NAME	13:*	A*	PO box indicator	Name given to attribute
DIVIDER	*:*	A1	\	
CONT_MARK	*:*	A1	0	No continuation record
EOR	*:*	A1	%	Record terminator

NOTES: An attribute description will be needed to describe all attributes used in Code-Point data. All the attributes that may appear within the data are given in the record examples below.

Record examples:

```
40PC007A7   Postcode unit\0%
40PQ002I2   Positional quality indicator\0%
40PR001A1   PO box indicator\0%
40TP003I3   Total number of delivery points\0%
40DQ003I3   Delivery points with same PQI as unit itself\0%
40RP003I3   Domestic delivery points\0%
40BP003I3   Non-domestic delivery points\0%
40PD003I3   PO box delivery points\0%
40MP003I3   Matched address premises\0%
40UM003I3   Unmatched delivery points\0%
40CY003I3   Country code\0%
40RH003A3   NHS regional health authority code\0%
40LH003A3   NHS health authority code\0%
40CC002A2   Administrative county code\0%
40DC002A2   Administrative district code\0%
40WC002A2   Administrative ward code\0%
40LS001A1   Postcode type\0%
```

```
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Feature Classification Record [FEATCLASS] 05

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	05	Record descriptor
FEAT_CODE	03:06	I4	2801	Feature code
CODE_COM	07:16	A10	<10S>	Not used
STCLASS	17:36	A20	<20S>	Not used
FEATDES	37:*	A*	Postcode unit Point	Textual description of feature classification
DIVIDER	*:*	A1	\	Divider used to terminate variable length fields
CONT_MARK	*:*	I1	0	No continuation record
EOR	*:*	A1	%	Record terminator

* = variable integer.

Record example:

```
052801                                Postcode unit Point\0%
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Section Header Record [SECHREC] 07

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	07	Record type identifier
SECT_REF	03:12	A10	SO<8S>	Postcode area covered by dataset
COORD_TYPE	13:13	I1	2	Defines rectangular coordinates
STRUC_TYP	14:14	I1	1	Defines vector data
XYLEN	15:19	I5	00007	Defines {X_COORD}, {Y_COORD} as seven-digit fields
XY_UNIT	20:20	I1	2	Defines X and Y units as metres
XY_MULT	21:30	R10,3	0000001000	Multiply X and Y coordinates by 1.000
ZLEN	31:35	I5	00006	Defines Z coordinates as six-digit fields
Z_UNIT	36:36	I1	2	Defines Z units as metres
Z_MULT	37:46	R10,3	0000001000	Multiply Z units by 1.000
X_ORIG	47:56	I10	0000000000	Origin of National Grid, zero
Y_ORIG	57:66	I10	0000000000	Origin of National Grid, zero
Z_DATUM	67:76	I10	0000000000	Not used
CONT_MARK	77:77	A1	1	Continuation record follows
EOR	78:78	A1	%	Record terminator

Continuation of Section Header Record

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	00	Continuation record identifier
XMIN	03:12	I10	0000000000	Not used
YMIN	13:22	I10	0000000000	Not used
XMAX	23:32	I10	0000000000	Not used
YMAX	33:42	I10	0000000000	Not used
XY_ACC	43:47	R5,2	00000	Not used
Z_ACC	48:52	R5,2	00000	Not used
SURV_DATE	53:60	D8	00000000	Not used
LAST_AMND	61:68	D8	00000000	Not used
COPYRIGHT	69:76	D8	19990401	Effective copyright date
CONT_MARK	77:77	A1	0	No continuation record
EOR	78:78	A1	%	Record terminator

Record example:

```
07SO        2100007200000010000000620000001000000000000000000000000000000001%
00000000000000000000000000000000000000000000000000000000000000000199904010%
```

```
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Point Record [POINTREC] 15

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	15	Record type identifier
POINT_ID	03:08	I6	000051	Feature serial number (range: 000001–999999)
VAL_TYPE	09:10	A2	<2S>	Not used
VALUE	11:16	A6	<6S>	Not used
FEAT_CODE	17:20	A4	2801	Point feature code
CONT_MARK	21:21	A1	0	No continuation record
EOR	22:22	A1	%	Record terminator

Record example:

```
15000051        28010%
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Geometry Record [GEOMETRY1] 21

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	21	Record type identifier
GEOM_ID	03:08	16	000000	Not used
GTYPE	09:09	AI	1	Defines point geometry
NUM_COORD	10:13	14	0001	Number of coordinate pairs
|X_COORD	14:20	17	0272530	Easting
|Y_COORD	21:27	17	0196956	Northing
|QPLAN	28:28	A1	<S>	Not used
CONT_MARK	29:29	A1	0	No continuation record or
			1	continuation record follows
EOR	30:30	A1	%	Record terminator

Postcodes that have no coordinated position will be given zero coordinates (‘00000000000000’) and the positional quality indicator in the accompanying Attribute Record will be set to ‘0’.

Record examples:

```
2100000010001027253001969560 0%
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Attribute Record [ATTREC] 14

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	14	Record type identifier
ATT_ID	03:08	I6	000000	Not used
|VAL_TYPE	09:10	A2	PC	Attribute mnemonic
|VALUE	11:*		SO515RU	Attribute value
CONT_MARK	*:*	A1	0	No continuation record or
			1	continuation record follows
EOR	*:*	A1	%	Record terminator

The pair of fields {VAL_TYPE} and {VALUE} will repeat to specify all the attributes required. It may be necessary to utilise a continuation record to specify all attributes.

The Attribute Record will contain all or some of the following fields:

Attribute mnemonic	Description	Fixed or variable	Size
PC	Postcode unit	F	A7
PQ	Positional quality indicator	F	I2
PR	PO box indicator	F	A1
TP	Total number of delivery points	F	I3
DQ	Delivery points – used to create the CPLC where PQI value is 10 or 20	F	I3
RP	Domestic delivery points	F	I3
BP	Non-domestic delivery points	F	I3
PD	PO box delivery points	F	I3
MP	Matched address premises	F	I3
UM	Unmatched delivery points	F	I3
CY	Country code	F	I3
RH	NHS regional health authority code	F	A3
LH	NHS health authority code	F	A3
CC	Administrative county code	F	A2
DC	Administrative district code	F	A2
WC	Administrative ward code	F	A2
LS	Postcode type	F	A1

Attributes with null data will be omitted from this record.

Each of the attribute mnemonics will be defined in an Attribute Description Record [ATTDESC] 40 at the start of the transfer set.

Record example:

```
14000000PCSO515RUPQ3PRNTP017DQ017RP017BP000PD000MP017UM000RV19990215RHY06LHQD31%
00CC24DCUNWCFW0%
```

```
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Volume Terminator Record [VOLTERM] 99

Field	Position	Format	Value example	Description
REC_DESC	01:02	A2	99	Record type identifier
FREE_TEXT	03: *	A*	*	Message (see note below)
CONT_VOL	*:*	I1	0	No continuation volume follows
EOR	*:*	A1	%	Record terminator

NOTE: The FREE_TEXT field will comprise the message: End Of Transfer Set

Record example:

```
99End Of Transfer Set0%
```

```
....|....1....|....2....|....3....|....4....|....5....|....6....|....7....|....8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
```

Template

Chapter 4 Comma Separated Values (CSV) explained

An overview of the data in CSV format

CSV is a de facto standard method for delivering data. This is provided to suit customers requiring a simple business use. CSV can be used in a word-processing package or presented as a spreadsheet. Code-Point information in CSV is held within individual fields. Each field is either textual, for example, SO515RU, or numeric, for example, 21. Within CSV each field is separated from the next by a comma. If the field is textual, then the text is enclosed in double quotes, for example, "SO515RU".

This method of representation can also be referred to as a Comma Delimited File (CDF). All coordinate values within Code-Point are given with a precision of 1 metre.

See also chapter 5.

Chapter 5 Record structures for the transfer of Code-Point in CSV

CSV fields

The CSV will contain the following fields separated by commas in the following order:

Mnemonic	Description	Format	Size	Description
PC	Postcode unit	A7	7	
	Field separator	A1	1	,
PQ	Positional quality indicator	I2	1	
	Field separator	A1	1	,
PR	PO box indicator	A1	1	
	Field separator	A1	1	,
TP	Total number of delivery points	I3	*	
	Field separator	A1	1	,
DQ	Delivery points – used to create the CPLC where the PQI value is 10 or 20	I3	*	
	Field separator	A1	1	,
RP	Domestic delivery points	I3	*	
	Field separator	A1	1	,
BP	Non-domestic delivery points	I3	*	
	Field separator	A1	1	,
PD	PO box delivery points	I3	*	
	Field separator	A1	1	,
MP	Matched address premises	I3	*	
	Field separator	A1	1	,
UM	Unmatched delivery points	I3	*	
	Field separator	A1	1	,
EA	Eastings	I6	*	
	Field separator	A1	1	,
NO	Northings	I7	*	
	Field separator	A1	1	’
CY	Country code	I3	3	
	Field separator	A1	1	,
RH	NHS regional health authority code	A3	3	
	Field separator	A1	1	,
LH	NHS health authority code	A3	3	
	Field separator	A1	1	,
CC	Administrative county code	A2	2	
	Field separator	A1	1	,
DC	Administrative district code	A2	2	
	Field separator	A1	1	,
WC	Administrative ward code	A2	2	
	Field separator	A1	1	,
LS	Postcode type	A1	1	

Those fields containing text, that is, alphanumerics (A), will be enclosed by double quotes, which have not been included in the sizes listed above.

Fields with null data will appear as “ ” for text or 0 for a numeric.

Each record will be terminated with a carriage return character (ASCII 13) and a line feed character (ASCII 10).

Examples of a Code-Point CSV record:

“SO515RU”,10,”N”,17,17,17,0,0,17,0,437015,120914,064,”Y06",”QD3",”24",”UN”,”FW”,”S”

Annexe A Glossary

The purpose of this section is to provide a glossary of terms used in the definition of products, services, licensing and other terms and conditions for Code-Point. Where terms refer to other terms within the glossary, they are connected by means of hot links to the relevant entries.

addressed premise
A permanent or non permanent building structure with an address being a potential delivery point for Royal Mail.

Examples of an addressed premise would be: a house, a flat within a block of flats, a caravan site, a bollard to which several houseboats may be moored, or an organisation occupying the whole of a building.

ADDRESS-POINT
An Ordnance Survey addressing product that relates Royal Mail Postcode Address File (PAF) addressed properties within Great Britain to the National Grid.

area-based postcode
A type of large-user postcode that is allocated to a small number of organisations who receive an exceptionally large amount of mail. These postcodes still relate to a geographical area but may overlap other sector areas or be scattered.

building
A physical, walled structure connected to foundations that has, or will have, a roof. This definition includes buildings surveyed at foundation stage.

CPLC (Code-Point location coordinate)
A National Grid reference for each postcode unit. It is a two-dimensional coordinated point to a resolution of 1 metre. Coordinates are attributed from GRIDLINK using an accuracy hierarchy.

Country code
The code used by Office of National Statistics to indicate the country in which the Code-Point georeference lies. This has replaced the PAF update date field.

Country	Code
England	064
Scotland	179
Wales	220
N Ireland	152

Comma Separated Values (CSV)
The CSV file format is commonly used to exchange data between different applications, for example, Microsoft® Excel™ and Access. Being text files, CSV files can also be viewed in Notepad.

delivery point
A Royal Mail-defined point to which mail is delivered. This may be a property (private address), organisation, mailbox or even the name of an individual. These categories are derived from *The Complete Guide to Postcode Products* from Royal Mail. This is distinct from the addressed premise because there may be more than one organisation at an address.

Gridlink
Gridlink is the name given to a joined up government initiative involving Royal Mail, the Office for National Statistics, the General Registry Office for Scotland, Ordnance Survey of Northern Ireland and Ordnance Survey. All these organisations are involved in the georeferencing of postcodes and the relating of postcodes to administrative and National Health areas and so on.

inward code or incode
See postcode.

Land-Line
Ordnance Survey's definitive product range of large scale maps in digital form. Land-Line has a vector (point and line) structure that collectively forms 36 feature codes, with a further 27 feature codes in Land-Line.Plus®, representing an accurate and detailed representation of the real world.

large-user postcode
A large-user postcode is allocated when:

- a firm or business at a new address regularly receives, in any one day, 25 or more items of mail in a town area or 50 or more items in a rural area;
- a private box (PO box) is provided;
- Royal Mail Selectapost service is provided;
- a Business Reply or Freepost licence is taken out; or
- all Freepost and Business Replies have their own postcode.

matched address
An address, resulting from a match between the Land-Line address data and the PAF, which has been allocated a coordinate position. The match may be a result of either manual or automatic matching, the latter encompassing both full and fuzzy logic matching.

National Grid reference (NGref)
The National Grid provides a unique reference system that can be applied to all Ordnance Survey maps of Great Britain. The map of Great Britain is covered by 100 km by 100 km grid squares, with the origin lying to the west of the Isles of Scilly. When a National Grid reference is quoted, the easting (left to right direction) is always given before the northing (upwards direction).

A National Grid reference (to 1 metre) will identify the spatial position of the CPLC.

non-geographic postcodes
Special non-geographic postcodes are allocated to single organisations who receive an exceptionally large amount of mail. These are included in Code-Point.

National Transfer Format (NTF)
A vector interchange format used to distribute digital map products from Ordnance Survey that conforms to BS 7567 (Electronic transfer of geographic information (NTF)).

outward code or outcode
See postcode.

PAF (Postcode Address File)
The PAF was created when all the separately held information was assembled and stored on a Royal Mail central computer system. PAF now contains the postal addresses and postcodes of approximately 26 million delivery points in Great Britain, including approximately 222 000 large users.

positional quality (PQ)
The positional quality is a flag to indicate the positional accuracy of the Gridlink coordinates allocated to each postcode record.

All postcodes are to 1 m resolution, but Gridlink will seek to provide the most accurate coordinates according to the hierarchy detailed in the following table.

Status value	Description of status values
1	Automatically calculated to be within the building of the matched address closest to the postcode mean.
2	As for status value 1, except by visual inspection of Land-Line maps.
3	Approximate to within 50 m of true position.
4	Postcode unit mean – (mean of matched addresses with the same postcode, but not snapped to a building).
5	Postcode imputed by ONS by reference to surrounding known postcodes.
6	Postcode sector mean – mainly PO boxes.
8	Postcode terminated. No postcodes of this type will be provided by Gridlink, nor should they be provided to Gridlink. Consortium members may wish to hold this information for historical purposes. The accuracy of the data is as indicated by its status value immediately prior to its termination.
9	No coordinates available.

postal address

A postal address is a delivery point that is currently receiving mail. There may be many delivery points within an individual building structure as shown in Land-Line data.

postcode

An abbreviated form of address made up of combinations of between five and seven alphanumeric characters. A postcode may cover between 1 and 100 addresses. The average number of addresses per postcode is 15.

There are two main components of a postcode:

- The outward code (also called outcode). The first two to four characters of the postcode constituting the postcode area and the postcode district. It is the part of the postcode that enables mail to be sent from the accepting office to the correct area for delivery.
- The inward code (also called incode). The last three characters of the postcode constituting the postcode sector and the postcode unit. It is used to sort mail at the local delivery office.

For example:

Outward		Inward	
NW	6	4	DP
			Unit
		Sector	
	District		
Area			

postcode area
An area given a unique alphabetic coding by Royal Mail to facilitate the delivering of mail. The area is identified by one or two alpha characters at the start of the full postcode, the letters being derived from a town, city or district falling within the postcode area. There are at present 120 postcode areas in Great Britain, for example, SO for Southampton, MK for Milton Keynes, B for Birmingham or W for London West. The postcode area code constitutes the first part of the outward code.

postcode district
A sub-area of the postcode area, specified by the character sub-string within the first half of a full postcode, which may be numeric, alphabetic or alphanumeric; for example, 42 from MK42 6GH or 1A from W1A 4WW. There are approximately 2800 postcode districts in Great Britain.

NOTE: There are certain non-geographic districts. In these instances a district code is allocated to cover all large users in the postcode area.

postcode sector
A sub-area of a postcode district whose area is identified by the number third from the end of a full postcode. There are approximately 9000 postcode sectors in Great Britain. An example of a postcode sector code is 3 from GU12 3DH.

postcode unit
A sub-area of a **postcode sector**, indicated by the two letters of the **inward postcode**, which identifies one or more **small-user postcode** delivery points or an individual **large user postcode**. There are approximately 1.7 million postcode units in the UK.

Post office (PO) box
Generally, a non-geographic address allocated with a number by the Post Office®. PO boxes within ADDRESS-POINT are now matched to the Royal Mail delivery office at which they are based (except in the BT postcode area), rather than the average of matched addresses within the postcode sector. This will enable PO boxes to be matched with a PQI value of 10.

Postzon
A file marketed by Royal Mail that allocates a National Grid reference to each postcode unit. This coordinate is derived from a 100 metre square that contains the first of the range of addresses that form the postcode unit.