

BRITISH STANDARD

Spatial datasets for geographical referencing –

Part 1: Specification for a street gazetter

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Summary of pages

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Foreword

Publishing information

This part of BS 7666 was published by BSI and came into effect on 28 July 2006. It was prepared by Technical Committee IST/36, Geographic information. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

BS 7666 was originally published over the period 1994 to 1996 in four parts.

These four parts were revised separately over the period 2000 to 2002. During 2004 to 2005, all the parts were revised together, with a new Part 0: *General model for gazetteers and spatial referencing* has been added. This provides a common structure for gazetteers of any class of geographic object.

BS 7666 now comprises the following parts:

- *Part 0: General model for gazetteers and spatial referencing;*
- *Part 1: Specification for a street gazetteer;*
- *Part 2: Specification for a land and property gazetteer;*
- *Part 5: Specification for a delivery point gazetteer.*

These parts supersede BS 7666-1:2000, BS 7666-2:2000, BS 7666-3:2000 and BS-7666-4:2002. The new Part 0 has subsumed Part 3: Specification for addresses. Part 1 has subsumed Part 4: Specification for recording public rights of way but in other respects is similar in scope to that published previously. The scope of Part 2 is largely unchanged. Part 5 is new in scope.

Parts BS 7666-1:2000, BS 7666-2:2000, BS 7666-3:2000 and BS-7666-4:2002 are now withdrawn. Thus Parts 3 and 4 will not form part of the standard although there will now be a Part 5. Renumbering has not taken place to avoid any confusion with the withdrawn standards.

The main changes that have been made to this Part of the Standard are as follows:

- the structure, content and terminology are made consistent with the new general model in Part 0;
- the addition of a requirement for gazetteer metadata;
- the addition of a facility for recording descriptive identifiers in multiple languages;
- the addition of a facility for classification of streets;
- the removal of the tolerance attribute and the replacement of the spatial locator by a pair of extremity points;
- the addition of a facility for cross-referencing to other datasets;
- removal of the requirement for the identifier of an elementary street unit to be the coordinates of a reference point and replacement with a general identifier;
- the addition of a informative annex on Public Rights of Way;
- other minor changes in the light of experience of use.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

Streets are defined in different ways by different people for different purposes, and references can be by name, number or description. In this part of the standard, a general, all-encompassing definition is taken. Different ways of referencing streets are specified. Individual streets may have multiple references, and streets may overlap.

The intention of this part of BS 7666 is to enable the consistent definition of streets and their compilation into street gazetteers. This will be used for a range of purposes, including highways and streetworks management, property addressing and navigation. A street gazetteer will also provide the street referencing element of land and property gazetteers which provide a definitive list of land parcels and properties, each uniquely identified.

Data to be recorded about Public Rights of Way, previously defined in BS 7666-4:2002, is included as an annex to this part, and applies only to England and Wales.

1 Scope

This part of BS 7666 specifies the data to be maintained in a gazetteer of streets, consistent with Part 0 of this standard. This enables different users of street information to use the same data with consistency of content, accuracy, currency and format. Different ways of referencing a street are defined so that data can be accessed by street name, description, route number, unique reference number or external cross-reference.

This part of BS 7666 also specifies the means of representing the geometry of the street in terms of coordinates. Three ways are allowed for this with successive levels of detail:

- a) by identifying the end points of a street, and representing the street as a single line segment;
- b) by breaking the street at its intermediate junctions to create a set of constituent line segments, termed elementary street units;
- c) by describing the course of each elementary street unit.

Each of these options is defined by a level of conformance to the standard.

This part of BS 7666 is intended for use by those compiling street gazetteers for purposes of highways and streetworks management, property addressing and navigation. It does not provide a database design or a transfer format.

This part of BS 7666 also specifies how additional information on Public Rights of Way may be recorded. This only applies to England and Wales.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the reference cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 7666-0, *Spatial datasets for geographical referencing — Part 0: General model for gazetteers and spatial referencing*.

BS ISO 639-2, *Codes for the representation of the names of languages — Alpha-3 code*.

BS ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*.

3 Terms and definitions

For the purposes of this part of BS 7666, the terms and definitions given in BS 7666-0 and the following apply.

3.1 administrative area

geographic area that may be either:

- a) a highest level local administrative area, which may be a county, unitary authority, metropolitan district, council area (Scotland) or district council (Northern Ireland); or

- b) Greater London; or
- c) an island or group of islands.

NOTE Examples of administrative areas are “Gloucestershire”, “London”, “Shetland Islands” and “the Isle of Man”.

3.2 coordinated point

defined point, the position of which is recorded as a pair of coordinates relative to coordinate reference system

NOTE Examples are a pair of National Grid coordinates in Great Britain.

3.3 designated street name

name for a street that has been allocated by a street naming authority

NOTE This can normally be identified by a name plate on the street. In some cases, there may be two designated street names, e.g. where there are multiple languages used.

3.4 elementary street unit

subset of a street that forms a continuous length between adjacent junctions or other significant landmarks

NOTE An example of a significant landmark is a marker of the boundary of a locality or town.

3.5 locality

local area identified formally or informally by a particular name where people live or where certain activities take place that may form part of a town, or stand in its own right within the context of one or more administrative areas

NOTE A locality may be a neighbourhood, suburb, district, village, estate, settlement, parish or industrial estate

3.6 public right of way PROW

legally defined route over land in England and Wales along which any member of the public has the right to pass and repass

3.7 street

way or thoroughfare providing a right of passage on foot, by cycle or by motor vehicle, or access to more than one property

NOTE The term “street” is used throughout this standard to encompass the terms “street”, “road” and “thoroughfare”. A street may be the whole or a part of a highway, road, lane, footpath, cyclepath, square, court, alley or passage. Rivers, canals, waterways, railways and drives to a single property are not streets.

3.8 street description

description, allocated by a street naming authority or highway authority, used to identify a street that does not have a designated street name

NOTE A street that does not have a designated street name does not normally have a street name plate.

3.9 street reference

name, number or description that identifies a street or part of a street

3.10 street naming authority

body designated with the responsibility for naming all streets in a defined area

NOTE This is normally a district council, unitary authority, metropolitan district, or London borough including the City of London. It is not necessarily the highway authority.

3.11 street number

road or route number allocated to a street by a relevant authority

NOTE Examples of a relevant authority are the Department for Transport, the Scottish Executive, the Welsh Assembly Government, Northern Ireland Roads Service and the local highway authority. Examples of numbered streets are "A1" and "C1111". A street may have more than one street number.

3.12 town

city or town that is not an administrative area, or a suburb of an administrative area that does not form part of another town

NOTE Examples of towns are "Luton", "Gosforth" and "Ealing".

3.13 unofficial street name

name by which a street is known, but which has not been designated by a street naming authority

NOTE Such a street name may cover part or all of one or several streets. Examples are "Lovers Lane", "The Great North Road" and "The old A14".

4 Street gazetteer requirements

4.1 Scope of gazetteer

A street gazetteer contains references to instance of streets within its territory of use. The following types of street may be included within the scope of the gazetteer:

- a) motorway;
- b) trunk road;
- c) classified (numbered or unnumbered) road;
- d) any other named or unnamed road;
- e) public right of way;
- f) any other way that falls within the definition of a street that is required to be included to meet a particular user need.

NOTE A "virtual" street such as a high rise building, or a river, canal, waterway or railway should not be included in the gazetteer. An indoor street within a shopping mall may be included in a gazetteer.

4.2 Street references

For every street, a street reference shall be given, in the form of either:

- a) the designated street name; or
- b) the street description if the street does not have a designated street name.

NOTE 1 Additional street references in the form of a street number and/or an unofficial street name may also be included.

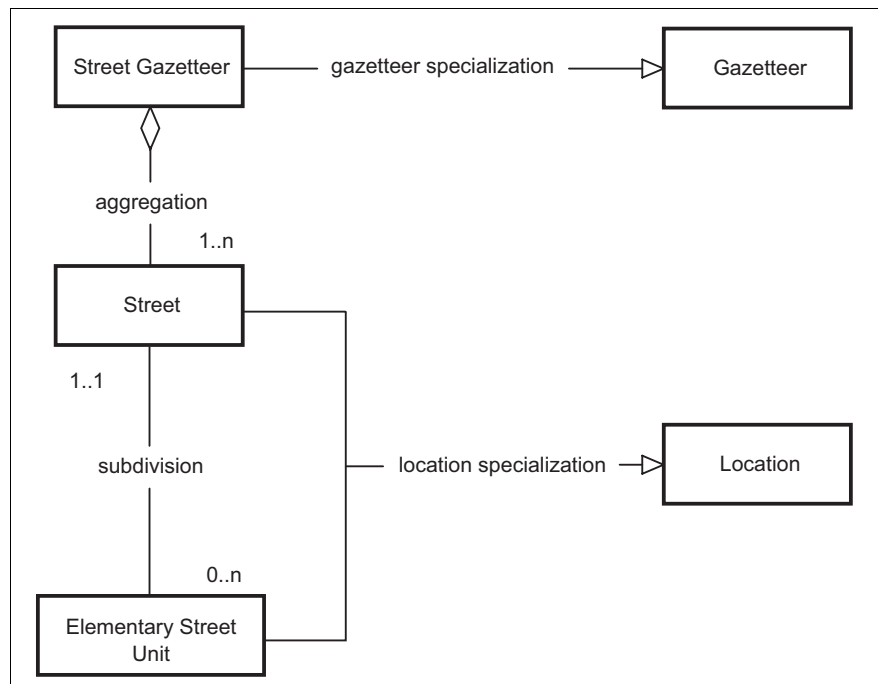
NOTE 2 An individual street may have more than one entry in the gazetteer as a result of being referenced in several ways, and different street references may overlap, e.g. Ellesmere Road is part of the Great West Road.

A gazetteer may also contain details of the **elementary street units**, the individual lengths of street that make up the street.

NOTE 3 A set of conformance levels for street gazetteers are defined in Annex A covering the optional requirements. Three levels of conformance are defined.

The relationship between the street and elementary street unit is shown in Figure 1.

Figure 1 **Street gazetteer model**



NOTE The diagramming convention used in this figure is explained in Annex B. Street Gazetteer is a specialization of a Gazetteer as defined in Part 0 of this British Standard. Street and Elementary Street unit are specializations of Location as defined in Part 0 of this British Standard.

4.3 Conformance

A street gazetteer shall conform to one of the three levels defined in Annex A.

4.4 Special cases

4.4.1 Roundabouts

If named, a roundabout shall be included in the gazetteer with a separate street reference. If unnamed, a roundabout may be included in the gazetteer with a description or may be regarded as part of one of the streets, usually the major street passing through or leading to or from the roundabout. Mini roundabouts shall be considered as part of all the streets in which they are situated. Where a street continues beyond a roundabout, it shall be considered as a single street with a single street reference, unless the street name or number changes at the roundabout.

NOTE If elementary street units are recorded for a roundabout, then there will be one between each pair of adjacent streets coming into the roundabout.

4.4.2 Dual carriageway streets

A dual carriageway shall be considered as one street in the gazetteer, unless the individual carriageways have different names or numbers. If elementary street units are recorded in the gazetteer, then the two individual carriageways shall be recorded as separate elementary street units.

4.4.3 Link and slip roads

All link and slip roads at junctions and interchanges shall be considered as part of the street to which they relate unless they are separately named. Where a link or slip road relates equally to two streets, e.g. a slip road between two motorways, it shall be considered as part of the one onto which it leads. If elementary street units are recorded, then each link or slip road shall be recorded as an elementary street unit.

4.4.4 Cycle routes beside carriageways

A cycle route separated from a carriageway (e.g. by a verge or kerb) shall be recorded as a separate street.

NOTE Where a cycle route is within the carriageway (e.g. where it is differentiated by coloured tarmac or a white line), it is considered to be part of the carriageway.

5 Gazetteer metadata

5.1 Requirements

A gazetteer shall have metadata associated with it. This metadata shall be described by certain high-level attributes as specified in 5.2 and 5.3.

5.2 Mandatory elements

A gazetteer shall have the following mandatory (M) metadata elements:

- a) **name:** name of the gazetteer;
- b) **scope:** description of the content of the gazetteer, including the rules for inclusion or exclusion, e.g. “public streets and streets used for creating addresses of residential and commercial property”;

- c) **territory of use:** geographic domain of the street gazetteer, e.g. Great Britain, England and Wales, Scotland, Northern Ireland;
- d) **gazetteer owner:** the organization or organizations with overall responsibility for the gazetteer, e.g. “DNA Scotland” or “the Local Government Information House”;
- e) **custodian:** the role, organization or organizations responsible for the compilation and maintenance of the data in the gazetteer, e.g. the Street Gazetteer Custodian;
- f) **coordinate system:** coordinate reference system used to describe position in the gazetteer, e.g. the National Grid (NG) of Great Britain, or Irish Transverse Mercator (ITM);
- g) **current date:** the date at which the gazetteer can be considered to be current.

NOTE The current date is not necessarily the date of creation or last update of the gazetteer.

5.3 Optional elements

A gazetteer shall have the following optional (O) metadata elements:

- a) **coordinate axis units:** unit of measure of coordinates, e.g. metres;
- b) **metadata date:** date of last update of metadata;
- c) **street classification scheme:** the street classification scheme used in the gazetteer;
- d) **state coding scheme:** the coding scheme used to define the logical state of a street recorded in the gazetteer;

NOTE An example coding scheme is given in C.2 in Annex C.

- e) **language(s):** the languages used in the gazetteer for names and descriptors, identified by a three letter code as specified in BS ISO 639-2 (see Annex C);

NOTE Where no language is specified, a default of English is assumed.

- f) **character set(s):** any non-English character set(s) used to record entries in the gazetteer, e.g. Gaelic;
- g) **external cross-referencing scheme(s):** any external cross-referencing scheme(s) used in the gazetteer to reference the street, other than that defined in this Standard, e.g. Ordnance Survey TOIDs (topographic identifiers).

5.4 Structure

Metadata about the gazetteer shall be provided as defined in 5.2 and 5.3 and in accordance with Table 1.

NOTE A UML model is shown in Annex B, which also shows the relationships with the other classes. An example metadata set is given in Annex D.

Table 1 Gazetteer metadata

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
name	name	M	1	CharacterString
scope	scope	M	1	CharacterString
territory of use	terOfUse	M	1	CharacterString
gazetteer owner	gazOwner	M	1	CharacterString
custodian	cust	M	1	CharacterString
coordinate system	coordSys	M	1	CharacterString
coordinate axis units	coordUnit	O	1	CharacterString
metadata date	metaDat	O	1	Date
street classification scheme	stClassScm	O	1	CharacterString
state coding scheme	statCodScm	O	1	CharacterString
current date	curDat	M	1	Date
language	language	O	N	Language ^f
character set	charSet	O	N	CharacterString
external cross-referencing scheme	extXRefScm	O	N	CharacterString

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f See Annex C.

6 Street records

6.1 Streets

Each record in the gazetteer shall identify a single instance of a street. The street instance may be related to other street instances (e.g. a named street may form part of a numbered street).

NOTE A street instance may extend to:

- the end of a street where it is a close or cul-de-sac;
- the point at which there is a change of designated street name;
- the limit of a street description;
- the point at which a street number ceases to apply;
- a change of locality, town or administrative area;
- the boundary of the territory of use.

6.2 Mandatory attributes

A street recorded in the gazetteer shall have the following mandatory (M) attributes:

- unique street reference number:** an identifier for the street (see 6.7.1);
- descriptive identifier(s):** spatial references for the street in the form of a description of its location (see 6.6);

- c) **record type:** a primary classification of the street record (see 6.7.2);
- d) **entry date:** date street record added to the gazetteer;
- e) **update date:** date of last update of street record;
- f) **start date:** date at which street was created;
NOTE When the start date is not known, a notional date at which it is known to exist should be used, e.g. 2000-01-01.
- g) **geographic extent:** described by a pair of extremity points (see 6.7.3);
- h) **responsible authority:** an administrator for the street (see 6.7.4).

6.3 Optional attributes

Where appropriate, a street recorded in the gazetteer shall also have one or more of the following optional (O) attributes:

- a) **street classification:** code for the type of street (see Annex C);
- b) **end date:** date at which street ceased to exist;
- c) **state:** code identifying the logical state of the street (see Annex C);
- d) **current state date:** date at which street achieved its current state in the real-world;
- e) **external cross-reference(s):** identifier(s) of street recorded elsewhere, e.g. its Ordnance Survey TOID (Topographic Identifier).

6.4 Associations

A street may have the following associations:

- a) overlaps one or more other **streets**;
NOTE Overlapping streets are those that are co-incident in whole or in part. Each is identified by its unique street reference number.
- b) **subdivides** into one or more **elementary street units**.

6.5 Structure

A street record shall be structured in accordance with Table 2.

NOTE 1 A UML model is shown in Annex B. Examples are given in Annex E.

NOTE 2 As appropriate, additional attributes may be added by the user in the context of a particular application, for example street record version number.

Where attributes for Public Rights of Way (PROWs) are required, they shall be as specified in Annex F.

Table 2 Attributes of street

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
unique street identifier	usrn	M	1	CharacterString
descriptive identifier	descId	M	N	DescriptiveIdentifier
record type	recType	M	1	Integer
street classification	stClass	O	1	Integer
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
start date	startDat	M	1	Date
end date	endDat	O	1	Date
state	state	O	1	CharacterString
current state date	curStatDat	O	1	Date
extremity point1	extPt1	M	1	Point
extremity point2	extPt2	M	1	Point
responsible authority	respAuth	M	1	Integer
external cross-reference	extXRef	O	N	CharacterString
<i>role name</i> ^f : subdivides into	subdividesInto	O	N	ElementaryStreetUnit
<i>role name</i> ^f : overlaps	overlaps	O	N	Street

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f The name of the association.

6.6 Descriptive identifier

6.6.1 Purpose

Where a street has more than one name designated by the street naming authority, or where there is more than one version of any of these fields, e.g. in Wales where there may be names in English and in Welsh, an additional descriptive identifier shall be recorded.

All names shall be recorded in full. Abbreviations and punctuation shall not be used unless they appear in the designated name, and only single spaces shall be used.

6.6.2 Mandatory elements

A descriptive identifier shall have the following mandatory (M) elements:

- a) **identifier:** a name, number or description of the street (see 6.6.5);

6.6.3 Optional elements

A descriptive identifier may also have the following optional (O) element:

- a) **language:** code identifying the language used for the descriptive identifier (see Annex C).

NOTE 1 This attribute is used to identify the language in a multi-lingual context, and the text may include words in other languages. Where no language is given, it is assumed to be English.

A descriptive identifier shall also have at least one of the following optional (O) elements:

- a) **locality:** the name of the locality in which the street is located;
- b) **town:** the name of the town in which the street is located;
- c) **administrative area:** the name of the administrative area in which the street is located.

NOTE 2 The purpose of the locality, town and administrative area is to provide a spatial reference for the street, and as a minimum should identify and locate the street uniquely. Additional elements may be recorded if they will be of benefit to other applications. Where the street extends over more than one locality, then either the street shall be split between the localities, with a separate street reference for each, or else no locality name should be given. Similarly, where the street extends over more than one town, then either the street shall be split between the towns, with a separate street reference for each, or else no town name should be given.

6.6.4 Structure

A descriptive identifier shall be structured in accordance with Table 3.

NOTE A UML model for the descriptive identifier is given in Annex B.

Table 3 **Descriptive identifier**

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
identifier	id	M	1	CharacterString
language	language	O	1	Language ^f
locality	locality	C ^g	1	CharacterString
town	town	C ^g	1	CharacterString
administrative area	adminArea	C ^g	1	CharacterString

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M), conditional (C) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f See Annex C.

^g At least one of locality, town and administrative area are required sufficient to describe the location of the street.

6.6.5 Street names descriptions and numbers

6.6.5.1 Street names

A designated street name or an unofficial street name shall be recorded in full. Abbreviations and punctuation shall not be used unless they appear in the designated name, e.g. "Dr Newton's Way", and only single spaces shall be used.

6.6.5.2 Street descriptions

A street description shall include the type of street and contain only what is necessary for the purpose of identification, such as a description of the end

locations or identifiable landmarks. If the street lies within a large public or private establishment or estate, then it shall be identified to that site.

NOTE Examples of a street description are: “Underhill Lane, track to South Farm”, “Smith Street, alley behind houses on north side”, “Southmoor Trading Estate service road”, “M1 from junction 3 to junction 4” and “Grand Canal, towpath on the north side from Old Bridge to New Bridge”.

6.6.5.3 Street numbers

A street number shall comprise road or route number allocated to a street by a relevant authority.

NOTE 1 Examples of a relevant authority are the Department for Transport, the Scottish Executive, the Welsh Assembly Government, Northern Ireland Roads Service and the local highway authority.

A county/highway authority reference shall be prefixed by the additional character “Z”.

NOTE 2 Examples of street numbers are “A5127M”, “ZC1366” and “ZU1484”.

6.7 Attributes

6.7.1 Unique street reference number

Each street referenced in the gazetteer shall have a unique street reference number. The reference number shall not be changed if responsibility for the street transfers from one authority to another.

6.7.2 Record type

The record type shall be a one digit integer identifying the type of a street reference, as given in Table 4.

Table 4 **Record types**

Record type	Street reference type
1	Designated street name
2	Street description
3	Street number
4	Unofficial street name

6.7.3 Extremity points

The extremity points shall be two points at the ends of the street, each represented by a coordinate pair. These points shall be at opposite ends of the street, where two ends are readily identified. If the street has more than two ends, then the two extremity points shall be at the two ends that are farthest apart. If the street has only one identifiable end, then the second extremity point shall be the identifiable point (e.g. a corner or junction) that is farthest from the identifiable end of the street.

NOTE 1 If the street does not have ends (i.e. it is circular), then any identifiable point (e.g. a corner or junction) may be selected, and the same coordinated point taken for both extremity points.

NOTE 2 Where properties in the street are numbered, the order of extremity points should follow the order of progression of property numbers. Where there are no property numbers and the street is one-way, the extremity points should be ordered in the direction of travel.

Where a metric grid is used, e.g. the National Grid in Great Britain, all coordinated points shall be measured to an accuracy of not less than 10 m relative to other recorded coordinates, and recorded at a precision of 1 m.

NOTE 3 If the street is less than 10 m in length, then the two extremity points may be the same.

6.7.4 Responsible authority

The responsible authority shall be the local or national authority that has current responsibility for naming or numbering the street. The responsible authority shall be identified by a code identifying the authority.

NOTE The responsible authority is the street naming authority for a designated or unofficial street name or a street description, and the highway authority, i.e. the Department for Transport, the Scottish Executive, the Welsh Assembly Government, Northern Ireland Roads Service or the local highway authority for a street number. It is not necessarily the same authority that originally named or numbered the street, e.g. where authority reorganization or boundary changes have occurred. The codes are allocated by the Office for National Statistics.

7 Elementary street unit records

7.1 Mandatory attributes

An elementary street unit recorded in the gazetteer shall have the following mandatory (M) attributes:

- a) **unique identifier:** a unique numeric identifier for the elementary street unit;

NOTE 1 The unique identifier need not be a coordinate of a reference point within the metalled area of the elementary street unit.

- b) **entry date:** date elementary street unit added to the gazetteer;
 c) **update date:** date of last update of elementary street unit record;
 d) **start date:** date at which elementary street unit was created in the real-world;

NOTE 2 When the start date is not known, a notional date at which it is known to exist should be used, e.g. 2000-01-01.

- e) **geographic extent:** described by a pair of extremity points as defined in 6.6.4.

NOTE 3 Where properties in the street are numbered, the extremity point closest to the lowest numbered property should be taken as the first extremity point. Where there are no property numbers and the elementary street unit forms part is a dual carriageway or one-way street, the extremity points should be ordered in the direction of travel.

7.2 Optional attributes

Where appropriate, an elementary street unit recorded in the gazetteer shall also have one or more of the following optional (O) attributes:

- a) **street classification:** class of the elementary street unit (a recommended set of values are given in Annex C, Table C.1);
- b) **description:** a descriptive identifier for the elementary street unit within the street, e.g. "High Street between North Road and South Road";
- c) **end date:** date at which elementary street unit ceased to exist in the real-world;
- d) **state:** code identifying the physical state of the elementary street unit (a recommended set of values are given in Annex C, Table C.2);
- e) **current state date:** date at which elementary street unit achieved its current state;
- f) **coordinated points:** a set of coordinates describing the centre-line of the elementary street unit, such that the geometry of the line always remains within the extent of the street;
NOTE These coordinates may be recorded by means of a cross-reference to an external source of data.
- g) **external cross-reference(s):** identifier(s) of related objects recorded elsewhere (e.g. Ordnance Survey TOIDs).

7.3 Associations

An elementary street unit shall have the following relationships:

- a) **subdivides** one or more **streets**.

7.4 Structure

An elementary street unit record shall be structured in accordance with Table 5.

NOTE 1 A UML model is shown in Annex B. An example of elementary street unit data is given in Annex G.

NOTE 2 As appropriate, additional attributes can be added by the user in the context of a particular application.

NOTE 3 A set of conformance levels for street gazetteers, covering some of the optional requirements for elementary street units are defined in Annex A.

Table 5 Attributes of elementary street unit

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
unique identifier	uniqueId	M	1	CharacterString
street classification	stClass	O	1	StreetClassification ^f
description	desc	O	1	CharacterString
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
start date	startDat	M	1	Date
end date	endDat	O	1	Date
state	state	O	1	Integer
current state date	curStatDat	O	1	Date
extremity point1	extPt1	M	1	Point
extremity point2	extPt2	M	1	Point
coordinated point	coordPt	O	N	Point
external cross-reference	extXRef	O	N	CharacterString
<i>role name</i> ^g :				
subdivides	subdivides	M	N	Street

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f See Table C.1.

^g The name of the association.

8 Data quality

The quality of data in a gazetteer shall be tested and reported.

Associated with each gazetteer shall be a data quality report recording a standard set of data quality measures. This report shall contain details of any tests carried out, including details of the test methods, the date of the test, the name of the tester, and details of any source material or other information used. Where tests are performed on samples of the data, these shall be chosen at random, and the method of generation of the sample shall be recorded. The data quality report shall contain sections covering each of the following aspects:

- a) **lineage:** a description of the source material from which the gazetteer and updates to it were derived and the methods of derivation;
- b) **currency:** the date for which the gazetteer is current;
- c) **positional accuracy:** results of tests of the positional accuracy of the coordinates in the gazetteer, in terms of distance on the ground;
- d) **attribute accuracy:** the results of tests carried out on the accuracy of the (discrete) attributes in the gazetteer, expressed as the percentage found correct, and of the continuous attributes (e.g. dates), expressed as a mean error;

- e) **completeness:** the results of tests to verify that all entries have been included in the gazetteer, expressed as a percentage present, together with the results of tests to verify that there are not duplicate entries, expressed as a percentage of duplicates
- f) **logical consistency:** the result of tests to verify that entries in the gazetteer have been recorded in a consistent manner.

Annex A (normative) Conformance

This Annex defines a set of conformance levels for street gazetteers, covering some of the optional requirements. Three levels of conformance are defined.

A.1 Gazetteer containing only streets

A street gazetteer shall conform to this part of BS 7666 at level 1 if:

- it contains a record of all streets within scope, as defined in Clause 4;
- for each street record, all mandatory attributes are recorded as defined in 6.2;
- gazetteer metadata is recorded as defined in Clause 5;
- there is a quality report as described in Clause 8.

A.2 Gazetteer containing streets and elementary street units with no intermediate points

A street gazetteer shall conform to this part of BS 7666 at level 2 if, in addition to meeting the requirements of A.1:

- for each street, all constituent elementary street units are recorded, as defined in Clause 7;
- for each elementary street unit, all mandatory attributes are recorded, as defined in 7.1.

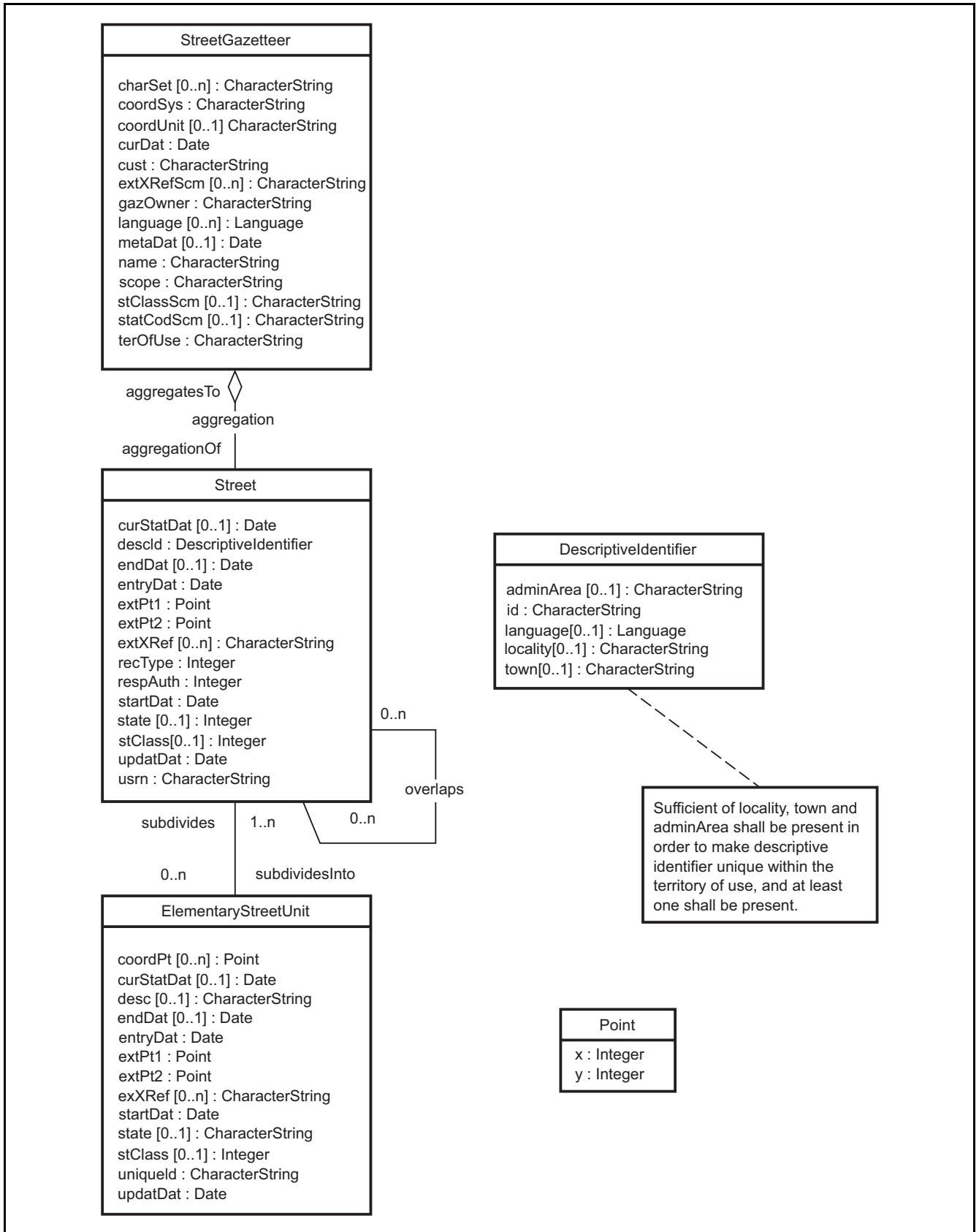
A.3 Gazetteer containing a full description of the elementary street units

A street gazetteer shall conform to this part of BS 7666 at level 3 if, in addition to meeting the requirements of A.2:

- for each elementary street unit, a set of coordinated points describing the course of the street are recorded, as defined in 7.2, so that the line defined by the coordinates lies within the polygon representing the street.

Annex B (normative) UML model

Figure B.1 UML model for a street gazetteer



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The model diagram is written in UML (Unified Modelling Language). It shows the object classes as boxes, and the associations between them. The name of the object class is given in the higher level of the box with the attributes (where given) in the lower level.

The minimum and maximum allowable number of attributes are indicated in brackets []. [0..] indicates that the attribute is optional, and [..n] implies multiple values are allowed. Where no range is given, a single attribute value is mandatory. The data type of the attribute is shown. These are:

- **CharacterString**: a sequence of alphanumeric characters;
- **Integer**: a whole number;
- **Date**: a date, recorded as a numeric value in accordance with BS ISO 8601, either in the basic format (YYYYMMDD) or in the extended format (YYYY-MM-DD), where YYYY is the year, MM is the month, and DD is the day.

Where the attribute type is another class, the name of that class is given.

Associations between object classes are identified by links (lines) between classes, identified by name. These also show the multiplicity of the association from the perspective of the other class (target) to that class (source):

- 0..1 implies optionality;
 - 1 implies one only;
 - 1..n implies one or more;
 - 0..n implies zero, one or more.
- ◇ represents an aggregation, e.g. the street gazetteer is an aggregation of streets.
- △ represents a generalization, e.g. a gazetteer is a generalization of a street gazetteer.

Annex C (informative) Recommended coding schemes

The following code lists are recommended for use in a street gazetteer.

Table C.1 **Street classification codes**

Street type code	Classification
1	metalled public road passable to vehicles
2	metalled public road with restricted access to vehicles ^a
3	unmetalled public road or track
4	pedestrian way or footpath open to the public
5	private road or track ^b
6	metalled track or cycleway open to the public
7	other public right of way ^c

^a An example is a pedestrianized street closed to normal vehicular access, but allowing access to emergency vehicles.

^b A private road may also carry a public footpath.

^c Examples are bridleways, byways open to all traffic (BOATs) and roads used as public paths (RUPPs).

Table C.2 **State codes**

State code	State
1	under construction ^a
2	constructed ^b
3	temporarily stopped up
4	permanently stopped up

^a Or under Section 38 notice.
^b For private streets, this is at the judgement of the data maintaining authority.

Table C.3 **Language codes**

Language code	Language
ENG	English
CYM	Welsh
GLE	Gaelic (Irish)
GAE	Gaelic (Scottish)
COR	Cornish
ULL	Ulster Scots

Annex D (informative)**Example street gazetteer metadata**

This Annex gives an example of a street gazetteer.

name: the National Street Gazetteer

scope: all streets maintained by relevant highways authorities (both local and national), all streets with designated names assigned by the Street Naming and Numbering Authorities, and other streets used for purposes of access and addressing of properties.

territory of use: Great Britain

gazetteer owner: Department for Transport

custodian: the National Street Gazetteer Custodian

coordinate system: National Grid of Great Britain

coordinate axis units: metres

metadata date: 2006-01-01

street classification scheme: as per BS 7666-1

state coding scheme: as per BS 7666-1

current date: 2005-09-30

language: ENG

character set: -

external cross-referencing scheme: Ordnance Survey TOID (Topographic Identifier)

Annex E (informative) **Example street data**

This Annex gives an example of street data in a street gazetteer.

unique street identifier: 080919201804

descriptive identifier: Histon Road, Cottenham, -, Cambridgeshire

record type: 1

street classification: 1

entry date: 2005-03-15

update date: 2005-03-15

start date: 1909-01-01

end date: -

state: 2

current state date: 2005-03-15

extremity point 1: 54422653

extremity point 2: 54482670

responsible authority: Cambridgeshire County Council

external cross-reference: not known

elementary street units: 54462662

overlaps: 021049

Annex F (informative) **Additional information relating to Public Rights of Way**

F.1 **Scope**

Public Rights of Way (PROWs) are routes over land in England and Wales along which any member of the public has the right to pass or repass. Designated local authorities, referred to as “surveying authorities”, have a statutory duty to record these in the form of a definitive map and statement. A surveying authority may be a unitary authority, a county council, a metropolitan district council or a London borough council. National Parks may have delegated powers related to public rights of way from one or more highway authorities in respect of surveying and highway powers within their boundaries. The surveying authority is also the highway authority.

This Annex is designed as a natural progression in the referencing process as defined by a “street” within BS 7666-1. This standard restricts itself purely to footpaths, bridleways and certain other defined tracks, collectively known as Public Rights of Way, as defined by Acts of Parliament listed in the Bibliography.

This Annex shows how additional information about streets relating to public rights of way may be recorded. It specifies a record of Public Rights of Way (PROW) in England and Wales.

PROWs defined within relevant parliamentary acts are those maintained by highway authorities in the discharge of their statutory duties. This Annex is therefore directed toward developers and users of PROW spatial datasets in their professional work, such as those working within leisure and recreational management or local land charges, or those with other interests in public rights of way generally.

F.2 Public Rights of Way records

Figure F.1 provides a data model in UML (Unified Modelling Language) for records of Public Rights of Way. It is based upon the following object classes:

- a) **Public Right of Way (PROW)**: a legally defined route over land in England and Wales along which any member of the public has the right to pass and repass;

NOTE A PROW is eligible for inclusion in the Definitive Map and Statement. PROWs include footpaths, bridleways, byways open to all traffic, roads used as public paths and restricted byways.

- b) **PROW Furniture (PROWFurniture)**: object associated with a PROW, which can be there to aid and assist the passage of the public or to facilitate agricultural or other use of the land, e.g. a bridge, a sign post or steps (to aid and assist the public), a gate or stile (to facilitate agricultural use of the land);
- c) **PROW Link (PROWLink)**: continuous subdivision of a PROW;
- d) **Link Geometry (LinkGeometry)**: details of the physical properties of a part of a PROW link;
- e) **Promoted Route (PromotedRoute)**: route with a specified geographical identity, e.g. "The Pennine Way";
- f) **Promoted Route Element (PromotedRouteElement)**: whole or part of a link containing a promoted route.

The link to a street is also shown. The attributes to be recorded for each of these object classes are shown in the following clauses.

F.3 PROW

F.3.1 Requirements

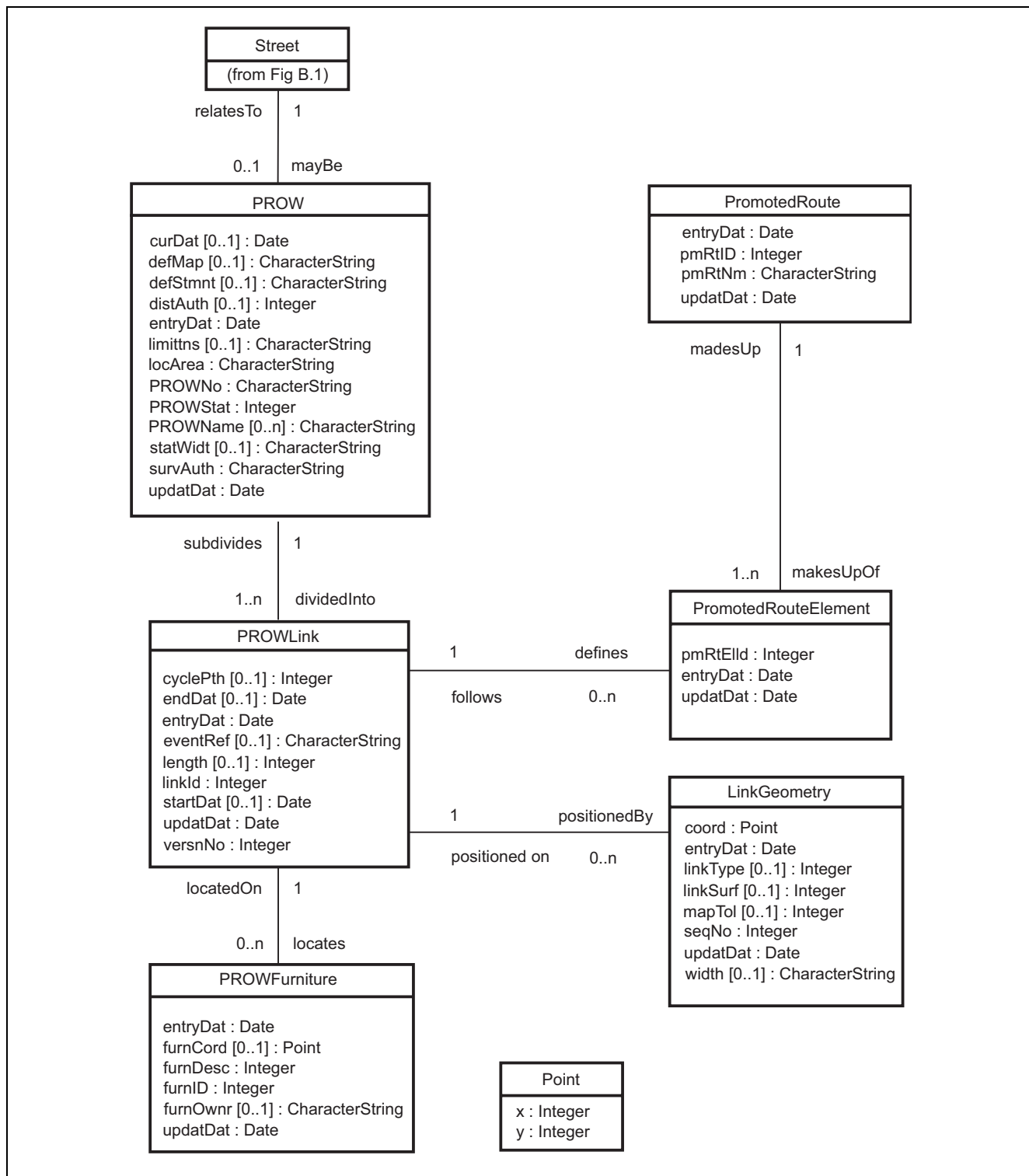
A PROW shall have attributes as defined in **F.3.2** and **F.3.3** and associations as defined in **F.3.4**.

F.3.2 Mandatory attributes

A PROW record shall have the following mandatory (M) attributes:

- a) **PROW number**: a unique identifier for the PROW within a local area;
- b) **PROW status**: code defining the status of the PROW indicating its legal usage (see **F.3.6**);
- c) **entry date**: date PROW record added to the gazetteer;
- d) **update date**: date of last update of PROW record;

Figure F.1 UML model for Public Rights of Way



- e) **surveying authority:** Office for National Statistics (ONS) code for the surveying authority, the public authority designated with the statutory responsibility for recording all public rights of way in its area;

NOTE Surveying authorities are established under the National Parks and Countryside Access Act 1949. The Countryside and Rights of Way Act 2000 contains provisions for those authorities with more than one definitive map and statement to combine them into one.

- f) **local area:** code defined by a highways authority which uniquely identifies the local area.

F.3.3 Optional attributes

Where appropriate, a PROW shall also have one or more of the following optional (O) attributes:

- a) **PROW name(s):** a name or names given to the PROW;
- b) **definitive map reference:** a cross reference to a specific definitive map, which may be the Ordnance Survey map reference or the surveying authority's unique reference;
- c) **definitive statement:** the complete definitive statement entry or a cross-reference to it;
- d) **current relevant date:** date of the current definitive map;
- e) **district authority:** Office for National Statistics (ONS) code for the district authority;
- f) **stated width:** legal width as shown in the definitive statement
- g) **limitations:** any limitations and conditions on the public use of a PROW, e.g. "The racecourse has the right to close paths on race days".

F.3.4 Associations

A PROW shall have the following associations:

- a) **relates** to a **street**;
- b) **divided into** one or more **PROW links**.

F.3.5 Structure

A PROW record shall be structured as defined in Table F.1.

F.3.6 PROW status

The PROW status shall be a code defining the status of a PROW indicating its legal usage and shall be as specified in Table F.2.

Table F.1 Attributes of PROW

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
PROW number	PROWNo	M	1	CharacterString
PROW status	PROWStat	M	1	Integer (see F.3.6)
PROW name	PROWName	O	N	CharacterString
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
definitive map reference	defMap	O	1	CharacterString
definitive statement	defStmnt	O	1	CharacterString
current relevant date	curDate	O	1	Date
surveying authority	survAuth	M	1	CharacterString
district authority	distAuth	O	1	CharacterString
local area	locArea	M	1	CharacterString
stated width	statWidt	O	1	CharacterString
limitations	limittns	O	1	CharacterString
<i>role name</i> ^f :				
relates to	relatesTo	M	1	Street

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f The name of the association.

Table F.2 PROW status code

PROW status code	Status
01	Footpath
02	Bridleway
03	Byway open to all traffic (BOAT)
04	Road used as a public path (RUPP)
05	Restricted byway

F.4 PROW Link

F.4.1 Requirements

A PROW link shall have attributes as defined in F.4.2 and F.4.3 and associations as defined in F.4.4.

F.4.2 Mandatory attributes

A PROW link shall have the following mandatory (M) attributes:

- link identity:** serial number identifying part of a PROW;
NOTE 1 Link identities do not need to be numbered sequentially.
- version number:** serial number which identifies the version of the PROW link;

NOTE 2 The version number is incremented by one whenever a new link is created as a result of a legal event.

- c) **entry date:** date when PROW link was first recorded;
- d) **update date:** date when the PROW link record was last updated.

F.4.3 Optional attributes

Where appropriate, a PROW link shall also have one or more of the following optional (O) attributes:

- a) **start date:** date at which an event occurred that creates a PROW link in whole or in part;
- b) **end date:** date of confirmation of order of closure of PROW link in whole or in part;
- c) **event reference:** reference of an external record generated to process the last event;

NOTE An event is a coming into operation of an order, agreement or other legal instrument, which creates, widens, diverts, extinguishes or changes the status of a public right of way, or the preparation of a consolidated definitive map and statement.

- d) **length:** ground distance in metres of the route between the start and end of the PROW link;
- e) **cycle path indicator:** integer with the value “1” if this link forms part of a cycle path.

F.4.4 Associations

A PROW link shall have the following associations:

- a) **subdivides a PROW;**
- b) may be **positioned by** one or more **link geometry;**
- c) may **locate** one or more items of **PROW furniture;**
- d) may **define** one or more **promoted route elements.**

F.4.5 Structure

A PROW link record shall be structured in accordance with Table F.3.

Table F.3 Attributes of PROW link

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
link identity	linkId	M	1	Integer
version number	versnNo	M	1	Integer
start date	startDat	O	1	Date
end date	endDat	O	1	Date
event reference	eventRef	O	1	CharacterString
length	length	O	1	Integer
cycle path indicator	cyclePth	O	1	Integer ^f
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
<i>role name</i> ^g : subdivides	subdivides	M	1	PROW
<i>role name</i> ^g : positioned by	positionedBy	O	N	LinkGeometry
<i>role name</i> ^g : locates	locates	O	N	PROWfurn
<i>role name</i> ^g : defines	defines	O	N	PromotedRouteElement

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute

^f Set to the value "1" if link forms part of a cycle path, otherwise blank

^g The name of the association.

F.5 Link geometry

F.5.1 Requirements

Where recorded, Link geometry shall have attributes as defined in **F.5.2** and **F.5.3** and associations as defined in **F.5.4**.

F.5.2 Mandatory attributes

Link geometry shall have the following mandatory (M) attributes:

- a) **sequence number**: consecutive number reflecting the sequential order of coordinates from the beginning to the end of the link;
- b) **coordinate**: grid reference identifying a point on the PROW;
NOTE The coordinate may be a grid reference identifying the location of one or more of:
 - i) the start point of a link;
 - ii) the end point of a link;
 - iii) an intermediate point of a link associated with a change of direction;
 - iv) the start of the application of a path type code;
 - v) the start of the application of a path surface code;
 - vi) the start of the application of a stated width.
- c) **entry date**: date when link geometry record was first recorded;
- d) **update date**: date when the link geometry record was last updated.

F.5.3 Optional attributes

Where appropriate, link geometry shall also have one or more of the following optional (O) attributes:

- mapping tolerance:** measure, in metres, of the precision of the defined coordinates in proportion to the scale of the definitive map;
- link type:** the type of link (see F.5.6);
- link surface:** the type of path surface (see F.5.7);
- width:** width of path.

NOTE The width may include a range and should include units where appropriate, e.g. “1-2 m”.

F.5.4 Associations

A link geometry record shall have the following associations:

- positioned on a PROW link.**

F.5.5 Structure

A link geometry record shall be structured in accordance with Table F.4.

Table F.4 Attributes of link geometry

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
sequence number	seqNo	M	1	Integer
coordinate	coord	M	1	Point
mapping tolerance	mapTol	O	1	Integer
link type	linkType	O	1	LinkTypeCode (see F.5.6)
link surface	linkSurf	O	1	LinkSurfaceCode (see F.5.7)
width	width	O	1	CharacterString
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
<i>role name</i> ^f : positioned on	positionedOn	M	1	PROWLink

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f The name of the association.

F.5.6 Link type code

Example values for the link type code are given Table F.5.

Table F.5 Link type code

Link type code	Link type
10	Cross-field
20	Headland
30	Enclosed
40	Other

NOTE Additional entries may be made within the structure specified in Table F.5 to meet local requirements. For example, the link type code “11” means that the link is of type “Cross-field — Arable”.

F.5.7 Link surface code

Example values for the link surface code are given in Table F.6.

Table F.6 Link surface code

Link surface code	Surface
10	Natural – including pasture, coastal and woodland
20	Worked – including arable farmland, forest and any other area with a potential for change
30	Metalled – any metalled surface
40	Modified – all other modified surfaces

NOTE Additional entries may be made within the structure specified in Table 10 to meet local requirements. For example the link surface code “11” means that the link surface is of type “Natural — Coastal”.

F.6 PROW Furniture

F.6.1 Requirements

Where recorded, PROW furniture shall have attributes as defined in **F.6.2** and **F.6.3** and associations as defined in **F.6.4** in a structure in accordance with Table F.7.

Items of PROW furniture that connect PROWs shall only be recorded once, on one of the PROWs. Items of PROW furniture that connect PROW links shall only be recorded once, on one of the PROW links.

F.6.2 Mandatory attributes

PROW furniture shall have the following mandatory (M) attributes:

- furniture identity:** number which identifies uniquely an item of furniture;
- furniture description:** type of furniture (see **F.6.6**);
- entry date:** date when furniture record was first recorded;
- update date:** date when the furniture record was last updated.

F.6.3 Optional attributes

Where appropriate, PROW furniture shall also have one or more of the following optional (O) attributes:

- furniture owner:** name of the owner of the item of PROW furniture;
NOTE The furniture owner may be the landowner or the surveying authority.
- furniture coordinate:** grid reference of the centre point of the item of PROW furniture.

F.6.4 Associations

PROW furniture shall have the following associations:

- located on a PROW link.**

F.6.5 Structure

A PROW furniture record shall be structured in accordance with Table F.7.

Table F.7 Attributes of PROW furniture

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
furniture identity	furnID	M	1	Integer
furniture description	furnDesc	M	1	Furniture Description Code (see F.6.6)
furniture owner	furnOwnr	O	1	CharacterString
furniture coordinate	furnCord	O	1	Point
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
<i>role name</i> ^f : located on	locatedOn	M	1	PROWLink

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f The name of the association.

F.6.6 Furniture Description Code

Example values for the furniture description code are given in Table F.8.

Table F.8 Furniture description codes

Furniture description code	Furniture description
10	Signpost
20	Stile
30	Gate
40	Bridge
50	Sign
60	Steps

NOTE 1 Additional entries may be made to meet local requirements. For example, furniture description code "22" means the furniture is of type "Stile — Ladder".

NOTE 2 "Signpost" includes any marker that is legally required at the start or end of any link or at any point along its length.

F.7 Promoted route

F.7.1 Requirements

Where recorded, a promoted route shall have attributes as defined in F.7.2 and in accordance with Table F.9.

F.7.2 Attributes

Promoted route shall have the following mandatory (M) attributes:

- a) **promoted route identity:** number which identifies uniquely a promoted route;
- b) **promoted route name:** name of the promoted route;
- c) **entry date:** date when the promoted route record was first recorded;
- d) **update date:** date when the promoted route record was last updated.

F.7.3 Associations

Promoted route shall have the following associations:

- a) **made up of** one or more **promoted route elements**.

F.7.4 Structure

A Promoted route record shall be structured according to Table F.9.

Table F.9 Attributes of promoted route

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^c	Data type ^e
promoted route identity	pmRtID	M	1	Integer
promoted route name	pmRtNm	M	1	CharacterString
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
<i>role name</i> ^f : made up of	madeUpOf	M	N	PromotedRouteElement

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f The name of the association.

F.8 Promoted route element

F.8.1 Requirement

Where recorded, a promoted route shall be linked to the Public Rights of Way by means of a Promoted Route Element.

NOTE Only the parts of a promoted route that are Public Rights of Way need to be recorded.

A promoted route element shall have attributes as defined in **F.8.2** and associations (roles) as defined in **F.8.3**.

F.8.2 Attributes

A promoted route element shall have the following mandatory (M) attributes:

- a) **promoted route element identity:** number which identifies uniquely an element within a promoted route;
- b) **entry date:** date when the promoted route element record was first recorded;
- c) **update date:** date when the promoted route element record was last updated.

F.8.3 Associations

A promoted route element shall have the following associations:

- 1) **makes up a promoted route;**
- 2) **follows a PROW link.**

F.8.4 Structure

A promoted route element record shall be structured in accordance with Table F.10.

Table F.10 Attributes of promoted route element

Name ^a	UML name ^b	Obligation ^c	Maximum occurrences ^d	Data type ^e
promoted route element identity	pmRtElId	M	1	Integer
entry date	entryDat	M	1	Date
update date	updatDat	M	1	Date
<i>Role name^f:</i> makes up	makesUp	M	1	PromotedRoute
<i>Role name^f:</i> follows	follows	M	1	PROWLink

^a The unique name of the attribute.

^b The name of the attribute used in the UML model.

^c Whether the attribute is mandatory (M) or optional (O).

^d Whether the attribute is single-valued (1) or may have multiple values (N).

^e The form of the attribute.

^f The name of the association.

Annex G (informative) Example elementary street unit data

This Annex gives an example of an elementary street unit.

unique identifier:	54462662
street classification:	1
description:	Histon Road from The Green to The Drove
entry date:	2005-03-15
update date:	2005-03-15
start date:	1909-01-01
end date:	-
state:	2
current state date:	2005-03-15
extremity point 1:	54482670
extremity point 2:	54462662
coordinated point:	54462662, 54462662, 54482668, 54482670
external cross-reference:	-
street:	080919201804

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