



Project RADEF

**RADEF Data Model and Data  
Dictionary**

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## **1. Introduction**

### **1.1 Purpose and Scope of this Document**

The Project Management and Quality Plan (PMQP), developed at the beginning of this project, states that the scope of this deliverable to be the Road Administration Data Exchange Format (RADEF) logical data model (LDM) and the data dictionary. The purpose of this document is to detail the LDM and the data dictionary of the following domains:

- Road Network;
- Restriction;
- Traffic;
- Structure;
- Equipment;
- Accident;
- Condition;
- Road Geometry;
- Route;
- Network Enquiry.

The information contained in this document represents an accurate reflection of the discussions and the agreements reached at the workshops.

### **1.2 Approach**

As identified in the PMQP, four workshops were held in order to agree the requirements and content of the RADEF data domains. The scope of each domain workshop was based on the RADEF requirements as stated in section 2 of deliverable D2a in the Phase One Deliverable document. Prior to each workshop, a first-cut LDM for the domains to be discussed was circulated to all PRA representatives.

The first detailed domain workshop was held in Paris on 1-3 April 1996. The primary purpose of this workshop was to discuss the Road Network domain. However, other domains including Route and Road Geometry were also discussed in some detail.

The second detailed domain workshop was held in London on 22 and 23 April 1996. This workshop covered the Restriction and Traffic domains.

The third detailed domain workshop was held in Gatwick on 20-22 May 1996. This workshop covered the Structure, Equipment and Accident domains.

The fourth and final detailed domain workshop was held in London on 19-21 June 1996. This workshop covered the Condition, Road Geometry, Route and Network Enquiry domains.

Discussion notes of each of the workshops have been provided in appendix B.

Agendas and the attendees of the above workshops are provided in appendix C.

### **1.3 Structure of Document**

This document consists of the following sections:

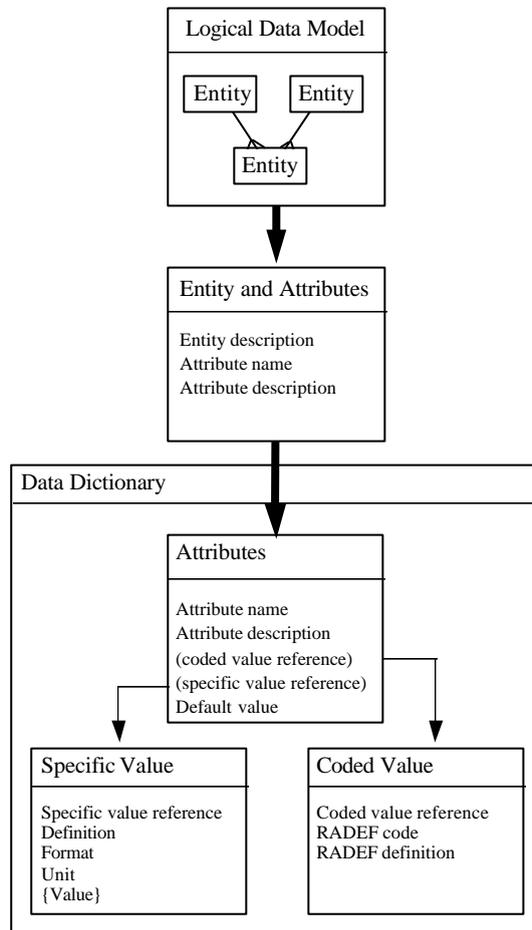
- section 1 specifies the purpose, scope of this document and the approach taken to develop this deliverable;
- section 2 provides the overall LDM, and the individual LDMs for each of the domains. A cross-reference between entities and domains is also provided;
- section 3 contains details of each entity and its attributes;
- section 4 consists of the data dictionary in terms of the data attributes, coded value tables and the specific value tables.

This document contains the following appendices:

- appendix A describes the logical data modelling notation;
- appendix B contains the discussions notes of each domain;
- appendix C lists the attendees and the agendas of the domain workshops held in order to define the requirements of RADEF;
- appendix D consists of examples for each domain. The examples show the main entities of each domain, together with the examples of the potential data for the entity concerned;
- Appendix E contains a glossary of some of the terms used in this document.

## 1.4 Deliverable Map

Below is a diagram to make it easier to understand the main constituents of this deliverable and so see how they are interrelated.



## **2. Logical Data Model**

### **2.1 Introduction**

This section presents the overall LDM, and the individual LDMs for each of the domains. A cross-reference between entities and domains is also provided.

To assist the reader, the logical data modelling notation used for the LDM diagrams is described in appendix A.

### **2.2 Overall RADEF LDM**

The overall RADEF LDM is shown on the next page.



### **2.3 Entity/Domain Cross-reference**

The table below lists the entities in the RADEF LDM. A tick indicates that the entity is referred to within the domain. Where a cross-reference to a code table is indicated, please refer to section 4.2 for a detailed description.

| ENTITY NAME                        | Code table cross-ref. | DOMAIN CROSS-REFERENCE |             |         |           |           |          |           |               |       |                 |
|------------------------------------|-----------------------|------------------------|-------------|---------|-----------|-----------|----------|-----------|---------------|-------|-----------------|
|                                    |                       | Road Network           | Restriction | Traffic | Structure | Equipment | Accident | Condition | Road Geometry | Route | Network Enquiry |
| ACCIDENT                           |                       |                        |             |         |           |           | ✓        |           |               |       |                 |
| ACCIDENT POSITION TYPE             | CV7                   |                        |             |         |           |           | ✓        |           |               |       |                 |
| ACCIDENT PREVENTION                | CV25                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| ARC                                |                       |                        |             |         |           |           |          |           | ✓             |       |                 |
| ARC POINT                          |                       |                        |             |         |           |           |          |           | ✓             |       |                 |
| ARC POSITION TYPE                  | CV22                  |                        |             |         |           |           |          |           | ✓             |       |                 |
| ARTIFICIAL LIGHTING CONDITION TYPE | CV13                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| BORDER CONNECTION                  |                       | ✓                      |             |         |           |           |          |           |               |       |                 |
| CONDITION CROSS SECTIONAL POS      | CV23                  |                        |             |         |           |           |          | ✓         |               |       |                 |
| CONDITION LEVEL TYPE               | CV9                   |                        |             |         |           |           |          | ✓         |               |       |                 |
| COUNTRY                            | CV2                   | ✓                      |             |         | ✓         | ✓         |          |           |               | ✓     | ✓               |
| DIRECTION                          | CV6                   | ✓                      |             | ✓       |           |           |          |           |               |       |                 |
| EQUIPMENT CROSS SECTIONAL POS      | CV8                   |                        |             |         |           | ✓         |          |           |               |       |                 |
| EQUIPMENT DETAIL                   |                       |                        |             |         |           | ✓         |          |           |               |       |                 |
| EQUIPMENT ITEM                     |                       |                        |             |         |           | ✓         |          |           |               |       |                 |

| ENTITY NAME                          | Code table cross-ref. | DOMAIN CROSS-REFERENCE |             |         |           |           |          |           |               |       |                 |
|--------------------------------------|-----------------------|------------------------|-------------|---------|-----------|-----------|----------|-----------|---------------|-------|-----------------|
|                                      |                       | Road Network           | Restriction | Traffic | Structure | Equipment | Accident | Condition | Road Geometry | Route | Network Enquiry |
| EQUIPMENT ITEM ATTRIBUTE             |                       |                        |             |         |           | ✓         |          |           |               |       |                 |
| EQUIPMENT LOCATION                   |                       |                        |             |         |           | ✓         |          |           |               |       |                 |
| EQUIPMENT TYPE                       | CV10                  |                        |             |         |           | ✓         |          |           |               |       |                 |
| EUROPEAN ROUTE DEFINITION            |                       |                        |             |         |           |           |          |           |               | ✓     |                 |
| EUROPEAN ROUTE FUNCTION TYPE         | CV11                  |                        |             |         |           |           |          |           |               | ✓     |                 |
| GRID TYPE                            | CV21                  |                        |             |         |           |           |          |           | ✓             |       |                 |
| INJURY TYPE                          | CV12                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| MEASUREMENT UNIT                     | CV1                   |                        | ✓           | ✓       |           | ✓         |          | ✓         |               |       |                 |
| NATIONAL ROAD/SECTION CLASSIFICATION |                       | ✓                      |             |         |           |           |          |           |               |       |                 |
| NATIONAL ROUTE DEFINITION            |                       |                        |             |         |           |           |          |           |               | ✓     |                 |
| NATIONAL ROUTE FUNCTION TYPE         |                       |                        |             |         |           |           |          |           |               | ✓     |                 |
| NATURAL LIGHTING CONDITION TYPE      | CV14                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| NETWORK ENQUIRY                      |                       |                        |             |         |           |           |          |           |               |       | ✓               |
| NETWORK ENQUIRY FUNCTION TYPE        |                       |                        |             |         |           |           |          |           |               |       | ✓               |
| NETWORK ENQUIRY ROAD SECTION         |                       |                        |             |         |           |           |          |           |               |       | ✓               |

| ENTITY NAME                 | Code table cross-ref. | DOMAIN CROSS-REFERENCE |             |         |           |           |          |           |               |       |                 |
|-----------------------------|-----------------------|------------------------|-------------|---------|-----------|-----------|----------|-----------|---------------|-------|-----------------|
|                             |                       | Road Network           | Restriction | Traffic | Structure | Equipment | Accident | Condition | Road Geometry | Route | Network Enquiry |
| NODE                        |                       | ✓                      |             |         |           |           |          |           |               |       | ✓               |
| PERSON IN ACCIDENT          |                       |                        |             |         |           |           | ✓        |           |               |       |                 |
| PERSON TYPE                 | CV15                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| REFERENCE POINT             |                       | ✓                      | ✓           | ✓       | ✓         | ✓         | ✓        | ✓         | ✓             | ✓     |                 |
| REPORT DIRECTION            | CV16a                 |                        |             |         |           |           |          |           |               |       | ✓               |
| RESTRICTION                 |                       |                        | ✓           |         | ✓         |           |          |           |               |       |                 |
| RESTRICTION DIRECTION       | CV28                  |                        | ✓           |         |           |           |          |           |               |       |                 |
| RESTRICTION TYPE            | CV4                   |                        | ✓           |         |           |           |          |           |               |       |                 |
| ROAD CONDITION              |                       |                        |             |         |           |           |          | ✓         |               |       |                 |
| ROAD CONDITION TYPE         | CV19                  |                        |             |         |           |           |          | ✓         |               |       |                 |
| ROAD SURFACE CONDITION TYPE | CV20                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| ROAD TYPE                   | CV27                  | ✓                      |             |         |           |           |          |           |               |       |                 |
| ROAD/SECTION                |                       | ✓                      | ✓           | ✓       | ✓         | ✓         | ✓        | ✓         | ✓             | ✓     | ✓               |
| ROAD/SECTION CLASS TYPE     | CV18                  | ✓                      |             |         |           |           |          |           |               |       |                 |
| ROAD/SECTION CLASSIFICATION |                       | ✓                      |             |         |           |           |          |           |               |       |                 |

| ENTITY NAME             | Code table cross-ref. | DOMAIN CROSS-REFERENCE |             |         |           |           |          |           |               |       |                 |
|-------------------------|-----------------------|------------------------|-------------|---------|-----------|-----------|----------|-----------|---------------|-------|-----------------|
|                         |                       | Road Network           | Restriction | Traffic | Structure | Equipment | Accident | Condition | Road Geometry | Route | Network Enquiry |
| ROAD/SECTION ROAD TYPE  |                       | ✓                      |             |         |           |           |          |           |               |       |                 |
| ROUTE                   |                       |                        |             |         |           |           |          |           |               | ✓     |                 |
| SEX OF PERSON           | CV24                  |                        |             |         |           |           | ✓        |           |               |       |                 |
| STRUCTURE               |                       |                        |             |         | ✓         |           |          |           |               |       |                 |
| STRUCTURE CATEGORY      | CV26                  |                        |             |         | ✓         |           |          |           |               |       |                 |
| STRUCTURE FUNCTION TYPE | CV16                  |                        |             |         | ✓         |           |          |           |               |       |                 |
| STRUCTURE LOCATION      |                       |                        | ✓           |         | ✓         |           |          |           |               |       |                 |
| TRAFFIC FLOW            |                       |                        |             | ✓       |           |           |          |           |               |       |                 |
| TRAFFIC FLOW TYPE       | CV5                   |                        |             | ✓       |           |           |          |           |               |       |                 |
| VEHICLE IN ACCIDENT     |                       |                        |             |         |           |           | ✓        |           |               |       |                 |
| VEHICLE TYPE            | CV3                   |                        | ✓           | ✓       |           |           | ✓        |           |               |       |                 |
| WEATHER CONDITION TYPE  | CV17                  |                        |             |         |           |           | ✓        |           |               |       |                 |



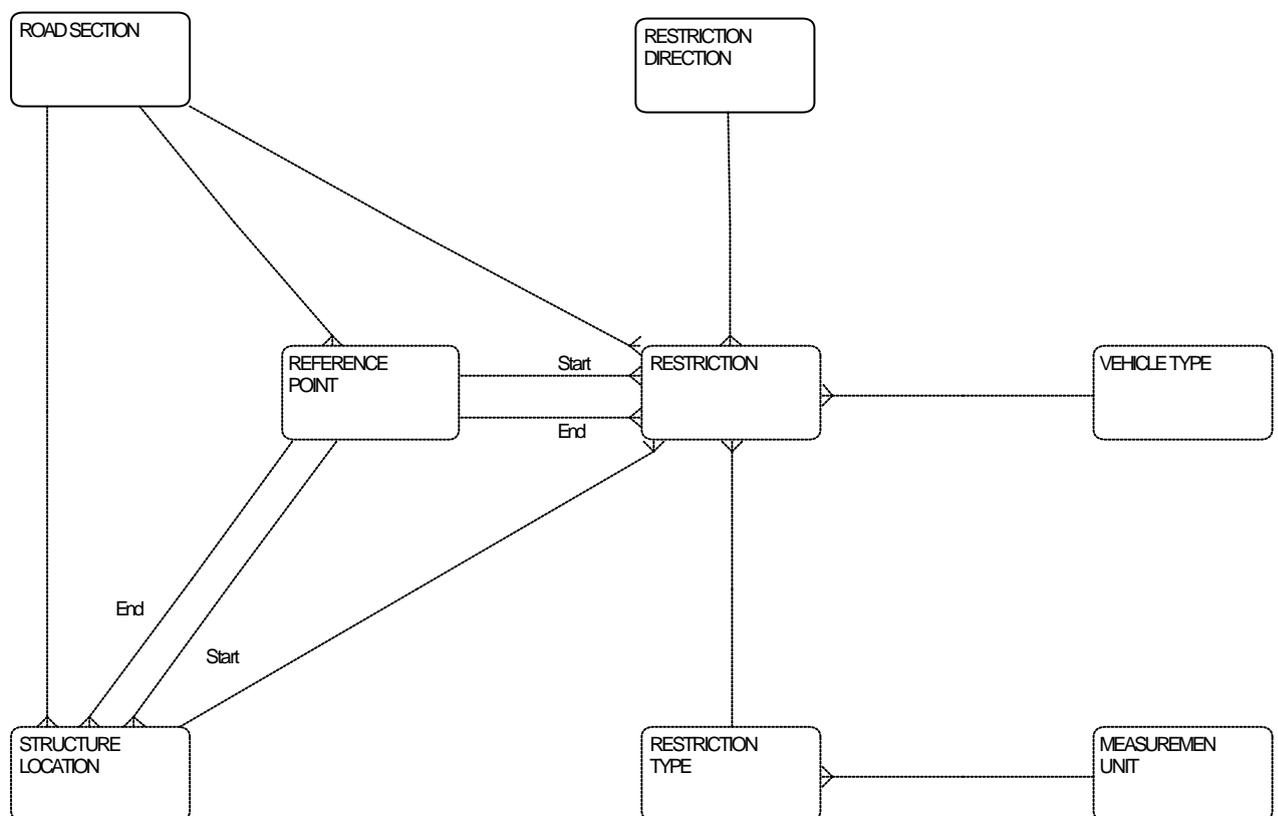
## 2.5 Restriction Domain

### Objectives

The objectives of this domain were agreed to be to enable:

- the identification of permanent physical restrictions to vehicular travel;
- the definition of routings by exchanging data at local and national levels (in conjunction with other domains);
- the operation of vehicle navigation systems by providing data to the private sector.

### Restriction Domain LDM



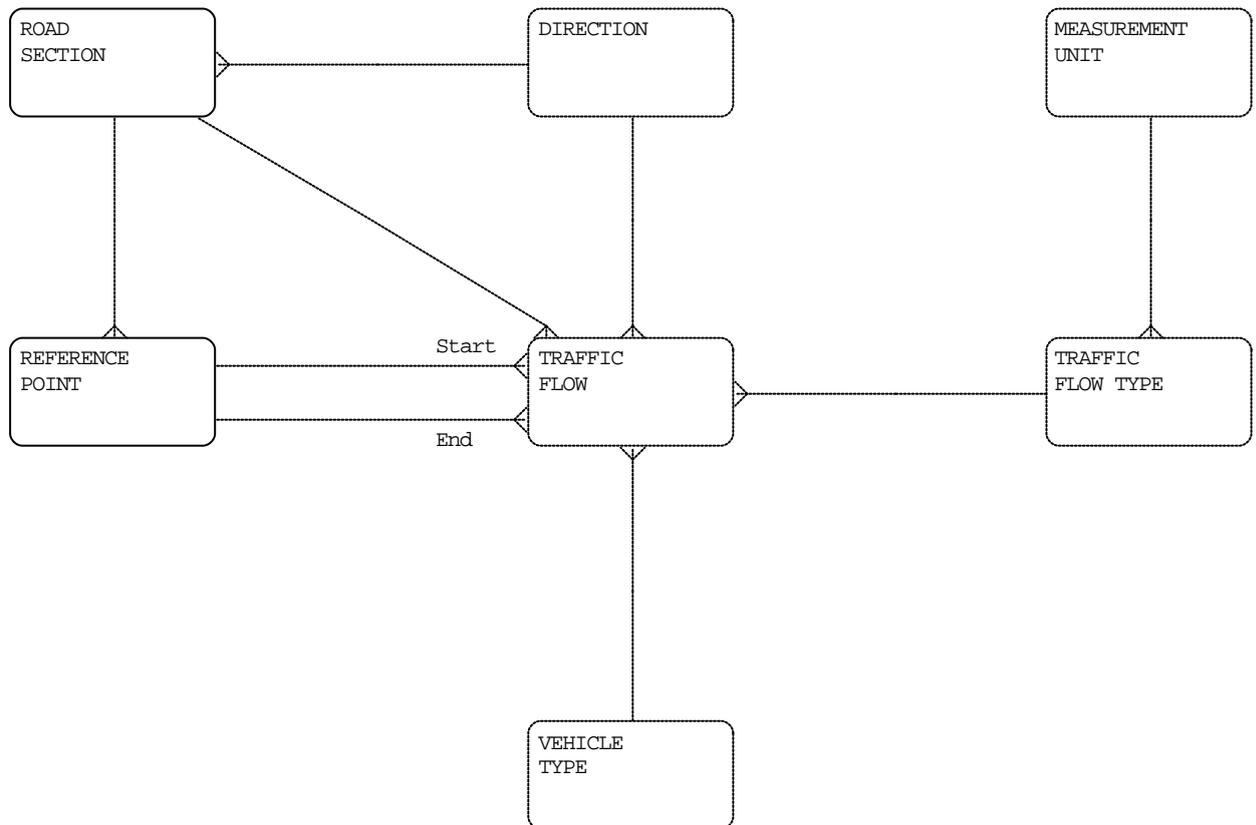
## 2.6 Traffic Domain

### Objectives

The objectives of this domain were agreed to be to enable:

- the exchange of aggregated (statistical) traffic data in terms of the traffic flow;
- traffic flow data to be classified by vehicle type.

### Traffic Domain LDM



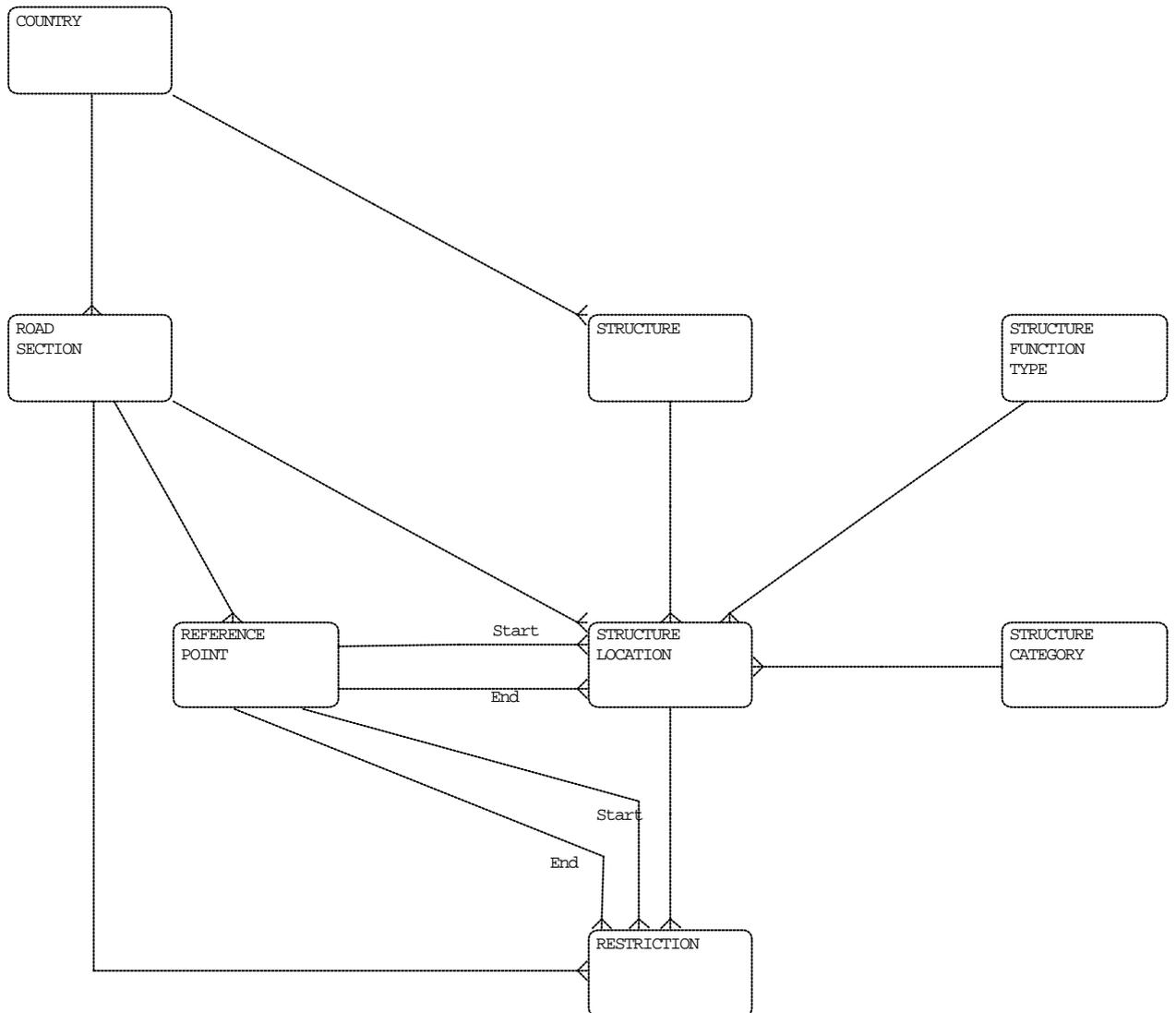
## 2.7 Structure Domain

### Objectives of the Structure Domain

The objectives of the Structure domain were agreed to be to enable:

- the identification of structures, such as bridges and tunnels, and must be part of the road network;
- the identification of potential restrictions resulting from a structure.

### Structure Data Model



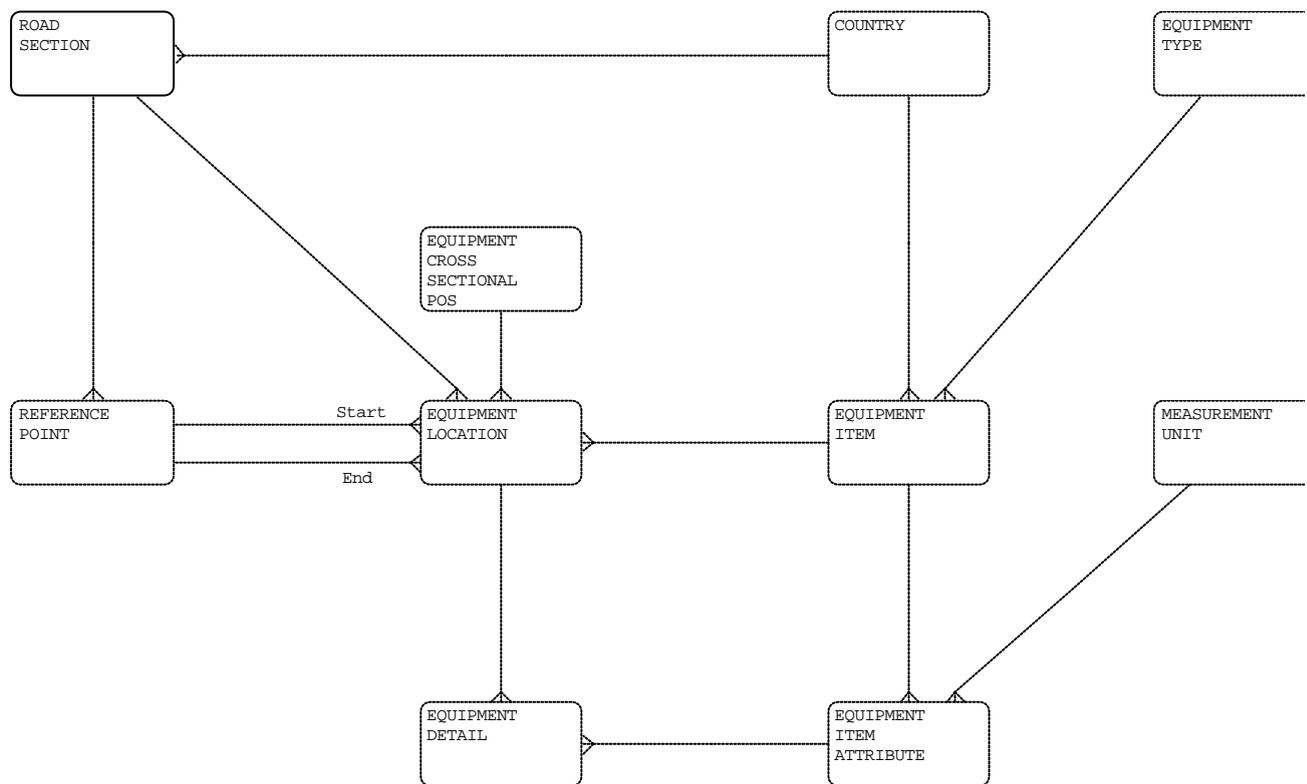
## 2.8 Equipment Domain

### Objectives of the Equipment Domain

The objectives of the Equipment domain were agreed to be to enable:

- the identification of ‘road furniture’ items of a non-structural nature (e.g. lampposts and road signs) along a road;
- the identification of the location of the road furniture associated with a road.

### Equipment Data Model



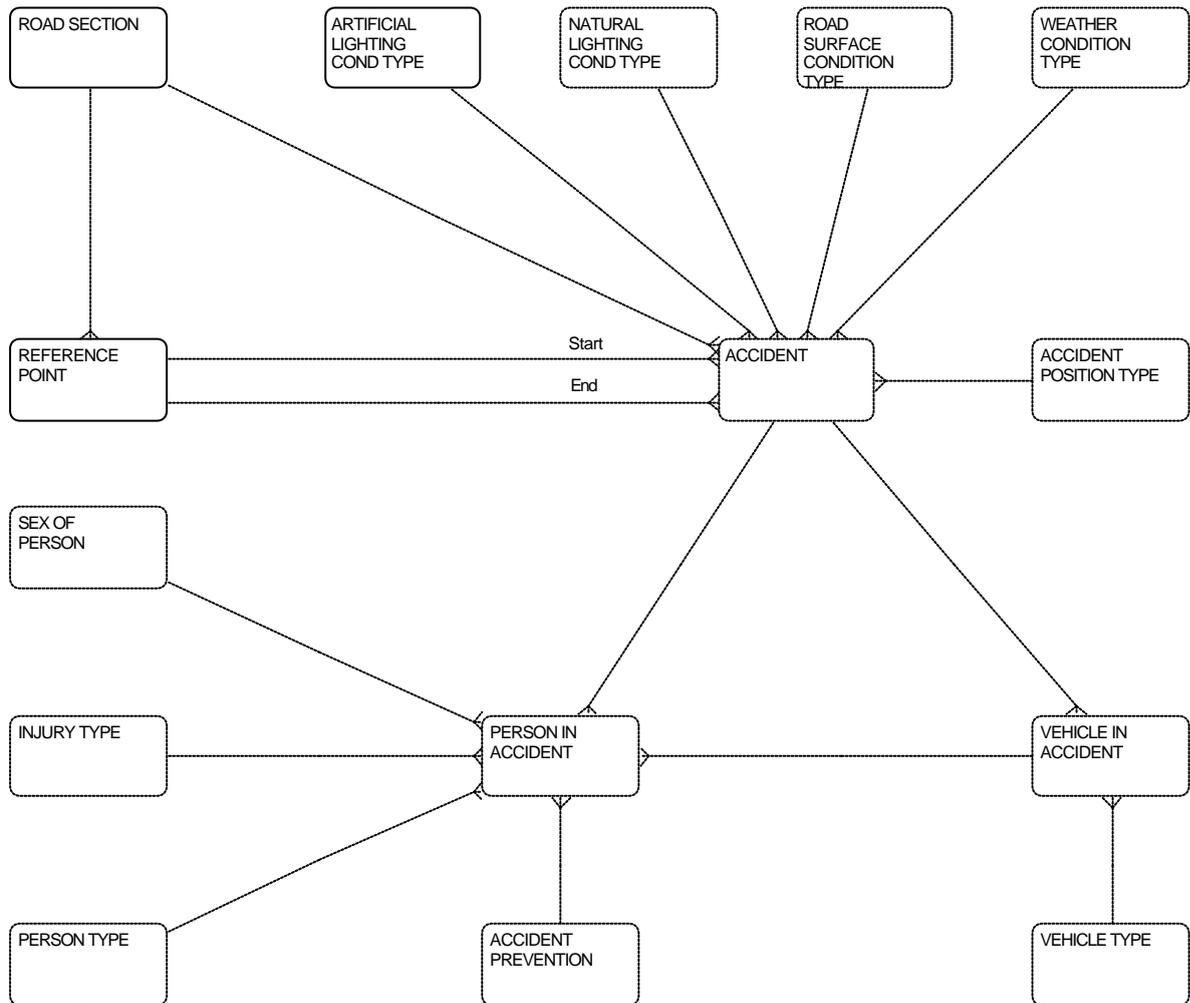
## 2.9 Accident Domain

### Objective of the Accident Domain

The objective of the Accident domain was agreed to be to enable:

- the exchange of accident information for statistical analysis at a European level, and to trigger further investigation.

### Accident Data Model



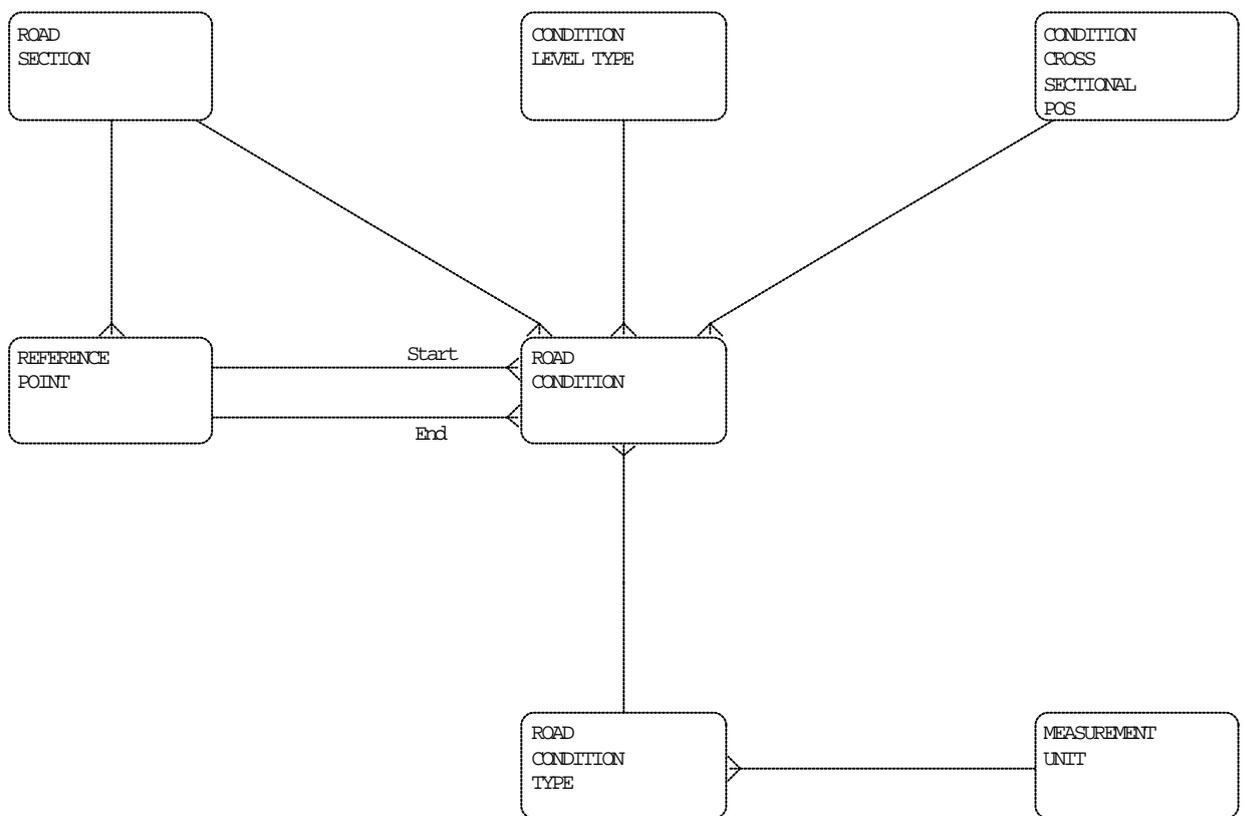
## 2.10 Condition Domain

### Objectives of the Condition Domain

The objectives of the Condition domain were agreed to be to enable:

- the recording of information related to the physical condition of the road pavement, with measurements aggregated at 100m intervals;
- the exchange of road pavement information using the locally defined condition levels, or the actual measured values, when exchanging data on a national/local basis;
- the exchange of road pavement information using only the RADEF defined condition levels when exchanging data on an international basis.

### Condition Data Model



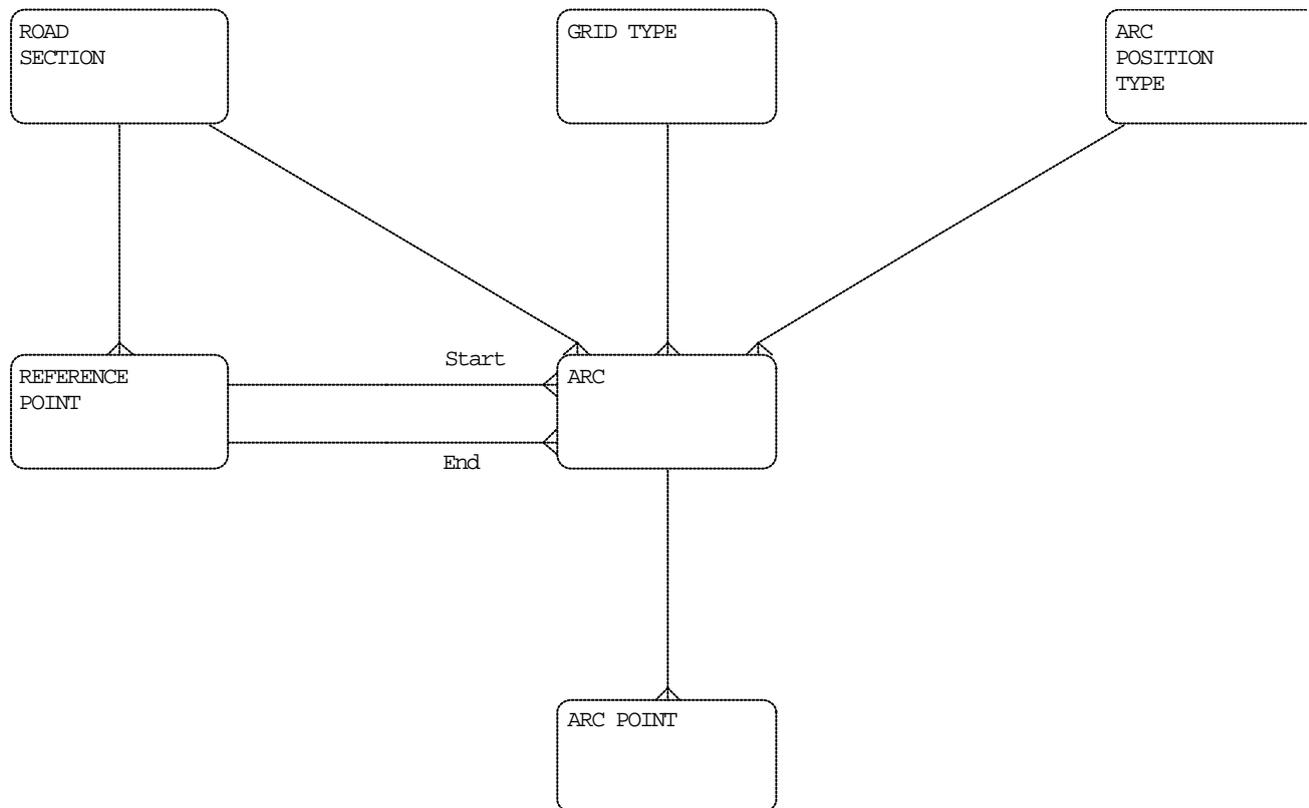
## 2.11 Road Geometry Domain

### Objective of the Road Geometry Domain

The objective of the Road Geometry domain was agreed to be to enable:

- the transfer of the x and y co-ordinates, and the z co-ordinates if available, of control axes for sections or part sections of the road network, to enable the visualisation of a road profile.

### Road Geometry Data Model





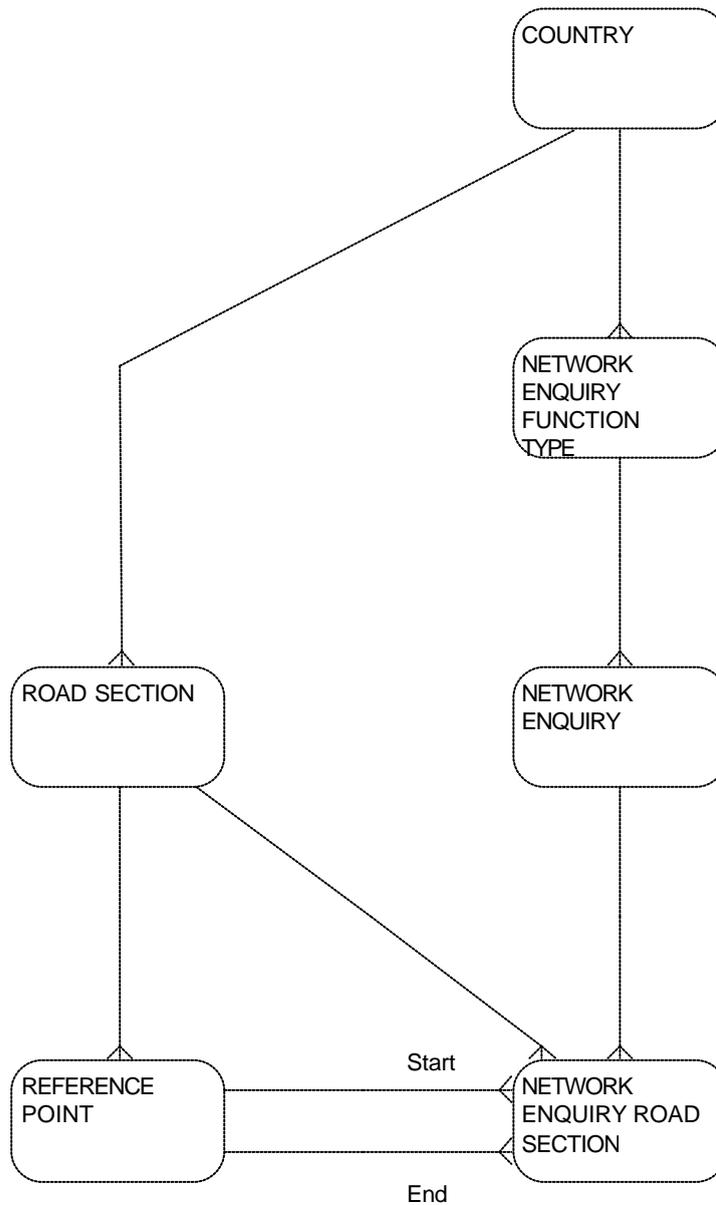
## 2.13 Network Enquiry Domain

### Objectives of the Network Enquiry Domain

The objectives of the Network Enquiry domain were agreed to be to enable:

- a spatial filter to be created for the purposes of selecting the required data;
- each country to define their own legal/political and task orientated views of a road network.

### Network Enquiry Data Model



### 3. Entities and Entity Description

#### 3.1 Attributes of Entities

This section consists of the following for each entity listed in section 2.3 above:

- the name of the entity;
- a description of the entity;
- a list of the attributes of the entity.

The list of attributes for each entity uses the following notation to depict the type of attribute:

| Notation                  | Description  |
|---------------------------|--|
| <b><u>Attribute x</u></b> | If the attribute name is in bold and underlined, this indicates that the attribute forms part of the primary key.  |
| <b>f or f</b>             | If there is a 'f' to the right of the attribute name, this indicates that the attribute is a foreign key. A 'f' to the right of the attribute name indicates that this attribute is a part of the primary key of the entity, and is also a foreign key.  |
| o                         | If an attribute has an 'o' to the left of the attribute name, this indicates that the attribute is optional.   |
| Attribute x {yy}          | If curly brackets appear to the right of the attribute name, this is used to provide additional information for the attribute. For example, the attributes <i>Node Identifier {Start}</i> and <i>Node Identifier {End}</i> signify that that the attributes are used to record the <i>Start</i> Node Identifier and <i>End</i> Node Identifier respectively. |

### 3.2 ACCIDENT

|  |                 |
|--|-----------------|
| <b>Name</b>  | <b>ACCIDENT</b> |
| <b>Description</b>                                     |                 |
| This entity is used to hold details about an accident. |                 |
| <b>Attributes</b>                                      |                 |
| <b><u>Country identifier</u></b>                       | <b>f</b>        |
| <b><u>Road/section reference</u></b>                   | <b>f</b>        |
| <b><u>Reference point identifier {start}</u></b>       | <b>f</b>        |
| <b><u>Reference point identifier {end}</u></b>         | <b>f</b>        |
| <b><u>Chainage {start}</u></b>                         |                 |
| <b><u>Chainage {end}</u></b>                           |                 |
| <b><u>Accident identifier</u></b>                      |                 |
| Accident date  |                 |
| o Accident time  |                 |
| o Accident description                                 |                 |
| o Accident position type identifier                    | f               |
| o Artificial lighting condition type identifier        | f               |
| o Natural lighting condition type identifier           | f               |
| o Weather condition type identifier                    | f               |
| o Road surface condition type identifier               | f               |

### 3.3 ARC

|  |     |   |
|--|-----|---|
| <b>Name</b>  | ARC |   |
| <b>Description</b>   |     |   |
| This is used to describe the geometry of a road section in terms of a group of points. |     |   |
| <b>Attributes</b>  |     |   |
| <u>Country identifier</u>  |     | f |
| <u>Road/section reference</u>  |     | f |
| <u>Reference point identifier {start}</u>  |     | f |
| <u>Reference point identifier {end}</u>  |     | f |
| <u>Chainage {start}</u>  |     |   |
| <u>Chainage {end}</u>  |     |   |
| <u>Arc identifier</u>  |     |   |
| Grid type identifier   |     | f |
| Arc position type identifier   |     | f |
| o Accuracy level   |     |   |

### 3.4 ARC POINT

|   |                  |   |
|---|------------------|---|
| <b>Name</b>   | <b>ARC POINT</b> |   |
| <b>Description</b>  |                  |   |
| This is used to identify the points within an arc and their sequence. |                  |   |
| <b>Attributes</b>   |                  |   |
| <u>Country identifier</u>   |                  | f |
| <u>Road/section reference</u>   |                  | f |
| <u>Reference point identifier {start}</u>                             |                  | f |
| <u>Reference point identifier {end}</u>                               |                  | f |
| <u>Arc identifier</u>   |                  | f |
| <u>Sequence number {arc point}</u>                                    |                  |   |
| X co-ordinate   |                  |   |
| Y co-ordinate   |                  |   |
| o Z co-ordinate   |                  |   |

### 3.5 BORDER CONNECTION

|   |   |          |
|---|---|----------|
| <b>Name</b>   | <b>BORDER CONNECTION</b>                            |          |
| <b>Description</b>  |   |          |
| The border connection is the location on the road at which the border crosses the road. This allows the mapping of whichever road networking systems (i.e. node/link or long sections with reference points) the two bordering countries use. |   |          |
| <b>Attributes</b>   |   |          |
|   | <b><u>Country identifier {home country}</u></b>     | <b>f</b> |
|   | <b><u>Road/section reference {home country}</u></b> | <b>f</b> |
|   | <b><u>Border connection identifier</u></b>          |          |
| o   | Node identifier {home country}                      | f        |
| o   | Reference point identifier {home country}           | f        |
| o   | Chainage {home country}                             |          |
|   | <b>Country identifier {bordering country}</b>       | f        |
| o   | Road/section reference {bordering country}          | f        |
| o   | Node identifier {bordering country}                 | f        |
| o   | Reference point identifier {bordering country}      | f        |
| o   | Chainage {bordering country}                        |          |

### 3.6 EQUIPMENT DETAIL

|  |                         |   |
|--|-------------------------|---|
| <b>Name</b>  | <b>EQUIPMENT DETAIL</b> |   |
| <b>Description</b>   |                         |   |
| This is used to specify the details of an attribute of an item of equipment. |                         |   |
| <b>Attributes</b>  |                         |   |
| <u>Country identifier</u>  |                         | f |
| <u>Road/section reference</u>  |                         | f |
| <u>Reference point identifier {start}</u>                                    |                         | f |
| <u>Reference point identifier {end}</u>                                      |                         | f |
| <u>Chainage {start}</u>  |                         |   |
| <u>Chainage {end}</u>  |                         |   |
| <u>Equipment item identifier</u>   |                         | f |
| <u>Equipment item attribute identifier</u>                                   |                         | f |
| Equipment attribute value  |                         |   |

### 3.7 EQUIPMENT ITEM

|  |                       |
|--|-----------------------|
| <b>Name</b>  | <b>EQUIPMENT ITEM</b> |
| <b>Description</b>   |                       |
| This is used to record the details of an item of equipment on a road. Examples of items of equipment are a lamppost, road sign and a painted line on the road. |                       |
| <b>Attributes</b>  |                       |
| <u><b>Country identifier</b></u>   | <b>f</b>              |
| <u><b>Equipment item identifier</b></u>  |                       |
| Equipment type identifier  | f                     |
| o Equipment item description   |                       |

### 3.8 EQUIPMENT ITEM ATTRIBUTE

|  |                                 |
|--|---------------------------------|
| <b>Name</b>  | <b>EQUIPMENT ITEM ATTRIBUTE</b> |
| <b>Description</b>   |                                 |
| This is used to record the attributes of items of equipment on a road. Examples of attributes for an item of equipment, such as a lamppost are height, colour, bulb type and bulb wattage. |                                 |
| <b>Attributes</b>  |                                 |
| <u><b>Country identifier</b></u>   | <b>f</b>                        |
| <u><b>Equipment item identifier</b></u>  | <b>f</b>                        |
| <u><b>Equipment item attribute identifier</b></u>  |                                 |
| o Measurement unit identifier  | f                               |
| o Equipment item attribute description   |                                 |

### 3.9 EQUIPMENT LOCATION

|  |                           |   |
|--|---------------------------|---|
| <b>Name</b>  | <b>EQUIPMENT LOCATION</b> |   |
| <b>Description</b>   |                           |   |
| This is used to indicate the location of an item of equipment. |                           |   |
| <b>Attributes</b>  |                           |   |
| <u>Country identifier</u>                                      |                           | f |
| <u>Road/section reference</u>                                  |                           | f |
| <u>Reference point identifier {start}</u>                      |                           | f |
| <u>Reference point identifier {end}</u>                        |                           | f |
| <u>Chainage {start}</u>  |                           |   |
| <u>Chainage {end}</u>  |                           |   |
| <u>Equipment cross sectional pos identifier</u>                |                           | f |
| <u>Equipment item identifier</u>                               |                           | f |

### 3.10 EUROPEAN ROUTE DEFINITION

|  |                                  |
|--|----------------------------------|
| <b>Name</b>  | <b>EUROPEAN ROUTE DEFINITION</b> |
| <b>Description</b>   |                                  |
| This is used to hold the definition of the purpose of a European route, e.g. a dangerous goods route between Lille and Lyon. |                                  |
| <b>Attributes</b>  |                                  |
| <u><b>European route definition identifier</b></u>   |                                  |
| <u><b>European route function type identifier</b></u>  | <b>f</b>                         |
| European route definition description  |                                  |

### 3.11 NATIONAL ROAD/SECTION CLASSIFICATION

|   |   |   |
|---|---|---|
| <b>Name</b>   | <b>NATIONAL ROAD/SECTION CLASSIFICATION</b>                   |   |
| <b>Description</b>  |   |   |
| <p>This entity enables the RADEF road/section class types to be further defined by the PRAs. For example, in the UK, the RADEF road/section class type of <i>national legal class</i> can be further defined into 'M' for motorways, 'A' for 'A' class roads, 'B' for 'B' class roads, etc.</p> |   |   |
| <b>Attributes</b>   |   |   |
|   | <b><u>Country identifier</u></b>                              | f |
|   | <b><u>National road section classification identifier</u></b> |   |
| o   | National road section classification description              |   |
| o   | Road section class type identifier                            | f |

### 3.12 NATIONAL ROUTE DEFINITION

|  |                                  |          |
|--|----------------------------------|----------|
| <b>Name</b>  | <b>NATIONAL ROUTE DEFINITION</b> |          |
| <b>Description</b>   |                                  |          |
| This is used to hold the definition of the purpose of a national route, e.g. a dangerous goods route between Lille and Lyon. |                                  |          |
| <b>Attributes</b>  |                                  |          |
| <u><b>Country identifier</b></u>   |                                  | <b>f</b> |
| <u><b>National route definition identifier</b></u>   |                                  |          |
| <u><b>National route function type identifier</b></u>  |                                  | <b>f</b> |
| National route definition description  |                                  |          |

### 3.13 NATIONAL ROUTE FUNCTION TYPE

|   |                                     |
|---|-------------------------------------|
| <b>Name</b>   | <b>NATIONAL ROUTE FUNCTION TYPE</b> |
| <b>Description</b>  |                                     |
| This is used to hold the characteristics of the sequential road/sections (or part of) for special purposes for national requirements, e.g. dangerous goods. |                                     |
| <b>Attributes</b>   |                                     |
| <u><b>Country identifier</b></u>  | <b>f</b>                            |
| <u><b>National route function type identifier</b></u>   |                                     |
| National route function type description  |                                     |

### 3.14 NETWORK ENQUIRY

|  |  |          |
|--|--|----------|
| <b>Name</b>  | <b>NETWORK ENQUIRY</b>                                 |          |
| <b>Description</b>   |  |          |
| <p>This enables PRAs to further define their network enquiry function types. For example, in Switzerland, the network enquiry function type of <i>Kanton</i> can be further classified into the individual Kantons of BL, NE, BG etc. For another example of the network enquiry function type of <i>winter maintenance</i>, this can be further classified into route 1, route 2, route n for winter maintenance.</p> |  |          |
| <b>Attributes</b>  |  |          |
|  | <u><b>Country identifier</b></u>                       | <b>f</b> |
|  | <u><b>Network enquiry function type identifier</b></u> | <b>f</b> |
|  | <u><b>Network enquiry identifier</b></u>               | <b>f</b> |
| o  | Network enquiry description                            |          |

### 3.15 NETWORK ENQUIRY FUNCTION TYPE

|   |  |          |
|---|--|----------|
| <b>Name</b>   | <b>NETWORK ENQUIRY FUNCTION TYPE</b>                   |          |
| <b>Description</b>  |  |          |
| <p>This enables PRAs to define their network enquiry function types. For example, in Switzerland, the legal and administration bodies can be defined as National/federal, Kanton, District and Municipality. Further examples of task orientated network enquiry function types are winter maintenance and grass cutting.</p> |  |          |
| <b>Attributes</b>   |  |          |
|   | <b><u>Country identifier</u></b>                       | <b>f</b> |
|   | <b><u>Network enquiry function type identifier</u></b> | <b>f</b> |
| o   | Network enquiry function type description              |          |

### 3.16 NETWORK ENQUIRY ROAD SECTION

|  |                                     |   |
|--|-------------------------------------|---|
| <b>Name</b>  | <b>NETWORK ENQUIRY ROAD SECTION</b> |   |
| <b>Description</b>   |                                     |   |
| This is used define the road/sections relating to a network enquiry, e.g. the road/sections for winter maintenance on route 1. |                                     |   |
| <b>Attributes</b>  |                                     |   |
| <u>Country identifier</u>  |                                     | f |
| <u>Road/section reference</u>  |                                     | f |
| <u>Reference point identifier {start}</u>  |                                     | f |
| <u>Reference point identifier {end}</u>  |                                     | f |
| <u>Chainage {start}</u>  |                                     |   |
| <u>Chainage {end}</u>  |                                     |   |
| <u>Network enquiry function type identifier</u>  |                                     | f |
| <u>Network enquiry identifier</u>  |                                     | f |
| Report direction identifier  |                                     |   |
| o Sequence number {network enquiry}  |                                     |   |

### 3.17 NODE

|  |             |
|--|-------------|
| <b>Name</b>  | <b>NODE</b> |
| <b>Description</b>   |             |
| <p>A node is the zero dimensional element that can be used to define the topology of a road network. (GDF definition: A node is a zero-dimensional element that is a topological junction of two or more edges, or an end point of an edge).</p> |             |
| <b>Attributes</b>  |             |
| <b><u>Country identifier</u></b>   | <b>f</b>    |
| <b><u>Node identifier</u></b>  |             |
| o Node name  |             |

### 3.18 PERSON IN ACCIDENT

|   |                           |          |
|---|---------------------------|----------|
| <b>Name</b>   | <b>PERSON IN ACCIDENT</b> |          |
| <b>Description</b>  |                           |          |
| This entity hold details of a person involved in an accident. |                           |          |
| <b>Attributes</b>   |                           |          |
| <u>Country identifier</u>                                     |                           | <b>f</b> |
| <u>Accident identifier</u>                                    |                           | <b>f</b> |
| <u>Sequence number {person in accident}</u>                   |                           |          |
| Accident prevention identifier                                |                           | f        |
| Sex of person identifier                                      |                           | f        |
| Person type identifier  |                           | f        |
| Injury type identifier  |                           | f        |
| o Age   |                           |          |
| o Alcohol limit exceeded indicator                            |                           |          |
| o Sequence number {vehicle in accident}                       |                           | f        |

### 3.19 REFERENCE POINT

|  |                        |
|--|------------------------|
| <b>Name</b>  | <b>REFERENCE POINT</b> |
| <b>Description</b>   |                        |
| This is used to identify the points of reference for countries that use long sections as the method for referencing road networks. A reference point must be associated with a road/section. |                        |
| <b>Attributes</b>  |                        |
| <u><b>Country identifier</b></u>   | <b>f</b>               |
| <u><b>Road/section reference</b></u>   | <b>f</b>               |
| <u><b>Reference point identifier</b></u>   |                        |
| Sequence number {reference point}  |                        |
| o Offset   |                        |
| o Reference point description  |                        |
| o Distance from beginning of road  |                        |
| o Distance to next RP  |                        |

**Note:** the sequence number {reference point} must be integer and increasing, but is not necessarily cardinal.

- e.g reference point id  
distance from beginning of road  
cardinal sequence number

### 3.20 RESTRICTION

|   |                    |   |
|---|--------------------|---|
| <b>Name</b>   | <b>RESTRICTION</b> |   |
| <b>Description</b>  |                    |   |
| This is used to identify physical restrictions in the movement of vehicles. |                    |   |
| <b>Attributes</b>   |                    |   |
| <u>Country identifier</u>   |                    | f |
| <u>Road/section reference</u>   |                    | f |
| <u>Reference point identifier {start}</u>                                   |                    | f |
| <u>Reference point identifier {end}</u>                                     |                    | f |
| <u>Chainage {start}</u>   |                    |   |
| <u>Chainage {end}</u>   |                    |   |
| <u>Restriction type identifier</u>  |                    | f |
| <u>Vehicle type identifier</u>  |                    | f |
| <u>Start date {restriction}</u>   |                    |   |
| <u>End date {restriction}</u>   |                    |   |
| <u>Start time {restriction}</u>   |                    |   |
| <u>End time {restriction}</u>   |                    |   |
| Restriction value   |                    |   |
| o Comments  |                    |   |
| o Restriction direction identifier  |                    | f |
| o Structure identifier  |                    | f |
| o Structure function type identifier  |                    | f |

### 3.21 RESTRICTION TYPE

|   |                         |
|---|-------------------------|
| <b>Name</b>   | <b>RESTRICTION TYPE</b> |
| <b>Description</b>  |                         |
| This is used to classify the type of restriction. For example, maximum height, maximum length, maximum width. |                         |
| <b>Attributes</b>   |                         |
| <u><b>Restriction type identifier</b></u>   |                         |
| Restriction type description  |                         |
| Measurement unit identifier   | f                       |

### 3.22 ROAD CONDITION

|   |                       |   |
|---|-----------------------|---|
| <b>Name</b>   | <b>ROAD CONDITION</b> |   |
| <b>Description</b>  |                       |   |
| This entity holds information related to the condition of the road. |                       |   |
| <b>Attributes</b>   |                       |   |
| <u>Country identifier</u>   |                       | f |
| <u>Road/section reference</u>                                       |                       | f |
| <u>Reference point identifier {start}</u>                           |                       | f |
| <u>Reference point identifier {end}</u>                             |                       | f |
| <u>Chainage {start}</u>   |                       |   |
| <u>Chainage {end}</u>   |                       |   |
| <u>Road condition type identifier</u>                               |                       | f |
| Road condition date   |                       |   |
| Condition cross sectional pos identifier                            |                       | f |
| o Lane reference  |                       |   |
| o Road condition value {minimum}                                    |                       |   |
| o Road condition value {average}                                    |                       |   |
| o Road condition value {maximum}                                    |                       |   |
| o Condition level type identifier                                   |                       | f |

### 3.23 ROAD CONDITION TYPE

|  |                            |
|--|----------------------------|
| <b>Name</b>  | <b>ROAD CONDITION TYPE</b> |
| <b>Description</b>   |                            |
| This entity holds the types of road conditions for which measurements have been taken. Examples of the road condition types are good, average and bad. |                            |
| <b>Attributes</b>  |                            |
| <u><b>Road condition type identifier</b></u>   |                            |
| Road condition type description  |                            |
| o Measurement unit identifier  | f                          |

### 3.24 ROAD/SECTION

|   |                     |
|---|---------------------|
| <b>Name</b>   | <b>ROAD/SECTION</b> |
| <b>Description</b>                                      |                     |
| This is used to identify the road or a section of road. |                     |
| <b>Attributes</b>                                       |                     |
| <b><u>Country identifier</u></b>                        | <b>f</b>            |
| <b><u>Road/section reference</u></b>                    |                     |
| o Locational description                                |                     |
| o Road/section length                                   |                     |
| o Direction identifier                                  | f                   |
| o Node identifier {start}                               | f                   |
| o Node identifier {end}                                 | f                   |

### 3.25 ROAD/SECTION CLASSIFICATION

|  |                                    |   |
|--|------------------------------------|---|
| <b>Name</b>  | <b>ROAD/SECTION CLASSIFICATION</b> |   |
| <b>Description</b>   |                                    |   |
| This entity is used to cross-reference road/sections to national road section classifications. For example, all the road sections that are classified into national legal classes or national owner classes. |                                    |   |
| <b>Attributes</b>  |                                    |   |
| <u>Country identifier</u>  |                                    | f |
| <u>Road section reference</u>  |                                    | f |
| <u>Reference point identifier {start}</u>  |                                    | f |
| <u>Reference point identifier {end}</u>  |                                    | f |
| <u>Chainage {start}</u>  |                                    |   |
| <u>Chainage {end}</u>  |                                    |   |
| <u>National road section classification identifier</u>   |                                    | f |

### 3.26 ROAD/SECTION ROAD TYPE

|   |                               |          |
|---|-------------------------------|----------|
| <b>Name</b>   | <b>ROAD/SECTION ROAD TYPE</b> |          |
| <b>Description</b>  |                               |          |
| This entity is used to cross-reference road/sections to the road type. For example, all the road sections that are classified as motorways. |                               |          |
| <b>Attributes</b>   |                               |          |
| <u>Country identifier</u>   |                               | <b>f</b> |
| <u>Road section reference</u>   |                               | <b>f</b> |
| <u>Reference point identifier {start}</u>   |                               | <b>f</b> |
| <u>Reference point identifier {end}</u>   |                               | <b>f</b> |
| <u>Chainage {start}</u>   |                               |          |
| <u>Chainage {end}</u>   |                               |          |
| <u>Road type identifier</u>   |                               | <b>f</b> |

### 3.27 ROUTE

|   |              |          |
|---|--------------|----------|
| <b>Name</b>   | <b>ROUTE</b> |          |
| <b>Description</b>  |              |          |
| This entity holds information relating to routes. A route is defined as a sequence of physically connected road/sections (including part road/sections) with no physical discontinuity. |              |          |
| <b>Attributes</b>   |              |          |
| <b><u>Country identifier</u></b>  |              | <b>f</b> |
| <b><u>Road/section reference</u></b>  |              | <b>f</b> |
| <b><u>Reference point identifier {start}</u></b>  |              | <b>f</b> |
| <b><u>Reference point identifier {end}</u></b>  |              | <b>f</b> |
| <b><u>Chainage {start}</u></b>  |              |          |
| <b><u>Chainage {end}</u></b>  |              |          |
| <b><u>European route definition identifier</u> or <u>National route definition identifier</u></b>   |              | <b>f</b> |
| <b><u>Route definition indicator</u></b>  |              |          |
| <b><u>Sequence number {road/section}</u></b>  |              |          |

### 3.28 STRUCTURE

|  |                  |          |
|--|------------------|----------|
| <b>Name</b>  | <b>STRUCTURE</b> |          |
| <b>Description</b>   |                  |          |
| This is used to hold details of a structure, such as a bridge or tunnel. |                  |          |
| <b>Attributes</b>  |                  |          |
| <u><b>Country identifier</b></u>   |                  | <b>f</b> |
| <u><b>Structure identifier</b></u>                                       |                  |          |
| Structure description  |                  |          |

### 3.29 STRUCTURE LOCATION

|  |                           |   |
|--|---------------------------|---|
| <b>Name</b>  | <b>STRUCTURE LOCATION</b> |   |
| <b>Description</b>   |                           |   |
| This is used to hold details of the location of a structure. |                           |   |
| <b>Attributes</b>  |                           |   |
| <u>Country identifier</u>                                    |                           | f |
| <u>Road/section reference</u>                                |                           | f |
| <u>Reference point identifier {start}</u>                    |                           | f |
| <u>Reference point identifier {end}</u>                      |                           | f |
| <u>Chainage {start}</u>                                      |                           |   |
| <u>Chainage {end}</u>  |                           |   |
| <u>Structure identifier</u>                                  |                           | f |
| <u>Structure function type identifier</u>                    |                           | f |
| o Structure category identifier                              |                           | f |

### 3.30 TRAFFIC FLOW

|   |                     |   |
|---|---------------------|---|
| <b>Name</b>   | <b>TRAFFIC FLOW</b> |   |
| <b>Description</b>  |                     |   |
| This is used to identify the traffic flow along a road/section. |                     |   |
| <b>Attributes</b>   |                     |   |
| <u>Country identifier</u>                                       |                     | f |
| <u>Road/section reference</u>                                   |                     | f |
| <u>Reference point identifier {start}</u>                       |                     | f |
| <u>Reference point identifier {end}</u>                         |                     | f |
| <u>Chainage {start}</u>   |                     |   |
| <u>Chainage {end}</u>   |                     |   |
| <u>Traffic flow type identifier</u>                             |                     | f |
| <u>Start date {traffic flow}</u>                                |                     |   |
| <u>End date {traffic flow}</u>                                  |                     |   |
| Traffic flow value  |                     |   |
| o Percentage of international traffic                           |                     |   |
| o Direction identifier  |                     | f |
| o Vehicle type identifier                                       |                     | f |

### 3.31 TRAFFIC FLOW TYPE

|   |                          |
|---|--------------------------|
| <b>Name</b>   | <b>TRAFFIC FLOW TYPE</b> |
| <b>Description</b>  |                          |
| This is used to classify the type of traffic flow measurement. Examples are annual average daily traffic, average daily traffic during peak periods and maximum traffic flow. |                          |
| <b>Attributes</b>   |                          |
| <u><b>Traffic flow type identifier</b></u>  |                          |
| Traffic flow type description   |                          |
| Measurement unit identifier   | f                        |

### 3.32 VEHICLE IN ACCIDENT

|  |                            |   |
|--|----------------------------|---|
| <b>Name</b>  | <b>VEHICLE IN ACCIDENT</b> |   |
| <b>Description</b>   |                            |   |
| This entity holds details of vehicles, in terms of the vehicle types, involved in an accident. |                            |   |
| <b>Attributes</b>  |                            |   |
| <u>Country identifier</u>  |                            | f |
| <u>Accident identifier</u>   |                            | f |
| <u>Sequence number {vehicle in accident}</u>   |                            |   |
| Vehicle type identifier  |                            | f |

## 4. Data Dictionary

### 4.1 Attributes

The RADEF data dictionary comprises three tables. This section presents the ‘attributes table’. The other two data dictionary tables, the ‘coded value’ and the ‘specific value’ tables are detailed in sections 4.2 and 4.3 respectively.

Each attribute is given a short description, together with a cross-reference to the ‘coded value’ or the ‘specific value’ tables as detailed in sections 4.2 and 4.3 respectively.

References to the coded values are prefixed by CV, whereas references to the specific value tables simply have a descriptive.

| Attribute Name                     | Definition   | Coded/<br>Specific | Cross Reference | Default<br>value |
|------------------------------------|--|--------------------|-----------------|------------------|
| Accident date                      | The date of an accident.   | Specific           | Date            |                  |
| Accident description               | A description of an accident.  | Specific           | Alphanum-desc   |                  |
| Accident identifier                | A unique identifier for an accident.   | Specific           | Alphanum-id     |                  |
| Accident position type description | The description of the type of feature of the road associated with the location of an accident, such as curved road, crossing or bridge.                     | Specific           | Alphanum-desc   |                  |
| Accident position type identifier  | A unique identifier for the type of feature of the road associated with the location of an accident, such as curved road, crossing or bridge.                | Coded              | CV7             | Unknown          |
| Accident prevention description    | A description specifying whether the person involved in an accident wore some form of accident prevention device, such as a seat belt or crash helmet.       | Specific           | Alphanum-desc   |                  |
| Accident prevention identifier     | A unique identifier to specify whether the person involved in an accident wore some form of accident protection device, such as a seat belt or crash helmet. | Coded              | CV25            | Unknown          |
| Accident time                      | The time an accident occurred.   | Specific           | Time            |                  |
| Accuracy level                     | A free format description of the accuracy level in the measurement of the co-ordinates.  | Specific           | Alphanum-desc   |                  |
| Age                                | The age of the person involved in an accident.   | Specific           | Numeric         |                  |
| Alcohol limit exceeded indicator   | A yes/no indicator signifying whether the alcohol level in the blood of a person involved in an accident exceeded the national limit.                        | Specific           | Yes/no          |                  |

| Attribute Name                                 | Definition   | Coded/<br>Specific | Cross Reference | Default<br>value |
|--|--|--------------------|-----------------|------------------|
| Arc identifier                                 | A unique identifier for an arc of a road/section.  | Specific           | Alphanum-id     |                  |
| Arc position type description                  | The description of the position of the arc in relation to the control axes. Examples are centre line, left of carriageway edge and right of carriageway edge.                          | Specific           | Alphanum-desc   |                  |
| Arc position type identifier                   | A unique identifier for the position of the arc in relation to the control axes.   | Coded              | CV22            |                  |
| Artificial lighting condition type description | The description of the type of artificial lighting condition as recorded against an accident. Examples are lit, unlit and unknown.   | Specific           | Alphanum-desc   |                  |
| Artificial lighting condition type identifier  | A unique identifier for the type of artificial lighting condition as recorded against an accident.   | Coded              | CV13            | Unknown          |
| Border connection identifier                   | A unique identifier for the border connection.   | Specific           | Alphanum-id     |                  |
| Chainage                                       | A measurement, in metres, from a specified location along the longitudinal axis of the road. A positive value indicates with chainage and a negative value indicates against chainage. | Specific           | Numeric         | 0                |
| Comments                                       | Free format field to permit the entry of comments.   | Specific           | Alphanum-desc   |                  |
| Condition cross sectional pos description      | The description of a cross sectional position relating to the measurements taken for the road condition. Examples include left, right, whole or unknown.                               | Specific           | Alphanum-desc   |                  |
| Condition cross sectional pos identifier       | A unique identifier for a cross sectional position relating to the measurements taken for the road condition.  | Coded              | CV23            | Whole            |
| Condition level type description               | The description for classifying the condition of the road into categories of good, average or bad.   | Specific           | Alphanum-desc   |                  |
| Condition level type identifier                | A unique identifier for classifying the condition of the road into categories of good, average or bad.   | Coded              | CV9             |                  |
| Country description                            | The name of a country.   | Specific           | Alphabetic      |                  |
| Country identifier                             | A unique identifier for a country.   | Coded              | CV2             |                  |
| Direction description                          | A description of the different directions. The directions are applicable to the direction of traffic flow and to the offset of reference points.                                       | Specific           | Alphanum-desc   |                  |

| Attribute Name                            | Definition   | Coded/<br>Specific | Cross Reference | Default<br>value |
|---|--|--------------------|-----------------|------------------|
| Direction identifier                      | A unique identifier for directions applicable to the chainage of reference points. The directions are applicable to the direction of traffic flow and to the offset of reference points. | Coded              | CV6             |                  |
| Distance from beginning of road           | The distance, in metres, from the beginning of the road.   | Specific           | Numeric         |                  |
| Distance to next RP                       | The distance, in metres, to the next reference point.  | Specific           | Numeric         |                  |
| End date                                  | The end date of the subject matter in question. An example is the end date for a restriction.  | Specific           | Date            |                  |
| End time                                  | The end time of the subject matter in question. An example is the end time for a restriction.  | Specific           | Time            |                  |
| Equipment cross sectional pos description | The description of a cross sectional position relating to items of equipment at a particular location. Examples are left, right, whole or unknown.                                       | Specific           | Alphanum-desc   |                  |
| Equipment cross sectional pos identifier  | A unique identifier for a cross sectional position relating to items of equipment at a particular location.  | Coded              | CV8             | Unknown          |
| Equipment item attribute description      | A description for an attribute of an item of equipment on a road. Examples of attributes for an item of equipment, such as a lamppost are height, colour, bulb type and bulb wattage.    | Specific           | Alphanum-desc   |                  |
| Equipment item attribute identifier       | A unique identifier for an attribute of an item of equipment on a road.  | Specific           | Alphanum-id     |                  |
| Equipment item attribute value            | The actual value of an attribute of an item of equipment. For example, a lamppost may have an attribute of height with a value of 7 (metres).  | Specific           | Alphanum-desc   |                  |
| Equipment item description                | A description for an item of equipment on a road. Examples of items of equipment are a lamppost, road sign and a painted line on the road.   | Specific           | Alphanum-desc   |                  |
| Equipment item identifier                 | A unique identifier for an item of equipment on a road.  | Specific           | Alphanum-id     |                  |
| Equipment type description                | The description of a type of equipment. Examples of the types of items of equipment include lighting, drainage and safety.   | Specific           | Alphanum-desc   |                  |
| Equipment type identifier                 | A unique identifier for a type of equipment.   | Coded              | CV10            |                  |

| Attribute Name  | Definition  | Coded/<br>Specific | Cross Reference | Default<br>value |
|---|---|--------------------|-----------------|------------------|
| European route<br>definition description                | The description of the definition of the European route function. For example, a dangerous goods route between Lille and Lyon.  | Specific           | Alphanum-desc   |                  |
| European route<br>definition identifier                 | A unique identifier for the definition of the European route function. For example, E1, a dangerous goods route between Lille and Lyon.   | Specific           | Alphanum-id     |                  |
| European route<br>function type<br>description          | The description of the type of European route function. Examples are a dangerous goods route and a route for heavy goods vehicles.  | Specific           | Alphanum-desc   |                  |
| European route<br>function type identifier              | A unique identifier for the type of European route function. Examples are DG1, a dangerous goods route and HGV1, a route for heavy goods vehicles.  | Coded              | CV11            |                  |
| Grid type description                                   | The description of a type of grid referencing system.   | Specific           | Alphanum-desc   |                  |
| Grid type identifier                                    | A unique identifier for a type of grid referencing system.  | Coded              | CV21            |                  |
| Injury type description                                 | The description of a type of injury resulting from an accident, such as fatal, serious and minor.   | Specific           | Alphanum-desc   |                  |
| Injury type identifier                                  | A unique identifier for a type of injury resulting from an accident.  | Coded              | CV12            | Unknown          |
| Lane reference  | The lane reference (e.g. lane 1, lane 62, lane A2) to which the measurement of road condition applies.  | Specific           | Alphanum-desc   |                  |
| Locational description                                  | The description of the location of the road/section.  | Specific           | Alphanum-desc   |                  |
| Measurement unit<br>description                         | The description of a measurement unit e.g. kilogram and metre.  | Specific           | Alphanum-desc   |                  |
| Measurement unit<br>identifier                          | A unique identifier for a measurement unit e.g. kg (kilogram) and m (metre).  | Coded              | CV1             |                  |
| National road section_<br>classification<br>description | A description of the national road section classification. For example, in the UK, the RADEF road/section class type of <i>national legal class</i> can be further defined into 'M' for motorways, 'A' for 'A' class roads, 'B' for 'B' class roads, etc. | Specific           | Alphanum-desc   |                  |
| National road section_<br>classification identifier     | A unique identifier for the national road section classification.   | Specific           | Alphanum-id     |                  |

| Attribute Name                              | Definition  | Coded/<br>Specific | Cross Reference | Default<br>value |
|---|---|--------------------|-----------------|------------------|
| National route definition description       | The description of the definition of the national route function. For example, N1, a dangerous goods route between Lille and Lyon.  | Specific           | Alphanum-desc   |                  |
| National route definition identifier        | A unique identifier for the definition of the national route function.  | Specific           | Alphanum-id     |                  |
| National route function type description    | The description of the type of national route function. Examples are DG1, a dangerous goods route and HGV1, a route for heavy goods vehicles.   | Specific           | Alphanum-desc   |                  |
| National route function type identifier     | A unique identifier for the type of national route function.  | Specific           | Alphanum-id     |                  |
| Natural lighting condition type description | The description of the type of natural lighting conditions as recorded against an accident. Examples are darkness, daylight, twilight and unknown.  | Specific           | Alphanum-desc   |                  |
| Natural lighting condition type identifier  | A unique identifier for the type of natural lighting conditions as recorded against an accident.  | Coded              | CV14            | Unknown          |
| Network enquiry description                 | A description for a network enquiry. Examples are the individual Kantons (e.g. BL and NE) as in Switzerland. Another example is Route 1, Route 2, Route n, for winter maintenance or grass cutting. | Specific           | Alphanum-desc   |                  |
| Network enquiry function type description   | A description for a type of network enquiry. Examples (from Switzerland) are national/federal, Kanton, district and municipality. Other examples are winter maintenance and grass cutting.          | Specific           | Alphanum-desc   |                  |
| Network enquiry function type identifier    | A unique identifier for a type of network enquiry function.   | Specific           | Alphanum-id     |                  |
| Network enquiry identifier                  | A unique identifier for a type of a network enquiry.  | Specific           | Alphanum-id     |                  |
| Node identifier                             | A unique identifier for a node. A node is the zero dimensional element that can be used to define the topology of a road network.   | Specific           | Alphanum-id     |                  |
| Node name                                   | The name of a node.   | Specific           | Alphanum-desc   |                  |
| Offset                                      | The offset, in metres, of the reference point from the beginning of the road.   | Specific           | Numeric         |                  |
| Percentage of international traffic         | The percentage of vehicles from another country.  | Specific           | Numeric         |                  |

| Attribute Name                      | Definition   | Coded/<br>Specific | Cross Reference | Default<br>value |
|-------------------------------------|--|--------------------|-----------------|------------------|
| Person type description             | The description of the type person involved in an accident, such as a pedestrian, passenger or driver.           | Specific           | Alphanum-desc   |                  |
| Person type identifier              | A unique identifier for the type of person involved in an accident.  | Coded              | CV15            | Unknown          |
| Reference point description         | The description for a reference point along the section of road.   | Specific           | Alphanum-desc   |                  |
| Reference point identifier          | A unique identifier for a reference point.   | Specific           | Alphanum-id     |                  |
| Report direction description        | A description of the report of a network enquiry direction.  | Specific           | Alphanum-desc   |                  |
| Report direction identifier         | A unique identifier for the report of a network enquiry direction.   | Coded              | CV16a           | Ascending        |
| Restriction direction description   | A description of the different directions applicable to restrictions, such as ahead, left and right.             | Specific           | Alphanum-desc   |                  |
| Restriction direction identifier    | A unique identifier for directions applicable to restrictions.   | Coded              | CV28            |                  |
| Restriction type description        | The description for a type of restriction, such as maximum height, maximum length and maximum width.             | Specific           | Alphanum-desc   |                  |
| Restriction type identifier         | A unique identifier for a restriction type.  | Coded              | CV4             |                  |
| Restriction value                   | The actual value of a restriction. For example 3.5 (metres) for the maximum height.                              | Specific           | Numeric         |                  |
| Road condition date                 | The date the road condition measurement was taken.   | Specific           | Date            |                  |
| Road condition type description     | A description for the type of road condition measurement, such as structural condition and cracks.               | Specific           | Alphanum-desc   |                  |
| Road condition type identifier      | A unique identifier for the type of road condition.  | Coded              | CV19            |                  |
| Road condition value                | The value applicable to the road condition.  | Specific           | Alphanum-desc   |                  |
| Road section class type description | The description for road section class type. Examples are the national legal class and the national owner class. | Specific           | Alphanum-desc   |                  |
| Road section class type identifier  | A unique identifier for a road section class type.   | Coded              | CV18            |                  |

| Attribute Name                          | Definition   | Coded/<br>Specific | Cross Reference | Default<br>value |
|---|--|--------------------|-----------------|------------------|
| Road surface condition type description | The description of the type of road surface condition at the time of an accident. Examples are dry, slippery, wet and unknown.                               | Specific           | Alphanum-desc   |                  |
| Road surface condition type identifier  | A unique identifier for type of the road surface condition at the time of an accident.   | Coded              | CV20            | Unknown          |
| Road type description                   | A description of the type of road, such as a motorway or national road.  | Specific           | Alphanum-desc   |                  |
| Road type identifier                    | A unique identifier for the type of road.  | Coded              | CV27            |                  |
| Road/section length                     | The length, in metres, of a road/section.  | Specific           | Numeric         |                  |
| Road/section reference                  | A unique identifier for a road/section. A road/section is an element of the road network between two specific points and with a unique reference identified. | Specific           | Alphanum-id     |                  |
| Route definition indicator              | An indicator to specify if the route is a nationally defined route ('N') or defined at a European level ('E').   | Specific           | Alphabetic      |                  |
| Sequence number                         | The sequence number of the subject matter in question. For example the sequence number of a reference point.   | Specific           | Numeric         |                  |
| Sex of person description               | A description of the gender of a person involved in an accident. Possible values are male, female or unknown.  | Specific           | Alphanum-desc   |                  |
| Sex of person identifier                | A unique identifier of the gender of a person involved in an accident.   | Coded              | CV24            | Unknown          |
| Start date                              | The start date of the subject matter in question. An example is the start date for a restriction.  | Specific           | Date            |                  |
| Start time                              | The start time of the subject matter in question. An example is the start time for a restriction.  | Specific           | Time            |                  |
| Structure category description          | A description for indicating how traffic flows on a structure, in terms of whether it is under, over or 'other'.   | Specific           | Alphanum-desc   |                  |
| Structure category identifier           | A unique identifier for indicating the type of traffic flow on a structure.  | Coded              | CV26            |                  |
| Structure description                   | A description of the structure.  | Specific           | Alphanum-desc   |                  |
| Structure function type description     | The description of the function of a structure, such as a bridge, tunnel or brunnel.   | Specific           | Alphanum-desc   |                  |

| Attribute Name                     | Definition   | Coded/<br>Specific | Cross Reference | Default<br>value |
|------------------------------------|--|--------------------|-----------------|------------------|
| Structure function type identifier | A unique identifier for the type of structure function.  | Coded              | CV16            |                  |
| Structure identifier               | A unique identifier for a structure such as a bridge.  | Specific           | Alphanum-id     |                  |
| Traffic flow type description      | The description for a type of traffic flow measurement. Examples are the annual average daily traffic and the average daily traffic during peak periods. | Specific           | Alphanum-desc   |                  |
| Traffic flow type identifier       | A unique identifier for a traffic flow type.   | Coded              | CV5             |                  |
| Traffic flow value                 | The actual value of the traffic flow.  | Specific           | Numeric         |                  |
| Vehicle type description           | The description for a type of vehicle. Examples are bus, motorcycle and passenger car.   | Specific           | Alphanum-desc   |                  |
| Vehicle type identifier            | A unique identifier for a type of vehicle.   | Coded              | CV3             |                  |
| Weather condition type description | The description of the weather condition type at the time of an accident. Examples are rain, fine, sun and strong wind.                                  | Specific           | Alphanum-desc   |                  |
| Weather condition type identifier  | A unique identifier for the weather condition type at the time of an accident.   | Coded              | CV17            | Unknown          |
| X co-ordinate                      | The x co-ordinate of an arc point on a road/section.   | Specific           | Numeric         |                  |
| Y co-ordinate                      | The y co-ordinate of an arc point on a road/section.   | Specific           | Numeric         |                  |
| Z co-ordinate                      | The z co-ordinate of an arc point on a road/section.   | Specific           | Numeric         |                  |

## 4.2 Coded Value Tables

The data dictionary comprises three tables. This section presents the ‘coded value tables’.

Coded values are those where a value for the data item is ‘selected’ from a table containing codes and descriptions. It must also be possible to translate coded values. For example, in the UK, the code R may be used to describe the colour red, however, in France a code of RO1 may be used, and its description would be described as rouge in French.

References to the coded values are prefixed by CV, whereas references to the specific values tables simply have a descriptive.

## List of Entity/Code Value Tables

The tables below list the code value entities in this section. For readability, the table on the left is sorted by ascending code table reference, whereas the table on the right is sorted into alphabetic code table name order. The order of the code value tables in this section is as per the table on the left.

| Code table cross-ref. | ENTITY/CODE VALUE TABLE NAME       | CV26 | STRUCTURE CATEGORY    |
|-----------------------|------------------------------------|------|-----------------------|
|                       |                                    | CV27 | ROAD TYPE             |
| CV1                   | MEASUREMENT UNIT                   | CV28 | RESTRICTION DIRECTION |
| CV2                   | COUNTRY                            |      |                       |
| CV3                   | VEHICLE TYPE                       |      |                       |
| CV4                   | RESTRICTION TYPE                   |      |                       |
| CV5                   | TRAFFIC FLOW TYPE                  |      |                       |
| CV6                   | DIRECTION                          |      |                       |
| CV7                   | ACCIDENT POSITION TYPE             |      |                       |
| CV8                   | EQUIPMENT CROSS SECTIONAL POS      |      |                       |
| CV9                   | CONDITION LEVEL TYPE               |      |                       |
| CV10                  | EQUIPMENT TYPE                     |      |                       |
| CV11                  | EUROPEAN ROUTE FUNCTION TYPE       |      |                       |
| CV12                  | INJURY TYPE                        |      |                       |
| CV13                  | ARTIFICIAL LIGHTING CONDITION TYPE |      |                       |
| CV14                  | NATURAL LIGHTING CONDITION TYPE    |      |                       |
| CV15                  | PERSON TYPE                        |      |                       |
| CV16                  | STRUCTURE FUNCTION TYPE            |      |                       |
| CV16a                 | REPORT DIRECTION                   |      |                       |
| CV17                  | WEATHER CONDITION TYPE             |      |                       |
| CV18                  | ROAD/SECTION CLASS TYPE            |      |                       |
| CV19                  | ROAD CONDITION TYPE                |      |                       |
| CV20                  | ROAD SURFACE CONDITION TYPE        |      |                       |
| CV21                  | GRID TYPE                          |      |                       |
| CV22                  | ARC POSITION TYPE                  |      |                       |
| CV23                  | CONDITION CROSS SECTIONAL POS      |      |                       |
| CV24                  | SEX OF PERSON                      |      |                       |
| CV25                  | ACCIDENT PREVENTION                |      |                       |

| ENTITY/CODE VALUE TABLE NAME       | Code table cross-ref. |
|------------------------------------|-----------------------|
| ACCIDENT POSITION TYPE             | CV7                   |
| ACCIDENT PREVENTION                | CV25                  |
| ARC POSITION TYPE                  | CV22                  |
| ARTIFICIAL LIGHTING CONDITION TYPE | CV13                  |
| CONDITION CROSS SECTIONAL POS      | CV23                  |
| CONDITION LEVEL TYPE               | CV9                   |
| COUNTRY                            | CV2                   |
| DIRECTION                          | CV6                   |
| EQUIPMENT CROSS SECTIONAL POS      | CV8                   |
| EQUIPMENT TYPE                     | CV10                  |
| EUROPEAN ROUTE FUNCTION TYPE       | CV11                  |
| GRID TYPE                          | CV21                  |
| INJURY TYPE                        | CV12                  |
| MEASUREMENT UNIT                   | CV1                   |
| NATURAL LIGHTING CONDITION TYPE    | CV14                  |
| PERSON TYPE                        | CV15                  |
| REPORT DIRECTION                   | CV16a                 |
| RESTRICTION DIRECTION              | CV28                  |
| RESTRICTION TYPE                   | CV4                   |
| ROAD CONDITION TYPE                | CV19                  |
| ROAD SURFACE CONDITION TYPE        | CV20                  |
| ROAD TYPE                          | CV27                  |
| ROAD/SECTION CLASS TYPE            | CV18                  |

|                         |      |                        |      |
|-------------------------|------|------------------------|------|
| SEX OF PERSON           | CV24 | VEHICLE TYPE           | CV3  |
| STRUCTURE CATEGORY      | CV26 | WEATHER CONDITION TYPE | CV17 |
| STRUCTURE FUNCTION TYPE | CV16 |                        |      |
| TRAFFIC FLOW TYPE       | CV5  |                        |      |

|                         |   |   |
|-------------------------|---|---|
| <b>Code table ref.:</b> | CV1   |   |
| <b>Name:</b>            | <b>MEASUREMENT UNIT</b>   |   |
| <b>Description:</b>     | This is used to identify the various measurement units that can be applied to data values when exchanging road information. |   |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>  |
|                         | Kilogram  | Kilogram.   |
|                         | Kilometre   | Kilometre.  |
|                         | Kilometres per hour   | Kilometres per hour.  |
|                         | Metre   | Metre.  |
|                         | Mile  | Mile.   |
|                         | Miles per hour  | Miles per hour.   |
|                         | None  | None.   |
|                         | Short tonnes  | Short tonnes.   |
|                         | Standard axles  | Standard axles.   |
|                         | Tonnes  | Tonnes.   |
|                         | Vehicles per day  | Number of vehicles travelling on the road/section per day.  |
|                         | Vehicles per hour   | Number of vehicles travelling on the road/section per hour. |

|                         |  |                    |
|-------------------------|--|--------------------|
| <b>Code table ref.:</b> | CV2  |                    |
| <b>Name:</b>            | <b>COUNTRY</b>   |                    |
| <b>Description:</b>     | This is used to identify the countries using RADEF for data exchange purposes. |                    |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b> |
|                         | Austria  | Austria.           |
|                         | Belgium  | Belgium.           |
|                         | Denmark  | Denmark.           |
|                         | Finland  | Finland.           |
|                         | France   | France.            |
|                         | Germany  | Germany.           |
|                         | Greece   | Greece.            |
|                         | Ireland  | Ireland.           |
|                         | Italy  | Italy.             |
|                         | Luxembourg   | Luxembourg.        |
|                         | Netherlands  | Netherlands.       |
|                         | Portugal   | Portugal.          |
|                         | Spain  | Spain.             |
|                         | Sweden   | Sweden.            |
|                         | Switzerland  | Switzerland.       |
|                         | United Kingdom   | United Kingdom.    |

|                         |  |  |
|-------------------------|--|--|
| <b>Code table ref.:</b> | CV3  |  |
| <b>Name:</b>            | <b>VEHICLE TYPE</b>                            |  |
| <b>Description:</b>     | This is used to classify the types of vehicle. |  |
| <b>Code</b>             | <b>Name</b>                                    | <b>Description</b>   |
|                         | All vehicles                                   | All vehicles.  |
|                         | Bicycle  | Bicycle.   |
|                         | Bus  | Bus and coach.   |
|                         | Heavy goods vehicle                            | A vehicle is classified as a HGV if its weight exceeds the nationally defined limit OR the axle weight exceeds the nationally defined limit. |
|                         | Light goods vehicle                            | Light goods vehicle.   |
|                         | Motorcycle                                     | Motorcycle.  |
|                         | Passenger car                                  | Passenger car.   |
|                         | Rail track vehicles                            | Rail track vehicles.   |
|                         | Special vehicle (e.g. agricultural)            | Special vehicle (e.g. agricultural).   |

|                         |   |                                  |
|-------------------------|---|----------------------------------|
| <b>Code table ref.:</b> | CV4   |                                  |
| <b>Name:</b>            | <b>RESTRICTION TYPE</b>   |                                  |
| <b>Description:</b>     | This is used to classify the type of restriction. For example, maximum height, maximum length, maximum width. |                                  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>               |
|                         | Maximum axle weight   | Maximum axle weight restriction. |
|                         | Maximum height  | Maximum height restriction.      |
|                         | Maximum length  | Maximum length restriction.      |
|                         | Maximum weight  | Maximum weight restriction.      |
|                         | Maximum width   | Maximum width restriction.       |

|                         |  |   |
|-------------------------|--|---|
| <b>Code table ref.:</b> | CV5  |   |
| <b>Name:</b>            | <b>TRAFFIC FLOW TYPE</b>   |   |
| <b>Description:</b>     | This is used to classify the type of traffic flow measurement. Examples are annual average daily traffic, average daily traffic during peak periods, maximum flow. |   |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>  |
|                         | Annual average daily traffic   | The annual average daily traffic (AADT).                                      |
|                         | Average flow during peak period  | The average daily traffic during peak periods, such as for the month of July. |
|                         | Maximum flow   | The maximum flow of traffic.  |



|                         |   |                    |
|-------------------------|---|--------------------|
| <b>Code table ref.:</b> | CV6   |                    |
| <b>Name:</b>            | <b>DIRECTION</b>  |                    |
| <b>Description:</b>     | This is used to identify the direction applicable to traffic flow and the chainage of reference points. |                    |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b> |
|                         | Against chainage  | Against chainage.  |
|                         | Both directions   | Both directions.   |
|                         | With chainage   | With chainage.     |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV7   |  |
| <b>Name:</b>            | <b>ACCIDENT POSITION TYPE</b>   |  |
| <b>Description:</b>     | This entity holds the features of the road associated with the location of an accident, such as a curved road, crossing and bridge. |  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>   |
|                         | Bridge  | The accident occurred on a bridge.                               |
|                         | Cross-roads   | The accident occurred at a cross-roads.                          |
|                         | Curve   | The accident occurred on a curved part of the road.              |
|                         | Pedestrian crossing   | The accident occurred on a pedestrian crossing.                  |
|                         | Railway crossing  | The accident occurred on a railway crossing.                     |
|                         | Road works  | The accident occurred where roadwork's were taking place.        |
|                         | Roundabout  | The accident occurred at a roundabout.                           |
|                         | Slip road   | The accident occurred on a slip road.                            |
|                         | Straight road   | The accident occurred on a straight part of the road.            |
|                         | T junction  | The accident occurred at a T junction.                           |
|                         | Tunnel  | The accident occurred in a tunnel.                               |
|                         | Unknown   | The position at which an accident occurred is unknown (default). |

|                         |  |  |
|-------------------------|--|--|
| <b>Code table ref.:</b> | CV8  |  |
| <b>Name:</b>            | <b>EQUIPMENT CROSS SECTIONAL POS</b>   |  |
| <b>Description:</b>     | This entity holds the type of the cross sectional positions relating to items of equipment at a particular location. |  |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>                             |
|                         | Centre   | Centre.  |
|                         | Left   | Left.  |
|                         | Right  | Right.   |
|                         | Unknown  | Cross-sectional position is unknown (default). |

|  |       |        |
|--|-------|--------|
|  | Whole | Whole. |
|--|-------|--------|

|                         |   |                     |
|-------------------------|---|---------------------|
| <b>Code table ref.:</b> | CV9   |                     |
| <b>Name:</b>            | <b>CONDITION LEVEL TYPE</b>   |                     |
| <b>Description:</b>     | This is used to classify the condition of the road into categories of good, average or bad. |                     |
| <b>Code</b>             | <b>Name</b>   | <b>Description.</b> |
|                         | Good  | Good.               |
|                         | Average   | Average.            |
|                         | Bad   | Bad.                |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV10  |  |
| <b>Name:</b>            | <b>EQUIPMENT TYPE</b>   |  |
| <b>Description:</b>     | This entity holds the different types of equipment, such as lighting, drainage and user services. |  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>   |
|                         | Drainage  | To include items related to water, such as water reservoirs.   |
|                         | Environmental   | Equipment for protecting the environment, such as noise protection walls, trees and hedges.  |
|                         | Lighting  | Lighting equipment, such as lampposts.   |
|                         | Measurement device  | Measurement devices such as video cameras, induction loops and radar.  |
|                         | Pipeworks   | Pipework equipment, such as pipes for gas, water and electricity.  |
|                         | Road markings   | Markings on a road, such as solid and dashed lines.  |
|                         | Safety  | Safety equipment on a road, such as safety barriers.   |
|                         | Signs and information   | Static and dynamic signs providing information to drivers.   |
|                         | User services   | This includes service stations, parking facilities, telephones, toll booths, etc. For a complete list of the user services, please refer to chapter 5.10 of the GDF document (v3). |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV11  |  |
| <b>Name:</b>            | <b>EUROPEAN ROUTE FUNCTION TYPE</b>   |  |
| <b>Description:</b>     | This is used to define the characteristics of the sequential road/sections (or part of) for special purposes for European requirements, e.g. dangerous goods.<br>Note: no codes and descriptions have been defined at the moment. |  |

| <b>Code</b> | <b>Name</b> | <b>Description</b> |
|-------------|-------------|--------------------|
|             |             |                    |

|                         |  |  |
|-------------------------|--|--|
| <b>Code table ref.:</b> | CV12   |  |
| <b>Name:</b>            | <b>INJURY TYPE</b>   |  |
| <b>Description:</b>     | This entity holds the different types of injuries that a person can suffer in an accident, such as fatal, serious and minor. |  |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>   |
|                         | Fatal  | A person involved in an accident and dying within 30 days of that accident.                    |
|                         | Minor  | A person involved in an accident and requiring medical treatment without a stay in a hospital. |
|                         | None   | A person involved in an accident but incurring no injury.                                      |
|                         | Serious  | A person involved in an accident and incurring a serious injury requiring hospitalisation.     |
|                         | Unknown  | A person involved in an accident but his/her injuries were unknown (default).                  |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV13  |  |
| <b>Name:</b>            | <b>ARTIFICIAL LIGHTING CONDITION TYPE</b>   |  |
| <b>Description:</b>     | This entity holds the artificial lighting condition types as recorded against an accident. Examples are lit, unlit and unknown. |  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>   |
|                         | Lit   | The artificial lighting was switched on at the time of the accident.                                     |
|                         | Unknown   | The artificial lighting was unknown at the time of the accident (default).                               |
|                         | Unlit   | The artificial lighting was either switched off or no lights were available at the time of the accident. |

|                         |  |   |
|-------------------------|--|---|
| <b>Code table ref.:</b> | CV14   |   |
| <b>Name:</b>            | <b>NATURAL LIGHTING CONDITION TYPE</b>   |   |
| <b>Description:</b>     | This entity holds the natural lighting condition types as recorded against an accident. Examples are daylight, darkness, twilight and unknown. |   |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>  |
|                         | Darkness   | The natural lighting condition was darkness at the time of the accident.          |
|                         | Daylight   | The natural lighting condition was daylight at the time of the accident.          |
|                         | Twilight   | The natural lighting condition was twilight at the time of the accident.          |
|                         | Unknown  | The natural lighting condition was unknown at the time of the accident (default). |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV15  |  |
| <b>Name:</b>            | <b>PERSON TYPE</b>  |  |
| <b>Description:</b>     | This entity holds the types of persons that can be involved in an accident, such as pedestrians, passengers or drivers. |  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>   |
|                         | Driver  | The person involved in an accident is the driver of a vehicle.   |
|                         | Passenger   | The person involved in an accident is a passenger of a vehicle.  |
|                         | Pedestrian  | The person involved in an accident is a pedestrian.              |
|                         | Unknown   | The type of person involved in an accident is unknown (default). |

|                         |   |                    |
|-------------------------|---|--------------------|
| <b>Code table ref.:</b> | CV16  |                    |
| <b>Name:</b>            | <b>STRUCTURE FUNCTION TYPE</b>  |                    |
| <b>Description:</b>     | This entity holds the different functions of structures, such as bridges and tunnels. |                    |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b> |
|                         | Bridge  | Bridge.            |
|                         | Cutting   | Cutting.           |
|                         | Gallery   | Gallery.           |
|                         | Retaining wall  | Retaining wall.    |
|                         | Tunnel  | Tunnel.            |

|                         |  |   |
|-------------------------|--|---|
| <b>Code table ref.:</b> | CV16a  |   |
| <b>Name:</b>            | <b>REPORT DIRECTION</b>  |   |
| <b>Description:</b>     | This entity holds the different report directions for a network enquiry road section |   |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>  |
|                         | Ascending  | Direction of enquiry road section is ascending in chainage (default). |
|                         | Descending   | Direction of enquiry road section is descending in chainage           |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV17  |  |
| <b>Name:</b>            | <b>WEATHER CONDITION TYPE</b>   |  |
| <b>Description:</b>     | This entity holds the weather condition types as recorded against an accident. Examples include rain, fine, sun, fog and strong wind. |  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>   |
|                         | Fine/dry  | The weather condition was fine/dry at the time of the accident.          |
|                         | Fog   | The weather condition was foggy at the time of the accident.             |
|                         | Hailstones  | The weather condition was hailstones at the time of the accident.        |
|                         | Rain  | The weather condition was rain at the time of the accident.              |
|                         | Snow  | The weather condition was snow at the time of the accident.              |
|                         | Strong wind   | The weather condition was strong winds at the time of the accident.      |
|                         | Sun   | The weather condition was sunny at the time of the accident.             |
|                         | Unknown   | The weather condition was unknown at the time of the accident (default). |

|                         |                                     |   |
|-------------------------|-------------------------------------|---|
| <b>Code table ref.:</b> | CV18                                |   |
| <b>Name:</b>            | <b>ROAD/SECTION CLASS TYPE</b>      |   |
| <b>Description:</b>     | This entity holds the road classes. |   |
| <b>Code</b>             | <b>Name</b>                         | <b>Description</b>  |
|                         | National legal class                | The class of roads as defined by national legislation.                                      |
|                         | National owner class                | This defines the authority, organisation or company that owns the asset within the country. |
|                         | Number of lanes                     | Number of lanes.  |
|                         | Separated carriageways              | This is used to indicate whether the carriageways are separated.                            |

|                         |   |   |
|-------------------------|---|---|
| <b>Code table ref.:</b> | CV19  |   |
| <b>Name:</b>            | <b>ROAD CONDITION TYPE</b>                                |   |
| <b>Description:</b>     | This entity holds the different types of road conditions. |   |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>  |
|                         | Cracks  | The condition of the of the road pavement in terms of the cracks.                       |
|                         | Evenness  | The condition of the road pavement in terms of its evenness.                            |
|                         | Holes   | The condition of the of the road pavement in terms of the holes, whether filled or not. |
|                         | Overall condition   | The overall condition of the road pavement.   |
|                         | Rutting depth   | The condition of the of the road pavement in terms of the rutting depth.                |
|                         | Skid resistance   | The condition of the of the road pavement in terms of the skidding resistance.          |
|                         | Structural condition                                      | The structural condition of the road pavement.  |
|                         | Usage condition   | The usage condition of the road pavement.   |
|                         | Water retention   | The condition of the road pavement in terms of its water retention capability.          |

|                         |  |   |
|-------------------------|--|---|
| <b>Code table ref.:</b> | CV20   |   |
| <b>Name:</b>            | <b>ROAD SURFACE CONDITION TYPE</b>   |   |
| <b>Description:</b>     | This entity holds the road surface condition types as recorded against an accident. Examples are dry, slippery, wet and unknown. |   |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>  |
|                         | Dry  | The road surface condition was dry at the time of the accident.               |
|                         | Slippery   | The road surface condition was slippery at the time of the accident.          |
|                         | Unknown  | The road surface condition was unknown at the time of the accident (default). |
|                         | Wet  | The road surface condition was wet at the time of the accident.               |

|                         |  |  |
|-------------------------|--|--|
| <b>Code table ref.:</b> | CV21   |  |
| <b>Name:</b>            | <b>GRID TYPE</b>   |  |
| <b>Description:</b>     | This is used to identify the geodetic referencing systems. |  |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>   |
|                         | Belgium  | Belgium.   |
|                         | DHDN   | Germany.   |
|                         | European 1950 (ED50)                                       | Austria, Belgium, Denmark, Finland, France, Germany, Gibraltar, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland. |
|                         | European 1979 (ED79)                                       | Austria, Finland, Netherlands, Norway, Spain, Sweden and Switzerland.  |
|                         | European 1987 (ED87)                                       | Europe.  |
|                         | European Terrestrial Reference System 1989 (ETRS 1989)     | Countries within Europe working in CERCO.  |
|                         | Geodetic Reference System 1967 (GRS67)                     | Worldwide.   |
|                         | Geodetic Reference System 1980 (GRS80)                     | Worldwide.   |
|                         | Ireland 1965   | Ireland.   |
|                         | Nouvelle Triangulation Francaise (NTF)                     | France.  |
|                         | Ordnance Survey of Great Britain 1936                      | England, Isle of Man, Scotland, Shetland Islands and Wales.  |
|                         | Rikets Traingulering 1990 (RT90)                           | Sweden.  |
|                         | World Geodetic System 1972 (WGS72)                         | Worldwide.   |
|                         | World Geodetic System 1984 (WGS84)                         | Worldwide.   |

|                         |   |                            |
|-------------------------|---|----------------------------|
| <b>Code table ref.:</b> | CV22  |                            |
| <b>Name:</b>            | <b>ARC POSITION TYPE</b>  |                            |
| <b>Description:</b>     | This is used to indicate the location of the arc in relation to the control axes. |                            |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>         |
|                         | Centre line   | Centre line.               |
|                         | Left of carriageway edge  | Left of carriageway edge.  |
|                         | Right of carriageway edge   | Right of carriageway edge. |



|                         |  |                                     |
|-------------------------|--|-------------------------------------|
| <b>Code table ref.:</b> | CV23   |                                     |
| <b>Name:</b>            | <b>CONDITION CROSS SECTIONAL POS</b>   |                                     |
| <b>Description:</b>     | This entity holds the type of the cross sectional positions relating to the measurements taken for the road condition. |                                     |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>                  |
|                         | Centre   | Centre.                             |
|                         | Left   | Left.                               |
|                         | Right  | Right.                              |
|                         | Unknown  | Unknown.                            |
|                         | Whole  | Whole of the carriageway (default). |

|                         |   |  |
|-------------------------|---|--|
| <b>Code table ref.:</b> | CV24  |  |
| <b>Name:</b>            | <b>SEX OF PERSON</b>  |  |
| <b>Description:</b>     | This entity holds the gender of the person involved in an accident. |  |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>   |
|                         | Female  | The person involved in an accident is of the female gender.            |
|                         | Male  | The person involved in an accident is of the male gender.              |
|                         | Unknown   | The gender of the person involved in an accident is unknown (default). |

|                         |   |   |
|-------------------------|---|---|
| <b>Code table ref.:</b> | CV25  |   |
| <b>Name:</b>            | <b>ACCIDENT PREVENTION</b>  |   |
| <b>Description:</b>     | This entity holds an indication of whether the person involved in an accident was wearing some form of accident prevention device, such as a seat-belt or crash helmet. |   |
| <b>Code</b>             | <b>Name</b>   | <b>Description</b>  |
|                         | No  | The person involved in an accident was not wearing any form of accident prevention device, such as a seat-belt or crash helmet.                               |
|                         | Not obligatory  | The person involved in an accident is not legally obliged to wear any form of accident prevention device, such as a seat-belt or crash helmet.                |
|                         | Unknown   | It is not known whether the person involved in an accident was wearing any form of accident prevention device, such as a seat-belt or crash helmet (default). |
|                         | Yes   | The person involved in an accident was wearing some form of accident prevention device, such as   |

|  |                              |
|--|------------------------------|
|  | a seat-belt or crash helmet. |
|--|------------------------------|

|                         |  |   |
|-------------------------|--|---|
| <b>Code table ref.:</b> | CV26   |   |
| <b>Name:</b>            | <b>STRUCTURE CATEGORY</b>  |   |
| <b>Description:</b>     | This entity holds the categories (e.g. under, over or other) of traffic flow for a structure |   |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>  |
|                         | Other  | The traffic flow on the structure is not one of the other categories. |
|                         | Over   | The traffic flow is over the structure.                               |
|                         | Under  | The traffic flow is under the structure.                              |

|                         |                                   |   |
|-------------------------|-----------------------------------|---|
| <b>Code table ref.:</b> | CV27                              |   |
| <b>Name:</b>            | <b>ROAD TYPE</b>                  |   |
| <b>Description:</b>     | This entity holds the road types. |   |
| <b>Code</b>             | <b>Name</b>                       | <b>Description</b>  |
|                         | Motorway                          | A motorway normally has two carriageways each with two or more lanes, separated by a physical barrier. No stopping is allowed on the carriageway, and there is normally a minimum speed limit, although this is not the case in the UK. Also, all road crossings are grade separated. |
|                         | National road                     | A national road has one or more lanes which are not necessarily separated by a physical barrier, and normally have traffic lights or grade separated crossings.   |

|                         |  |                             |
|-------------------------|--|-----------------------------|
| <b>Code table ref.:</b> | CV28   |                             |
| <b>Name:</b>            | <b>RESTRICTION DIRECTION</b>   |                             |
| <b>Description:</b>     | This is used to identify the directions applicable to restrictions. The list has been taken from the GDF (version 3.0) document. |                             |
| <b>Code</b>             | <b>Name</b>  | <b>Description</b>          |
|                         | Ahead  | Ahead.                      |
|                         | Backward   | Backward.                   |
|                         | Between ahead and right  | Between ahead and right     |
|                         | Between backward and left  | Between backward and left.  |
|                         | Between left and ahead   | Between left and ahead.     |
|                         | Between right and backward   | Between right and backward. |

|  |       |        |
|--|-------|--------|
|  | Left  | Left.  |
|  | Right | Right. |

### 4.3 Specific Value Tables

The data dictionary comprises three tables. This section presents the ‘specific value tables’.

For ‘specific values’ the properties associated with it are defined as required. References to the coded values are prefixed by CV, whereas references to the specific values tables simply have a descriptive.

|                             |                            |
|-----------------------------|----------------------------|
| <b>Specific value ref.:</b> | Alphabetic                 |
| <b>Definition:</b>          | Alphabetic characters only |
| <b>Format:</b>              | A..Z, a..z                 |
| <b>Unit:</b>                | Not applicable             |

|                             |                                  |
|-----------------------------|----------------------------------|
| <b>Specific value ref.:</b> | Alphanum-desc                    |
| <b>Definition:</b>          | Alphanumeric description         |
| <b>Format:</b>              | Number of characters as required |
| <b>Unit:</b>                | Not applicable                   |

|                             |                                  |
|-----------------------------|----------------------------------|
| <b>Specific value ref.:</b> | Alphanum-id                      |
| <b>Definition:</b>          | Alphanumeric identifier          |
| <b>Format:</b>              | Number of characters as required |
| <b>Unit:</b>                | Not applicable                   |

|                             |                |
|-----------------------------|----------------|
| <b>Specific value ref.:</b> | Date           |
| <b>Definition:</b>          | Date           |
| <b>Format:</b>              | DD/MM/YYYY     |
| <b>Unit:</b>                | Not applicable |

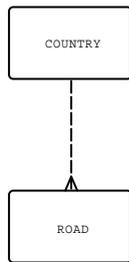
|                             |  |
|-----------------------------|--|
| <b>Specific value ref.:</b> | Numeric  |
| <b>Definition:</b>          | Numeric value                                      |
| <b>Format:</b>              | Number to the appropriate precision (e.g. nnnn.mm) |
| <b>Unit:</b>                | See coded value CV1                                |

|                             |                |
|-----------------------------|----------------|
| <b>Specific value ref.:</b> | Time           |
| <b>Definition:</b>          | Time           |
| <b>Format:</b>              | HH:MM          |
| <b>Unit:</b>                | Not applicable |

|                             |                    |
|-----------------------------|--------------------|
| <b>Specific value ref.:</b> | Yes/no             |
| <b>Definition:</b>          | A yes/no indicator |
| <b>Format:</b>              | Y or N             |
| <b>Unit:</b>                | Not applicable     |

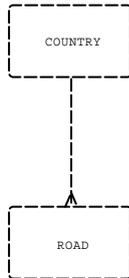
## Appendix A: Logical Data Modelling Notation

The notation used for logical data modelling is described in the examples below. The relationship between two entities is shown by a line which has a 'crows foot' at one end, and is used to indicate the 'many' end.



A relationship which has a dotted line between two entities is read as:

Each COUNTRY may have one or more ROADS and each ROAD may be situated in one and only one COUNTRY.



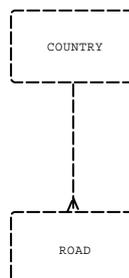
A relationship which has a dotted line on one end and a solid line on the 'crows foot' end is read as:

Each COUNTRY may have one or more ROADS but each ROAD must be situated in one and only one COUNTRY.



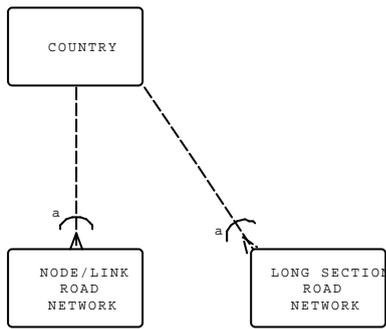
A relationship with a solid line on one end and a dotted line on the 'crows foot' end is read as:

Each COUNTRY must have one or more ROADS but each ROAD may be situated in one and only one COUNTRY.



A relationship consisting of a solid line is read as:

Each COUNTRY must have one or more ROADS and each ROAD must be situated in one and only one COUNTRY.



An exclusive relationship is indicated with an arc and an alphabetic letter on two or more relationships and is read as:

Each COUNTRY *may* have either a NODE/LINK ROAD NETWORK or a LONG SECTION ROAD NETWORK, but not both at the same time. Each NODE/LINK ROAD NETWORK or LONG SECTION ROAD NETWORK *must* be situated in one and only one COUNTRY.

## Appendix B: Discussion Notes of the Domain Workshops

The following are discussion notes of the domain workshops held on 1-3 April and 22-23 April 1996 in Paris and London respectively. For ease of reading, the notes are categorised into the following domains:

|              |                 |
|--------------|-----------------|
| Appendix B1  | Road network    |
| Appendix B2  | Restriction     |
| Appendix B3  | Traffic         |
| Appendix B4  | Structure       |
| Appendix B5  | Equipment       |
| Appendix B6  | Accident        |
| Appendix B7  | Condition       |
| Appendix B8  | Road Geometry   |
| Appendix B9  | Route           |
| Appendix B10 | Network Enquiry |

## Appendix B1: Road Network Domain Workshop

1. It was agreed to remove the Node Type entity from the draft first-cut Road Network data model since its attributes could be held on the Road/section entity.
2. A discussion took place on the Border Connection entity. It was agreed that the Border Connection entity is the relationship between the Node and the Reference Point entities to allow for the definition (mapping) of the border position between countries using the either of the road networking mechanisms, i.e. node/link or long sections with reference points.

This would enable the following permutations to be accommodated at the border point:

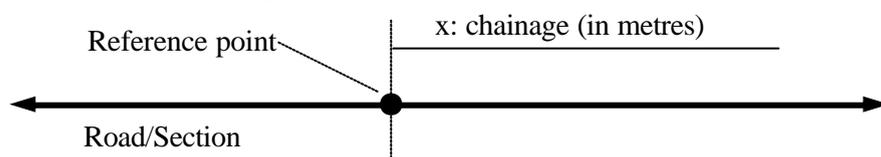
- nodes in one country to be mapped onto the nodes of the bordering country;
- nodes in one country to be mapped onto the reference points in the bordering country;
- reference points in one country to be mapped onto the reference points in the bordering country.

However, it would be necessary to have the chainage as well as the reference point as there are some countries, such as France, that do not have the reference point exactly at the border.

In Denmark there is no reference point at the end of the road at the border crossing, whereas Switzerland have reference points at the border point. In Belgium they know the length of the road so are able to work out the border point based on the beginning of the road.

3. Node reference **must** be unique within a country and it is up to each country to ensure that this is the case.
4. Cross sectional referencing will be covered in the relevant data domain, not as part of the road network domain.
5. Connectivity between road/sections needs to be possible in a country's referencing system if 'connected' routes are to be developed in the Routes domain.
6. The road reference identifier will be the 'addition' of one or more physical database fields.
7. To ensure that the road/section is unique within RADEF, the identifier of the country will be used together with the road/section reference. This will therefore form the key of the Road/section entity.

8. For the RADEF pilot project it was acknowledged that only a ‘snapshot’ of the network would be transferred from the source database(s), and any comparison of the road network (historic/current/future) would be made by the recipient of the data.
9. A next step development (not to be undertaken during this RADEF project) was identified as potentially being able to make an enquiry to enable changes to the road network to be highlighted from the source database.
10. It was agreed that to ensure a full degree of confidence in an enquiry through operation of the RADEF tool, the network domain should always be the first domain transferred. This would enable the correct road/sections to be included in the enquiry.
11. It was accepted that no duplicate road/section references exist at any point in time within a single country.
1. The Road/section entity defines an element of road. A test of whether the road/section is at the correct level of definition to be within this entity, is if one is able to define the longitudinal location of an item by only:
  - country;
  - reference of road/section element;
  - position of chainage reference point if using the long section referencing method;
  - chainage from chainage reference point (or node).



2. Where road/section references are ‘re-used’, they must be allocated version numbers and/or given validity dates. This will then ensure that they are unique.
3. A discussion took place related to separate carriageways. It was identified that for those countries using long section referencing, they are all able to identify the left/right carriageway by means of a flag or data item. By including this in the road/section reference this makes each carriageway a unique section. For those countries using node/link referencing this was either dealt with by a similar indicator added to the reference, or by use of a ‘dummy/fictitious’ node.
4. Each PRA must develop a definition of their network referencing system. This will be shared with the other PRAs to enable them to interpret the system, define enquiries and interpret the information provided.

5. A data attribute for 'locational description' of a road/section is incorporated in the Road/section entity. This may be allocated a road name, road description or similar physical field from a PRA database.
6. It was agreed that the Road/section entity would include a data attribute for length. This would be defined by the source country.
7. It was agreed that there was a need for a RADEF definition of road types and that this would be best done at a RADEF steering committee meeting.

However, a discussion took place at one of the workshops on road types. There is no harmonised set of standard road types across Europe. GDF have proposed nine types. Following discussion between the PRA representatives, four categories were proposed:

- *Motorway*. A motorway normally has two carriageways each with two or more lanes, separated by a physical barrier. No stopping is allowed on the carriageway, and there is normally a minimum speed limit, although this is not the case in the UK. Also, all road crossings are grade separated.
- *National Road*. A national road has one or more lanes which are not necessarily separated by a physical barrier, and normally have traffic lights or grade separated crossings.
- *Department Road*. These would be roads such as provincial roads.
- *Community Road*. These would be roads such as municipal roads.

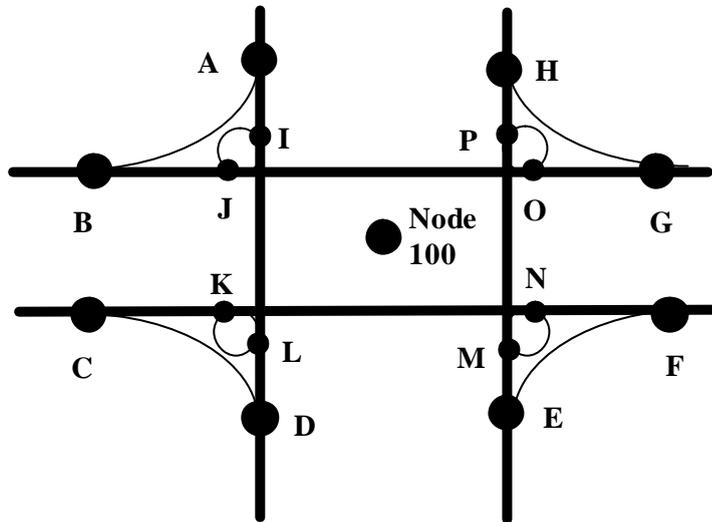
It was proposed that RADEF should use the first two definitions of road type, namely, Motorway and the National Road, and that the others could be introduced in future versions of RADEF. The different road types are held on the Road Type entity.

8. The road referencing system in Denmark will shortly be undergoing changes in the way chainage is measured: at the moment, they use a 'special start point' and the chainage is measured from this point to the reference point.

This system will be changed shortly such that the first reference point will be at the 'special start point' and not relative to a reference point.

9. Following lengthy discussion, it was identified that there was no requirement for a 'structured' data attribute related to a road/section of 'road number'. If an enquiry is required for a specific road class/number (e.g. N5), a route would be defined and used as the basis of the enquiry. Therefore this requirement must be covered in the Route domain workshop.

10. Attributes, such as the national ‘legal’ road class (i.e. the class of road as defined by national legislation), national owner class (i.e. the authority, organisation or company that owns the asset within the country), number of lanes, and whether the carriageways are separated or not, is held on the Road/section Class Type entity. An example of the national legal classes of roads in the UK are: ‘A’ class roads, ‘B’ class roads and the ‘M’ roads i.e. motorways. This allows each country to further define their own road section class types, and this information is held on the National Road/section Classification entity.
11. Countries using the node/link road network referencing system will need to define the start and end of a road section by identifying the start and end nodes.
  1. In Germany they have the concept of simple nodes. For example, consider a motorway junction with slip roads.



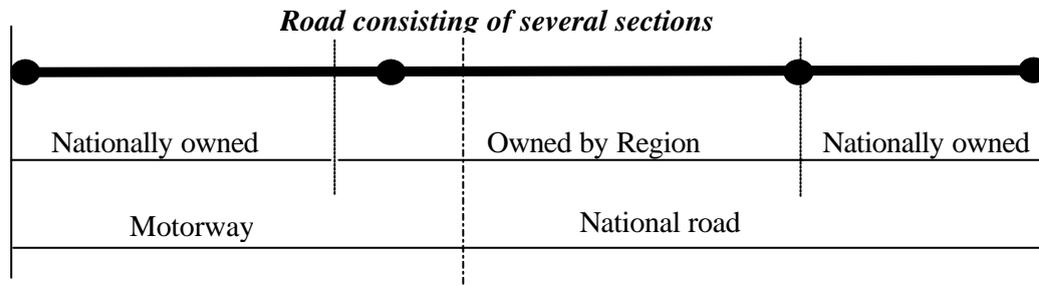
Node 100 would be regarded as the node, whereas the other nodes are regarded as sub-nodes with references of 100A, 100B, 100C etc., up to 100P. This requirement is covered in the RADEF model since each node is given a unique reference.

2. During the first workshop, the national ‘owner’ road class entity was defined as the authority, organisation or company that owns the asset. Examples of the different ‘owners’ in the countries are listed below:

- Germany: Federal state (Bund), Land, County (Kreis), Municipality;
- Switzerland: Kanton, Bezirk; Municipality, Private;
- United Kingdom: Local highway authority, National highway authority;
- Italy: State, Regional, Provincial, Municipal, Concession;
- Belgium: State, Region, Territory, District;
- Denmark: State, County (Amt), Commune, Private, Concession;
- France: State, Region, Department, Municipal.

At a subsequent workshop, it was agreed that each country should be able to define their own ‘national owner classes’. This requirement has now been accommodated in the Road/section Class Type entity, where the highest level is defined (refer to coded value table CV18), and in the National Road/section Classification entity where the national owner classes can be defined by each country.

1. It was accepted that each road section, or a part of a road section needs to be classified in a number of ways as illustrated in the diagram below.



2. It was agreed that all measurements of distance/length should be in metres, and would be converted as appropriate by the RADEF tool.
3. Countries using the long section road network referencing system will need to define the road section and can optionally define the start and end reference points.

## Appendix B2: Restriction Domain Workshop

1. Denmark do not have a restrictions table in its own right. Instead the attributes related to restrictions are available on entities in other domains.
2. Belgium and Germany do not have information related to restrictions imposed by obstacles to the turning movements of vehicles.
3. It was agreed that only permanent restrictions should be considered and not dynamic restrictions e.g. those caused by accidents, road maintenance, strikes etc.
4. It was agreed to use the restriction types defined in the GDF document. However, each PRA was asked to send KPMG their own definition of the types of restriction and to suggest which restrictions could be made common for the RADEF project.
5. It was agreed that during this RADEF project, this domain should cater for physical restrictions and that legal restrictions should be covered by future versions of RADEF.
6. It was accepted that exchange of restriction information would be far more important between the PRA and the private sector, than between the PRA and Eurostat or between the PRAs on an international basis.
7. A discussion took place as to whether RADEF should hold information on the lane on which the restriction occurred. It concluded that this version of RADEF should not include this and that it should be considered for future versions of RADEF.
8. It was agreed that there should be the ability to associate a restriction to a structure, such as a bridge. To this end it was accepted that an optional reference to the structure should be held on the restriction entity, and that the it should be revisited when the structure domain workshop is held.
9. It was accepted that it is necessary to know the 'to' and 'from' points for the restriction. If the restriction was at a particular point, then the 'to' and 'from' points would coincide.
10. It was accepted that the reason for the restriction was not to be recorded, simply the fact there was a restriction on a road/section.
11. It was decided that information related to the gradient of a road/restriction should be left until the Road Geometry domain workshop.
12. It was agreed to have a 'direction indicator' to indicate the direction of the restriction.
13. It was agreed to use the eight directions defined in the GDF document. These are: ahead, between ahead and right, right, between right and backward, backward, between backward and left, left, between left and ahead.
14. Although the agreed requirements do not include dynamic restrictions, the LDM can be expanded to cater for such restrictions.

15. A discussion took place on whether it was necessary to record details of turning restrictions. It concluded that the restriction entity could be used to record this particular restriction by making 'turning restriction' one of the restriction types.

It was agreed that 'turning restriction' would only apply to the node/link type of road network.

16. A discussion on the period of the restriction took place. Five alternatives were discussed:
1. no restriction dates;
  2. only restriction comments e.g. 'this restriction applies every weekend';
  3. only restriction dates;
  4. both restriction dates and times;
  5. restriction dates and times and (optional) comments.

Option 5 was accepted as this gave the greatest flexibility as it also permits the definition of restrictions that occurred on a regular basis, although this implies that a record would exist for every occurrence of a restriction. Another benefit of this option is that dynamic restrictions could be created.

The use of validity dates on a separate entity were discussed but rejected.

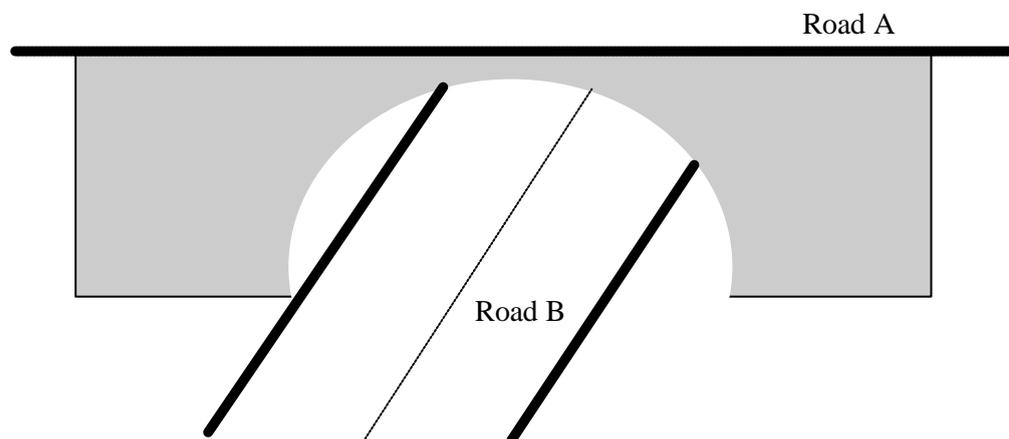
17. Countries using the node/link road network referencing system will need to define the section of road to which the restriction applies by the road section reference and any chainage.
18. Countries using the long section road network referencing system will need to define the section of road to which the restriction applies by the road section reference and optionally, reference points and any chainage from the reference points.

## Appendix B3: Traffic Domain Workshop

1. It was accepted that PRAs have systems for capturing raw traffic data which is then processed to provide aggregated data.
2. It was agreed not to include the capacity of the road e.g. the maximum number of vehicles that can travel along a road.
3. It was agreed that the scope of this domain would be driven by what the PRAs can do at present rather than by proposals coming from other European bodies. Hence after discussion on the issue of 'level of service' (comparing the capacity of the road with the actual volume of traffic), it was agreed not to include this due to lack of data availability.
4. It was agreed to delete the 'measurement basis' entity from the first-cut LDM as it was felt unnecessary to record whether the measurement of traffic flow was taken by automatic or manual means.
5. As there was a lack of data availability regarding the 'annual average daily traffic per lane', it was decided not to include this as one of the traffic flow types.
6. It was agreed that the location of where the measurement was taken is not required.
7. Due to difficulties in collecting traffic data, the percentage of international traffic (i.e. cars with foreign number plates or some other indication that it is from another country) will be an optional field on the traffic flow entity.
8. It was agreed that the details of the frequency/period of measurement is not required.
9. The validity dates (to and from) of the traffic data will be included in the traffic flow entity.
10. For countries with a need to transfer details of the average speed of the traffic along a section of road, they could achieve this by having an 'average speed' traffic flow type.
11. It was agreed that it was not necessary to record the type of device used for measuring the traffic flow.
12. It was proposed that the following be used for vehicle types: all vehicles, heavy goods vehicles, motorcycles, passenger cars, light goods vehicles, special vehicles (e.g. agricultural), and buses.
13. Countries using the node/link road network referencing system will need to define the section of road to which the traffic flow applies by the road section reference and any chainage.
14. Countries using the long section road network referencing system will need to define the section of road to which the traffic flow applies by the road section reference and optionally, reference points and any chainage from the reference points.

## Appendix B4: Structure Domain Workshop

1. A discussion on the definition of a structure resulted in the following: a structure must be an integral part of the road that affects the usage of that road, and could cause a restriction in the flow of traffic.
2. It was agreed that a structure **must** be located on a road/section.
3. If a structure causes a restriction then this may be indicated on the appropriate restriction.
1. Certain structures can have more than one function, and it may be located at the same place but on different road/sections. For example, a structure that allows traffic to flow over as well as under it, as illustrated below.



2. It was agreed that there was no requirement for RADEF to indicate the cross-sectional position of a structure.
3. It was accepted that there is an optional requirement to record how traffic flows on a structure, i.e. under, over or 'other'.
4. Countries using the node/link road network referencing system will need to define the section of road to which the structure applies by the road section reference and any chainage.
5. Countries using the long section road network referencing system will need to define the section of road to which the structure applies by the road section reference and optionally, reference points and any chainage from the reference points.

## Appendix B5: Equipment Domain Workshop

1. It was agreed that it was necessary to have the locational referencing of equipment items as well as its cross-sectional position along the road/section.
2. The cross-sectional positions were agreed as being left, whole, centre, none and whole (default). See coded value table CV8 for further details.
3. It was agreed that the lateral position of equipment items was not a requirement of RADEF. This is because of the inaccuracies in the recording of lateral positions of equipment items in the national systems.
4. The equipment types were agreed as described in coded value table CV10.
5. It is assumed that items of equipment have unique identifiers in the PRA systems.
6. It was agreed to use the list of services described in chapter 5.10 of the GDF version 3.0 for the equipment type of 'user services'.
7. Countries using the node/link road network referencing system will need to define the section of road to which the equipment applies by the road section reference and any chainage.
8. Countries using the long section road network referencing system will need to define the section of road to which the equipment applies by the road section reference and optionally, reference points and any chainage from the reference points.

## Appendix B6: Accident Domain Workshop

1. It was agreed that this domain would not deal with personal or sensitive information.
2. It was agreed that the 'attributes' (e.g. road surface and weather conditions) of an accident would be held. This was after a discussion during which it was accepted that the 'attributes' of an accident should be aggregated into the following: driver, animal, weather, road surface, passenger, pedestrian, riot, light, dark and other object.
3. Future versions of RADEF could enhance the Vehicle In Accident entity by including details of the vehicle itself, such as the registration number and the age of vehicle. For this version of RADEF it was accepted that there is a requirement to hold only the types of vehicles involved in an accident.
4. It was accepted that for the Accident Position Type entity, certain countries may only use a subset of the possible values in the entity.
5. The descriptions for the following code value tables (entities) were agreed and are described in the coded value tables section of this document: Artificial Lighting Condition Type, Natural Lighting Condition Type, Weather Condition Type, Road Surface Condition Type, Accident Position Type, Person Type and Injury Type.
6. It was agreed that the Hazard entity would not be a requirement within RADEF. This entity held hazards such as dogs or other animals on the road which could cause an accident.
7. Countries using the node/link road network referencing system will need to define the section of road to which the accident applies by the road section reference and any chainage.
8. Countries using the long section road network referencing system will need to define the section of road to which the accident applies by the road section reference and optionally, reference points and any chainage from the reference points.

## Appendix B7: Condition Domain Workshop

1. It was agreed that there is no requirement to hold details about the generic mechanism used for collecting information relating to the condition of the road pavement.
2. It was accepted that it was not necessary to know whether the measurement of the road condition was taken by manual or electronic mechanisms.
3. It was agreed that the number of years before a road pavement requires remedial action, i.e. the residual life of a road pavement, is not required. This is because the residual life of a road pavement is normally calculated and it is deemed to be sensitive information.
4. It was accepted that it was sufficient to classify the condition of the road pavement into good, average and bad for international data exchange, even though the definition of this classification would vary in each country. PRAs would need to contact their opposite number in the other country if they wanted to know details of the make up of each classification.
5. When exchanging road pavement condition information at a local/national level, there is a requirement to be able to use national road pavement condition classifications, as well as those defined in point 4 above.
6. It was agreed to default to the 'whole of the carriageway' when recording the area where the road condition measurement was taken.
7. Countries using the node/link road network referencing system will need to define the section of road to which the road condition applies by the road section reference and any chainage.
8. Countries using the long section road network referencing system will need to define the section of road to which the road condition applies by the road section reference and optionally, reference points and any chainage from the reference points.

## Appendix B8: Road Geometry Domain Workshop

1. It was agreed that the Road Geometry domain within RADEF should not replace the use of the GDF, and that it should be used as the primary mechanism for transferring geographic data.
2. It was agreed that in order to make road geometry information more meaningful, each country would need to submit to KPMG/MVA, details of the grid systems used.
3. It was accepted that there is no requirement for holding a description for an arc.
4. The UK road geometry system holds all of the arc points in a pool and this permits any arc to refer to this. However, after some discussion, this approach was deemed to be unsuitable for RADEF.
5. As some countries are unable at the present moment to supply a z co-ordinate, it was agreed that it should be made optional.
6. It was accepted that the accuracy level of arc points has to be country dependent and that it should therefore be made optional for data exchange purposes.
7. A discussion on whether cross-sectional position needed to be applied to this domain concluded that the objective of this domain relate only to the profile of the road, and not to the cross-sectional positioning.
8. At a meeting held in Woking on 30 August 1996, the possibility of exchanging road geometry information with different scales of accuracy was discussed. It was agreed that this requirement would be considered for future versions of RADEF.

## Appendix B9: Route Domain Workshop

1. The definition of the entities within this domain were agreed at the Paris workshop and is documented earlier within this document.
2. It is possible to have discontinuous routes for certain routes, e.g. tourist routes. However, routes such as used for the transportation of dangerous goods cannot have breaks in the route. It was accepted that if a gap exists within a route, then two routes will have to be created.
3. Only a few countries, such as Switzerland, have information about routes available in their databases. In some countries, such as in Belgium, routes comprise of motorways.
4. It was accepted that a task for the PRAs would need to set up route data in their databases before it could be exchanged with other PRAs.
5. TERN routes are currently available in paper format, and these routes will need to be defined in databases before such information could be exchanged.
6. It was generally accepted that TERN routes would normally utilise the nationally defined routes.
7. Code table 11, European Route Function Type is currently empty because the route types are undefined at the present moment.

## Appendix B10: Network Enquiry Domain Workshop

1. This domain was renamed from the Enquiry Admin Area to the Network Enquiry domain.
2. It was accepted that the primary purpose of this domain is to permit users to select data for exchange purposes.
3. There was a debate on whether this domain should fall within the scope of RADEF because its primary purpose is for selecting data for exchange purposes. The RADEF tool will enable data selection for exchange purposes. It was agreed to develop the LDM for this domain and keep it within the scope of RADEF.
4. The data models for this and the Route domain are virtually identical, but they serve different purposes.
5. It was agreed that each country would need to define their network enquiry function types. The types fall into two main categories:
  1. own legal/political/ administrative bodies (e.g. in Switzerland, these would be the national/federal, Kanton, district and municipality);
  2. task orientated (e.g. winter maintenance and grass cutting).
6. In order to provide greater flexibility, it was agreed to have a further level of breakdown of the network enquiry function types. For example, in Switzerland, the national function type of Kanton, could be further broken down into the individual Kantons, such as BL and NE. This further breakdown is held on the Network Enquiry entity.

For a task orientated national function type of winter maintenance, routes could be defined consisting of road sections in sequence which required maintenance during winter.

## **Appendix C: Workshop Attendees and Agenda**

This appendix lists the attendees and the agendas for the domain workshops used for agreeing the PRA requirements for RADEF.

|             |         |
|-------------|---------|
| Appendix C1 | Paris   |
| Appendix C2 | London  |
| Appendix C3 | Gatwick |
| Appendix C4 | London  |

## **Appendix C1: Workshop Attendees and Agenda: Paris (1-3 April)**

The attendees of the Paris workshop held on 1-3 April 1996 were as follows:

| <b>Name</b>         | <b>Country</b> | <b>Organisation</b>       |
|---------------------|----------------|---------------------------|
| Jacques Bertrand    | Belgium        | PSUtec                    |
| Paolo Ferrazzi      | Italy          | ANAS                      |
| Les Hawker          | United Kingdom | Highways Agency           |
| Patrice Gouverneur  | France         | SETRA                     |
| Mark Joynson        | United Kingdom | KPMG                      |
| Roman Limbach       | Germany        | BMV                       |
| Claude Marschal     | Switzerland    | Consultant to Switzerland |
| Noel Monot          | France         | SETRA                     |
| Antonio Principe    | Italy          | Consultant to Italy       |
| Patrick Snakenbroek | Belgium        | MET                       |
| Holger Soelberg     | Denmark        | VD                        |
| Tal Soor            | United Kingdom | KPMG                      |
| Eric thor Straten   | Denmark        | VD                        |
| Franck Vallee       | France         | Consultant to France      |

The workshop agenda was as follows:

### **Monday (1 April 1996)**

- 1400 Introduction to purpose and structure of the three day workshop
- 1430 Description of the format of the domain deliverables (D3 and D4)
- 1530 Logical Data Model
- 1800 Depart

### **Tuesday (2 April 1996)**

- 0830 Logical Data Model
- 1200 Lunch
- 1330 Entities and Attributes
- 1800 Depart

### **Wednesday (3 April 1996)**

- 0830 Data Dictionary
- 1200 Lunch
- 1330 Data Dictionary (or Geometry)
- 1600 Depart

## Appendix C2: Domain Workshop Attendees and Agenda: London (22-23 April)

The attendees of the London workshop held on 22-23 April 1996 were as follows:

| Name                | Country        | Organisation                                   |
|---------------------|----------------|--|
| Jacques Bertrand    | Belgium        | PSUtec   |
| Chris Britton       | United Kingdom | Consultant to UK (part attendance on 22 April) |
| Paolo Ferrazzi      | Italy          | ANAS   |
| Patrice Gouverneur  | France         | SETRA  |
| Mark Joynson        | United Kingdom | KPMG (attended on 22 April)                    |
| Roman Limbach       | Germany        | BMV  |
| Claude Marschal     | Switzerland    | Consultant to Switzerland                      |
| Gerhard Petersen    | Switzerland    | BfS  |
| Antonio Principe    | Italy          | Consultant to Italy                            |
| Patrick Snakenbroek | Belgium        | MET  |
| Tal Soor            | United Kingdom | KPMG   |

The workshop agenda was as follows:

### **Monday (22 April 1996)**

- 0900 Introduction to purpose and structure of the two day workshop
- 0915 Logical Data Model for the Restriction Domain
- 1230 Lunch
- 1400 Entities and Attributes for the Restriction Domain
- 1800 Depart

### **Tuesday (23 April 1996)**

- 0830 Logical Data Model for the Traffic Domain
- 1230 Lunch
- 1400 Entities and Attributes for the Traffic Domain
- 1700 Depart

## Appendix C3: Domain Workshop Attendees and Agenda: Gatwick (20-22 May)

The attendees of the Gatwick workshop held on 20, 21 and 22 May 1996 were as follows:

| Name                | Country        | Organisation              | Attendance |      |      |
|---------------------|----------------|---------------------------|------------|------|------|
|                     |                |                           | 20/5       | 21/5 | 22/5 |
| Jacques Bertrand    | Belgium        | PSUtec                    | ✓          | ✓    | ✓    |
| Chris Britton       | United Kingdom | Consultant to UK          | ✓          |      | am   |
| Mark Joynson        | United Kingdom | KPMG                      | ✓          | ✓    |      |
| Roman Limbach       | Germany        | BMV                       | ✓          | ✓    | ✓    |
| Claude Marschal     | Switzerland    | Consultant to Switzerland | ✓          | ✓    | ✓    |
| Chris Queree        | United Kingdom | MVA                       | ✓          |      |      |
| Holger Soelberg     | Denmark        | VD                        |            | pm   | ✓    |
| Patrick Snakenbroek | Belgium        | MET                       | ✓          | ✓    | ✓    |
| Eric thor Straten   | Denmark        | VD                        | ✓          |      |      |
| Tal Soor            | United Kingdom | KPMG                      | ✓          | ✓    | ✓    |
| Jonathan Thomas     | United Kingdom | MVA                       |            |      | ✓    |

The workshop agenda was as follows:

### Monday (20 May 1996)

- 0930 Introduction to purpose and structure of the three day workshop
- 0945 Comments on review of Deliverable D3
- 1115 Logical Data Model for the Structure Domain
- 1230 Lunch
- 1330 Entities and Attributes for the Structure Domain
- 1630 Logical Data Model for the Equipment Domain
- 1800 Depart

### Tuesday (21 May 1996)

- 0900 Logical Data Model for the Equipment Domain (continued)
- 1000 Entities and Attributes for the Equipment Domain
- 1230 Lunch
- 1330 Entities and Attributes for the Equipment Domain (continued)
- 1630 Logical Data Model for the Accident Domain
- 1800 Depart

### Wednesday (22 May 1996)

- 0900 Logical Data Model for the Accident Domain (continued)
- 1000 Entities and Attributes for the Accident Domain
- 1230 Lunch
- 1330 Entities and Attributes for the Accident Domain (continued)
- 1630 Depart

## Appendix C4: Domain Workshop Attendees and Agenda: London (19-21 June)

The attendees of the London workshop held on 19, 20 and 21 June 1996 were as follows:

| Name                | Country        | Organisation              | Attendance |      |      |
|---------------------|----------------|---------------------------|------------|------|------|
|                     |                |                           | 19/6       | 20/6 | 21/6 |
| Jacques Bertrand    | Belgium        | PSUtec                    | ✓          | ✓    | ✓    |
| Chris Britton       | United Kingdom | Consultant to UK          | pm         | ✓    | ✓    |
| Mark Joynson        | United Kingdom | KPMG                      |            | am   |      |
| Roman Limbach       | Germany        | BMV                       | ✓          | ✓    | am   |
| Claude Marschal     | Switzerland    | Consultant to Switzerland | ✓          | ✓    | ✓    |
| Chris Queree        | United Kingdom | MVA                       | am         |      |      |
| Patrick Snakenbroek | Belgium        | MET                       | ✓          | ✓    | ✓    |
| Tal Soor            | United Kingdom | KPMG                      | ✓          | ✓    | ✓    |
| Jonathan Thomas     | United Kingdom | MVA                       | pm         | ✓    | ✓    |

The workshop agenda was as follows:

### Wednesday (19 June 1996)

- 0930 Introduction and purpose of the three day workshop
- 0935 LDM to RADEF Tool Implementation
- 1030 Logical Data Model for the Condition Domain
- 1230 Lunch
- 1330 Entities and Attributes for the Condition Domain
- 1730 Debrief of visits to pilot sites
- 1800 Depart

### Thursday (20 June 1996)

- 0900 Logical Data Model for the Road Geometry Domain
- 1000 Entities and Attributes for the Road Geometry Domain
- 1230 Lunch
- 1330 Entities and Attributes for the Route Domain
- 1630 Logical Data Model for the Route Domain
- 1800 Depart

### Friday (21 June 1996)

- 0900 Logical Data Model for the Enquiry Admin Area domain
- 1000 Entities and Attributes for the Enquiry Admin Area domain
- 1100 Review of Road Classes
- 1200 Lunch
- 1300 Category Tables
- 1600 Depart

## Appendix D: Examples

This appendix contains examples for each domain, as listed below, of the data for the major entities in order to assist in the understanding of the LDM.

|              |                 |
|--------------|-----------------|
| Appendix D1  | Road network    |
| Appendix D2  | Restriction     |
| Appendix D3  | Traffic         |
| Appendix D4  | Structure       |
| Appendix D5  | Equipment       |
| Appendix D6  | Accident        |
| Appendix D7  | Condition       |
| Appendix D8  | Road Geometry   |
| Appendix D9  | Route           |
| Appendix D10 | Network Enquiry |

All the examples relate to the node/link road networking system except where stated. In the case of the node/link road networking system, the *reference point identifier* attribute on each entity will be null.

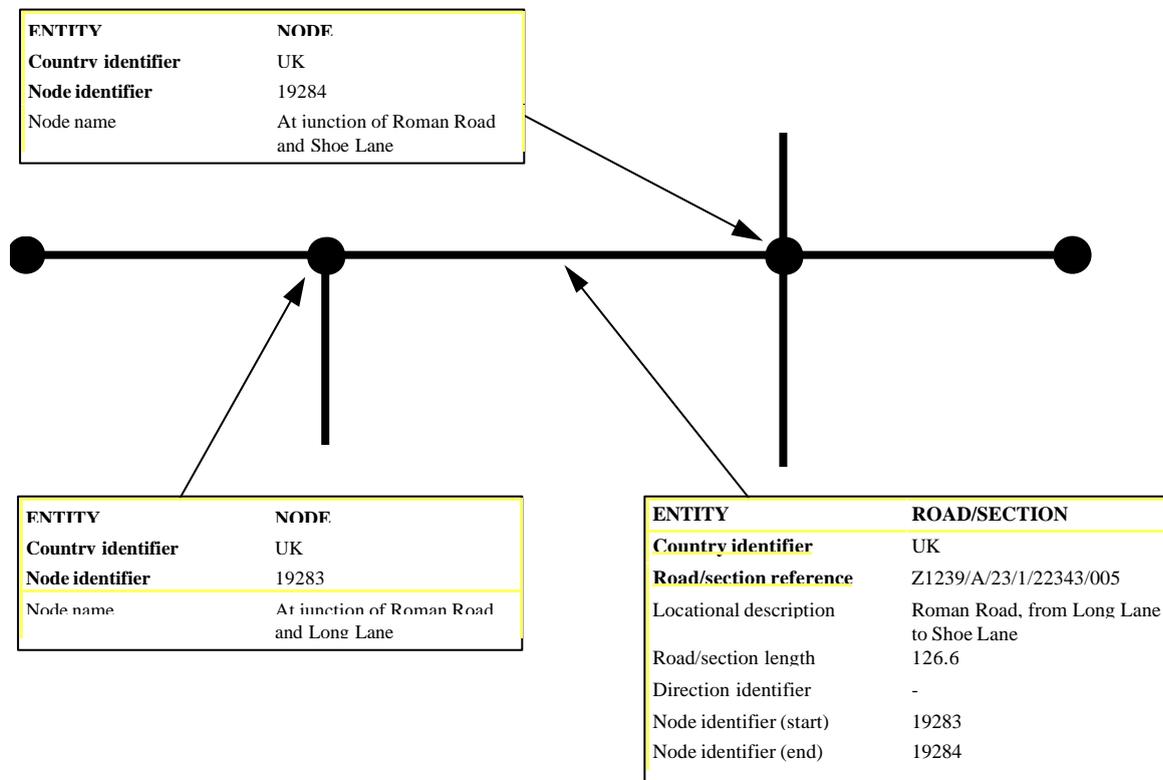
The data for some attributes of entities in the examples below is shown in italics. The reason for this is to increase the clarity of the data. However, it must be borne in mind that where the attribute is an identifier, then its code would be used rather than its value/description. An attribute name shown in bold indicates that it forms part of the primary key.

## Appendix D1: Road Network Domain Examples

The two road network referencing systems are generally referred to as the node link and the long section. The node link system consists of interconnected nodes whereas the long section consists of one or more road sections. A number of examples are provided below for the two network referencing systems to demonstrate how the data would be completed for the entities and attributes.

### Example From the Node/link Referencing System

The example below shows a road network consisting of a number of interconnected nodes, and in particular, a section of road consisting of a start and an end node.

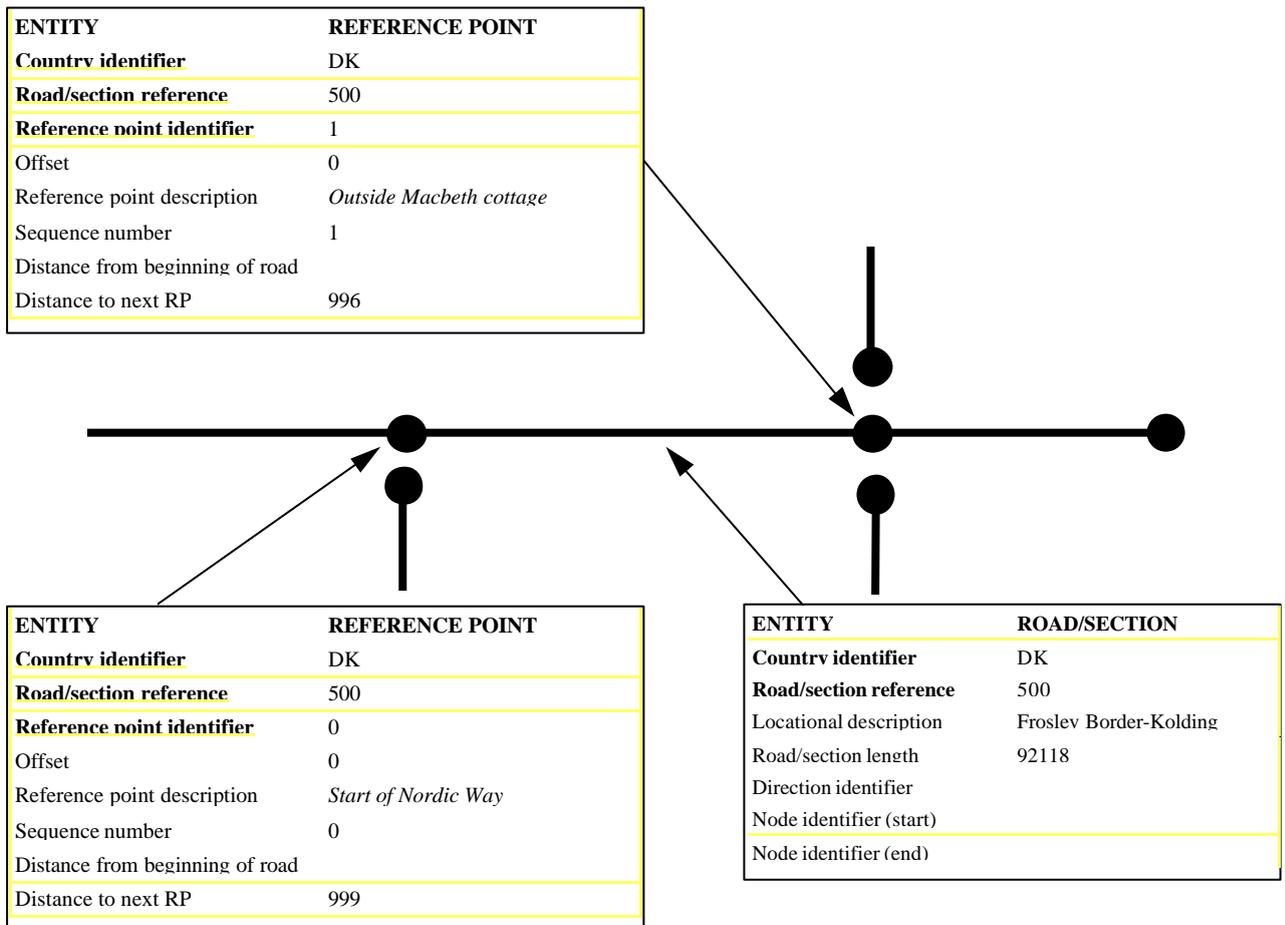


## Examples From the Long Section Referencing System

The examples shown below for the long section road network referencing system have been agreed with Denmark, which is a trail PRA site. The data has been provided by the Danish PRA, apart from data shown in italics, which has been included to increase clarity.

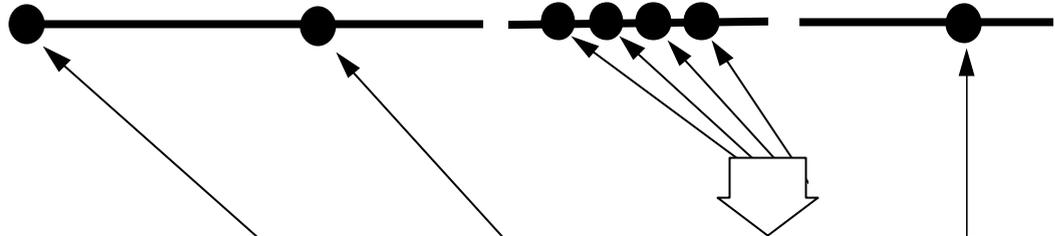
### *Example 1*

The example below shows a road network consisting of a number of reference points.



**Example 2**

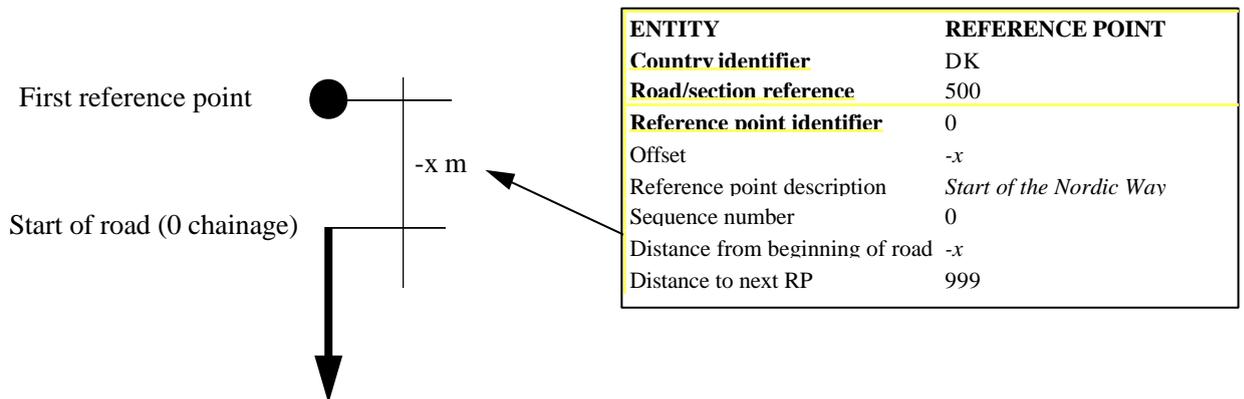
The example below shows a road network consisting of a number of reference points, and in particular, it shows how the data for different reference points is held within RADEF.



| ENTITY                            | REFERENCE POINT                | REFERENCE POINT                | REFERENCE POINT | REFERENCE POINT     |
|-----------------------------------|--------------------------------|--------------------------------|-----------------|---------------------|
| <b>Country identifier</b>         | DK                             | DK                             | DK              | DK                  |
| <b>Road/section reference</b>     | 500                            | 500                            | 500             | 500                 |
| <b>Reference point identifier</b> | 0                              | 1                              | n               | 96                  |
| Offset                            | 0                              | 0                              | 0               | 0                   |
| Reference point description       | <i>Start of the Nordic Way</i> | <i>Outside Macbeth cottage</i> |                 | <i>At Lego Land</i> |
| Sequence number                   | 0                              | 1                              | n               | 80                  |
| Distance from beginning of road   | 0                              | 999                            | ...             | 92118               |
| Distance to next RP               | 999                            | 996                            | ...             | 118                 |

**Example 3**

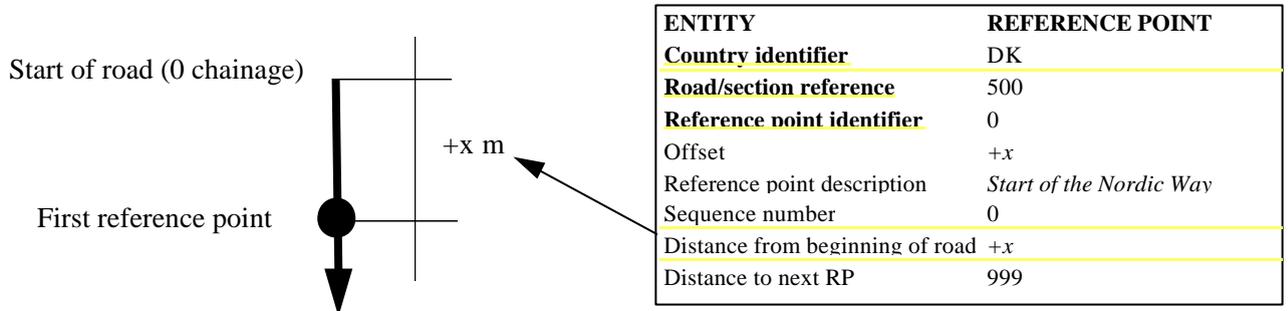
The example below shows the data held for a reference point if the reference point is positioned before the actual start of the road.



| ENTITY                            | REFERENCE POINT                |
|-----------------------------------|--------------------------------|
| <b>Country identifier</b>         | DK                             |
| <b>Road/section reference</b>     | 500                            |
| <b>Reference point identifier</b> | 0                              |
| Offset                            | -x                             |
| Reference point description       | <i>Start of the Nordic Way</i> |
| Sequence number                   | 0                              |
| Distance from beginning of road   | -x                             |
| Distance to next RP               | 999                            |

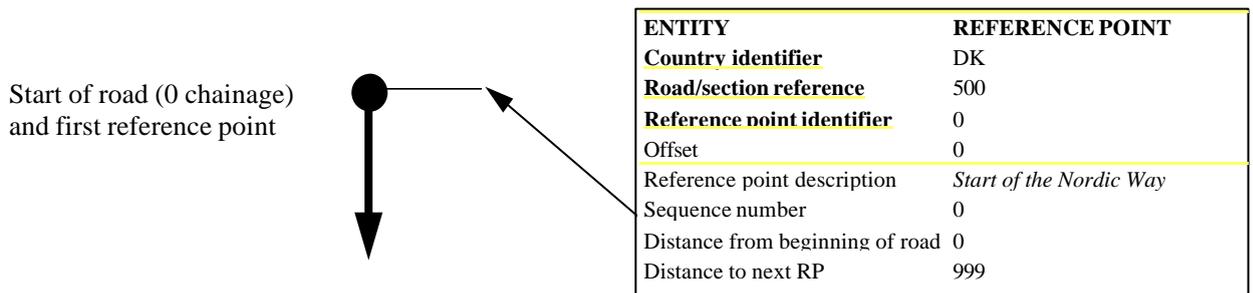
**Example 4**

The example below shows the data held for a reference point if the reference point is positioned after the actual start of the road.



**Example 5**

The example below shows the data held for a reference point if the reference point is positioned at the point where the road starts.



## General Examples of the Road Network Domain

| ENTITY   | NATIONAL ROAD/SECTION CLASSIFICATION |
|--|--------------------------------------|
| Country identifier                               | DK                                   |
| National road section classification identifier  | M45                                  |
| National road section classification description | Motorway                             |
| Road section class type identifier               | <i>National legal class</i>          |

| ENTITY  | ROAD/SECTION CLASSIFICATION |
|---|-----------------------------|
| Country identifier                              | DK                          |
| Road section reference                          | 500                         |
| Reference point identifier {start}              | 2                           |
| Reference point identifier {end}                | 3                           |
| Chainage {start}                                | 1700                        |
| Chainage {end}                                  | 2600                        |
| National road section classification identifier | M45                         |

| ENTITY                             | ROAD/SECTION ROAD TYPE |
|------------------------------------|------------------------|
| Country identifier                 | DK                     |
| Road section reference             | 500                    |
| Reference point identifier {start} | 0                      |
| Reference point identifier {end}   | 96                     |
| Chainage {start}                   | 1700                   |
| Chainage {end}                     | 2600                   |
| Road type identifier               | <i>Motorway</i>        |

| ENTITY                                     | BORDER CONNECTION |
|--|-------------------|
| Country identifier {home country}          | DK                |
| Road/section reference {home country}      | 500               |
| Border connection identifier               | BC65              |
| Node identifier {home country}             | 0                 |
| Reference point identifier {home country}  | 45                |
| Chainage {home country}                    | 0                 |
| Country identifier {bordering country}     | <i>Sweden</i>     |
| Road/section reference {bordering country} | ADFR346           |
| Node identifier {bordering country}        | 0                 |

| <b>ENTITY</b>                                  | <b>BORDER CONNECTION</b> |
|--|--------------------------|
| Reference point identifier {bordering country} | DAX53                    |
| Chainage {bordering country}                   | 0                        |

## Appendix D2: Restriction Domain Example

| ENTITY                             | RESTRICTION                                 |
|------------------------------------|---|
| Country identifier                 | DK  |
| Road/section reference             | 500   |
| Reference point identifier {start} | 2   |
| Reference point identifier {end}   | 5   |
| Chainage {start}                   | 1700  |
| Chainage {end}                     | 2600  |
| Restriction type identifier        | R12   |
| Vehicle type identifier            | <i>All vehicles</i>                         |
| Start date {restriction}           | 1/6/94                                      |
| End date {restriction}             | 31/10/94                                    |
| Start time {restriction}           | 12:00                                       |
| End time {restriction}             | 19:30                                       |
| Restriction value                  | 45  |
| Comments                           | Restriction applies during peak months only |
| Direction identifier               | <i>Both directions</i>                      |
| Structure identifier               | S123  |
| Structure function type identifier | <i>Bridge</i>                               |

| ENTITY                       | RESTRICTION TYPE           |
|------------------------------|----------------------------|
| Restriction type identifier  | R12                        |
| Restriction type description | <b>Maximum axle weight</b> |
| Measurement unit identifier  | <i>Tonnes</i>              |

## Appendix D3: Traffic Domain Example

| ENTITY                              | TRAFFIC FLOW           |
|-------------------------------------|------------------------|
| Country identifier                  | DK                     |
| Road/section reference              | 500                    |
| Reference point identifier {start}  | 2                      |
| Reference point identifier {end}    | 5                      |
| Chainage {start}                    | 1700                   |
| Chainage {end}                      | 2600                   |
| Traffic flow type identifier        | TFT34                  |
| Start date {traffic flow}           | 1/6/94                 |
| End date {traffic flow}             | 31/10/94               |
| Traffic flow value                  | 45,000                 |
| Percentage of international traffic | 15                     |
| Direction identifier                | <i>Both directions</i> |
| Vehicle type identifier             | <i>Passenger cars</i>  |

| ENTITY                        | TRAFFIC FLOW TYPE       |
|-------------------------------|-------------------------|
| Traffic flow type identifier  | TFT34                   |
| Traffic flow type description | Maximum flow            |
| Measurement unit identifier   | <i>Vehicles per day</i> |

## Appendix D4: Structure Domain Example

| ENTITY                | STRUCTURE  |
|-----------------------|--|
| Country identifier    | DK   |
| Structure identifier  | S123   |
| Structure description | Bridge in the city centre between Long Lane and Short Street |

| ENTITY                             | STRUCTURE LOCATION |
|------------------------------------|--------------------|
| Country identifier                 | DK                 |
| Road/section reference             | 500                |
| Reference point identifier {start} | 2                  |
| Reference point identifier {end}   | 3                  |
| Chainage {start}                   | 15                 |
| Chainage {end}                     | 65                 |
| Structure identifier               | S123               |
| Structure function type identifier | <i>Tunnel</i>      |
| Structure category identifier      | <i>Under</i>       |

## Appendix D5: Equipment Domain Example

| ENTITY                              | EQUIPMENT DETAIL |
|-------------------------------------|------------------|
| Country identifier                  | DK               |
| Road/section reference              | 500              |
| Reference point identifier {start}  | 2                |
| Reference point identifier {end}    | 2                |
| Chainage {start}                    | 15               |
| Chainage {end}                      | 15               |
| Equipment item identifier           | EI36             |
| Equipment item attribute identifier | EIA145           |
| Equipment attribute value           | 45               |

| ENTITY                     | EQUIPMENT ITEM   |
|----------------------------|--|
| Country identifier         | DK   |
| Equipment item identifier  | EI36   |
| Equipment type identifier  | <i>Lighting</i>  |
| Equipment item description | Lamppost manufactured by the National Lighting Company |

| ENTITY                               | EQUIPMENT ITEM ATTRIBUTE |
|--------------------------------------|--------------------------|
| Country identifier                   | DK                       |
| Equipment item identifier            | EI36                     |
| Equipment item attribute identifier  | EIA145                   |
| Measurement unit identifier          | <i>Metres</i>            |
| Equipment item attribute description | Lamppost height          |

| ENTITY                                   | EQUIPMENT LOCATION |
|--|--------------------|
| Country identifier                       | DK                 |
| Road/section reference                   | 500                |
| Reference point identifier {start}       | 2                  |
| Reference point identifier {end}         | 2                  |
| Chainage {start}                         | 15                 |
| Chainage {end}                           | 15                 |
| Equipment cross sectional pos identifier | <i>Left</i>        |
| Equipment item identifier                | EI36               |

## Appendix D6: Accident Domain Example

| ENTITY  | ACCIDENT                       |
|---|--------------------------------|
| Country identifier                            | <b>DK</b>                      |
| Road/section reference                        | <b>500</b>                     |
| Reference point identifier {start}            | <b>2</b>                       |
| Reference point identifier {end}              | <b>2</b>                       |
| Chainage {start}                              | <b>15</b>                      |
| Chainage {end}                                | <b>15</b>                      |
| Accident identifier                           | <b>A456</b>                    |
| Accident date                                 | 25/6/94                        |
| Accident time                                 | 15:34                          |
| Accident description                          | Major accident on the motorway |
| Accident position type identifier             | <i>Straight road</i>           |
| Artificial lighting condition type identifier | <i>Unlit</i>                   |
| Natural lighting condition type identifier    | <i>Darkness</i>                |
| Weather condition type identifier             | <i>Rain</i>                    |
| Road surface condition type identifier        | <i>Slippery</i>                |

| ENTITY                                | PERSON IN ACCIDENT |
|---------------------------------------|--------------------|
| Country identifier                    | <b>DK</b>          |
| Accident identifier                   | <b>A456</b>        |
| Sequence number {person in accident}  | <b>1</b>           |
| Accident prevention identifier        | <i>No</i>          |
| Sex of person identifier              | <i>Male</i>        |
| Person type identifier                | <i>Driver</i>      |
| Injury type identifier                | <i>Fatal</i>       |
| Age                                   | 35                 |
| Alcohol limit exceeded indicator      | <i>Yes</i>         |
| Sequence number {vehicle in accident} | 1                  |

| ENTITY                                | VEHICLE IN ACCIDENT  |
|---------------------------------------|----------------------|
| Country identifier                    | <b>DK</b>            |
| Accident identifier                   | <b>A456</b>          |
| Sequence number {vehicle in accident} | <b>1</b>             |
| Vehicle type identifier               | <i>Passenger car</i> |

## Appendix D7: Condition Domain Example

| ENTITY                                   | ROAD CONDITION |
|--|----------------|
| Country identifier                       | DK             |
| Road/section reference                   | 500            |
| Reference point identifier {start}       | 2              |
| Reference point identifier {end}         | 5              |
| Chainage {start}                         | 15             |
| Chainage {end}                           | 65             |
| Road condition type identifier           | RCT89          |
| Road condition date                      | 25/4/94        |
| Condition cross sectional pos identifier | Whole          |
| Lane reference                           | 2              |
| Road condition value {minimum}           | 0.03           |
| Road condition value {average}           | 0.06           |
| Road condition value {maximum}           | 0.10           |
| Condition level type identifier          | Good           |

| ENTITY                          | ROAD CONDITION TYPE |
|---------------------------------|---------------------|
| Road condition type identifier  | RCT89               |
| Road condition type description | Holes               |
| Measurement unit identifier     | Metre               |

## Appendix D8: Road Geometry Domain Example

| <b>ENTITY</b>                      | <b>ARC</b>                  |
|------------------------------------|-----------------------------|
| Country identifier                 | <b>DK</b>                   |
| Road/section reference             | <b>500</b>                  |
| Reference point identifier {start} | <b>2</b>                    |
| Reference point identifier {end}   | <b>2</b>                    |
| Chainage {start}                   | <b>0</b>                    |
| Chainage {end}                     | <b>10</b>                   |
| Arc identifier                     | <b>321</b>                  |
| Grid type identifier               | <i>European 1987 (ED87)</i> |
| Arc position type identifier       | <i>Centre line</i>          |
| Accuracy level                     | Accurate to + or -5 cm      |

| <b>ENTITY</b>                      | <b>ARC POINT</b> |
|------------------------------------|------------------|
| Country identifier                 | <b>DK</b>        |
| Road/section reference             | <b>500</b>       |
| Reference point identifier {start} | <b>2</b>         |
| Reference point identifier {end}   | <b>2</b>         |
| Arc identifier                     | <b>321</b>       |
| Sequence number {arc point}        | <b>1</b>         |
| X co-ordinate                      | 170.055          |
| Y co-ordinate                      | 674.173          |
| Z co-ordinate                      | 542.719          |

## Appendix D9: Route Domain Example

| ENTITY   | ROUTE |
|--|-------|
| Country identifier   | DK    |
| Road/section reference   | 500   |
| Reference point identifier {start}   | 2     |
| Reference point identifier {end}   | 2     |
| Chainage {start}   | 1700  |
| Chainage {end}   | 2600  |
| European route definition identifier <i>or</i><br>National route definition identifier | N78   |
| Route definition indicator   | N     |
| Sequence number {road/section}   | 3     |

| ENTITY                                  | NATIONAL ROUTE DEFINITION                       |
|---|---|
| Country identifier                      | DK  |
| National route definition identifier    | N78   |
| National route function type identifier | DG  |
| National route definition description   | Motorway route between Copenhagen and Helsingor |

| ENTITY                                   | NATIONAL ROUTE FUNCTION TYPE                      |
|--|---|
| Country identifier                       | DK  |
| National route function type identifier  | DG  |
| National route function type description | Routes for the transportation of dangerous goods. |

## Appendix D10: Network Enquiry Domain Example

| ENTITY                                   | NETWORK ENQUIRY                                    |
|--|--|
| Country identifier                       | DK   |
| Network enquiry function type identifier | NEFT56   |
| Network enquiry identifier               | NE43   |
| Network enquiry description              | All road sections between Copenhagen and Helsingor |

| ENTITY                                    | NETWORK ENQUIRY FUNCTION TYPE |
|---|-------------------------------|
| Country identifier                        | DK                            |
| Network enquiry function type identifier  | NEFT56                        |
| Network enquiry function type description | Winter maintenance            |

| ENTITY                                   | NETWORK ENQUIRY ROAD SECTION |
|--|------------------------------|
| Country identifier                       | DK                           |
| Road/section reference                   | 500                          |
| Network enquiry function type identifier | NEFT56                       |
| Network enquiry identifier               | NE43                         |

## Appendix E: Glossary of Terms

A definition for a number of terms used throughout this document is provided below.

|                     |   |
|---------------------|---|
| <b>Node</b>         | A node is the zero dimensional element that can be used to define the topology of a road network.   |
| <b>Road/section</b> | An element of the road network between two specific points and with a unique reference identified.  |
| <b>Road network</b> | All the road/sections of defined characteristics within a specific area (usually classified by owner and within a defined geographic boundary). |
| <b>Route</b>        | A sequence of physically connected road/sections (including part road/sections) with no physical discontinuity.                                 |
| <b>Structure</b>    | A physical construction, such as a bridge or tunnel, that ensures the flow of traffic along a carriageway.                                      |