Type: Push Button Wait

Type: Push Button Wait (below example is found at Cycle Crossings)

Types of Push Button Puffin
(Although there are two ‘units’ in the left picture, you would STILL only record ONE Push Button Puffin)

Type Push Button Toucan
NOTE: These may appear to be separate Items but they are considered as one for NAMS

Type Push Button Pegasus

53. VERGE (VG)

Surface Type: Grass

Surface Type: Other (granite blocks)

Surface Type: Concrete

VG 1 – Surface Type: Concrete
CT 1 – Type: track – Class: None – Flow: Two-way – Colour: None
NOTE: FW1 asset recorded beneath CT
FW 1 – Surface: Bitumen Macadam
VG 2 – Surface Type: Grass
FW 2 – Surface: Bitumen Macadam

This Photo demonstrates how the different assets and surface types should be separated

54. VENT SHAFT (VS)

Cover Type: Mesh

Cover Type: Other

Cover Type: Other

Cover Type: Other

55. CROSSOVER (XO)

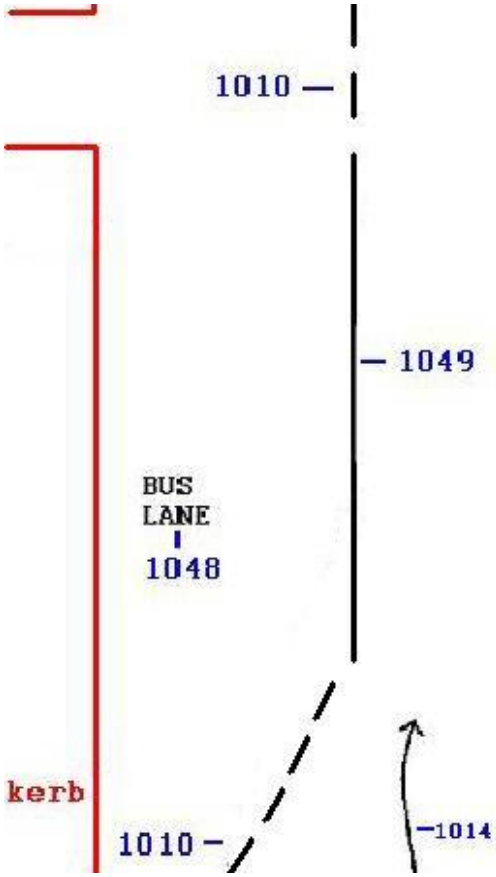
Footway Surface Type: Rolled Asphalt

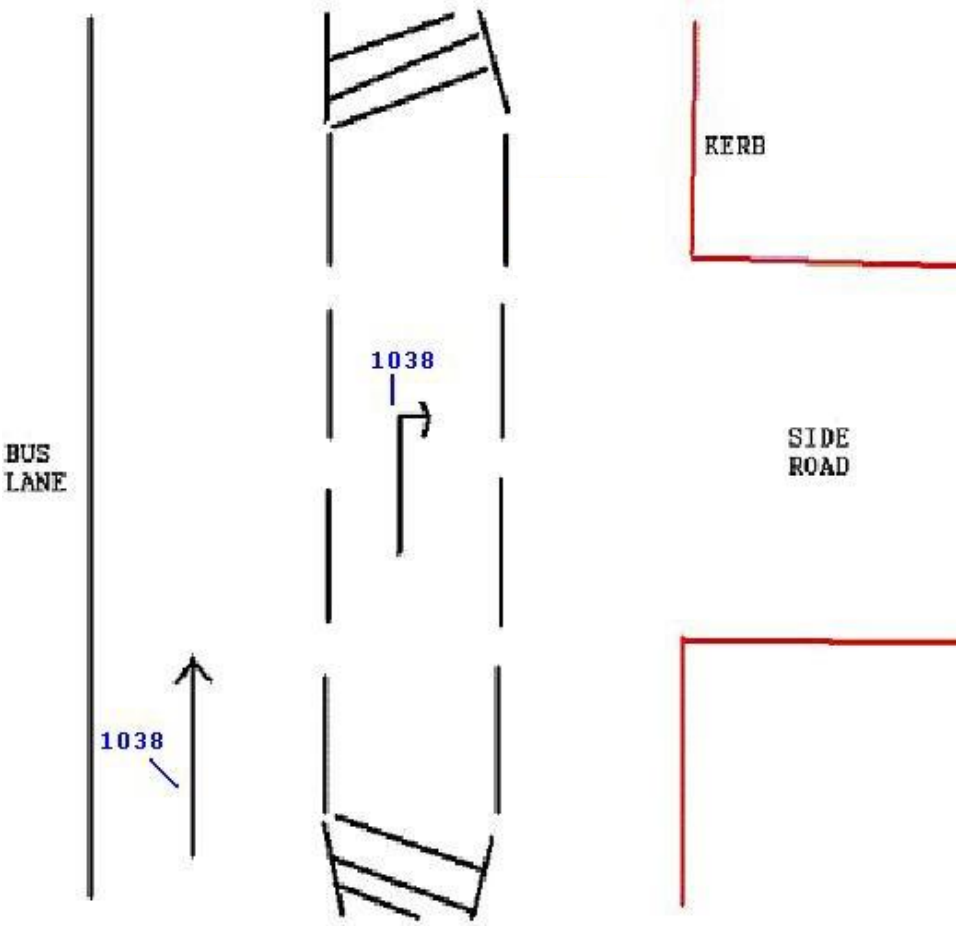
Footway Surface Type: Concrete

Footway Surface Type: Blocks

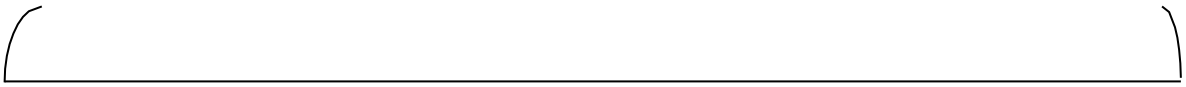
Footway Surface Type: Bitumen Macadam

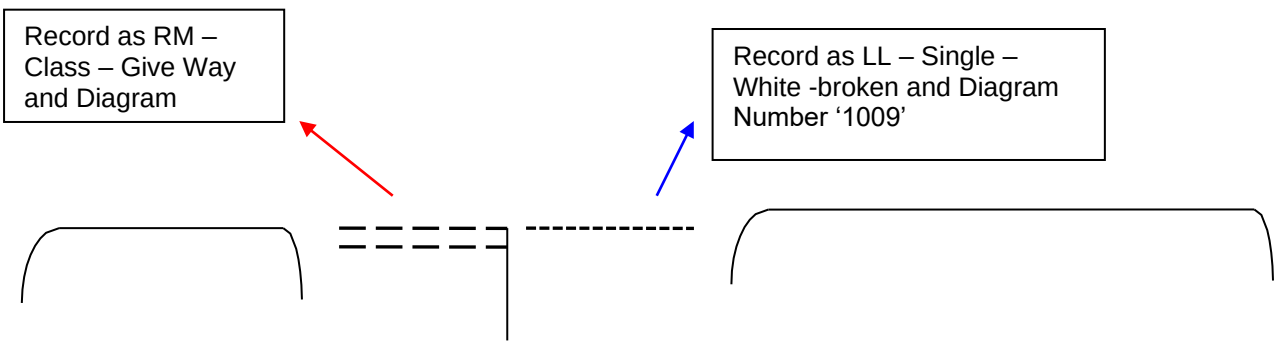
56. MISCELLANEOUS – EXAMPLES OF LL AND RM DIAGRAM NO.'S





Line at the edge of side roads





SCOPE

APPENDIX N3
Asset Management Information System
Survey and Data Rules

V11.01

June 2020

Preface

This document contains important information about the requirements of the asset survey and details about the assets that have to be recorded. It is pitched at a technical level, to readers who have some experience or knowledge of asset surveys. It should be noted that some of the rules within this document are not standard to RMMS and the survey should not be undertaken as though it is an RMMS survey. Special attention should be paid to notes regarding Highway and Traffic Authority Boundaries and the method by which assets are represented.

Document Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
11	Quality Review	Shayna Meyers	15/05/19	Updates to reflect new database and contract
11	DQ Team Review		15/05/19	
11.1	Quality Review	Shayna Meyers	03/06/20	Updates to reflect new database and contract

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64 APPENDIX A - CARRIAGEWAY ATTRIBUTE BREAKDOWN BY CONSTRUCTION LAYER I

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1 INTRODUCTION

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	24/07/07	
2	Quality Review	Huw Harries	23/04/09	
5.12	Update	Huw Harries	15/03/05	Changes in Structure and Content
6	Update	Huw Harries	12/08/05	Changes to reflect Rules improvement
7	Update	Huw Harries	01/07/07	Changes to reflect new contract arrangements
9	Update	Huw Harries	24/04/13	New chapter 2.7.4 on Hierarchical asset types
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract arrangements
11	DQ Team Review		10/09/19	

1.1 Overview of the Asset Management System

This document relates to the maintenance of asset items within Transport for London's (TfL) Network and Asset Management System. This is a comprehensive database which contains information on assets situated along TfL's Road Network (TLRN).

This document refers to some system and contractual specific data requirements that are liable to change.

The amount of asset types and attributes are also liable to change.

The Asset Dataset was created in 2001. At the time, an extensive data collection project took place over the space of 18 month and collected data on: Asset locations, geometry, attribute, and condition data.

Over time, data collection requirements changed within TfL. To meet these requirements improvements to the attribute content were made to facilitate the forward planning of schemes and reporting on Performance Indicators.

The Asset Management system was then used for the following:

- To enable precise management reports about the state of the network
- To provide historical information about assets for analysing changes (and trends) over time
- To report on the performance of the maintenance contractors
- To report on TfL's Best Value Performance Indicators
- To provide detailed information on individual assets and sites for planning activities
- To support TfL in identifying areas for improvement and maintenance on the network
- To support the defence of insurance claims and the recovery and recharge of costs
- To provide a defect and customer complaint audit trail alongside the asset inventory against which they are associated

All of the data collected and supplied to Transport for London, for the purposes of the Asset Management System, is exclusively owned by and remains the property of Transport for London.

1.2 How to use this document

The remainder of this document is split into 2 main parts:

- **Data Maintenance**
  This deals with the general processes for maintaining the database.
  It outlines the rules that govern these processes and gives examples.
  The section also explains attributes that are common to all of the asset types.
- **Asset Types and Rules**
  Sections **3** to **63** provide asset specific data collection and maintenance details.
  These sections outline the current list of assets, their attributes and the rules that govern their classification.
  The sections also identify any asset specific exceptions to the processes outlined in the Data Maintenance section.

Another publishing of this document will occur when one or more of the chapters has had a rule update, instead of the entire document. A record of all chapter changes for version control will be maintained at the start of each chapter and date stamped in order to ensure all parties involved have the most recent version. When Asset Attribution or List values are updated please refer to the latest versions of the following two documents:

'Asset Metadata – Attributes and Lists'
'Asset Metadata Added and Removed'

Note: This document does not provide details of data submission formats or contractual obligations over and above the quality requirements.

1.3 Related Documents

The latest version of the following documents should be referenced where appropriate:

.

- The Asset Management System Asset Photos: *This document uses photographic examples to demonstrate how assets on the TLRN should be classified.*
- Red Route and Congestion Charge Sign Diagram Document
- Register of Unknown Signs
- The Traffic Signs Regulations and General Directions
- Metadata Change Request: *This document outlines the procedures that need to be followed when requesting a change to the asset metadata*.
- Network Change Request: *This document outlines the procedures that need to be followed when requesting a change to the Logical Network.*
- Cyclic Asset Updates by Service

2 DATA MAINTENANCE

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Created		15/06/07	
1	Quality Review	John Cook	24/07/07	
2	Update	Huw Harries	24/07/07	Changes to reflect new contract arrangements
5.12	Update	Huw Harries	08/08	Added three Scheme ID columns to track PMO lifecycle
6	Update	Huw Harries	25/06/10	Added Work Order ID column to track Network Maintenance Services
7	Update	Huw Harries	07/12/11	Amended 2.7.4.4 to include LL&RM&LH exception note. And added confirmation note to section 2.2 Accuracy -background mapping. And added note on items beyond the HA boundary in 2.7.1 Referencing Assets
9	Update	Huw Harries	10/04/13	Recording Hierarchical assets
11	Update	Huw Harries	09/06/15	Clarification on the re-instatement of assets
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract arrangements
11	DQ Team Review		10/09/19	

2.1 Overview

This section covers the general processes of maintaining the Asset Management System database. It includes how to record changes to the asset data and how the asset data is referenced to the TLRN.

It should be noted that although the database contains an extensive list of asset types that cover the majority of features on the network, **Fire Hydrants and Cycle Hire Docking Stations** should **not** be collected.

2.2 Accuracy and Completeness of the Inventory

TfL's Data Quality Team has the responsibility of monitoring and reporting on the accuracy of the inventory.

Accuracy on the location of assets is measured to +/- 1 metre. Assets must be positioned such that they are within 1m of their true location and reflect their true shape and position when overlaid on an Ordnance Survey MasterMap 1:1250 data set. TfL have regular OS updates, however, ensure to update to match what is on site, as it may be more recent than the background map and email the TfL Data Quality Team as well.

The accuracy of the attribute data will be measured against the rules set out in this document and the supporting documentation. For asset data with content that is of a more technical nature engineers within TfL will be consulted.

An asset is considered to be correct if all of its attributes, geographical representation, and location are recorded correctly.

It is expected that the contractor will correct errors identified by TfL's Data Audits as per contractual guidelines and timeframes.

2.3 Structure Assets

2.3.1 Adding and Removing Structure Assets

Some asset types fall under the category of 'structures'. It is important to note that if one of these structures is created on site or an existing one is physically removed, these 'changes' should **NOT** be recorded by the contractor. Any updates to structural assets can **ONLY** be carried out internally by TfL to ensure all consistency across all asset management systems. If you notice any inventory changes that have not been updated please inform the TfL Data Quality Team immediately.

2.3.2 Updating Structure Attributes

There are some attributes stored against the structure asset types that will be maintained by the contractor. Information on these can be found in sections *5,6,8,14,19,24, 37,49, 56, 58 & 62* of this document and have been included for your reference. Table 1 below, lists the assets classed as structures:

Item	Description
SA	Ancillary Structure
BO	Bridge Over
BU	Bridge Under
CL	Catenary Lighting
CV	Culvert
EC	Embankment and Cutting
NI	Interceptors
PI	Pier
PN	Pump Station (and components)
RR	River Wall
RW	Retaining Wall
SU	Subway
PS	Post Types (CL,HM & “CCTV Mast”)

Table 1 – Asset types classed as Structures

2.4 Note Taking Facility

The ‘Notes’ column available in the upload file format should be used only in an emergency capacity to record any notes, inventory errors and extra inventory codes that cannot be captured under a specific attribute and are not defined in the Survey Rules.

2.5 Logical Network

All assets within the Asset Management System database must be associated to the Logical Network. This Logical Network is a graphical representation of the TLRN. It is made up of a combination of around 6,000 segments called ‘sections’ whose direction is determined by their associated start and end nodes.

A new section will always start when there is a change in road name, road number, borough, or contractor region. A new section also starts if the characteristics of the road change i.e. a change from Dual to Single Carriageway, or a change in adoption.

Each section has its own supporting attribute information, such as length, in addition to its graphical representation.

TfL have the sole responsibility for editing the Logical Network. If a change to the Network is required (either through an existing error or due to a change on site) the guidelines in the Network Change Policy Document should be followed.

2.6 Types of Update Made to the Asset Inventory

There are 3 types of update that can be made to the Asset Inventory; they are all the responsibility of the contractor:

- **Additions**
  Additions are defined as new assets added to the database. Additions occur through capital projects, scheduled and routine maintenance, emergency works and through works carried out on the TLRN by bodies other than TfL. On certain occasions, additions may be required as a result of errors within the database.

- **End-Dates**
  To allow temporal queries to be run on the Asset Management System and to give an accurate picture of the network over a specific period of time, assets are never deleted; instead, a database procedure called end-dating is used. This is a process which closes an asset by inserting the date it was removed from the network.
  End-dates occur through capital projects, scheduled and routine maintenance, and emergency works. On certain occasions end-dates may be required as a result of errors within the database.

- **Modifications**
  Modifications are used to track attribute and graphical changes to the asset data. Modifications occur through capital projects, scheduled and routine maintenance, and emergency works and through works carried out on the TLRN by bodies other than TfL. On certain occasions modifications may be required as a result of errors within the database.

2.7 General Rules for recording Assets (Additions)

The following section outlines the processes and methods used to record assets within the Asset Management System. These general principles will have to be followed carefully when adding assets to the inventory:

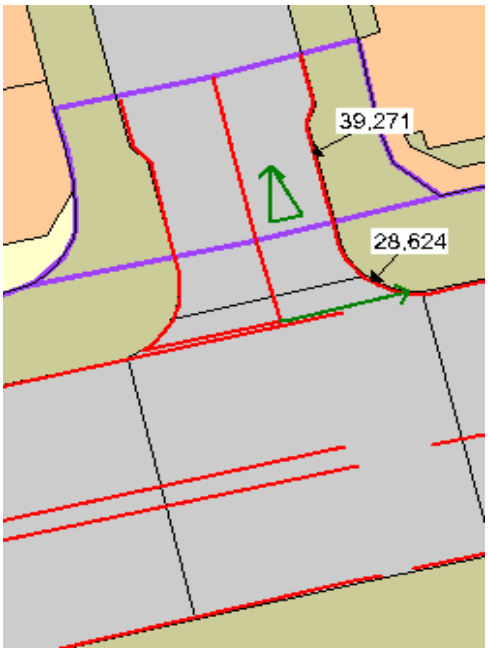
2.7.1 Referencing Assets

All assets collected must be referenced to their corresponding logical network section. In order to aid the surveyor in allocating an asset to the correct section of the road network, each section is allocated a polygon. This is referred to as a **Survey Envelope**. These are based on the Highway and Traffic Authority boundaries (HAB & TAB). Envelopes will have either a Highway or Traffic Authority Adoption. The adoption assigned to the envelope is used to define which asset types should be recorded within it. Assets outside the HAB are ONLY recorded if they are part of **Red Route Controls**. This would include all red route lines, boxes, signs and those posts used to **exclusively** support red route signs.

> **Note:** In some locations inventory items installed in a TA envelope may need collecting if they are TfL's responsibility to maintain. If the work includes the Removal or Installation of asset types - other than red route controls - beyond the boundary, check with the person who authorised the Revenue W.O. or the Schemes project manager and write to the Data Quality Team.

The Survey Envelopes were originally designed to contain complete inventory items, i.e. linear and polygonal assets did not cross envelope boundaries. As the requirements of the Asset Management System changed this rule was relaxed (this is explained later in this section).

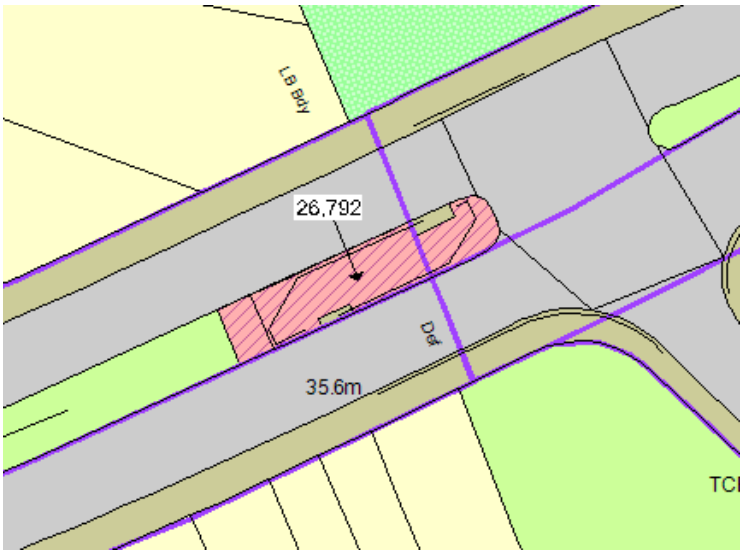
The example below shows that the Longitudinal Line (LL) breaks where the survey envelopes meet and therefore two LL assets have been recorded and referenced to separate TLRN section ID's (indicated with labels).



Due to TfL's reporting and maintenance requirements special consideration needs to be taken when collecting assets that **cross the boundary of two envelopes:**

If the following assets exist across two survey envelopes (of any Adoption) then they should be collected in their entirety (as one object) and referenced against the section in which the **majority** of the asset lies. This is because TfL is more concerned with counting these assets than reporting on their length or area:

- Cycle Track - Advanced Stop Reservoir
- Central Island
- Dropped Kerb
- Pedestrian Crossing
- Cycle Crossing
- Bus Shelter



The example on the left illustrates how a Central Island is recorded across two envelopes. The asset does **not** break at the envelope boundary and it is only assigned to the main road section where the majority of it lies (as label indicates)

The survey envelopes are also particularly helpful in preventing the same asset being collected twice, e.g. where assets exist between two parallel network sections.

NOTE: In some instances the Survey envelopes may not precisely match the Highway Authority Boundary. In such cases, the asset should break at the HAB and **not** the survey envelope boundary, i.e. the HAB takes precedence. Please inform the Data Quality Team when you come across these situations so that the survey envelopes can be corrected. Please consult the Network Change Request document for more information.

2.7.2 Drawing the Geographic Representation of an Asset Record

Every asset in the database inventory has a geographic representation used to display the assets location and/or shape.

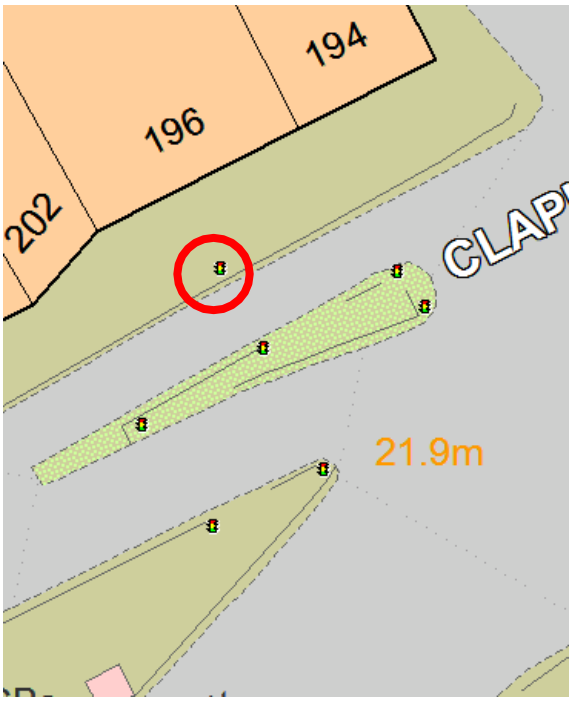
The location should be accurate to a **one metre** tolerance and be visually accurate when displayed on OS Master Map or Landline at **1:1250**.

All assets must be recorded in the GIS as either a line, polygon or point object. **Table 3** (in section 2.5.5.2) lists how each asset type should be represented.

2.7.2.1 GIS Representation Examples

2.7.2.1.1 Point features

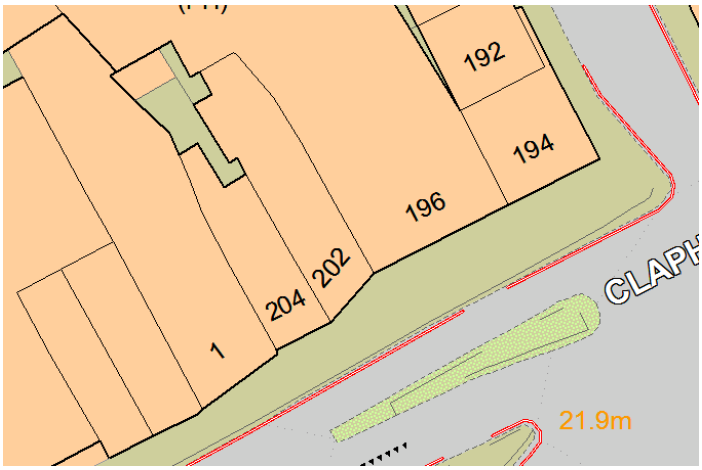
Point features should be positioned at the centroid of the asset captured. An example of a point item is displayed below (Traffic Signal):



2.7.2.1.2 Line features

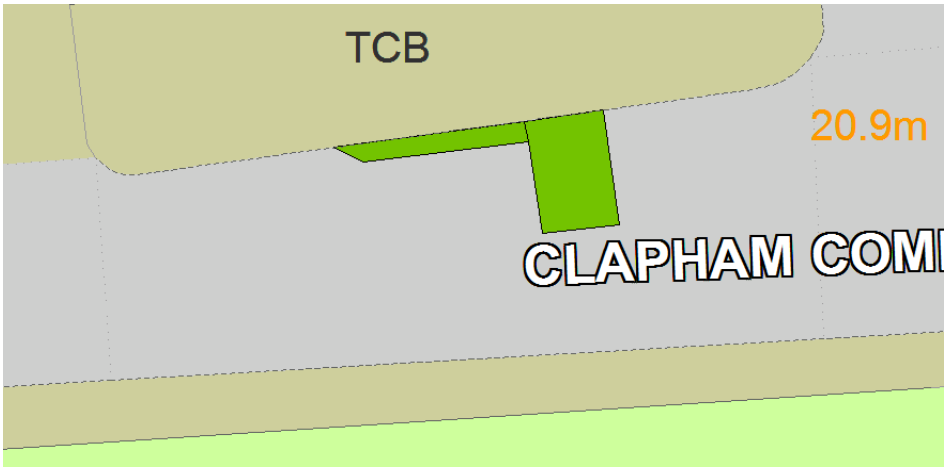
Line features must be drawn accurately to reflect the length of the asset. When representing wider assets with a Line, the centre of the asset should be followed, for example when drawing a Ditch.
A separate line should be recorded whenever there is a change in any of the defining attributes, e.g. a separate Longitudinal Line (LL) should be recorded if the Type changes from Broken to Unbroken. All line features are drawn in

the same way but they can be recorded in the database as either continuous or point items. A list of these can be found in Table 3. An example of a Line asset is displayed below (Red Longitudinal Line):



2.7.2.1.3 Polygon features

Polygon features must accurately reflect the shape (extent) of the asset. A separate polygon should be recorded whenever there is a change in any of the defining attributes, e.g. a central reserve should be composed of separate sections if the Surface Type changes from Grass to Concrete. Therefore, a single reserve on the ground may be made up of a number of Central Reserve polygons. All polygon features are drawn in the same way but they can be recorded in the database as either continuous or point items. A list of these can be found in Table 3. An example of a Polygon asset is displayed below (Cycle Lane and an Advance Stop Reservoir):



2.7.3 Exclusivity of Polygon Assets

Precise area measurements for polygon assets, such as Verge, are key to TfL reporting, e.g. for grass cutting maintenance. By following the exclusivity rules explained in this section a greater level of accuracy for area measurements can be attained.

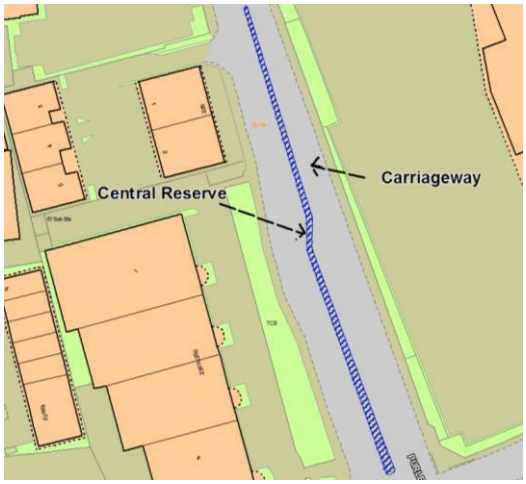
Table 2 lists which polygon assets are 'exclusive' and which are 'non-exclusive'. A full explanation of these classifications then follows.

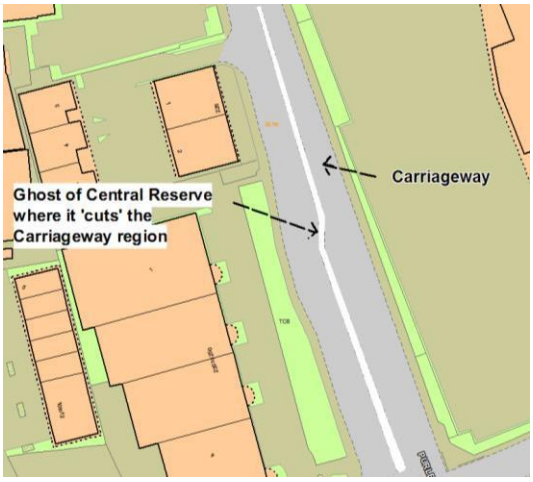
Item	Description	Exclusive	Non-Exclusive
BO	Bridge Over		Y
BU	Bridge Under		Y
BS	Bus Shelter		Y
LH	Hatched Road Markings		Y
PI	Pier		Y
PX	Pedestrian Crossing		Y
SU	Subway		Y
EC	Embankment / Cutting		Y
LB	Lay-by		Y
PN	Pump Station		Y
WL	Woodland		Y
CI	Central Island	Y	
CR	Central Reserve	Y	
CW	ONLY the Upper Most construction layer	Y	
FW	Footway	Y	
PL	Planted Area	Y	
TN	Tram Stop/ Station	Y	
CT	Cycle Track	If Cycle Track (Tactile)	For rest of Cycle Track & Lane (As CW,FW used to record surface)
DK	Dropped Kerb	For rest of Dropped Kerb	If without tactile or with tactile Studs
SA	Ancillary Structure	For rest of Ancillaries	if it exists under ground
VG	Verge	For rest of Verge	If recording the maintained grass area of an EC)

Table 2 - Polygon inventory items and their exclusive status

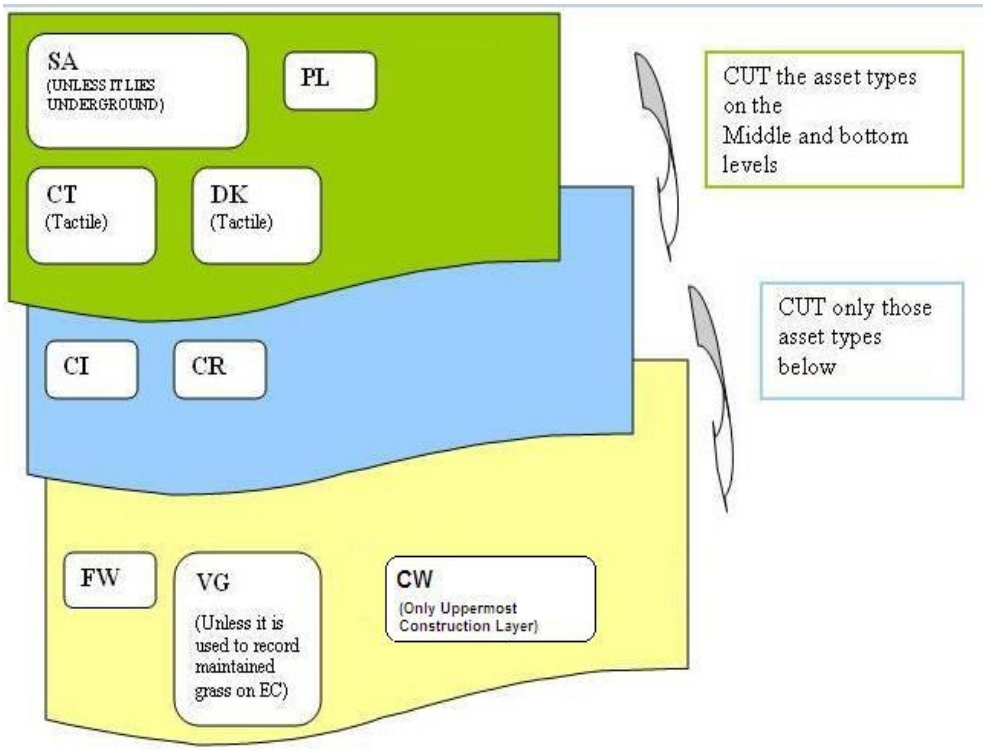
2.7.3.1 Exclusive

The graphical representation of an Exclusive polygon should not overlap any other Exclusive polygons because this does not happen in reality and will distort any 'total area' calculations performed on the Data. Maintaining this exclusivity rule can be achieved through 'cutting' polygons or by simply drawing them around areas you wish to remain exclusive. Below are two diagrams which give an example of a carriageway polygon that has been cut by a Central Reserve polygon.





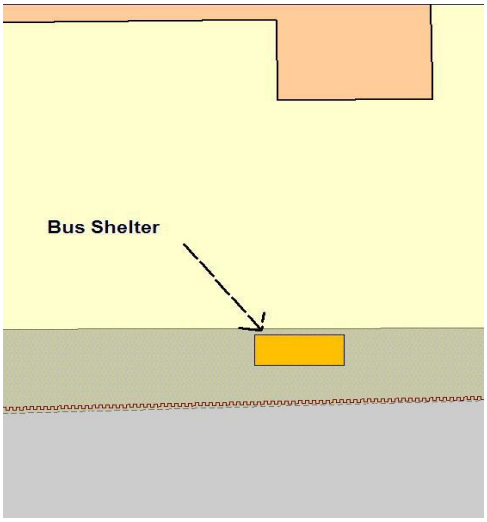
There is a defined hierarchy for how exclusive assets cut each other; this is displayed in the diagram below:

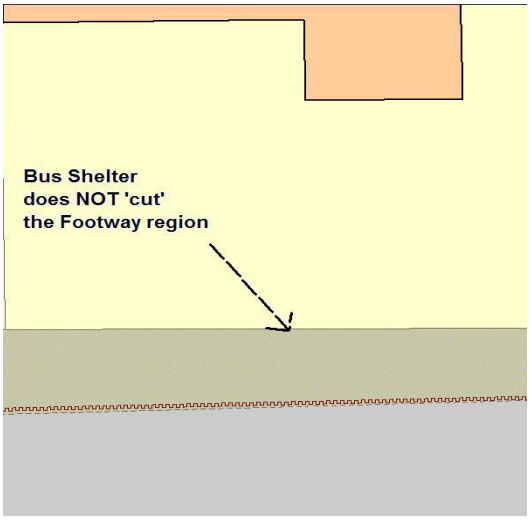


Non-Exclusive

Non-exclusive polygons do **not** need cutting or drawing around any exclusive or non-exclusive items (i.e. the graphic can overlap). For example, a pedestrian crossing asset can lie above a carriageway asset. Likewise, a pedestrian crossing can lie above a subway asset that also occurs beneath a carriageway asset.

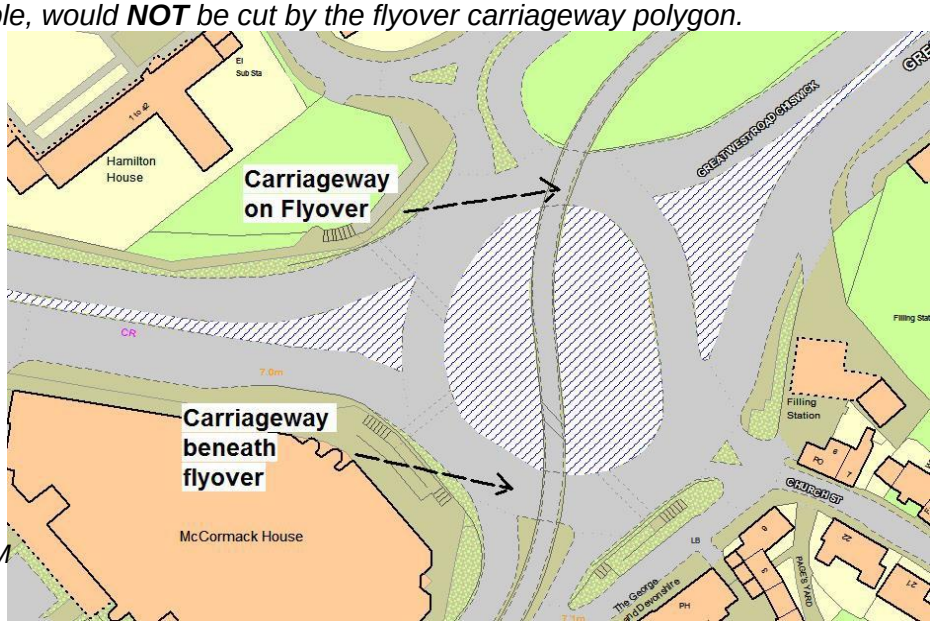
The example below shows a bus shelter polygon, which is non-exclusive as footway exists underneath it in reality.





Exception to exclusivity rules

There is one exception to the rules explained above. This is when two TLRN routes pass over one another. In this case the two sections of TLRN are treated as separate entities. The rules outlined above can then be applied. In the example below, this would allow TfL to store the correct area of carriageway for both sections.
*N.B. it also important to note that the blue and white central island, in the following example, would **NOT** be cut by the flyover carriageway polygon.*



2.7.4 Recording Hierarchical Assets

Some asset types are associated to one another in a Hierarchical relationship, i.e. where one asset type is defined as the 'Parent' that is linked to other asset types termed 'Children'. The hierarchical process is used to facilitate reporting on assets that are made up of sub-components. Please read the appropriate chapter on the asset types involved; these are listed below:

CHILD		PARENT	
Asset Type	Attribute	Asset Type	Attribute
PUMP	N/A	PUMP STATION	N/A
SUMP PUMP	N/A	PUMP STATION	N/A
CONTROL PANEL	N/A	PUMP STATION	N/A
PIPEWORK & VALVES	N/A	PUMP STATION	N/A
TELEMETRY	N/A	PUMP STATION	N/A
LIGHTING POINT	Carriageway light (old lamp post)	POST	Type: Lighting column
LIGHTING POINT	Footpath light	POST	Type: Lighting column
LIGHTING POINT	Central island light	POST	Type: Central island/Belisha beacon post
LIGHTING POINT	Belisha beacon	POST	Type: Central island/Belisha beacon post
LIGHTING POINT	High mast	POST	Type: High mast
LIGHTING POINT	Sign light	POST	Type: Lighting column, Post Carrying Sign, Central island/Belisha beacon post,
LIGHTING POINT	Spot light	POST	Type: Lighting column, Central island/Belisha beacon post, Post carrying sign
LIGHTING POINT	Spot light on Crossing	POST	Type: Lighting column, Central island/Belisha beacon post, Post carrying sign
LIGHTING POINT	Catenary lighting	CATENARY LIGHTING	N/A

2.7.5 Collecting Common Attributes

A number of attributes are ***common to all asset types***; the procedures for collecting these are outlined below:

2.7.5.1 Cross-Sectional Position (XSP)

This is an attribute that was formerly used in the database to record an assets' cross-sectional position on a section e.g. Left or Right Footway. In the current Asset Management System, it is no longer a requirement to collect this accurately during the survey, as it is a Geographic Information System. For this reason the asset types BO, BC, BI, BU, CW, CV, CX, PX, SU, TL and TN require no XSP value in their XSP column. For all other assets an XSP value of 'Y' should be used.

There is an exception to this rule:

When any of the following asset types exist within a SUBWAY, that TfL maintains, an XSP value of 'S' should be entered:

Channel (CH)
Camera (CM)
Gully (GY)
Mirror (FS)
Lighting Point (LP)

This is so that end-users can differentiate between assets above and below surface.

2.7.5.2 Asset Chainage

The start and end chainage of an asset is a measurement used to determine its longitudinal position along a section. The asset system expects a valid start and end chainage. **Point** items will always have the **same** start and end chainage values whilst **Continuous** items must have a difference in value of at least one between their start and end chainage.

As British National Grid coordinates are used for analysis instead of chainage values any newly installed point asset items can be given a default chainage of 1 and 1. Linear (continuous) assets can be defaulted from 0 to 1

Description	Item	Point or Continuous	GIS Feature type
Advertising Boards	**AB**	P	POINT
Bridge Over	**BO**	C	POLYGON
Bus Shelter	**BS**	C	POLYGON
Bridge Under	**BU**	C	POLYGON
Carrier Drain	**CA**	C	LINE
Communications Cabinet	**CC**	P	POINT
Counterfort Drain	**CD**	C	LINE
Channel	**CH**	C	LINE
Central Island	**CI**	C	POLYGON
Catenary Lighting	**CL**	C	LINE
Camera	**CM**	P	POINT
Pump Station Control Panel	**CO**	P	POINT
Central Reserve	**CR**	C	POLYGON
Cycle Track/Lane	**CT**	C	POLYGON
Culvert	**CV**	P	LINE
Carriageway	**CW**	C	POLYGON
Cycle Crossing	**CX**	P	POLYGON
Ditch	**DI**	C	LINE
Dropped kerb	**DK**	P	POLYGON
Embankment/Cutting	**EC**	C	POLYGON
Fences & Barriers	**FB**	C	LINE
Filter Drains	**FD**	C	LINE
Feeder Pillar	**FP**	P	POINT
Street Furniture	**FS**	P	POINT
Footway	**FW**	C	POLYGON
Grip	**GP**	P	LINE
Gully	**GY**	P	POINT
Hedge	**HG**	C	LINE
High Mast Lighting	**HM**	P	POINT
Inspection Chamber	**IB**	P	POINT
Junction	**JN**	P	POINT
Kerb	**KB**	C	LINE
Lateral Drain	**LD**	C	LINE
Hatched Road Markings	**LH**	C	POLYGON
Longitudinal Road markings	**LL**	C	LINE
Lighting Point	**LP**	P	POINT
Interceptor	**NI**	P	POINT
Outfall	**OL**	P	POINT
Pump Station Pump	**P1**	P	POINT
Piped Grip	**PG**	P	POINT
Pier	**PI**	C	POLYGON
Planted Area	**PL**	P	POLYGON

Pump Station	**PN**	P	POINT
Pedestrian Guard Rail	**PR**	C	LINE
Post	**PS**	P	POINT
Pump Station Pipe Work Valves	**PV**	P	POINT
Pedestrian Crossing	**PX**	P	POLYGON
Reference Marker Posts	**RF**	P	POINT
Road Markings	**RM**	P	LINE
River Wall	**RR**	C	LINE
Road Studs	**RS**	C	LINE
Pump Station Sump Pump	**S1**	P	POINT
Ancillary Structure	**SA**	C	POLYGON
Safety Bollard	**SB**	P	POINT
Safety Fence	**SF**	C	LINE
Sign	**SG**	P	POINT
Subway (Pedestrian / Cycle)	**SU**	C	POLYGON
Emergency Telephone Box	**TB**	P	POINT
Pump StationTelemetry	**TE**	P	POINT
Tram Line	**TL**	C	LINE
Tree	**TR**	P	POINT
Traffic Signal	**TS**	P	POINT
Verge	**VG**	P	POLYGON
Vent Shaft	**VS**	P	POINT
Woodland	**WL**	P	POLYGON
Crossover	**XO**	P	POINT

Table 3 – Describes the representation type of each asset and whether they have continuous or point chainage [terminology is taken from v1.2.1 Open GIS Implementation Specification for Geographic Information- Simple feature access- Part 1: Common architecture (opengeospatial.org)]

2.7.5.3 Borough Name

Each asset type has to have the correct 'Borough Name' value recorded against it. For your reference the borough names and their number codes have been listed in **Table 4**. They will not be repeated under each individual asset chapter: (N.B. The Borough should always be a number, i.e. 0, 1, 2 etc NOT 01, 02 etc.)

Borough	Number
City of London	0
Westminster	1
Camden	2
Islington	3
Hackney	4
Tower Hamlets	5

Greenwich	6
Lewisham	7
Southwark	8
Lambeth	9
Wandsworth	10
Hammersmith & Fulham	11
Kensington & Chelsea	12
Waltham Forest	13
Redbridge	14
Havering	15
Barking & Dagenham	16
Newham	17
Bexley	18
Bromley	19
Croydon	20
Sutton	21
Merton	22
Kingston upon Thames	23
Richmond upon Thames	24
Hounslow	25
Hillingdon	26
Ealing	27
Brent	28
Harrow	29
Barnet	30
Haringey	31
Enfield	32

Table 4 – London borough names and number codes

2.7.5.4 Installation Date

Whenever a new asset is physically installed on site, its installation Date should be collected under this attribute. If the exact date is not known you can use the implementation date of the scheme or the Works Order completion date. (Read the LL & RM & LH asset types for an exception to this rule)

2.7.5.5 Date Formats

Unless otherwise stated, dates should be recorded using the following format: DDMMYYYY, e.g. 08052019.

2.7.5.6 Scheme ID's

There are three of these attributes against each asset type – **These enable us to carry out Data Quality audits effectively:**

- 'Installed Under Scheme ID' – this is used to associate the installation of assets with specific schemes. The attribute should be populated with the PMO ID specific to the scheme the asset was installed under.
- 'Last Modified Under Scheme ID' – this is used to track any modifications to assets with specific schemes. The attribute should be populated with the PMO ID specific to the scheme from which the asset was modified.
- 'Removed Under Scheme ID' – this is used to track the removal of assets with specific schemes. The attribute should be populated with the PMO ID specific to the scheme from which the asset was removed.

2.7.5.7 Work Order ID's (the format will be similar to C5_HTO/123)

These enable us to carry out audits effectively: Whenever an asset has been installed, removed or modified as a result of any Network Maintenance Services (i.e. Service Instruction, Planned or Reactive Maintenance, Lump Sum) the associated Work Order ID should be populated.

2.8 End-Dating (Deleting)

The following section outlines the process of end-dating an asset on the Asset Management System:

There are a variety of circumstances when an asset should be end-dated. The general principles are listed below. Any exceptions to these principles will be outlined on an asset-by-asset basis in Sections 4 to 61 of this document.

End Dating Assets	
General Principle 1: An ***entire*** asset is removed from the TLRN and not replaced.	
Applies to:	**All assets**
Action:	**Old Asset is End Dated**
General Principle 2: An ***entire*** asset is removed and replaced with a new asset. (E.g. A Camera head changes from Bus to Red Light or a Central Island's surface type is completely changed).	
Applies to:	**All assets**
Action:	**Old Asset is End Dated and a new asset is recorded.**
General Principle 3: An ***entire*** asset has been erroneously collected in a previous survey**.**	
Applies to:	**All assets**
Action:	**Old Asset is End Dated.**

2.9 Modifications

The following section outlines the general processes of modifying an asset on the Asset Management system:

There are two types of modification that can be made to an existing asset in the database: a Correction or a Modification.

Corrections are used to fix errors that exist within the inventory, whether they are in the attribute or Spatial data. Corrections will update the current live record, no end-dating occurs and therefore no record of the corrected value is stored.

Modifications are used to reflect physical changes made to assets. E.g. if a Longitudinal Road Marking (LL) is repainted, the attribute Last Remarked Date for that asset will need updating to reflect this change.
This type of modification end-dates the current live record and inserts a new record with the updated attribute values. This form of modification allows the history of an asset to be tracked.

When the asset inventory is modified, assets are given an Edit Mode. The edit mode determines which type of modification will be carried out.
C = Correction
M = Modification

2.9.1 General Principles for Attribute Modifications

General Principle 1: An attribute value needs modifying as changes have been made to the asset on site (and the asset has **not** been entirely replaced). An update to that attribute is recorded.	
Applies to:	**All assets**
Action:	**Update attribute to new value using Edit Mode: Modify.**
General Principle 2: An attribute value has been incorrectly recorded. An Update to that attribute is recorded.	
Applies to:	**All assets**
Action:	**Update attribute to new value using Edit Mode: Correction.**

2.9.2 General Principles for Spatial Modifications

General Principle 1: An asset has been represented (i.e. drawn) or located badly. An update to the representation/location of the asset is supplied.	
Applies to:	**All assets**

Action:	**Update asset representation/location. Update associated attributes, i.e. chainage (if applicable) using Edit Mode: Correction.**
General Principle 2: An existing asset has been re-located, e.g. as part of a scheme. An update to the location of the asset is supplied.	
Applies to:	**All point assets**
Action:	**Update asset location. Update associated attributes using Edit Mode: Modify.**

The following rules ONLY apply to polygon and line assets whose footprints have changed due to work on site (from schemes etc.)

2.9.2.1 Splitting an Asset

Splitting an asset occurs when an update or improvement has been made to one part of an asset but the rest is left unchanged. The original asset is modified and depending on the location of the improvement, up to two new assets are created. Most linear or polygon assets can be split. See Table 5 for a full listing.

Capital Works

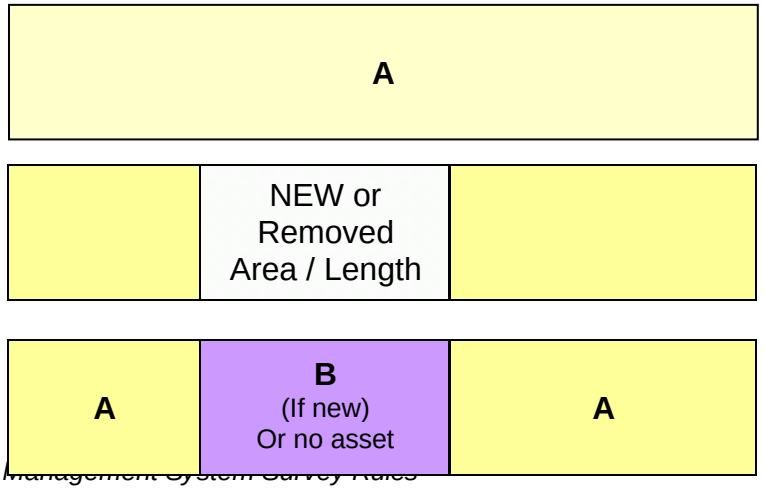
Any change to part of an asset due to Capital Works requires the asset **to be split.**

The 'Installed Under Scheme ID' and 'Installation date' should be populated for the asset physically installed as part of the scheme. (Regarding asset 'A' - in the example below – you will also need to populate its 'Last Modified Under Scheme' attribute)

Routine and Emergency Maintenance Works

If a change to part of an asset is 'like for like' e.g. part of a damaged guardrail is replaced with the same type as before, the asset should **NOT** be split. If part of an asset is replaced with a different type e.g. the damaged part of a visirail pedestrian guardrail is replaced with a plain pedestrian guardrail, then the asset **MUST** be split and an installation date supplied.

2.9.2.2 Rule 1 - Splitting an Asset in the Middle



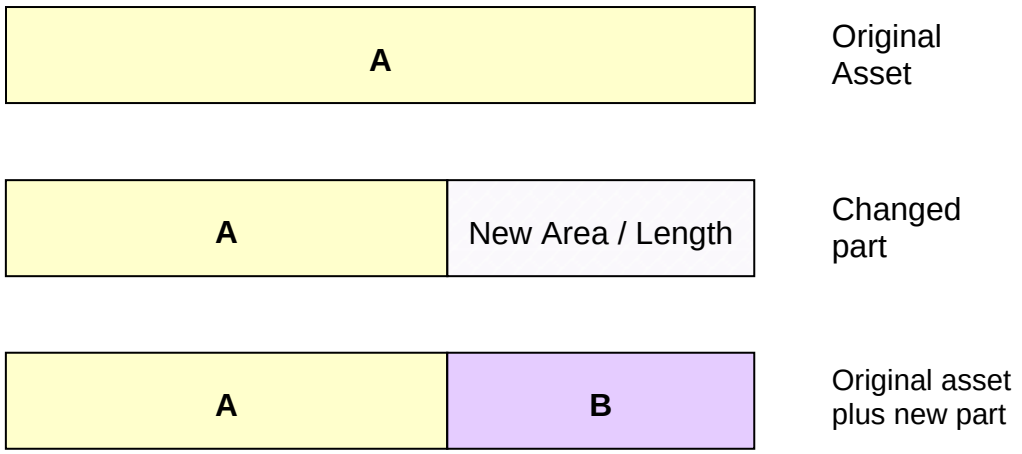
Rule 1 - Splitting an Asset with a change or removal to part of it in the middle of the area

In Rule 1, **A** represents the original asset (e.g. a section of Carriageway). **A** was changed at its centre and this required a new asset to be created (E.g. A Ped Crossing was installed). The original asset, **A** is modified and a new assets is created **B**. **A** is not 2 records in the database; it is one record that has 2 polygons that have been combined to make one object or Spatial record.

Important: Because of this rule special care needs to be taken when modifying and end-dating assets that have already been split. Because even though it looks like two objects it is only one. As a result, any work carried out on asset 'A' above, would affect both the left and right ends of the asset.

2.9.2.3 Rule 2 – Splitting an Asset due to a change at either end

Rule 2 shows how to update an asset if the change takes place on either end of the asset, thus causing the existing asset to be reduced in length.



Rule 2 - Policy for Splitting an Asset with a change at either end

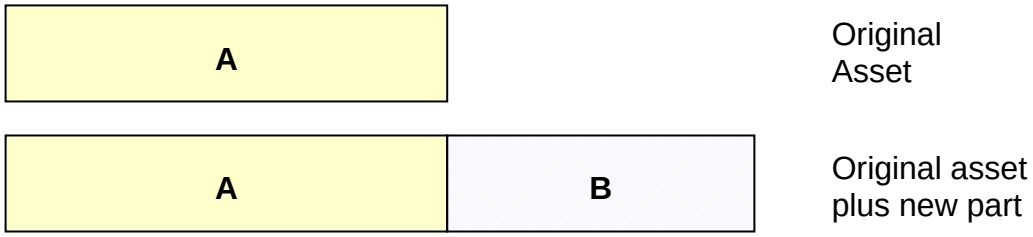
A represents the original asset. A change was made to the end of the asset (New Area / Length). The original asset **A** has its GIS representation modified to reflect the shortened asset and any attributes relating to the spatial characteristics are updated (e.g. chainage, length, etc.). A new asset **B** is created.

2.9.3 Enlarging or reducing the footprint of an Asset

2.9.3.1 Rule 3 – Appending to an Asset

If a new asset is installed next to an existing, identical asset, in most cases, a new asset should be created i.e. **appended** to the existing one.

A new asset record is created for the new part whilst the original remains the same. Two polygons (or lines) are used to represent the asset in the GIS.



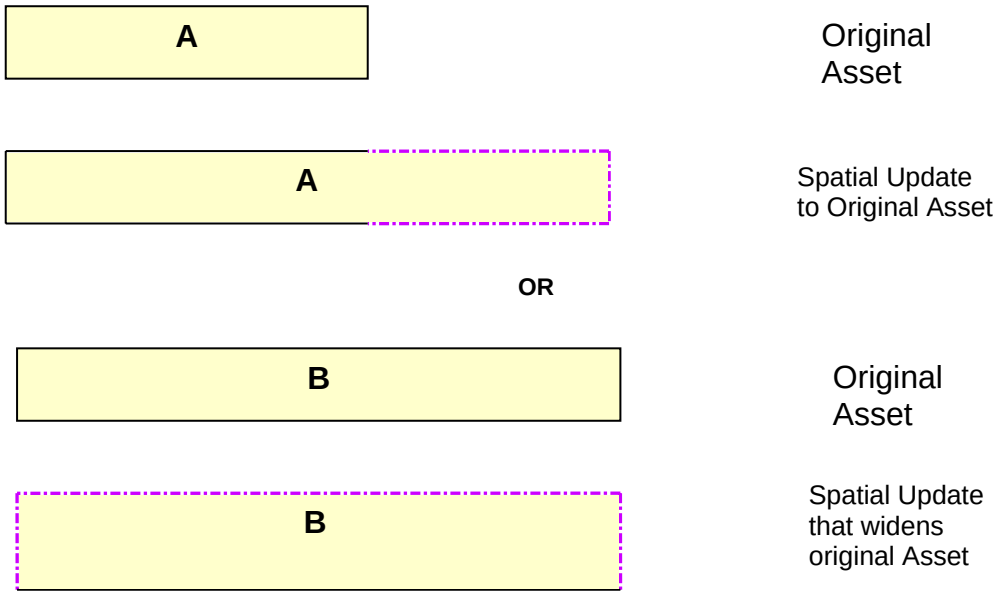
Rule 3 – Appending to an Asset

This method is used so that TfL can track changes on the network through the asset's installation date. In the example above Asset A and B will be identical but B will have a later installation date

2.9.3.2 Rule 4 - Enlarging an Asset

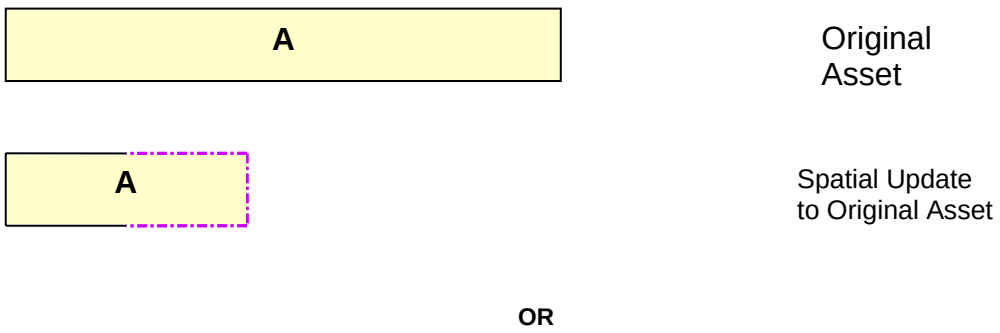
Certain asset types should **NOT** be appended to due to TfL's counting purposes. These assets should therefore be redrawn (i.e. the original object is re-shaped)

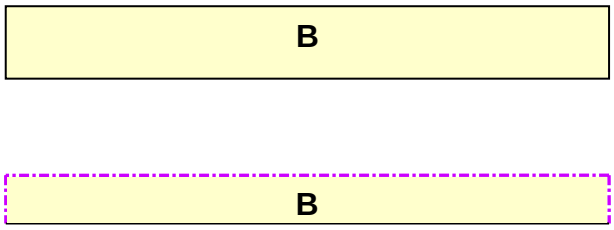
Enlarging an Asset	
An Asset which cannot be appended to requires a change of shape. The spatial representation of the asset should be redrawn.	
Applies to:	**Asset types which cannot be appended to. (see summary table 2.9.5.)**
Action:	**The GIS representation is amended and no additional assets are created.**



2.9.3.3 Rule 5 - Reducing an Asset

Reducing	
This is the opposite of Enlarging, i.e. the original object should be redrawn – to show the reduction in size - and no new assets should be generated.	
Applies to:	**All assets**
Action:	**The GIS representation is amended.**





Original Asset

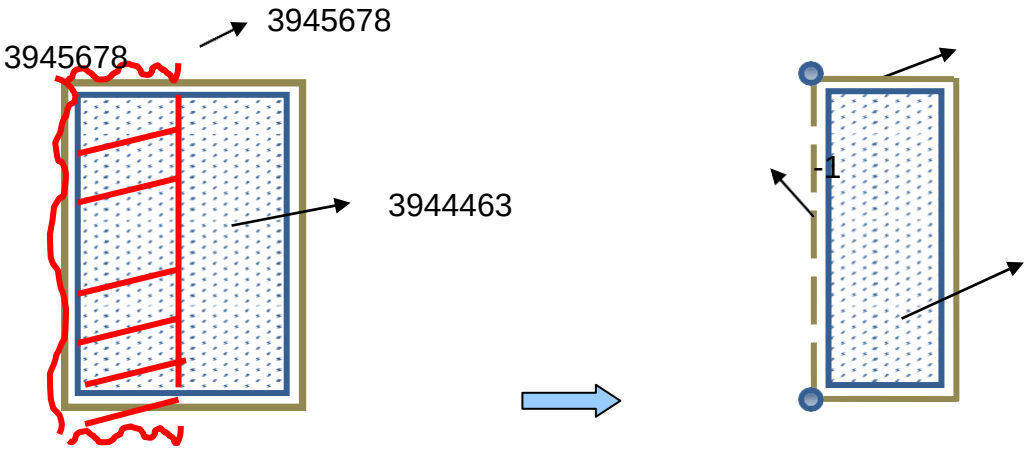
Spatial Update that narrows original Asset

2.10 Specific examples of Asset Updates (for Schemes) using the asset loader software:

(Even though this section contains details specific to our database loading software – that could change over time – it is a useful run through of the logic of asset data collection)

1 (a) Polygon & Polyline have been reduced in size – because it was partially *removed* or because part of it has been partially *re-surfaced*:

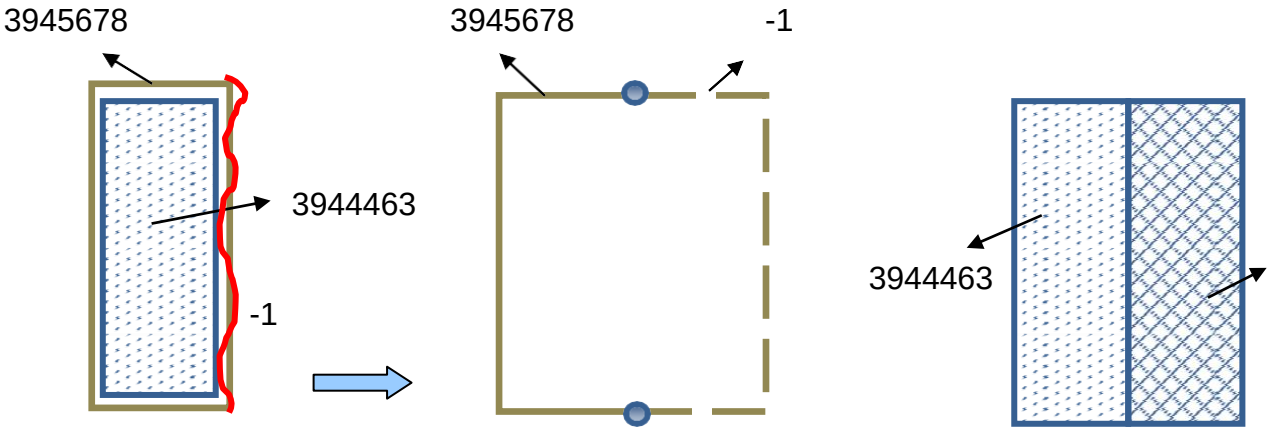
Example: the left side of a Central Island and part of its surrounding Kerb line have been removed (indicated by red lines) to make way for a cycle track The right side of the island remains the same and a NEW kerb has been installed at the left edge of the island (where it was cutaway).



TYPE	ASSET ID	ACTION
KB	3945678	Using the 'M' edit mode - Shrink the kerb away from the edge that has been remove (I.e. away from the red squiggly lines) by re-drawing the vertices – **IGNORE** the 'Install Date' But **UPDATE** the 'Last Modified Under Scheme ID'
CI	3944463	Using the 'M' edit mode - Shrink the shape to its new size by re-drawing the vertices - **IGNORE** the 'Install Date' But **UPDATE** the 'Last Modified Under Scheme ID'
KB	-1	Using 'I' edit mode - create a New kerb segment (indicated by dashed brown line) & **UPDATE** its 'Install Date' & 'Installed Under Scheme ID'

2 (a) Polygon / Polyline have increased in size by being added to:

Example: A Central Island and its surrounding Kerb line have been enlarged to hold more pedestrians. The right kerb edge has been removed (indicated by red squiggly line) where it abuts the new central island extension.

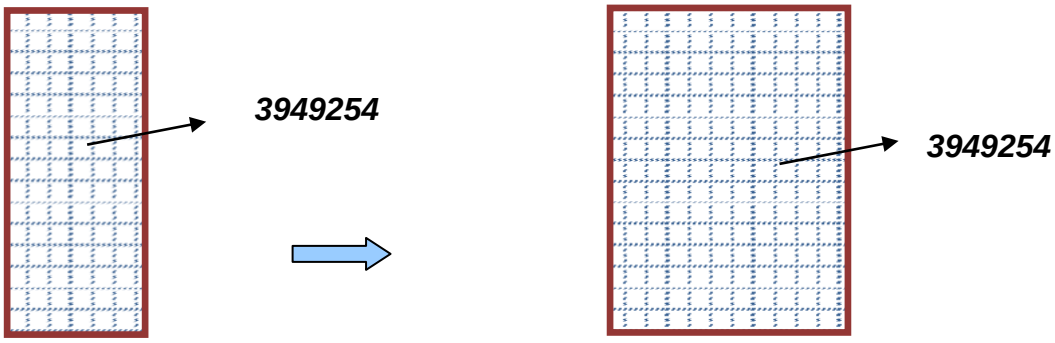


TYPE	ASSET ID	ACTION
KB	3945678	Using the 'M' edit mode - Shrink the kerb away from the right edge (I.e. away from the red squiggly line) by re-drawing the vertices - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'
CI	3944463	Leave as it is (no update is required)
KB	-1	Using the 'I' edit mode - create a new kerb asset (indicated by dashed brown line) that snaps to the ends of the existing KB - **UPDATE** 'Install Date' & 'Installed Under Scheme ID'
CI	-1	Using the 'I' edit mode - create a new central island asset that snaps to the existing the CI - **UPDATE** 'Install Date' & 'Installed Under Scheme ID'

2 (b) Exception to this Example

Some assets are counted against in reporting, so these cannot be 'appended to'. Therefore, if a Cycle Crossing or Pedestrian Crossing has increased in size on site, the original asset should be 'stretched', by editing its vertices.

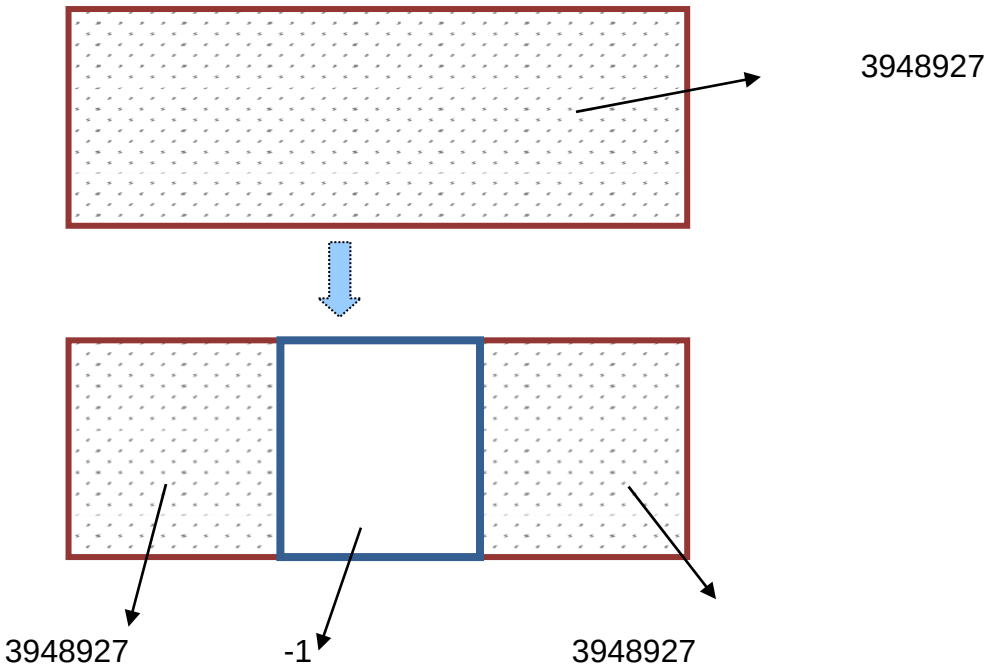
Example: CX is enlarged



TYPE	ASSET ID	ACTION
CX	3949254	Using the 'M' edit mode - enlarge the shape by re-drawing the vertices - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'

3 (a) Polygon has been sub divided:

Example below: A Footway has a new strengthened surface put into the middle of it so cars can cross



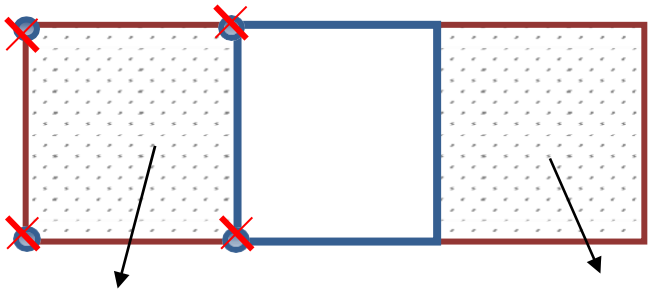
TYPE	ASSET ID	ACTION
FW	3948927	Cookie cut existing polygon using the shape of the new area of Footway – then give the modified footway an 'M' edit mode - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'
FW	-1	Using 'I' edit mode - create the new FW asset in the gap - **UPDATE** 'Install Date' & 'Installed Under Scheme ID'

N.B. Care should be taken when it comes to updating any previously 'cookie cut' asset in the future (like 3948927 above) – Because even though the Footway now looks like two separate objects, it is *in fact* only ONE record. So on future editing, in the case above, both the left AND right ends would be affected.

An example of such an update is given below: Let's say the LEFT edge of 394827, above, has now had a surface change to flag stones. You would therefore need to edit 394827 by deleting vertices (as indicated by the red crosses) to represent the shape that remains unchanged. Then you need to 'Insert' a new polygon where the new flag stone surface has been installed

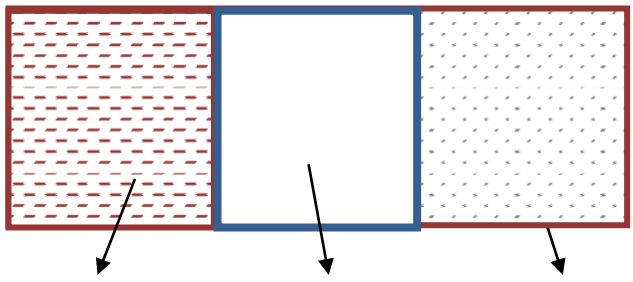
(represented in diagram (b) by the polygon '-1 flags') – this allows us to keep the history of the original asset going.

(a)



3948927 (unchanged) (Going to flags) (earlier strengthened Bit) 3948927

(b)

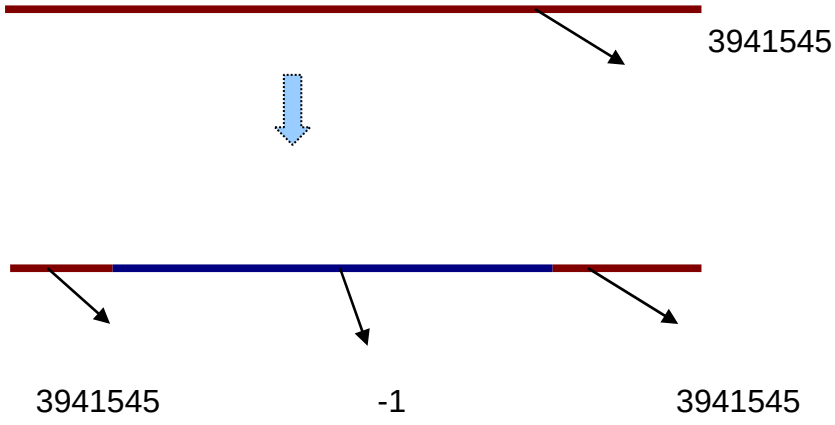


-1 (Flags) (earlier strengthened Bit) 3948927 (unchanged)

TYPE	ASSET ID	ACTION
FW	3948927	Delete vertices of the left half of this polygon – then give the record an 'M' edit mode - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'
FW	Strengthened bit from earlier	- leave as it is (no update required)
FW	-1	(b) Using 'I' edit mode - create a new FW asset (for the flagstones) - **UPDATE** the 'Install Date' & 'Installed Under Scheme ID'

3 (b) Polyline has been sub divided

Example below: a Bus stop special Kerb has been inserted into an existing concrete Kerb.

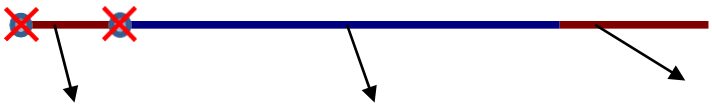


TYPE	ASSET ID	ACTION
KB	3941545	Cookie cut polyline using a polygon shape that is of the same length as the new area of Bus Stop Kerb - then give the record an 'M' edit mode - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'
KB	-1	Using 'I' edit mode - create a new KB asset in the gap - **UPDATE** 'Install Date' & 'Installed Under Scheme ID'

N.B. Once again, care should be taken when it comes to updating any cookie cut asset in the future (like 3941545 above) – Because even though the Kerb now looks like two separate objects, it is in fact only ONE record. So on future editing, in the case above, both the left AND right ends would be affected.

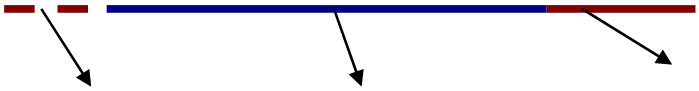
An example of such an update is given below: the left edge of 3941545 has had a surface change to natural stone. Therefore, you would need to edit 3941545 by deleting vertices (indicated by the red crosses) to represent the shape that remains unchanged. Then 'Insert' a new polyline where the new natural stone kerb has been installed (represented by the '-1 natural stone' in diagram (b) below) – this allows us to keep the history of the original asset going.

(a)



3941545 (unchanged) (earlier bus stop special bit) 3941545

(b)



-1 (unchanged) (natural Stone) (earlier bus stop special bit) 3941545

TYPE	ASSET ID	ACTION
FW	3941545	(a) Delete vertices of left half of this polyline – then give the record an 'M' edit mode - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'
FW	Bus stop special bit from earlier	- leave as it is – no update required
FW	-1	Using 'I' edit mode - create a new KB asset (for natural stone) - **UPDATE** 'Install Date' & 'Installed Under Scheme ID'

4 – Other Issues (Schemes):

Point Item has been re-located

Sometimes a point item, such as a post, gets moved during a scheme. If the properties of the post stay the same, then all the surveyor need do is move the point shape to its correct position; give the record an 'M' edit mode - **IGNORE** 'Install Date' But **UPDATE** 'Last Modified Under Scheme ID'

2.10.1 Summary

Table 5 below, outlines which spatial modification rules need applying to which asset types.

Asset Type	Description	GIS Feature type	Split	Extend	Append
BS	Bus Shelter	POLYGON	N	Y	N
CD	Counterfort Drain	LINE	Y	N	Y
CH	Channel	LINE	Y	N	Y
CI	Central Island	POLYGON	Y	N	Y
CR	Central Reserve	POLYGON	Y	N	Y
CT	Cycle Track *	POLYGON	Y	N	Y
CW	Carriageway	POLYGON	Y	N	Y
CX	Cycle Crossing	POLYGON	N	Y	N
DI	Ditch	LINE	Y	N	Y
DK	Drop Kerb	POLYGON	Y	N	Y
FB	Fences & Barriers	LINE	Y	N	Y
FD	Filter Drains	LINE	Y	N	Y
FW	Footway	POLYGON	Y	N	Y
GP	Grip	LINE	Y	N	Y
HG	Hedge	LINE	Y	N	Y
KB	Kerb	LINE	Y	N	Y

LB	Lay-by (for counts)	POLYGON	N/A	N/A	N/A
LH	Hatched Road Markings	POLYGON	Y	N	Y
LL	Longitudinal Road Markings	LINE	Y	N	Y
PL	Planted Area	POLYGON	Y	N	Y
PR	Pedestrian Guard Rail	LINE	Y	N	Y
PX	Pedestrian Crossing	POLYGON	N	Y	N
RS	Road Studs	LINE	Y	N	Y
SF	Safety Fence	LINE	Y	N	Y
TL	Tram Lines	LINE	Y	N	Y
VG	Verge	POLYGON	Y	N	Y

Table 5 – This table ONLY applies to assets whose footprints have been changed due to works on site (from schemes etc.)

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ASSET TYPES AND RULES

3 ASSET TYPES & RULES

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Created		15/06/07	
1	Quality Review	John Cook	24/07/07	
2	Update	Huw Harries	24/07/07	Changes to reflect new contract arrangements
3	Update	Huw Harries	01/10/09	Carriageway – New construction layers added
4	Update	Huw Harries	03/10	Amalgamated entry treatment, lay-by & hard shoulder into carriageway
8.3	Update	Huw Harries	09/03/12	Removed Catch pit and Manhole (amalgamated them into Inspection Chamber)
11	Update	Shayna Meyers	15/05/19	Removed assets CP, ET, HM, HS, LB, MH, TL, and TS from document. Added PI.
11	DQ Team Review		10/09/19	

4 ADVERTISING BOARDS (AB)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
8	Quality Review	Huw Harries	01/12/10	New asset type added – Panels taken from the street furniture where Type = 13 to populate this one.

4.1 Advertising Boards (AB)

Large hoardings used for advertising

4.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

4.1.2 Rules

4.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

4.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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5 ANCILLARY STRUCTURE (SA)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
11	Quality Review	Shayna Meyers	15/05/19	Changes to reflect new contract arrangements
11	DQ Team Review		15/05/19	

5.1 Ancillary Structure (SA)

Structures that are not classified under any other structure asset type should be recorded as an Ancillary Structure, e.g. Balancing Pond, Oil Separator, Sign Store.

5.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

5.1.2 Rules

(i) When the identity code is either not present or unreadable, an asterisk (*) should be entered.

(ii) For more information on Date Last Cycl Maint please refer to the 'Cyclic Asset Update by Service' document.

(iii) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

5.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

5.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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6 BRIDGE OVER (BO)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

6.1 Bridge Over (BO)

A structure which spans the road being surveyed and which carries another road, railway, pedestrians or another feature.

6.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

6.1.2 Rules

(i) On dual carriageways a Bridge Over is recorded against one section but should be assessed in the respect of the total length spanning both carriageways.

(ii) For more information on Date Last Cleaned and Date Last Cycl Maint please refer to the 'Cyclic Asset Update by Service' document.

(iv) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

6.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

6.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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7 BUS SHELTER (BS)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements

7.1 Bus Shelter (BS)

An item of street furniture used by the public at bus stops; normally near the carriageway.

7.1.1 Input details

Please See 'Asset Metamodel – Attributes and Lists'

7.1.2 Rules

The identity code is normally found along the edge of the roof that is facing the road. If it is unreadable or not present enter an asterisk (*).

A Bus Shelter should be recorded in its entirety (as one object) when it lies over two survey envelopes of any Adoption and they must be referenced to the section against which the **majority** of the asset lies. (This is so that counts can be carried out on them).

7.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

7.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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8 BRIDGE UNDER (BU)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

8.1 Bridge Under (BU)

A structure carrying the road being surveyed over another road, railway, river, ravine or another feature.

8.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

8.1.2 Rules

(i) Parapets are part of the bridge and are **not** to be recorded **separately.** But a Safety Fence, over a bridge, should be recorded under its own inventory item.

(ii) On dual carriageways a Bridge Under is recorded against one section but should be assessed in the respect of the total length spanning both carriageways.

(iii) For more information on Date Last Cycl Maint please refer to the 'Cyclic Asset Update by Service' document.

(v) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

8.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

8.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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9 CARRIER DRAIN (CA)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
8	Quality Review	Huw Harries	22/01/13	
8.4	Update	Huw Harries	22/01/13	New carrier drain
9.3	Update	Huw Harries	20/1214	Defect and treatment rules

9.1 Carrier Drain (CA)

Generally carrier drains carry larger volumes of water, these drains function as a common pipe picking up drainage from other laterals. There are generally two types of carrier drains; those carrying surface runoff and those carrying foul sewerage.

9.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

9.1.2 Rules

(i) Piped assets must be drawn to match the direction of drainage flow.
(ii) Piped assets must split at Junctions and Inspection Chambers.
(iii) Do **not** split piped assets at Network/Envelope/Borough boundaries as the drainage network model needs to be preserved. When associating piped assets to a network section choose the majority section.
(iv) Every piped asset should be associated to its surrounding drainage network
(v) Ghost nodes used to represent the survey limits should be created under the **Junction** asset type, e.g. to identify:
  (a) The point where a pipe becomes blocked
  (b) The 'edge extent' of the investigation area.

(vi) The Survey reference attribute must be populated with the unique identifier of the geographic objects from the original survey. (this is to provide a link from the Asset Management System back to the Inspection Reports and original geographic data)

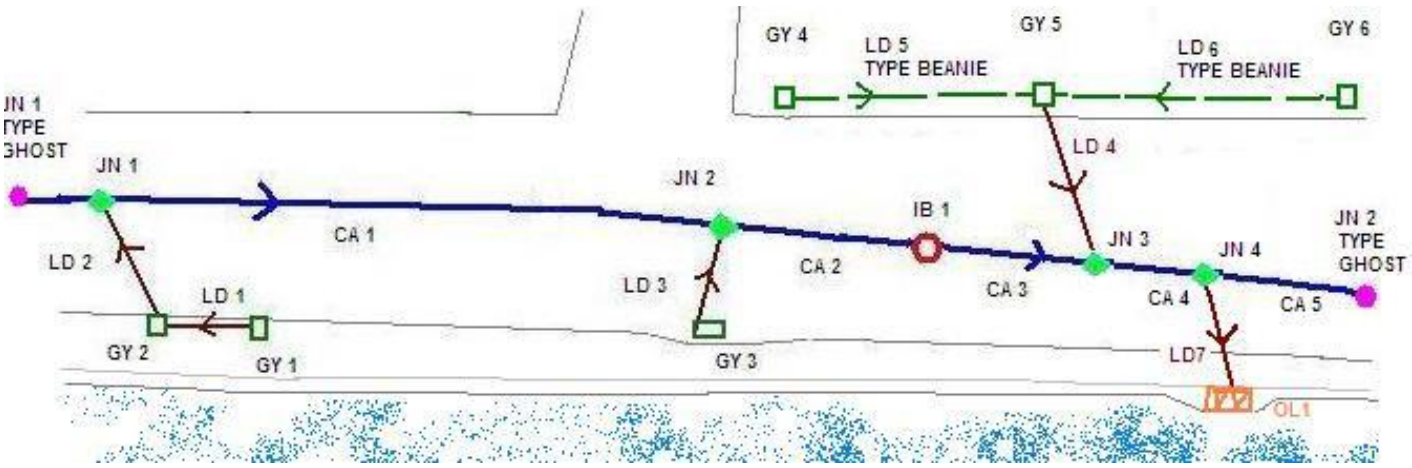
9.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Digitising the drainage network

Each asset object should be referenced so they fit into a logical drainage network using the Asset Management System asset id. Piped assets use the start point ID and end point ID attributes to record this drainage connectivity. These columns store the ACTUAL asset id's of the assets that connect to them: *Gullies, Junctions, Outfalls and Inspection Chambers*. So these asset types need uploading to the Asset Management System **before** their associated piped asset in order for their asset id's to be derived.

The example below depicts how a typical drainage network will look. The tables below the diagram define the start and end point attribution for the diagram. (The asset id's used are just hypothetical ones).



Lateral Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD1	GY1	GY2
LD2	GY2	JN1
LD3	GY3	JN2
LD4	GY5	JN3

Lateral Drain (Beanie Block)		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD5	GY4	GY5
LD6	GY6	GY5
LD7	JN4	OL1

Carrier Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
CA1	JN1	JN2
CA2	JN2	IB1
CA3	IB1	JN3
CA4	JN3	JN4
CA5	JN4	JN2-TYPE GHOST

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

9.2 Exceptions to the End Date and Modification Rules

Cleaning / jetting works:

The attribute 'Date Last Cleaned' must be updated after any: Cyclic, Reactive or Capital works.

Drainage Investigations and Renewal works:

After Drainage Investigations:

Piped assets identified with **Structural** damage (from the Inspection reports) should have their attribution: 'Structural count of Defects' and 'Most severe structural grade' updated accordingly. (To identify which piped asset the WinCan report relates to use the gully or Inspection chamber unique id listed in the top right corner of the Wincan report). *Only* Structural defects should be counted. If the amount of structural defects is zero you must still enter '1' into the 'Most severe structural grade' column. That is because the minimum grade a pipe can receive is '1', i.e. it's in the best possible condition. Other than this, score the structural count of defects and most severe grade as you see them. A pipe can have several structural defects, e.g. if you see a pipe with Grades of:

Constr (1)

Struct (3)

Struct (2)

Then the 'Structural Count of Defects' will equal '2' and the 'Most severe structural defect' will equal '3'.
See the ***Guidance Note on Sub-Surface Drainage Surveys*** for a breakdown of the structural grade score system.

N.B. Because the lateral and carrier **asset inventory** is being used to track defective piping defect records should not be created in the Asset Management System as a result.

After Renewals:

Any changes to piped assets: (installations, removals, renewals or repairs) needs to be reflected in the Asset Management System. This includes the revised 'structural count of defects' and 'most severe structural grade' values. The table below lists the type of upload and the attribute updates required by treatment type:

Treatment Type	**Type of Upload / Attributes to Populate**	
	Damaged pipe	**Replacement pipe** *(all attributes need collecting except Treatment method and Treatment Type)
Pipe Patched	*Upload Type: Modify* Treatment Method & Type Structural Count of Defects Most severe Structural Grade Modified under scheme id	n/a
Pipe Relined *(assumes whole pipe*	*Upload Type: Modify* * * If re-lined after survey hit blockage then End date Ghost	n/a

length)	node & stretch poly line to resulting terminus. Treatment Method & Type Structural Count of Defects Most severe Structural Grade Modified under scheme id	
Pipe Partially Replaced	*Upload Type: Modify* Treatment Method & Type Structural Count of Defects Most severe Structural Grade Modified under scheme id	*Upload Type: Insert* (Populate either the Start or End Point id with the applicable existing ghost node)
Pipe Totally Replaced	*Upload Type: Mod & End* Treatment Method & Type Removed Under Scheme id	*Upload Type : Insert*

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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10 COMMUNICATION CABINETS AND MISCELLANEOUS EQUIPMENT (CC)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements

10.1 Communication Cabinets and Miscellaneous Equipment (CC)

A cabinet containing electronic equipment associated with communication installations, traffic signals and other road features.

10.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

10.1.2 Rules

(i) If the identity code is either not present or unreadable, an asterisk (*) should be entered.

(ii) Devices used to study the weather, such as Fog detectors, should be recorded under C.C. *Type: Weather Station*

(iii) The *Type* field is used here so that Weather Stations, Bus Beacons, etc can be distinguished from the ordinary CC's found on site. If the CC being recorded does not fit one of these very specific *Types* then it will be recorded as - *Other*. Therefore the vast majority of Comms Cabinets are recorded with *Type – Other*.

(iv) If the *Owner* of the CC is not obvious or unidentifiable then it should be recorded as - *(*) Unknown*; if the *Owner* is not available from the pick list then - *Other* should be entered. In both cases the free text field *Description* should be used to give additional information.

(v) Because there are several companies who own comms equipment, part of the Owner list only refers to general ownership, e.g. If the owner of a CC is one of the Water Companies then the *Owner:* value – *'Water'* should be used.

(vi) If a Cabinet lies within the Highway Authority Boundary but obviously feeds something outside the HAB, e.g. an advertising panel, then it should STILL be recorded as it may pose a threat to pedestrians.

10.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

10.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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11 COUNTERFORT DRAIN (CD)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements

11.1 Counterfort Drain (CD)

A field drain, that runs perpendicular to the carriageway, surrounded by a granular material such as gravel, includes herringbone and intercepting drains. A Counterfort Drain is similar to a Filter Drain in appearance, but filter drains tend to run parallel to the carriageway.

11.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

11.1.2 Rules

(i) For more information on Date Last Inspection please refer to the 'Cyclic Asset Update by Service' document

11.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

11.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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12 CHANNEL (CH)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
8.4	Update	Huw Harries	22/01/13	Combined kerb & drainage channels to now be collected under lateral drains

12.1 Channel (CH)

A narrow strip, either longitudinal or transverse to the carriageway, constructed to carry and lead away surface water.

12.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

12.1.2 Rules

(i) This asset should be used to record those Channels running perpendicular to the carriageway, often found outside shop fronts.

(ii) This asset type should also be used to collect Subway Channels. They need to be given an XSP of S. This then allows them to be differentiated from street level channels.

(iii) For more information on Date Last Inspected please refer to the 'Cyclic Asset Update by Service' document

(iv) **Combined Kerb and drainage** items (often called Beanie Blocks) should be recorded under the Lateral Drain asset type, as Type: Beanie.

12.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

12.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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13 CENTRAL ISLAND (CI)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
8.2	Update	Huw Harries	14/01/11	Amended maintenance rule on date last cut

13.1 Central Island (CI)

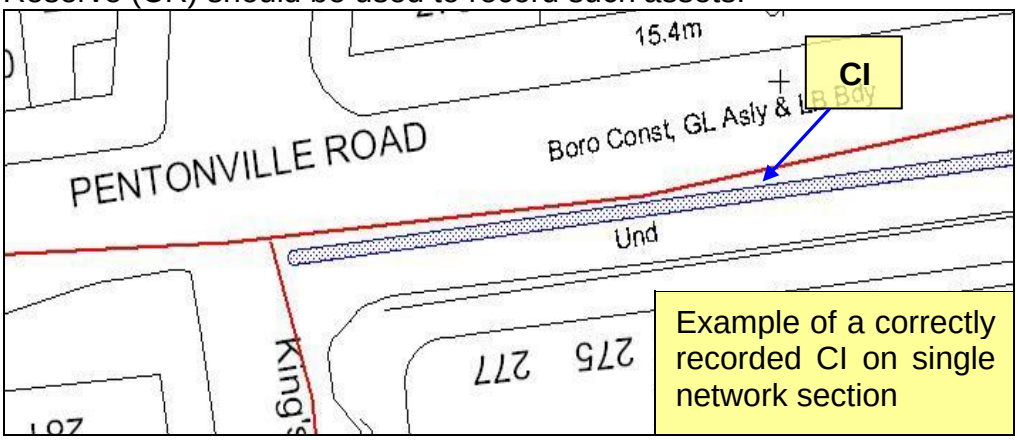
An obstruction in the road to split traffic into lanes and / or to provide a pedestrian refuge.

13.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

13.1.2 Rules

(i) This inventory item should **not** to be used to record assets existing between 2 network sections (forming a dual carriageway). Central Reserve (CR) should be used to record such assets.



(ii) Hatched Road Markings associated with Central Islands are a separate inventory item. Record these under the LH asset type.

(iii) Central Islands although continuous should break when they do in reality. Cross-Overs (XO) should **only** be used to represent where motor vehicles (not cycles) cross the Island.

(iv) Roundabouts with a **raised centre** should be treated as a Central Island. However, a mini roundabout **without** a raised centre must be regarded as a Transverse and Special Road Marking.

(v) Grass Cutting Regime will be used to identify how often the grassed area on this asset needs to be mown.

(vi) Any Central Island recorded with a Surface Type **other than Grass** should have a *Grass Cutting Regime: None.*

(vii) A Central Island that spans the Highway **and** Traffic Authority Boundaries must be recorded in its entirety and referenced to the

section against which the **majority** of the asset lies.

(vii) For more information on Date Last Cut please refer to the 'Cyclic Asset Update by Service' document.

13.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

13.2 Exceptions to the End Date and Modification Rules

Maintenance / Service Instruction work

If grass on an island is re-seeded or cut the Attribute 'Date Last Cut' would need populating with the date the order was complete.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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14 CATENARY LIGHTING (CL)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
8.4	Update	Huw Harries	22/01/13	CMS, MUESLI related reconfiguration

14.1 Catenary Lighting (CL)

The suspension of luminaries from wires fixed between columns or buildings to provide illumination. This asset type only represents the suspending cable; consequently there is no need to collect lighting attribution under this asset as Luminaires are collected individually under LP.

14.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

14.1.2 Rules

(i) The *Number of Columns* attribute is there to record the amount of columns used to suspend the lighting of this asset. If the Asset is suspended from a building or another structure the column should be left **null.**

(ii) All columns supporting Catenary Lighting should be recorded under the *Post asset type, and the Type: Catenary Lighting Column* attribute.

(iii) The identity codes of the Catenary Lighting columns should be recorded under the Post asset type: *Identity Code* field.

(iv) *Column Type: None* should be used when Catenary Lighting is suspended from a building or another structure.

(v) For more information on Date Last Cycl Maint please refer to the 'Cyclic Asset Update by Service' document. When cyclic works have been carried out on a CL both the CL, and its related LP & PS assets should be amended.

(vi) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

14.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

14.2 Exceptions to the End Date and Modification Rules

Attribute Updated

The number of bulbs and columns should be updated to reflect any changes as a result of shortening / extending.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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15 CAMERA (CM)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
11	DQ Team Review		15/05/19	

15.1 Camera (CM)

An item including its support post or structure, associated Communications Cabinets should be recorded as separate items.

15.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

15.1.2 Rules

(i) If the identity code is not present or unreadable, an asterisk (*) should be entered.

(ii) Sensors attached to Traffic Signals, e.g. those used for sensing the height of vehicles, should **not** be recorded under this asset type.

(iii) Camera heads are **not** considered separate assets. I.e. Multiple Camera heads at one location are considered **one** asset.

(iv) If a CCTV camera has been mounted on a mast that has been identified as a structure (normally 10-25 m in height and shall be specified by a TfL Engineer) then a post of Type – 'CCTV Camera Mast' will need collecting.

15.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

15.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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16 CENTRAL RESERVE (CR)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
8.2	Update	Huw Harries	14/01/11	Amended maintenance rule on date last cut

16.1 Central Reserve (CR)

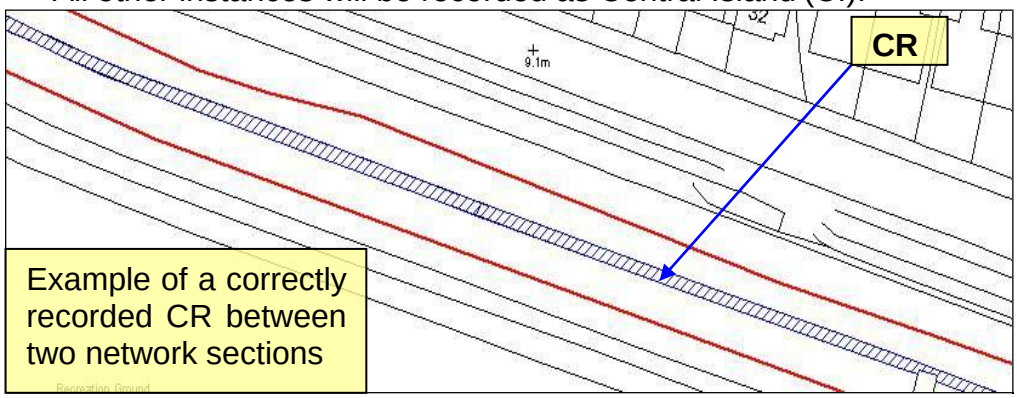
An area that separates the carriageway of a dual carriageway road that has been split into two network sections.

16.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

16.1.2 Rules

(i) A Central Reserve should only be recorded when it separates a dual carriageway which is represented by two parallel network sections. All other instances will be recorded as Central Island (CI).



(ii) Hatched Road Markings associated with Central Reserves are a separate inventory item. Record these under the LH asset type.

(iii) Central Reserves although continuous should break when they do so in reality. A Cross-Over (XO) should only be used to represent the location of a vehicular (NOT cycle) crossing.

(iv) Grass Cutting Regime will be used to identify how often the grassed are a on this asset needs to be mown.

(v) Any Central Reserve with a Surface Type **other than Grass** should have a *Grass Cutting Regime: None.*

(vi) For more information on Date Last Cut please refer to the 'Cyclic Asset Update by Service' document.

16.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

16.2 Exceptions to the End Date and Modification Rules

Maintenance / Service Instruction work

If grass on an island is re-seeded or cut the Attribute ‘Date Last Cut’ would need populating with the date the order was complete.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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17 CYCLE TRACK/LANE (CT)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Created		15/03/05	
1	Quality Review	John Cook	20/04/07	
1.1	Update	Huw Harries	19/09/05	Changed rule iv
1.2	Update	Huw Harries	31/05/06	Changed rule v, vii, viii
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
3	Update	Huw Harries	21/04/10	Added blue colour for cycle hire
4	Update	Huw Harries	25/06/10	Added rule X re: CSH
5	Update	Sacha Attard	15/02/11	Added rule (xi)

17.1 Cycle Track/Lane (CT)

A part of the Highway, allocated specifically for the use of pedal cycles.

17.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

17.1.2 Rules

(i) *CT Type:* ***Lane*** is used for items that exist on the carriageway that are marked out by white line road markings. Any cycle facility that exists on the Footway, or that is separated from the carriageway by an upstanding kerb, should be recorded as *Type:* ***Track*****.**

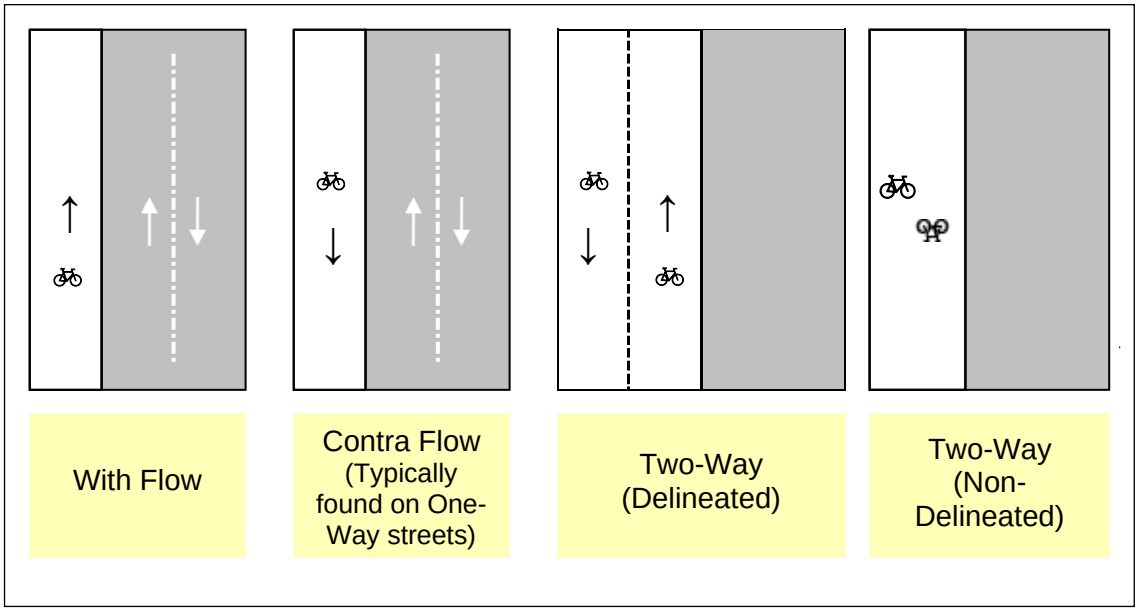
(ii) An **Advance Stop Reservoir** is the area found at junctions that is allocated for use by cyclists while awaiting traffic signals. They are clearly marked on the road surface. Any lead in to an Advance Stop Reservoir, marked on the carriageway, should be recorded under *Type:* ***Lane****.*
Note: Advanced Stop Reservoirs should **never** be split. They need to be recorded in their entirety (as one object) when they lie over two survey envelopes of any Adoption and they must be referenced to the section against which the **majority** of the asset lies. (This is so that counts can be carried out on them).

(iii) *Type:* ***Tactile Area*** is used to record areas of tactile paving associated with cycle facilities. These differ from pedestrian tactiles, in that the raised areas are in strips to warn pedestrians that they are approaching a cycle area.

(iv) The Class attribute only applies to *Type:* ***Lane*** *and* ***Advance Stop reservoir****.* If any of these two Types have solid edge line markings then class them as Mandatory; If any have dashed white lines collect them as Advisory. Lanes without any edge lines should have a *Class: None*. Any cycle facility other than Type: **Lane** and **Advance Stop reservoir** will always have a Class: *None*
Note: The edge line markings should be recorded under the Longitudinal Lines (LL) asset type.

(v) The Flow attribute only applies to *Type:* ***Track****.* All other CT Types will always have a *Flow: None.* The flow is indicated by the adjacent lane of traffic. (i.e. white arrows in the diagram below)
Also, have a look at the Asset Management System Asset Photos

document to see how the different flows can be recognised on site:



(vi) Colour: None should be used **unless** the underlying surface is dressed or has coloured aggregate. (I.e. the Colour: *Black/Dark Grey* refers to a surface dressing).

(vii) For CT Type: *Advance Stop Reservoir* the 'Colour' attribute should be used to collect the **predominant** colour of the asset.

(viii) The CT length should be recorded along the centreline of the asset. This applies to *Type: Track, Lane, Tactile Area and Adv Stop Reservoir*. The length recorded for the *Adv Stop Reservoir* should represent the distance from stop line to stop line.

(ix) Wherever a Cycle Track occurs along the pavement, a footway polygon of at least the same extent needs collecting as well. Similarly, wherever a Cycle Lane or Stop Reservoir appears on the road, a carriageway polygon needs collecting. This will then allow TfL to later derive the surface type of the Cycle Lane/Track. (That is why all CT polygons are non-exclusive - except those of Tactile Area – see the 'Exclusivity of Polygon Assets' topic in section 2.7.3 and the Footway (FW) section 28.1.3 for more clarification).

N.B. When a cycle lane is applied to an **existing** carriageway surface, and there is no surface differentiation between the lane and the rest of the carriageway (i.e. only markings are installed) we would **only** expect the road markings &CT to be picked up – there is **No** need to collect a separate piece of CW for the lane.

(x) Use 'Class:' 'CSH ... Mandatory, advisory, none' to differentiate the Cycle Superhighway from normal cycle routes.

(xi) Re-surfacing of a carriageway or footway works does NOT require an asset update for **CT - Cycle Track** EXCEPT when the Cycle Track has been modified i.e. Type, Class, Flow, Colour and length or even the shape has been changed.

17.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

17.2 Exceptions to the End Date and Modification Rules

. (See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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18 CULVERT (CV)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements

18.1 Culvert (CV)

An enclosed channel or large pipe (between two and three metres inclusive in diameter) for conveying water below ground, usually under a road.

18.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

18.1.2 Rules

(i) Culverts parallel to the carriageway shall be recorded at their mid-point (a note of their length and diameter should be taken).

(ii) If the identity code is not present or unreadable an asterisk (*) should be entered.

(iii) For more information on Date Last Cleaned, Date Last Inspected and Date Last Cycl Maint please refer to the 'Cyclic Asset Update by Service' document.

(vii) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

18.1.3 GIS representation

This asset must be represented by a **LINE** feature.
Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

18.2 Exceptions to the End Date and Modification Rules

Asset End-Date Driver:

A Culvert is end-dated when the diameter or material of the **entire** asset is changed.
(See sections 2.8 and 2.9 for details of the End Date and Modification rules)

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19 CARRIAGEWAY (CW)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
2	Quality Review	Huw Harries	23/04/09	
2	Update	Huw Harries	01/10/09	New construction layer attributes added
10	Update	Huw Harries	20/10/15	Added percentage threshold update rule
11	Quality Review	Shayna Meyers	15/05/19	Removed outdated web link

19.1 Carriageway

The part of the road constructed for use by vehicular traffic. N.B. not all of the attributes require populating – this is dependent on the Construction Layer chosen.

19.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

19.1.2 Rules

(i) Colour: "Not Applicable" should be used where the surface has not been colour treated.
(ii) The surface dressing construction layer should never have a Colour value of 'None'.
(iii) *N.B. Not all construction layers share the same attribute information – and because our system does not allow for 'mutually exclusive' attribute selection, you will have to be careful which attributes you are populating based on the construction layer you have chosen. Please read Appendix A to see which attributes apply to which Construction Layer.* Where attributes do not apply to the construction layer you have selected, please leave that column blank/null.

(iv) Wherever a Cycle Lane or Advance Stop Reservoir appears on the road, a carriageway polygon of at least the same extent needs collecting. This will then allow TfL to later derive the surface type of the Cycle Lane/Track. (That is why all CT polygons are non-exclusive - except those of Tactile Area – see the 'Exclusivity of Polygon Assets' topic in section 2.7.3 and the Footway (FW) section 28.1.3 for more clarification).

N.B. When a cycle lane is applied to an **existing** carriageway surface, and there is no surface differentiation between the lane and the rest of the carriageway (i.e. only markings are installed) we would **only** expect the road markings &CT to be picked up – there is **No** need to collect a separate piece of CW for the lane.

19.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

19.2 Exceptions to the End Date and Modification Rules

The ***complete area*** of works should be recorded where one of the following applies:

- Where *at least* a full lane width has been affected for *at least* 20m in length OR
- For smaller pieces of carriageway asset than the above - Where the *whole* asset (or *50% or more* of the asset) has been affected

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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20 CYCLE CROSSING (CX)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
1.1	Update	Huw Harries	19/09/05	Added rules v and vi
2	Update	Huw Harries	01/04/07	Changes to reflect new contract

20.1 Cycle Crossing

A Cycle Crossing is defined as a part of the highway specifically for the use of pedal cycles to cross the carriageway.

20.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

20.1.2 Rules

(i) A Cycle Crossing is defined as a separate item when it does not form part of a toucan crossing. They have a dedicated area for crossing separate to that for the pedestrian. Any associated signal facilities should be recorded under the Traffic Signals (TS) asset type.

(ii) Any Cycle Crossing that **shares** a Traffic Signal with a Pedestrian Crossing should be recorded as a Toucan.

(iii) Cycle Crossings should be recorded in their entirety (as one object) when they lie over two survey envelopes of any Adoption and they must be referenced to the section against which the **majority** of the asset lies. (This is so that counts can be carried out on them).

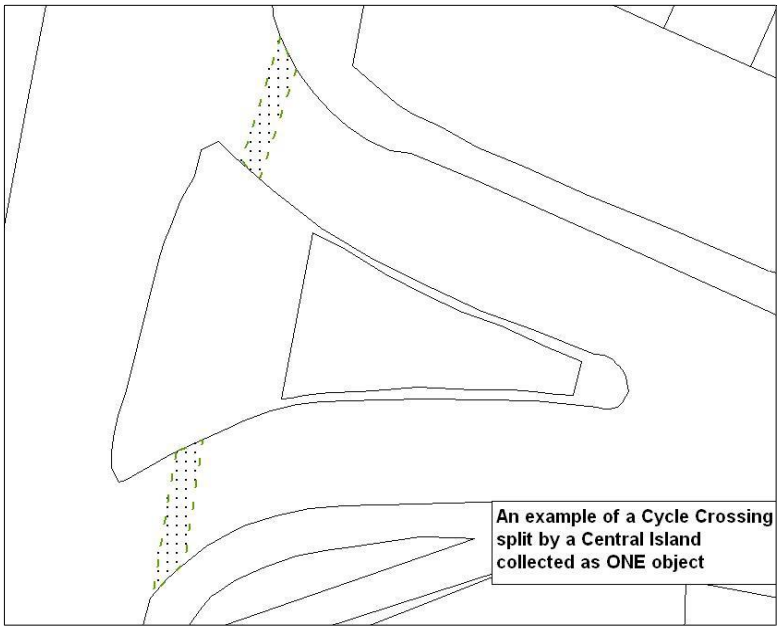
(iv) Any changes to the surface type and colour, at cycle crossings, should be collected against the upper most carriageway layer and any associated Road Markings or Studs should be recorded under the Transverse and Special Road marking (RM) asset type.

(v) Where cycle facilities cross the road but are not demarcated by road markings or signals, a CX should **NOT** be collected – UNLESS there are traffic controls on the road that indicate that cyclists have authority over cars in that area. E.g. A raised section of road and / or road markings to indicating cars should give way to cyclists crossing.

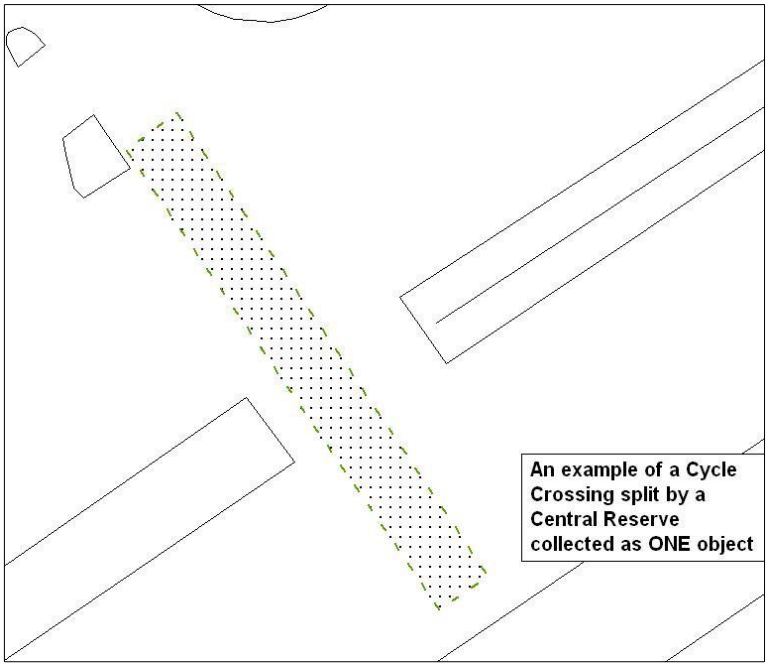
(vi) 'Elephant's footprint' markings WBM 294 can be used to delineate a cycleway when it crosses a carriageway, under the protection of traffic signals where the route may not otherwise be clear to cyclists.

(vii) Cycle crossings on roads that are split by a central island should be recorded as ONE object/record. This also applies to staggered crossings. However, when a cycle crossing is split by a Central Island that separates two **differently named** roads, e.g. City Rd

and Goswell Rd on the A501 in Islington - TWO objects/records should be recorded. Please see the examples below.



CX's through a Central Reserve should also be recorded as ONE object. On dual carriageways care needs to be taken that the crossing is not collected twice by different surveyors.



20.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

20.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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21 DITCH (DI)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements

21.1 Ditch (DI)

A trench adjacent to the carriageway for drainage, generally running parallel to the carriageway.

21.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

21.1.2 Rules

(i) For more information on Date Last Cleaned please refer to the 'Cyclic Asset Update by Service' document.

21.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

21.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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22 DROPPED KERB (DK)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
8.3	Update	Huw Harries	06/03/12	Added maintenance note (i) 50% rule
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract arrangements

22.1 Dropped Kerb (DK)

A polygon feature to identify where kerbs have been lowered to carriageway level; where the carriageway has been raised to footway level or where there is an existence of tactile paving to assist disabled persons from carriageways.

22.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

22.1.2 Rules

(i) Dropped Kerbs should ONLY be used to record areas that are used to assist pedestrians. They should **not** be used to record vehicle Cross Overs (XO).

(ii) All drop kerbs with *Type – 'Without Tactile'* should always have the Tactile value – *'None'.* In this case the polygon is non-exclusive of the footway.

(iii) When the Type value is – *'With Tactile'* the polygon drawn should represent the full extent of the tactile paving.

(iv) The *Tactile* value*: York* should be used to record Tactile paving areas constructed with York stone*.*

(v) *Tactile: Studs* are to be used to collect areas where rivets or studs exist (and NOT tactile modular paving).

(vi) If a Central Island or Reserve has a surrounding kerb that is dropped to carriageway level (for pedestrian access) it should be recorded under this asset type. If the island or refuge has a tactile area but no surrounding kerb it should also be recorded under this item.

(vii) Polygons recorded as Tactile: *Studs* must be non-exclusive of the footway so that the end user can identify the surface the studs have been placed into.

(viii) If the inventory item collected is of *Type: With Tactile,* the Drop Kerb should cut the Footway beneath it. When the inventory item collected is of *Type: Without Tactile* **or** of *Tactile: Studs*, the Footway should **not** be cut. This allows the end user to ascertain the surface type of the asset.

(ix) A Drop Kerb that spans the Highway **and** Traffic Authority Boundaries must be recorded in its entirety and referenced to the section against which the **majority** of the asset lies.

22.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

22.2 Exceptions to the End Date and Modification Rules

Maintenance/Service Instruction work:

(i) When maintenance works affect 50% or more of the asset, end date it and add a new one. Use the Work order repair date to populate the install date column.

N.B. Do Not split the asset as counts are made of these.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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23 EMBANKMENT AND CUTTINGS (EC)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract arrangements

23.1 Embankment and Cuttings (EC)

An Embankment is an area where a carriageway has been raised above existing ground level usually using earth or rock construction. A Cutting is an area where the carriageway is below existing ground level within an excavation.

23.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

23.1.2 Rules

(i) To distinguish between an Embankment and a Cutting, the angle should be recorded as positive for an Embankment (e.g. 30) and negative for a Cutting (e.g. –30). The actual angle must be recorded to the nearest 15 degrees.

(ii) Minor occurrences, less than 3 metres in height, should be ignored.

(iii) Record side slopes between the slip road and main carriageway as part of and relative to the main carriageway.

(iv) A Central Reserve slope should be recorded as part of the nominated section except where it compromises two slopes, in which case each must be recorded with adjacent carriageway sections.

(v) The maintainable grassed area of an Embankment / Cutting should be recorded using the Verge (VG) asset type. The Grass Cutting Regime will be applied to the VG asset.

(vi) For more information on Date Last Cycl Maint please refer to the 'Cyclic Asset Update by Service' document.

(viii) No Edits should ever be made to the following attributes:.

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

23.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

23.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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24 FENCE AND BARRIER (FB)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
10	Update	Huw Harries	20/10/15	Added 50% modification rule

24.1 Fence and Barrier (FB)

A barrier, fence, or wall for screening noise, headlight glare or to prevent access.

24.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

24.1.2 Rules

(i) Only record Fences and Barriers that TfL are responsible for i.e. ignore private ones. If there is any doubt of their ownership, they should be collected.

(ii) Crash Barriers must be recorded under the Safety Fence (SF) asset type.

(iii) Barriers erected to obstruct cycles on footways or structures are recorded under the Fence and Barrier (FB) asset type.

24.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

24.2 Exceptions to the End Date and Modification Rules

An asset update is required when 50% or more of adjoining panelling has been replaced or the 'Type' attribute has changed (e.g. boundary to noise)

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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25 FILTER DRAIN (FD)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract arrangements
11	DQ Team Review		15/05/19	

25.1 Filter Drain (FD)

A filter drain is usually adjacent and running parallel to a carriageway, surrounded by granular material such as gravel, within which may be laid a porous or perforated pipe.

25.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

25.1.2 Rules

(i) Counterfort Drains must be recorded under the Counterfort Drain (CD) asset type.

(ii) For more information on Date Last Inspected please refer to the 'Cyclic Asset Update by Service' document.

25.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

25.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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26 FEEDER PILLAR (FP)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
9.3	Update	Huw Harries	15/01/15	Added rule Origin of Supply
11	DQ Team Review		15/05/19	

26.1 Feeder Pillar (FP)

Items providing electrical services for a variety of applications. These can include: lamp column stumps.

26.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

26.1.2 Rules

Origin of Supply for electrical assets:

For all TfL electrical assets the Origin of Supply attribute is there to record the associated **Asset ID** of any Post or Feeder Pillar which lies at the start of a circuit where a 'cut out' from the DNO network also exists, i.e. its DNO entry point.

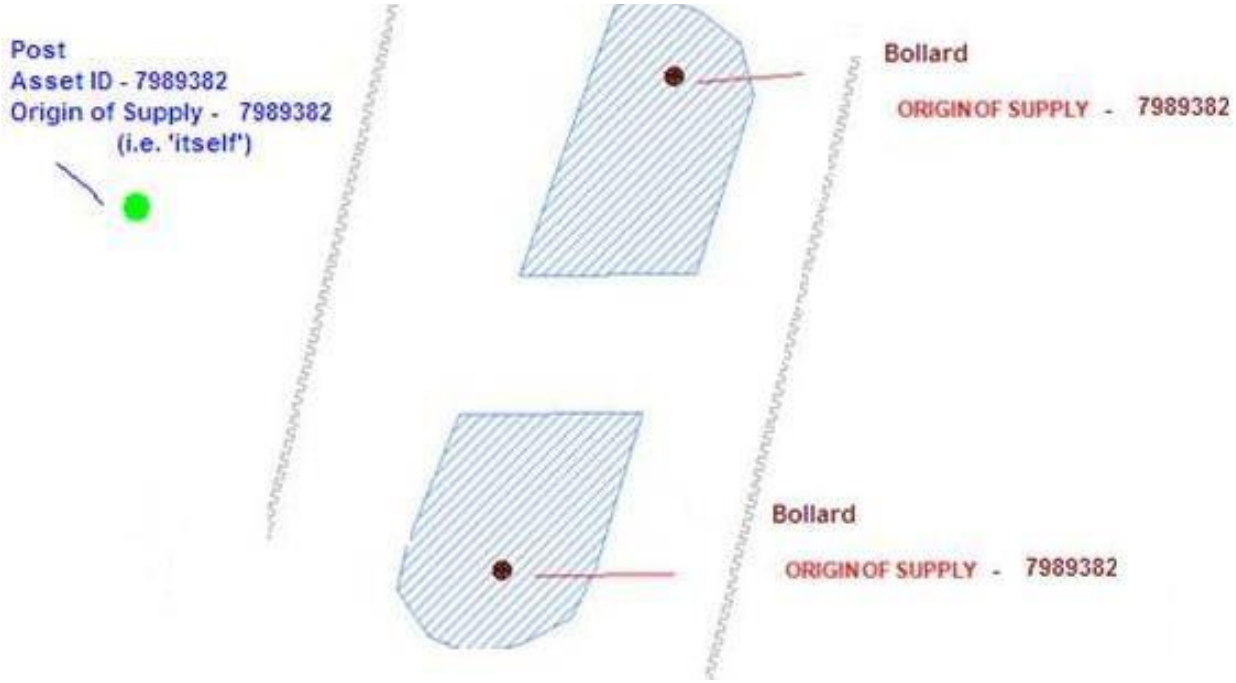
The attribute will inform the user where to completely isolate the circuit in its entirety from the DNO network so the electrical assets *along that circuit* can be tested or fixed. It should be noted that TFL are not allowed to work on the *actual DNO network.*

If the asset acting as the origin of supply is not a TfL asset or lies beyond the HA boundary it still needs collecting so engineers can identify its location.

The example below shows a Post (Lighting Column) as the origin for two safety bollards. Notice that the Post Asset ID also **matches** its 'Origin of Supply'. That is because the Post in this case is acting as its own origin of supply. We need to record this differentiation as not all posts act as such. The same rule applies to Feeder Pillars, some act as origins of supply and some merely link and extend private networks.

For *non-electrical* assets this attribute should be left empty.

The 'Supply Point if TfL Own' attribute is to be populated with an 'Asset ID' (rather than the asset Label number as it is currently) so that every electrical asset link with its *nearest supply point* can be captured in a more structured manner.
It will be worth getting those who install & rectify electrical items familiar with using these two attributes as soon as possible.



26.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

26.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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27 STREET FURNITURE (FS)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Quality Review	John Cook	01/04/07	
8	Update	Huw Harries	25/06/10	Added rule VIII RE: CSH
8	Update	Huw Harries	01/12/10	Type – Advertising Panel removed and stored under asset type Advertising Board
8.4	Update	Huw Harries	18/01/13	Type – Added 'semi-permanent memorial plaque' and 'Non-permanent memorial plaque (up to 12 months)'. See 29.1.2 viii.

27.1 Street Furniture (FS)

These items are installed by the highway authority or local authority and are erected for the benefit of pedestrians or for maintenance purposes.

27.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

27.1.2 Rules

(i) Street Furniture is usually located in footway and verge areas or on Central Islands and Reserves.

(ii) The item *3: Refuse Bin* refers to both fixed and free standing rubbish bins. Both should be recorded under this asset category. It is noted that the **freestanding** bins may move from time to time.

(iii) FS Type: *18: Mirror* should be used to record Subway Mirrors as well as road-side Mirrors. Subway mirrors should be recorded with an XSP of S. This allows them to be differentiated from street level mirrors.

(iv) FS Type: *20: Recycle Facility* should be used to record large containers that store recycling bottles, cans, paper, etc. It is noted that the **freestanding** facilities may move from time to time.

(v) FS Type: *99: Other* should be used on the occasions when an item of Street Furniture does not fit into any of the other categories available.

(vi) If the Ownership is unknown or unidentifiable an asterisk (*) should be entered.

(vii) Use 'CSH Cycle Stand' & 'CSH Trixi Mirror' to differentiate Cycle Super Highway objects from normal stands & mirrors.

(viii) To the existing 'Memorial plaque' (which is a permanently fixed asset) two more related items are added: 'Semi-permanent memorial plaque' and 'Non-permanent memorial plaque (up to 12 months)'. Some signs are installed semi permanently- in the case of tree or footway installs- and some signs need to be removed after 12 months. All of these assets are end-dated only once they are removed from site.

27.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

27.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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28 FOOTWAY (FW)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
1.1	Update	Huw Harries	31/05/06	Changed iv
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
	Quality Review	John Cook	01/04/07	
10	Update	Huw Harries	20/10/15	Added percentage threshold update rule
11	Quality Review	Shayna Meyers	15/05/19	Added rules from Asset Photo Doc & 50% clarification
11	DQ Team Review		15/05/19	

28.1 Footway (FW)

A part of the highway reserved for pedestrians and in some cases cyclists.

28.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

28.1.2 Rules

(i) Wherever a Cycle Track appears on the pavement, a footway polygon of the same extent needs collecting. This will then allow TfL to later derive the surface type of the Cycle Lane/Track. (That is why all CT polygons are non-exclusive - except those of Tactile Area – see the 'Exclusivity of Polygon Assets' topic in section 2.7.3 and the Verge topic in the Asset Management System Asset Photos document for more clarification).

(ii) When the footway surface changes due to a vehicular crossing, the change of surface should be recorded under the FW asset and a Crossover (XO) must be recorded at that location.

(iii) *Shared Use Footway: Yes* - is to indicate when a Footway is used for **both** Cyclists and Pedestrians – it will be clearly marked with a sign using the TSRGD diagram number 956 and sometimes a person / cycle symbol on the ground.

(iv) Any part of the footway that has been demarcated into a separate cycle zone, usually accompanied by a sign with the diagram number 957, should be recorded as *Shared Use: No.* The sign with TSRGD number 966 'cyclists dismount' is also an indication of when there is a change in the Shared Use of a footway - - See the CT topic in the Photo Document for clarification.

(v) Modular paving often found on the TLRN should be recorded as *Surface: Concrete Flags* and **not** *Surface: Block Paving.*

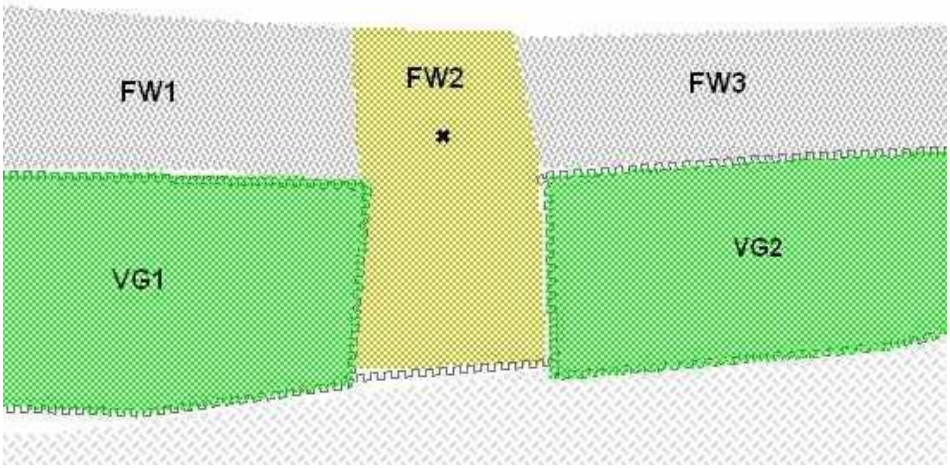
(vi) If the surface type changes near the kerb line you may need to record the area as a Verge (VG). One way of identifying Verges is by their construction. They are often built of material that is more durable than the Footway so that when a vehicle mounts the kerb less damage is caused. There also tends to be more items of Street Furniture installed on verges than on the footway.

28.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

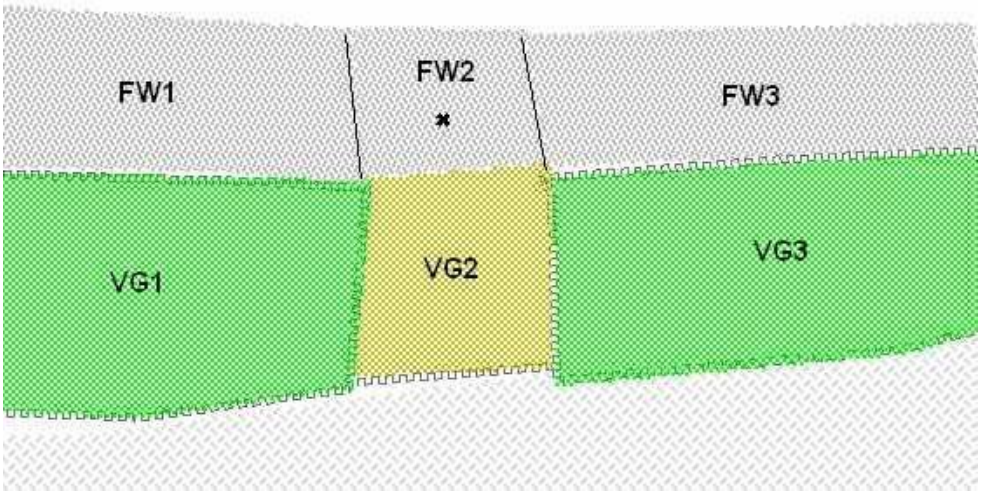
Examples of Footway (FW) and Verge (VG) surface change at Crossovers (XO)

If there is a surface change in the Footway that is of the SAME material as the Verge, then you ONLY need to record ONE object for that area. In the example below, 'FW1' and 'FW3' are concrete flags; 'VG1' and 'VG2' are grass and the polygon of Bitumen Macadam in yellow is recorded as a SINGLE polygon called FW2. [The Crossover is represented by the x]



If you have a change in surface type, in both the Footway **AND** the Verge, then record the change in **BOTH** the footway **AND** the verge. In the example below, 'FW1' and 'FW3' are concrete flags; 'VG1' and 'VG3' are grass; **BUT** 'FW2' is Bitumen Macadam and 'VG2' is Block Paved. [The Crossover is

represented by the x]



Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

28.2 Exceptions to the End Date and Modification Rules

The ***complete area*** of works should be recorded where the following applies:

- Where *at least* 5x5 metres (i.e. 25 square metres) of surface has been affected.
- For flag paved areas this would be 5x5 metres of *adjoining* flags
- For smaller pieces of footway asset than the above (less than 5x5) – Then update works where the *whole* asset (or *50% or more* of the asset) has been affected.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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29 GRIP (GP)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
1	Quality Review	John Cook	01/04/07	
1	Update	Huw Harries	01/04/07	Changes to reflect new contract

29.1 Grip (GP)

A shallow trench across the verge, perpendicular to the carriageway, it is used to lead water to or from the carriageway. This feature is only found in rural areas.

29.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

29.1.2 Rules

- Both hand-cut Grips (unlined) and pre-formed (lined) types should be recorded.
- Drainage features with metal grating which run transversely across the Footway (often outside shops) should be recorded under the Channel (CH) asset type.
- For more information on Date Last Inspected please refer to the 'Cyclic Asset Update by Service' document.

29.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

29.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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30 GULLY (GY)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
2	Quality Review	John Cook	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	14/01/11	Added maintenance rules
8.2	Update	Huw Harries	19/07/11	Added rule relating to Cycle Safe covers
8.4	Update	Huw Harries	22/01/13	Rules on drainage network collection
9	Quality Review	Huw Harries	22/01/13	
9.2	Update	Huw Harries	20/08/13	Gully Dimensions rule
9.3	Update	Huw Harries	10/11/14	Drainage Investigation rules
11	Update	Shayna Meyers	15/05/19	Removed old web link

30.1 Gully

A chamber at the side of the road connected to a drainage system to receive surface water and to trap debris. The chamber is usually surmounted by a grating.

30.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

30.1.2 Rules

(i) A Gully is a chamber which requires emptying periodically and is usually surmounted by a grating. Any grating and other ironwork which is not associated with a Gully (i.e. which will not require being emptied) should NOT be recorded.

(ii) Footway Gullies are included in this inventory item and must be recorded.

(iii) Subway Gullies should be recorded under this asset type with an XSP of S. This allows subway gullies to be differentiated from street level gullies.

(iv) Identifying Cycle Safe Cover

- Gullies must be flush with adjacent surfaces
- Grates slots should be at right angles to the direction of travel
- Gully covers do not have any gaps between the frame and cover wider than 15mm in the direction of traffic
- Take photo of asset if surveyor cannot identify if the cover is cycle safe.

(v) Every Gully should be associated to its surrounding drainage network

(vi) Use Gully: Type = Beanie to record any chambers that lie along or at the ends of a Beanie lateral drain.

(vii) Dimensions - the largest should be listed first as per the industry.

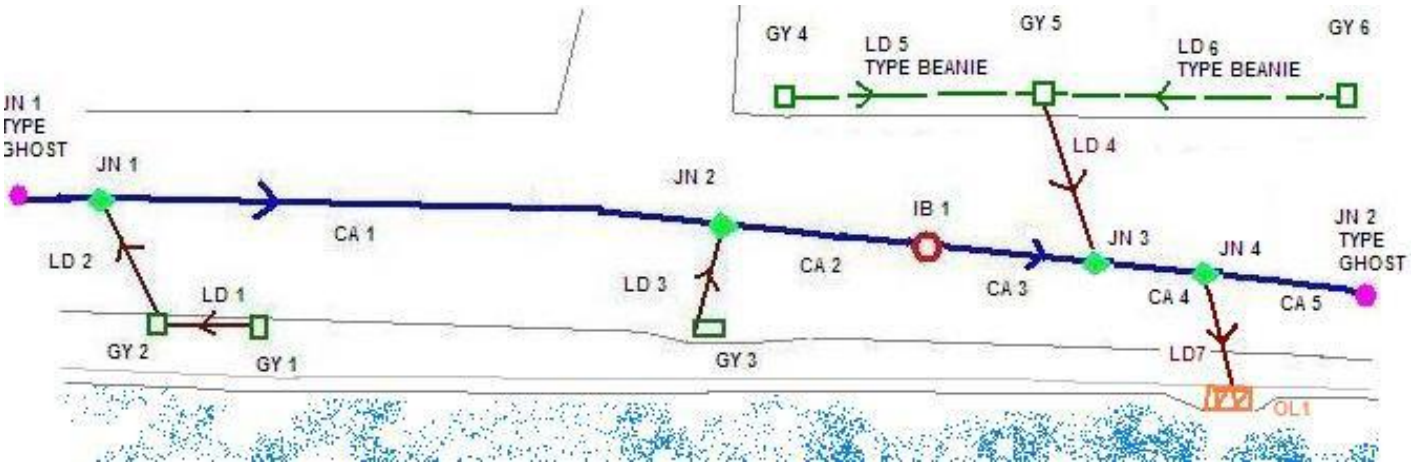
30.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Digitising the drainage network

Each asset object should be referenced so they fit into a logical drainage network using the Asset Management System asset id. Piped assets use the start point ID and end point ID attributes to record this drainage connectivity. These columns store the ACTUAL asset id's of the assets that connect to them: *Gullies, Junctions, Outfalls and Inspection Chambers*. So these asset types need uploading to the Asset Management System **before** their associated piped asset in order for their asset id's to be derived.

The example below depicts how a typical drainage network will look. The tables below the diagram define the start and end point attribution for the diagram. (The asset id's used are just hypothetical ones).



Lateral Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD1	GY1	GY2
LD2	GY2	JN1
LD3	GY3	JN2
LD4	GY5	JN3

Lateral Drain (Beanie Block)		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD5	GY4	GY5
LD6	GY6	GY5
LD7	JN4	OL1

Carrier Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
CA1	JN1	JN2
CA2	JN2	IB1
CA3	IB1	JN3
CA4	JN3	JN4
CA5	JN4	JN2-TYPE GHOST

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

30.2 Exceptions to the End Date and Modification Rules

Cleaning / jetting works:

The attribute 'Date Last Cleaned' must be updated after any: Cyclic, Reactive or Capital works.

Drainage Investigations and Renewal works:

After Drainage Investigations:

The Wincan video and Inspection report documents should be associated against the individual Gully or Inspection chamber referenced in the report using the 'DCTV' doc type. TfL will **not** accept a 'bulk' video or report of all assets associated to an individual asset.

You can split up a pdf document using Adobe Acrobat. (Adobe Reader will not do this). This can also be done for free if you download Chrome browser as well - use this link: http://www.pcadvisor.co.uk/how-to/software/3463224/split-pdf-for-free/

After Renewal, Maintenance or Service Instruction work:

(a) If the cover type attribute has changed from one type to another we expect an update, i.e. if a defect forced a cover 'replace' from 'pedestrian' or 'null' to 'cycle safe' we would need a Modification (and WO ID).

(b) If the chamber pot is replaced - end date the old one and add a new one. Use the work order repair date to populate the Install Date column.

(c) If the chamber pot is removed or deliberately filled in: end date the asset

(d) If the work on the gully does not affect any attribution, e.g. un-jammed, there is No need for a WO ID in this scenario. However, if you can tell from the defect before / after photo its cover type, please data cleanse the asset accordingly where it is currently null or wrong.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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31 HEDGE (HG)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
2	Quality Review	John Cook	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	14/01/11	Added maintenance rules
8.3	Update	Huw Harries	04/08/11	Updated maintenance rules

31.1 Hedge (HG)

A row of closely planted shrubs forming a fence or boundary.

31.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

31.1.2 Rules

(i) Record hedges that have been laid to provide stock proof barriers and whose responsibility lies with TfL. If there is any doubt of their ownership they should be collected.

(ii) A Hedge should be broken when there is a break on site so that the line of the hedge held on the Asset Management System reflects that in reality.

31.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

31.2 Exceptions to the End Date and Modification Rules

Maintenance/Service Instruction work:

Regarding updates resulting from maintenance/service instruction/reactive maintenance you are required to update the following fields:

(i) Date of Last Hedge-laying
(ii) Date Last Maintained

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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32 INSPECTION CHAMBER (IB)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
8.3	Update	Huw Harries	07/03/12	Inserted into survey rules
9.2	Update	Huw Harries	20/08/13	Chamber dimension rule
9.3	Update	Huw Harries	10/11/14	Drainage Investigation rules
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

32.1 Inspection Chamber (IB)

Inspection Chambers are generally large chambers, typically a minimum of 450mm, which provide access for maintenance equipment and are often up to 1000mm deep. This asset type includes: Manholes, Catch-pits and Soak-aways.

32.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

32.1.2 Rules

(i) A Manhole is a covered opening in a street which provides access for cleaning and repairing of a sewer beneath, or for repairing a conduit for electric underground piping or electric cables.

(ii) A Catch-pit is a chamber with an inlet pipe and an outlet pipe set at a level above the floor of the pit. Any heavy sediment carried by the system settles out whilst in the catchpit, from where it can be periodically pumped out or removed.

(iii) A Soakaway is a localised drainage pit filled with granular material. Its purpose is to allow surface water to permeate into the surrounding subsoil.

(iv) Only Ironwork greater than 400mm wide on any side should be collected

(v) Every Inspection chamber should be associated to its surrounding drainage network

(vi) Dimensions – the largest should be listed first as per the industry.

32.1.3 GIS representation

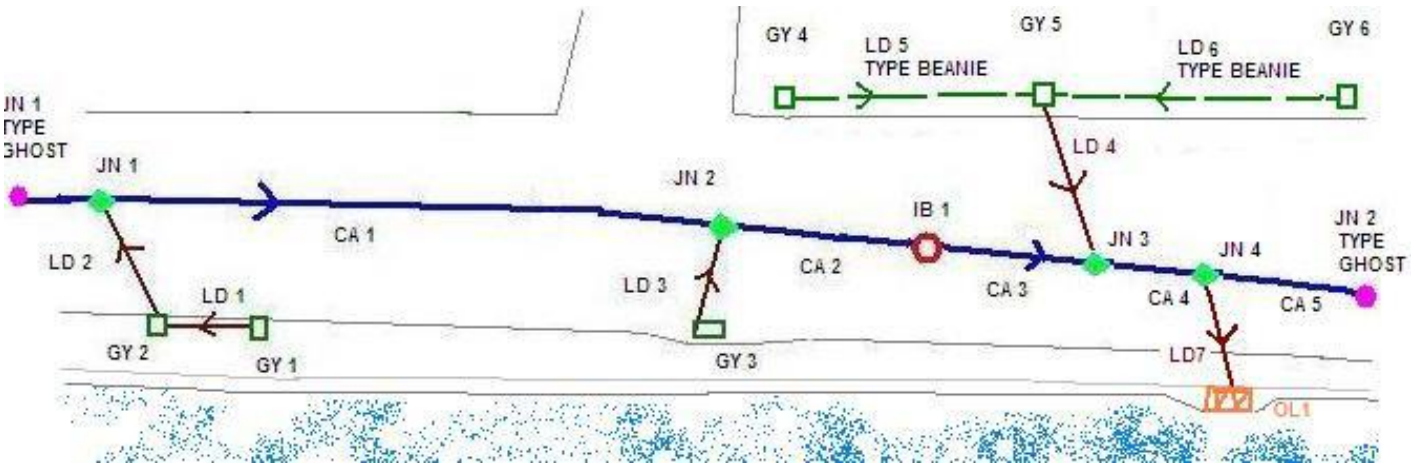
This asset must be represented by a **POINT** feature.

Digitising the drainage network

Each asset object should be referenced so they fit into a logical drainage network using the Asset Management System asset id. Piped assets use the start point ID and end point ID attributes to record this drainage connectivity. These columns store the ACTUAL asset id's of the assets that connect to them: *Gullies, Junctions, Outfalls and Inspection Chambers*. So these asset types need uploading to the Asset Management System **before** their

associated piped asset in order for their asset id's to be derived.

The example below depicts how a typical drainage network will look. The tables below the diagram define the start and end point attribution for the diagram. (The asset id's used are just hypothetical ones).



Lateral Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD1	GY1	GY2
LD2	GY2	JN1
LD3	GY3	JN2
LD4	GY5	JN3

Lateral Drain (Beanie Block)		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD5	GY4	GY5
LD6	GY6	GY5
LD7	JN4	OL1

Carrier Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
CA1	JN1	JN2
CA2	JN2	IB1
CA3	IB1	JN3
CA4	JN3	JN4
CA5	JN4	JN2-TYPE GHOST

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

32.2 Exceptions to the End Date and Modification Rules

Cleaning / jetting works:

The attribute 'Date Last Cleaned' must be updated after any: Cyclic, Reactive or Capital works.

Drainage Investigations and Renewal works:

After Drainage Investigations:

The Wincan video and Inspection report documents should be associated against the individual Gully or Inspection chamber referenced in the report using the 'DCTV' doc type. TfL will **not** accept a 'bulk' video or report of all assets associated to an individual asset.

You can split up a pdf document using Adobe Acrobat. (Adobe Reader will not do this). This can also be done for free if you download Chrome browser as well - use this link: http://www.pcadvisor.co.uk/how-to/software/3463224/split-pdf-for-free/

After Renewal, Maintenance or Service Instruction work:

(a) If a cover is replaced – Update the 'cover material' (you might also have to update the 'cover shape' & dimension columns)

(b) If a new manhole is installed – Add a new asset

(c) If the cover edging or brickwork is repaired – no asset update is currently required to the existing asset.

(d) If the chamber is surfaced over (e.g. with bitumen) - no asset update is currently required to the existing asset (It still remains part of the drainage network). In the future we may use an attribute to record covered over chambers.

If a Manhole is *identified* as a result of defect revenue maintenance then the following asset attribution should be recorded (this applies for both TfL and non-TfL Manholes):

Borough Name
Installation Date
Ownership
Cover Size
Cover Material
Last Service Inspection
Work Order ID

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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33 INTERCEPTOR (NI)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
2	Quality Review	John Cook	01/04/07	

33.1 Interceptor (IN)

A structure similar to a Catchpit at the point where surface water enters a drainage system, designed to prevent unwanted material from entering the system.

33.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

33.1.2 Rules

(i) It may not always be possible to identify an Interceptor without prior knowledge.

(ii) The presence of an Interceptor should be verified before this inventory item is recorded.

(iii) For more information on Date Last Cleaned and Date Last Inspected please refer to the 'Cyclic Asset Update by Service' document.

(iv) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

33.2 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

33.3 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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34 JUNCTION (JN)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
8.4	Update	Huw Harries	22/01/13	New junction
9	Quality Review	Huw Harries	22/01/13	
9.3	Update	Huw Harries	10/11/14	Drainage Investigation rules
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

34.1 Junction (JN)

A Junction is a point where two or more drains meet. The asset type is also used to represent the edge of a survey.

34.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

34.1.2 Rules

(i) Every Junction should be associated to its surrounding drainage network
(ii) Junction: Type= 'Junction' should be used to represent where two or more drains meet.
(iii) Junction: Type= 'Ghost' should be used to represent the survey limits, e.g. to mark:

(a) The point where a pipe becomes blocked
(b) The 'edge extent' of the investigation area.

(iv) When a pipe associated to a ghost asset is totally replaced the ghost must be end dated. When the pipe is only *partially replaced* reference the new section beyond the blockage against the ghost asset.
(v) When the area next to an existing survey is investigated any ghost assets that were used to mark the edge of the previous survey must be end dated and replaced with: a junction, gully or inspection chamber. Any associated piping would also need their geometry and 'start / end point ID's' reviewing.

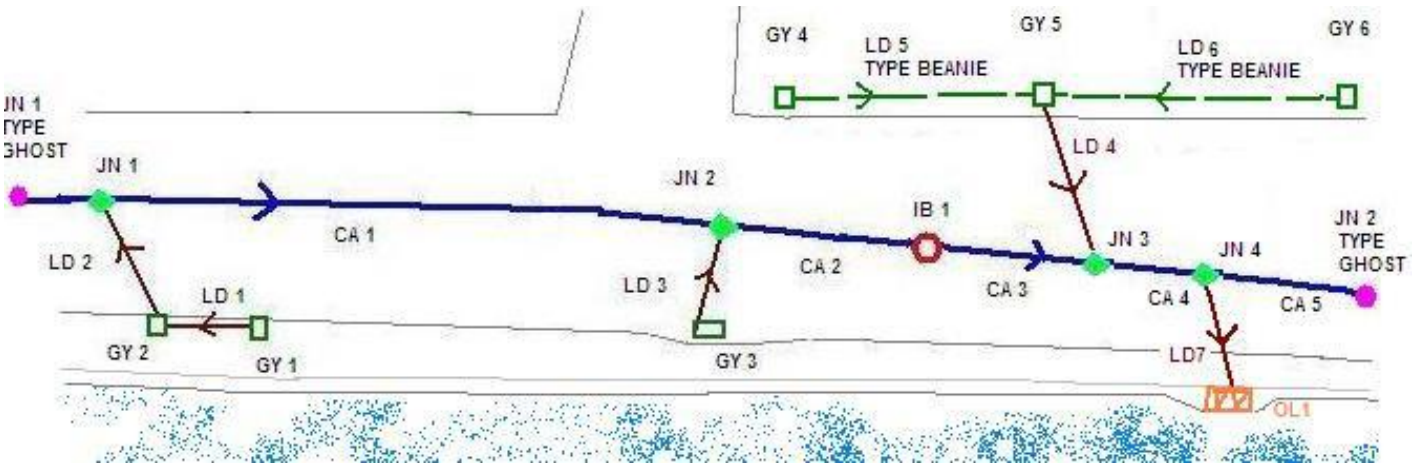
34.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Digitising the drainage network

Each asset object should be referenced so they fit into a logical drainage network using the Asset Management System asset id. Piped assets use the start point ID and end point ID attributes to record this drainage connectivity. These columns store the ACTUAL asset id's of the assets that connect to them: *Gullies, Junctions, Outfalls and Inspection Chambers*. So these asset types need uploading to the Asset Management System **before** their associated piped asset in order for their asset id's to be derived.

The example below depicts how a typical drainage network will look. The tables below the diagram define the start and end point attribution for the diagram. (The asset id's used are just hypothetical ones).



Lateral Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD1	GY1	GY2
LD2	GY2	JN1
LD3	GY3	JN2
LD4	GY5	JN3

Lateral Drain (Beanie Block)		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD5	GY4	GY5
LD6	GY6	GY5
LD7	JN4	OL1

Carrier Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
CA1	JN1	JN2
CA2	JN2	IB1
CA3	IB1	JN3
CA4	JN3	JN4
CA5	JN4	JN2-TYPE GHOST

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

34.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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35 KERB (KB)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
2	Quality Review	John Cook	01/04/07	
8.4	Update	Huw Harries	22/01/13	Combined kerb & drainage to now be collected under Lateral Drains
10	Update	Huw Harries	20/10/15	Added percentage threshold update rule

35.1 Kerb (KB)

A border, usually upstanding of natural or man-made material at the edge of a Carriageway, Lay-By or Hard Shoulder.

35.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

35.1.2 Rules

(i) A **combined Kerb and drainage** item (often called Beany Block) should be recorded under the Lateral Drain asset type, as Type: Beanie.

(ii) The kerb line should **NOT** break when a Dropped Kerb is recorded - it should be continuous.

(iii) Upstanding metal boarders that sometimes surround small Central Islands should be recorded under this asset type with the *Material: Other.*

(iv) When double or triple kerb lines are found on site an additional kerb line should be recorded to represent this.

35.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

35.2 Exceptions to the End Date and Modification Rules

An asset update is required when 50% or more of the asset has been replaced or the 'Type' attribute has changed (e.g. normal to bus stop special)

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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36 LATERAL DRAIN (LD)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
8.4	Update	Huw Harries	22/01/13	New lateral drain
9	Quality Review	Huw Harries	22/01/13	
9.3	Update	Huw Harries	20/12/14	Defect and treatment collection rules

36.1 Lateral Drain (LD)

A pipe that exits a gully, these drains can join other drains (Gully or Outfall) and connect into a common carrier drain.

36.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

36.1.2 Rules

(i) Piped assets must be drawn to match the direction of drainage flow.
(ii) Piped assets must split at Junctions, gullies and Inspection Chambers
(iii) Do **not** split piped assets at Network/Envelope/Borough boundaries as the drainage network model needs to be preserved. When associating piped assets to a network section choose the majority section.
(iv) Every piped asset should be associated to its surrounding drainage network
(v) Ghost nodes used to represent the survey limits should be created under the **Junction** asset type, e.g. to mark:
(a) The point where a pipe becomes blocked
(b) The 'edge extent' of the investigation area.

(vi) The Survey reference attribute must be populated with the unique identifier of the geographic objects from the original survey. (this is to provide a link from the Asset Management System back to the Inspection Reports and original geographic data)
(vii) Use Lateral Drain: Type= 'Beanie' to record the extent of a beanie block asset. Use Lateral Drain: Type= 'Lateral' to record outfalls *from* beanie blocks or Gullies.

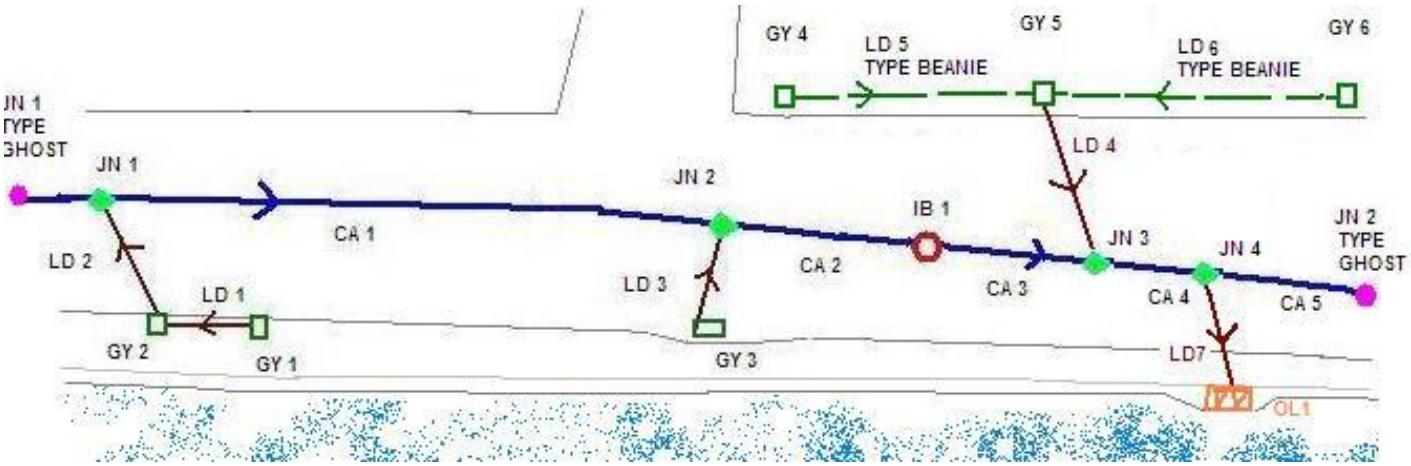
36.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Digitising the drainage network

Each asset object should be referenced so they fit into a logical drainage network using the Asset Management System asset id. Piped assets use the start point ID and end point ID attributes to record this drainage connectivity. These columns store the ACTUAL asset id's of the assets that connect to them: *Gullies, Junctions, Outfalls and Inspection Chambers*. So these asset types need uploading to the Asset Management System **before** their associated piped asset in order for their asset id's to be derived.

The example below depicts how a typical drainage network will look. The tables below the diagram define the start and end point attribution for the diagram. (The asset id's used are just hypothetical ones).



Lateral Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD1	GY1	GY2
LD2	GY2	JN1
LD3	GY3	JN2
LD4	GY5	JN3

Lateral Drain (Beanie Block)		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD5	GY4	GY5
LD6	GY6	GY5
LD7	JN4	OL1

Carrier Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
CA1	JN1	JN2
CA2	JN2	IB1
CA3	IB1	JN3
CA4	JN3	JN4
CA5	JN4	JN2-TYPE GHOST

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

36.2 Exceptions to the End Date and Modification Rules

Cleaning / jetting works:

The attribute 'Date Last Cleaned' must be updated after any: Cyclic, Reactive or Capital works.

Drainage Investigations and Renewal works:

After Drainage Investigations:

Piped assets identified with **Structural** damage (from the Inspection reports) should have their attribution: 'Structural count of Defects' and 'Most severe structural grade' updated accordingly. (To identify which piped asset the WinCan report relates to use the gully or Inspection chamber unique id listed in the top right corner of the Wincan report). *Only* Structural defects should be counted. If the amount of structural defects is zero you must still enter '1' into the 'Most severe structural grade' column. That is because the minimum grade a pipe can receive is '1', i.e. it's in the best possible condition. Other than this, score the structural count of defects and most severe grade as you see them. A pipe can have several structural defects, e.g. if you see a pipe with Grades of:

Constr (1)

Struct (3)

Struct (2)

Then the 'Structural Count of Defects' will equal '2' and the 'Most severe structural defect' will equal '3'.
See the ***Guidance Note on Sub-Surface Drainage Surveys*** for a breakdown of the structural grade score system.

N.B. Because the lateral and carrier **asset inventory** is being used to track defective piping defect records should not be created in the Asset Management System as a result.

After Renewals:

Any changes to piped assets: (installations, removals, renewals or repairs) needs to be reflected in the Asset Management System. This includes the

revised 'structural count of defects' and 'most severe structural grade' values. The table below lists the type of upload and the attribute updates required by treatment type:

Treatment Type	**Type of Upload / Attributes to Populate**	
	Damaged pipe	**Replacement pipe** *(all attributes need collecting except Treatment method & Treatment Type)
Pipe Patched	*Upload Type: Modify* Treatment Method & Type Structural Count of Defects Most severe Structural Grade Modified under scheme id	n/a
Pipe Relined *(assumes whole pipe length)*	*Upload Type: Modify* ***** * If re-lined after survey hit blockage then End date Ghost node & stretch poly line to resulting terminus. Treatment Method & Type Structural Count of Defects Most severe Structural Grade Modified under scheme id	n/a

Pipe Partially **Replaced**	*Upload Type: Modify* Treatment Method & Type Structural Count of Defects Most severe Structural Grade Modified under scheme id	*Upload Type: Insert* (Populate either the Start or End Point id with the applicable existing ghost node)
Pipe Totally **Replaced**	*Upload Type: Mod & End* Treatment Method & Type Removed Under Scheme id	*Upload Type : Insert*

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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37 HATCHED ROAD MARKINGS (LH)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
2	Quality Review	John Cook	01/04/07	
8.2	Update	Huw Harries	14/01/11	Added remarking & diag. number maintenance rules
8.3	Update	Huw Harries	07/11/11	Added clarification on revenue lining on resurfaced rds
8.3	Update	Huw Harries	27/02/12	Changed maint rule (i) 'if the entire' to ' 50% or more' and amended re-surface roads' rule to include assets not previously present on the system.
11	Update	Shayna Meyers	15/05/19	Updated referencing
11	DQ Team Review		15/05/19	

37.1 Hatched Road Markings (LH)

Road Markings on the Carriageway usually with a distinctive hatched design. (Solid markings may come under this asset type (for examples see the Asset Management System Asset Photos Document).

37.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

37.1.2 Rules

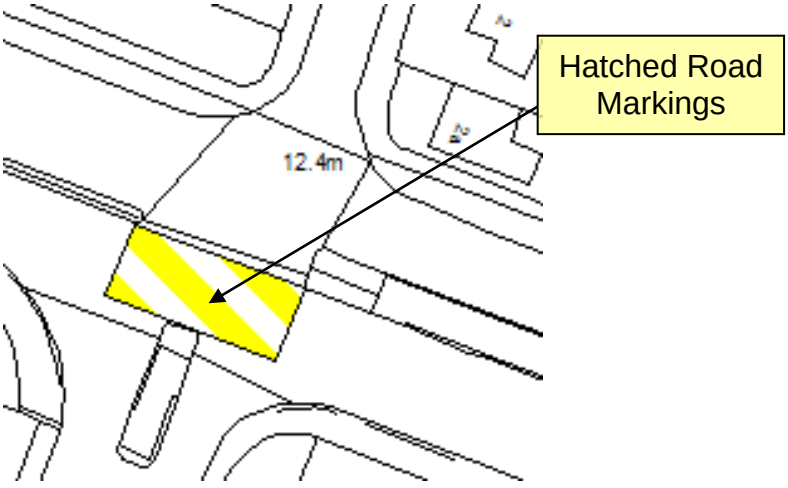
- Lines around the edge of Hatched Road Markings are included as part of the hatching and should **NOT** be recorded as a separate inventory item.
- Studs associated with the hatched road markings must be recorded under the Road Studs asset type.
- The Diagram Number should be populated with the appropriate values from the Traffic Signs Regulations and General Directions 2016.

37.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

An example of a box junction Hatched Road Marking is displayed below:



37.2 Exceptions to the End Date and Modification Rules

Capital Schemes

If Hatched Road Markings are re-lined as part of a **resurfacing scheme**, the original asset should be end-dated and a new one submitted, with the corresponding Scheme ID **and** Installation Date.

If a box junction was only halve re-lined in a scheme – shrink the existing record to preserve the 'unchanged' halve & Insert a new asset to represent the **new** halve.

Maintenance/Service Instruction work:

(i) If 50% or more of the asset is remarked then the 'Last Remarked' field should be updated with the date that the renewal / remarking order was completed.

When a road is given a new surface course and re-lined to the same layout as before, the existing lining should be retained and have its 'Last Remarked Date' updated.

However, if the layout has changed significantly or a new LH is laid *that was not present previously*; end date the old asset / add a new asset with an 'Install Date' matching the W.O. repair date and leave 'Last remarked date' Empty.

If the asset is missing from the system but was re-lined on site and is *shown to have been on the ground previously* then create a new asset and Only populate the 'last remark date' (taken from the W.O. repair date) and leave the install date Empty.

If the existing marking is extended by 50% or more, populate the 'Last Remarked' date and modify the geometry as well.

Applicable to BOTH Scheme & Maintenance work:

If the change to the asset requires a change to the diagram number then the old asset must be end dated and a new asset created with the date that the renewal or remarking order was completed.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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38 LONGITUDINAL ROAD MARKINGS (LL)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
1.1	Update	Huw Harries	25/08/05	Edited iii viiii
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	14/01/11	Added maintenance rules
8.3	Update	Huw Harries	07/12/11	Added clarification on revenue lining on re-surfaced rds
8.3	Update	Huw Harries	01/02/12	Added xii note collecting red lines beyond HAB
8.3	Update	Huw Harries	27/02/12	Changed maint rule (i) '50% / entire' to ' 50% or more' and amended re-surface roads' rule to include assets not previously present on the system.
11	Update	Shayna Meyers	15/05/19	Updated referencing
11	DQ Team Review		15/05/19	

38.1 Longitudinal Road Markings (LL)

Road Markings which lie along the Carriageway and along the Footway edge at some bus stops.

38.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

38.1.2 Rules

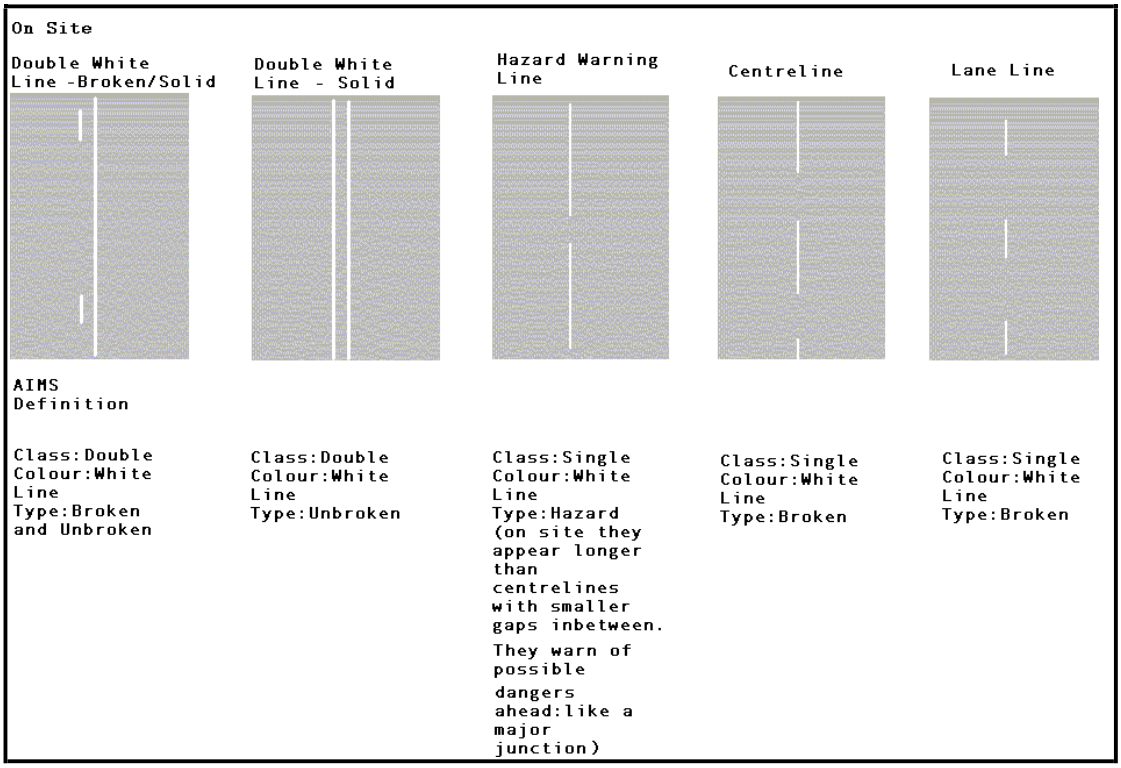
(i) Longitudinal Lines, including Zigzags, which form part of the Pedestrian Crossing, should be recorded under this asset type.

(ii) A line demarcating the edge of a Carriageway (typically solid white) should also be recorded under this inventory item.

(iii) The Length and Gap fields **only** need populating when collecting lines of Type: *broken; broken and unbroken;* as well as *bus lane* lines that are broken. For solid lines, a **null** value should be provided.

(iv) *Type: Bus Lane* should be used to record all lines associated with Bus Lanes (e.g. the tapered lines; the broken lines next to side road junctions or the solid Bus Lane markings).

(v) The *Class: Hazard* should **only** be used to record the lines that warn drivers about the dangers of crossing / straddling lane dividers near junctions or Pedestrian Crossings etc. They are typified by longer painted lines with shorter gaps. For a Hazard Line, the diagram number from the TSRGD should only ever be a 1004 or 1004.1. Zigzag lines should **NOT** be recorded as *Class: Hazard*. See below for clarification of line types:



(vi) Any broken yellow lines associated with Bus Cages (e.g. those in Lay-bys) need to be recorded under the ***RM*** asset type with a ***Class: Bus Cage***

(vii) The following lines should be recorded as LL's and given a diagram number of 1009 or 1010 – depending on their Length, gap and Width dimensions:

Those that run across the start of a side road **adjacent** to the give way line - to indicate where traffic can leave the carriageway
Those that run in the middle of the road, marking a lane for traffic to wait in, before they can cross over the oncoming traffic and into another road
Those that create a new lane at the edge of a main road, for traffic to turn off into another road

Please see the LL topic in the Asset Management System Asset Photos document for more details.

(viii) The yellow warning line along the Footway at Bus Stops <u>should</u> be recorded under this asset type.

(ix) It should be noted that many of the attribute value combinations possible for LL will never occur on site e.g. *Class: Hazard, Colour: Red, Type: Broken & Unbroken.*

(x) It should be noted that the line *Type: Broken & Unbroken* should be collected as *Class: Double.*

(xi) The Diagram Number should be populated with the appropriate values from the Traffic Signs Regulations and General Directions 2016. For LL **red route** lines, the diagram number should be taken from the associated red route sign. These numbers can be found in the Red Route and Congestion Charge Sign Diagram Document.

(xii) If you come across any red lines (or signs) beyond the current highway authority boundary limit please collect what you see painted on the ground. If the works include the Removal or Installation of other asset types beyond the boundary, check with the person who authorised the Revenue W.O. or the Schemes project manager and write to the Data Quality Team.

38.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

13.2 **Exceptions to the End Date and Modification Rules**

Capital Schemes

If Longitudinal Road Markings are re-lined as part of a **resurfacing scheme**, the original asset should be end-dated and a new one submitted, with the corresponding Scheme ID **and** Installation Date.

Maintenance/Service Instruction work:

(i) If 50% or more of the asset is remarked then the 'Last Remarked' field should be updated with the date that the renewal / remarking order was completed.

When a road is given a new surface course and re-lined to the same layout as before, the existing lining should be retained and have its 'Last Remarked Date' updated.

However, if the layout has changed significantly or a new LL is laid *that was not present previously*; end date the old asset / add a new asset with an 'Install Date' matching the W.O. repair date and leave 'Last remarked date' Empty.

If the asset is missing from the system but was re-lined on site and is *shown to have been on the ground previously* then create a new asset and Only populate the 'last remark date' (taken from the W.O. repair date) and leave the install date Empty.
If the existing marking is extended by 50% or more, populate the 'Last Remarked' date and modify the geometry as well.

If the existing marking is shrunk (burnt off) just modify the geometry (the asset can be identified using the 'Work Order ID' column).

Applicable to BOTH Scheme & Maintenance work:

If the change to the asset requires a change to the diagram number then the old asset must be end dated and a new asset created with the date that the renewal or remarking order was completed.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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39 LIGHTING POINT (LP)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	None
1.1	Update	Huw Harries	25/08/05	Added Belisha beacon iv rules
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	16/02/11	Update to rule viii – what to do when a new lamp head is installed (rule amalgamated into maintenance section 09/03/2012)
8.3	Update	Huw Harries	09/03/12	Amended note (ii) on electricity suppliers and added scenario table in the scheme / maintenance section
8.4	Update	Huw Harries	22/01/13	CMS, MUESLI related reconfiguration
9	Update	Huw Harries	24/04/13	Table on Hierarchical Assets
9.1	Update	Huw Harries	18/06/13	New rule on stumped columns
9.2	Update	Huw Harries	19/08/13	New rule on unmetered supply switching type & charge code & CMS unit ref
9.3	Update	Huw Harries	15/01/15	Added rule Origin of Supply
10	Update	Huw Harries	20/10/15	Added rule xii on spotlights and note on bracket types
11	Update	Shayna Meyers	08/05/19	Moved High Mast information to LP
11	DQ Team Review		15/05/19	

39.1 Lighting Point (LP)

The individual Luminaire of a lighting asset, usually including the housing, lamp, photocell, etc, but not the supporting column. This is a Hierarchical Asset type. Read section ***2.7.4 Recording Hierarchical Assets*** for more information.

39.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

39.1.2 Rules

(i) If the Identity Code is unreadable or not present, (tbc) should be used.

(ii) Most of the Electricity Suppliers in London will be one of the UKPN'S or Southern-Scottish – they each cover large enclosed areas; the rest will be private or solar powered.

(iii) *Number of Lamps* should be used to record the total amount of bulbs / tubes on the asset i.e. the number of lamps in the luminaire. The exception to this rule is when the luminaire contains lamps of different type and/or wattage (for example 3x150 + 1x250); in this case the Number of Lamps is always recorded as one; the wattage list contains the appropriate configuration.

(iv) This asset type should be used to collect Subway Lighting as well. They need to be given an XSP of S. This then allows them to be differentiated from street level lighting.

(v) For more information on Date Last Bulk Change and Date Last Elect Test please refer to the 'Cyclic Asset Update by Service' document.

(vi) Stand-alone Belisha Beacons associated with Zebra Crossings and other lighting with only a Luminaire at the top, i.e. with no bracket, should be recorded with a *Bracket Type: N/A - Post Top*.

(vii) If a Belisha Beacon exists on a Column as a SECONDARY bracket, this Belisha Beacon needs to be collected as a **separate LP asset**.

(viii) High Mast Lighting Points sit on masts that are typically greater than or equal to 20m in height. Their columns are defined as structures, in accordance with BD 63/94, and are captured as post assets.

(ix) When an electrical column is stumped and is **not** removed at the same time, the Column Type attribute needs modifying to 'Stump' and the Height to 1 (m) or near equivalent. The associated Lantern (Lighting Point) should be end dated as well.

(x) All Unmetered luminaires must hold a 'Switching Type (Regime)' that matches the appropriate BSCP520 code in the drop down list. Luminaires part of the CMS (central management system) must use a switching Regime of 998 or 999.

(xi) All Unmetered luminaires must hold a valid 13 digit Charge Code value. This must match the appropriate BSCP520 code for the apparatus.

(xii) The Unit Reference within the CMS system should be used to populate the 'CMS unit reference' attribute of the luminaire asset.

(xiii) Uplighting that illuminates, e.g. Trees or Hoop Bollards are to be collected as 'Spotlights' and have Asset Fixings' of 'In Ground'

Bracket Types:

The bracket type attribute defines several things about the way a Luminaire is mounted onto its column support or surface. Below is a list of what each means:

- Internal = the bracket stem is fixed inside the column shaft
- External = the bracket is fixed along the outside of the column shaft
- Clamped = the bracket wraps around the column shaft
- Wall = the bracket is directly attached to the wall

Some values in this list are not really brackets at all but have been included to help define *how* the Luminaire is mounted:

- NA / Post Top = a Luminaire directly mounted to the top of a column shaft
- NA / Fixed = a Luminaire directly fixed to its mount, e.g. a bulkhead against a wall
- NA / Suspended = a Luminaire suspended from wires

Where the bracket enters a Luminaire is also defined in the list:

Side Entry = from the side

Top entry = from above

Origin of Supply for electrical assets:

For all TfL electrical assets the Origin of Supply attribute is there to record the associated **Asset ID** of any Post or Feeder Pillar which lies at the start of a circuit where a 'cut out' from the DNO network also exists, i.e. its DNO entry point.

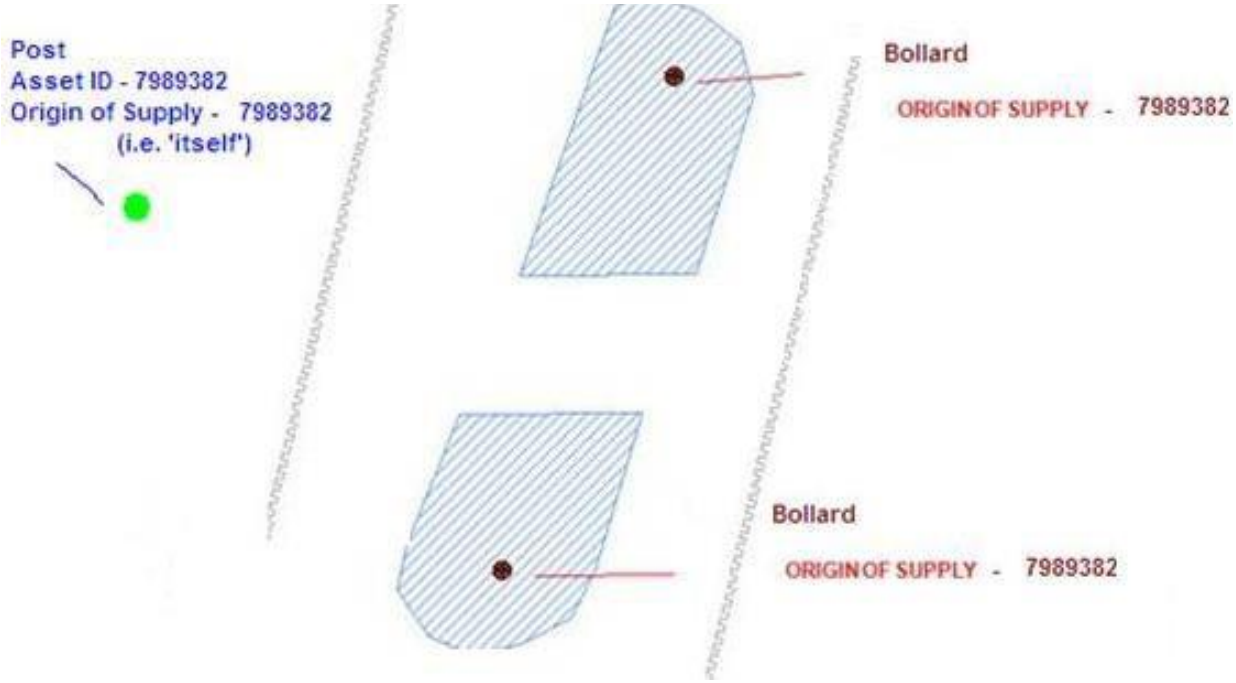
The attribute will inform the user where to completely isolate the circuit in its entirety from the DNO network so the electrical assets *along that circuit* can be tested or fixed. It should be noted that TFL are not allowed to work on the *actual DNO network.*

If the asset acting as the origin of supply is not a TfL asset or lies beyond the HA boundary it still needs collecting so engineers can identify its location.

The example below shows a Post (Lighting Column) as the origin for two safety bollards. Notice that the Post Asset ID also **matches** its 'Origin of Supply'. That is because the Post in this case is acting as its own origin of supply. We need to record this differentiation as not all posts act as such. The same rule applies to Feeder Pillars, some act as origins of supply and some merely link and extend private networks.

For *non-electrical* assets this attribute should be left empty.

The 'Supply Point if TfL Own' attribute is to be populated with an 'Asset ID' (rather than the asset Label number as it is currently) so that every electrical asset link with its *nearest supply point* can be captured in a more structured manner.
It will be worth getting those who install & rectify electrical items familiar with using these two attributes as soon as possible.



39.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

39.2 Exceptions to the End Date and Modification Rules

Effects on Hierarchical Assets:

Scenario (where a Post supports a Luminaire)	**Action**
New Post (with Luminaires)	Create/Load a new PS (make sure it's 'Type' is compatible with the Luminaire 'Type'). Create/Load its related LP(s) storing the PS's asset id in the LP's 'Parent' attribute
Post & Luminaires removed	End date PS and related LP(s)
Post removed (but Luminaire re-used)	End date PS and create/load a new one. **Modify** related LP(s) 'Parent' attribute to store the **new** PS's asset id
New Luminaire put on an existing Post	End-date existing LP and create/load a new one Hierarchically link it to the existing PS by storing the **existing** PS's asset id in the new LP's 'Parent' attribute
Column is stumped but is **not** removed at the same time	The Column Type attribute needs modifying to 'Stump' and the Height to 1 (m) or near equivalent. The associated Lantern (Lighting Point) should also be end dated.

List of generic requirements

- If the luminaire is on the TLRN and does not exist on the Asset Management System this should be captured.
- If the luminaire is both on the TLRN and the Asset Management System but has a wrong location, the asset needs to be located correctly within the Asset Management System.
- If the luminaire has incorrect attribute information in the Asset Management System this should be updated.
- All attribute information should be checked and corrected if necessary
- The luminaire must be represented by a **POINT** feature.
- The luminaire must be loaded into the Asset Management System and associated to the relevant linear section (TLRN).
- A BS7671 certificate.pdf needs to be associated against all new lighting assets and against any existing lighting that has been electrically tested.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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40 OUTFALL (OL)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
2	Quality Review	Huw Harries	22/01/13	
8.4	Update	Huw Harries	22/01/13	New outfall asset
9.3	Update	Huw Harries	20/1214	Further details of drainage network

40.1 Outfall (OL)

An outfall is the discharge point of a Lateral Drain into a stream or river.

40.1.1 Input details

Please See 'Asset Metamodel – Attributes and Lists'

40.1.2 Rules

(i) Every Outfall should be associated to its surrounding drainage network

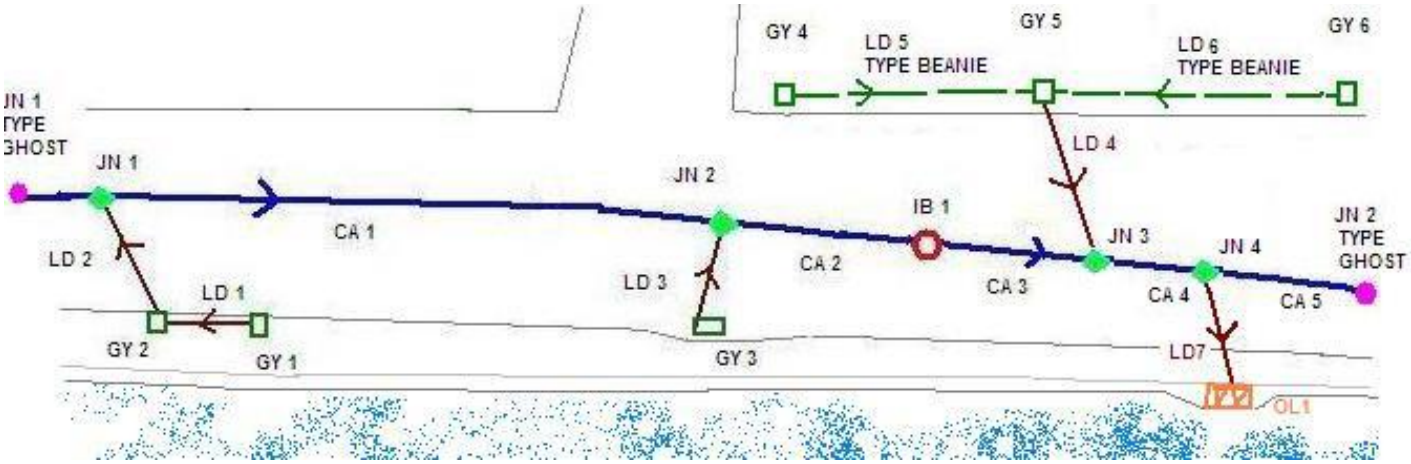
40.1.3 GIS Representation

This asset must be represented by a **Point** feature.

Digitising the drainage network

Each asset object should be referenced so they fit into a logical drainage network using the Asset Management System asset id. Piped assets use the start point ID and end point ID attributes to record this drainage connectivity. These columns store the ACTUAL asset id's of the assets that connect to them: *Gullies, Junctions, Outfalls and Inspection Chambers*. So these asset types need uploading to Asset Management System **before** their associated piped asset in order for their asset id's to be derived.

The example below depicts how a typical drainage network will look. The tables below the diagram define the start and end point attribution for the diagram. (The asset id's used are just hypothetical ones).



Lateral Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD1	GY1	GY2
LD2	GY2	JN1
LD3	GY3	JN2
LD4	GY5	JN3

Lateral Drain (Beanie Block)		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
LD5	GY4	GY5
LD6	GY6	GY5
LD7	JN4	OL1

Carrier Drain		
Asset ID	**FROM START POINT Asset ID**	**TO END POINT Asset ID**
CA1	JN1	JN2
CA2	JN2	IB1
CA3	IB1	JN3
CA4	JN3	JN4
CA5	JN4	JN2-TYPE GHOST

15.2 **Exceptions to the end date and modification rules**

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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41 PRIVATE CABLE (PC)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
9	Update	Huw Harries	24/04/13	First added to s. Rules (yet to be rolled out)

41.1 Private Cable (PC)

A cable that is owned and maintained by TFL for the purpose of feeding electrical assets.

41.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

41.1.2 Rules

(i)

41.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

41.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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42 PIER (PI)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
11	Update	Shayna Meyers	15/05/19	Pier added

42.1 Pier (PI)

A pier is a raised structure in a body of water, typically supported by piles or pillars.

42.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

42.1.2 Rules

(i) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

42.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

42.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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43 PLANTED AREA (PL)

Author(s)

Data Quality Team, Neil Hazell

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	24/01/11	Added Maintenance rule for date last maintained and rule on tree pit and tree pit regime

43.1 Planted Area (PL)

An area of maintained landscaping with or without flowers, which can be raised or at ground level.

43.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

43.1.2 Rules

(i) Hedges and Trees should be collected under their own respective asset types and **not** under PL. Any grassed areas within a planter should be recorded as Verge (VG) and given a Grass Cutting Regime (if applicable).

(ii) If the Planted Area 'Type' is 'Raised' a 'Material' and 'Height' entry must be provided.

(iii) If the Planted Area 'Type' is 'Surface Level' then the 'Material' must be recorded as 'None' and a **null** value provided for the 'Height'.

(iv) If the Planted Area 'Type' is 'Tree Pit' then the 'Regime Category' must be recorded a 'Tree Pit'

(v) If the height of a planted area changes along its length, just record an average height.

43.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

43.2 Exceptions to the End Date and Modification Rules

Capital Schemes

If the area is reseeded or plantings change, **no** update is required.

Maintenance/Service Instruction work:

For green related maintenance – populate 'Date Last Maintained'

(If a Planted Area asset had its brick surround fixed; or its soil turned over or was topped up with gravel there is NO need to populate the 'Date Last Maintained' attribute)

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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44 PUMP STATION (PN) & SUB-COMPONENTS

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
8	Quality Review	Huw Harries	22/01/13	
8.4	Update	Huw Harries	22/01/13	New pump station & sub components
9.3	Update	Huw Harries	20/1214	Rules on Hierarchical asset types

44.1 Pump Station (PN) & sub components

A pump station is an enclosed structure that is provided to house mechanical and electrical equipment for the removal of surface water from the local area.

Pump Station is a Parent asset type that should be linked in a hierarchy with the following 'child' asset types (see chapter ***2.7.4 Recording Hierarchical Assets*** *for* more information)

Pump (P1): A pump unit is a propriety piece of equipment used to pump liquids from one location to another.

Sump Pump [S1]: A pump unit installed in the drywell of a pump station to collect spilled liquid which may arise during pump maintenance operations or pump failure.

Telemetry [TE]: An electronic system designed to monitor day-to-day pump operation and to notify all pump failure events.

Control Panel [CO]: A control panel is the outer casing which houses the switchgear components.

Main Pipework and Valves [PV]: A pre-determined set of designed inter-connecting pipes to allow pumped liquids to pass through the pump unit.

44.1.1 Input details

Please See 'Asset Metamodel – Attributes and Lists'

44.1.2 Rules

(i) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

44.1.3 GIS representation

Asset Type	Represented as a:
Pump station	POLYGON
Pump	POINT
Sump pump	POINT
Telemetry	POINT
Control panel	POINT
Main Pipe work & Valves	POINT

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details

44.2 Exceptions to the End Date and Modification Rules

Effects on Hierarchical Assets:

Scenario	Action
New Pump Station and components installed	Create/Load a new PN. Create the related sub component assets, e.g. Pump; storing the PN's asset id in the sub component's 'Parent' attribute
Pump Removed and new installed	End date the old pump and add a new one hierarchically linking it to the existing Pump Station by storing the existing PN's asset id in the new Pump's 'Parent' attribute
Pump station Inspected	The 'Last inspection date' of both the station *and* its sub components may require updating

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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45 PEDESTRIAN GUARDRAIL (PR)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
10	Update	Huw Harries	20/10/15	Added percentage threshold update rule

45.1 Pedestrian Guardrail (PR)

A protective fence, usually on the edge of a Footway intended to restrain pedestrians from stepping on to the Carriageway or other area likely to be hazardous.

45.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

45.1.2 Rules

(i) PR *Type: Plain* should be used to record all Pedestrian Guardrails that are **not** *'Visirail'*. Please see the PR topic in the Asset Management System Asset Photos document as a guide.

45.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

45.2 Exceptions to the End Date and Modification Rules

Maintenance/Service Instruction:

An asset update is required when 50% or more of adjoining panelling has been replaced or the 'Type' or 'Material' attribute has changed (e.g. Steel to Alloy or Plain to Visirail).

A guard rail should be replaced like for like but if an existing railing is already made up of a mixture of panel types then go with the majority.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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46 POST (PS)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.3	Update	Huw Harries	01/02/12	Added xiv note post solely for red signs beyond HAB
8.4	Update	Huw Harries	22/01/13	CMS, MUESLI related reconfiguration
9	Update	Huw Harries	24/04/13	Table on Hierarchical Assets
9.1	Update	Huw Harries	18/06/13	New rule xvii on stumped columns
9.1	Update	Huw Harries	26/07/13	New rule xviii on Retention sockets & rule xix on Post attachments
9.3	Update	Huw Harries	15/10/15	Added rule Origin of Supply
10	Update	Huw Harries	20/10/15	Amended xix as retention now its own asset type and added rule xxii column type winch/raise
10.1	Update	Huw Harries	02/02/16	Removed rule xix on PS fixing of retention socket
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

46.1 Post (PS)

A Post is a free standing item of Street Furniture. Posts are Hierarchical Assets when they support Luminaires. Read section ***2.7.4 Recording Hierarchical Assets*** for more information
Examples of Posts would include items such as (but not exclusively):

- Wooden posts/bollards on Footways
- The individual Posts from which Signs are hung
- Bollards to stop vehicular access
- Lockable or retractable Posts.
- Lighting columns, including high mast and Catenary lighting posts (excluding the luminaire which is collected under (LP))

46.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

46.1.2 Rules

(i) 'Finger' Posts must be recorded under this item and the Signs on the Post should each be recorded as a separate Sign asset.

(ii) Bollards should be recorded under *Type: Bollard*. Bollards are easy to identify, they are usually installed to limit vehicular access or to protect Footway, and can be lockable or retractable.

(iii) If a Post appears to have lost the Sign it was erected to carry, it should still be recorded as *Type: Post Carrying Sign* and a **null** value should be provided as the *Number of Signs.*

(iv) The *Type: Post Carrying Traffic Signal* should be used to record any Post carrying a Traffic Signal; this includes push button control boxes.

(v) If a Traffic Signal is found to be carrying a Sign its supporting post should still be recorded as PS - 'carrying traffic signal' but it should also have an entry in the *Number of Signs* field to represent the amount of Signs it holds.

(vi) The Type: *Lighting column* should be used to record those columns supporting luminaires that have the purpose of illuminating the footway as well as those that illuminate the carriageway

(vii) The Type: *Central Island/Belisha Beacon post* should be used to record those posts used to support Central Island and Belisha Beacon luminaires

(viii) If a Bollard is found to be carrying a Sign it should still be recorded as a 'bollard' but it should also have an entry in the *Number of Signs* field to represent the amount of Signs it holds.

(ix) Any post exclusively supporting a Red Route control sign (including Congestion Charge) should have an Owner = *TfL SM*

(x) Any post exclusively supporting a Traffic Signal should have the Owner = *TTS/TCSU*

(xi) Any post exclusively supporting a Street Name Plate or a resident permit holder sign should have an Owner =*Local Authority*

(xii) For more information on Date Last Cleaned please refer to the Cyclic Asset Update by Service document.

(xiii) For Post Type – Signal Mast Arm; please record the structure identifier in the 'Identity Code' column.

(xiv) For Post Type – High Mast Column; please record the structure identifier in the 'Identity Code' column.

(xv) The *Type: Catenary Lighting Column* should be used to record those columns used to support Catenary Lighting.

(xvi) If a CCTV camera has been mounted on a mast that has been identified as a structure (normally 10-25 m in height) then a post of Type – 'CCTV Camera Mast' will need collecting; please record the structure identifier in the 'Identity Code' column.

(xvii) If you come across a post beyond the highway authority boundary that solely supports a red route sign please collect what you see on site. If the works include the Removal or Installation of other asset types beyond the boundary, check with the person who authorised the Revenue W.O. or the Schemes project manager and write to the Data Quality Team.

(xviii) When an electrical column is stumped and is **not** removed at the same time, the Column Type attribute needs modifying to 'Stump' and the Height to 1 (m) or near equivalent. The associated Lantern (Lighting Point) should be end dated as well.

(xix) Post Attachments: (counts of Luminaires and other attachments should be recorded as per the diagrams below)

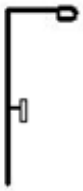
(xx) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

(xxi) Column Type - Winched mechanically or manually ONLY relate to Posts supporting High mast lighting. Column Type - Raise and Lower are those that support footpath lighting that bend at a hinge, generally less than 10 m in height.

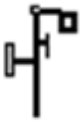
Post (PS)	
Type:	Lighting Column
No. of Approved Attachments	= 97 N/A
Type of Approved Attachments	= 97 N/A
No. of Luminaires	= 1 (except when stumped obviously)

Post (PS)	
Type:	Lighting Column
No. of Approved Attachments	= 2
Type of Approved Attachments	= Multiple (for the non-illuminated sign & the sign light attached)
No. of Luminaires	= 2



Post (PS)	
Type:	Lighting Column
No. of Approved Attachments	= 1
Type of Approved Attachments	= Internally Illuminated Sign
No. of Luminaires	= 1 (This count relates to the Luminaire Not the Sign)

Post (PS)	
Type:	Post Carrying Sign
No. of Approved Attachments	= 2
Type of Approved Attachments	= Multiple (for the non-Illuminated Sign & the Sign Light)
No. of Luminaires	= 1



Post (PS)	
Type:	Post Carrying Sign
No. of Approved Attachments	= 3
Type of Approved Attachments	= Multiple (for the internally illuminated & non-Illuminated Sign & the Sign Light)
No. of Luminaires	= 1 (This count relates to the Luminaire Not the Signs)

(xxii) Structural testing

The purpose of any non-destructive test (NDT) method should be to determine whether a deteriorated lighting column, either satisfies the service criteria or is in danger of collapse.

TfL will instruct the Contractor to undertake street lighting column structural tests at various locations as shown in the works information. The company carrying out the structural testing should provide the following information:

1. Date of structural test (ATR_52)
2. Column Identity (ATR_3)
3. Structural Test Result (ATR_43)
4. Additional information (i.e. Type of construction (height, material etc.))
5. Structural Test Certificate

Structural Condition Rating

Attribute Column	Test Result	Test Outcome
Structural Condition Rating	1	High Green - Cat 5G (5 year till next structural test)
Structural Condition Rating	2	Low Green - Cat 2G (2 year till next structural test)
Structural Condition Rating	3	Low Amber - Cat P (1 years till next structural test)
Structural Condition Rating	4	High Amber - Cat 1U (1 year till next structural test)
Structural Condition Rating	5	Red - Cat 2U (0 years till next)
Structural Condition Rating	6	Blue - (Significant visual defect were observed)
Structural Condition Rating	7	Purple - (Subjective visual assessment only)

Note: The condition ratings above relate to the testing categories in the TR 22 Managing a Vital Asset: Lighting Supports document

Asset Management System Update required?
The Structural Condition Rating field is a mandatory field and requires populating.

CA17_Date Last Struct Insp

Asset Management System Update required?
As a result of cyclic works instructed by TfL.

Date Last Struct Test

Asset Management System Update required?
As a result of Service Instructions instructed by TfL or as part of a Scheme work to Undertake Street lighting column structural tests. (This does not include cyclic work).

Date Next Struct Test Required

Asset Management System Update required?
The Date Next Structural Test Required field should be populated using the results of the Structural Condition Rating and date structurally tested (see below).

Calculating

Structural Condition Rating	Re-Test within?	Excel Formula
Structural Condition Rating = 1	5 years	=DATE(YEAR(*A1*)+5,MONTH(A1),DAY(*A1*)-1)
Structural Condition Rating = 2	2 years	=DATE(YEAR(*A1*)+2,MONTH(A1),DAY(*A1*)-1)
Structural Condition Rating = 3	1 year	=DATE(YEAR(*A1*)+1,MONTH(A1),DAY(*A1*)-1)
Structural Condition Rating = 4	1 year	=DATE(YEAR(*A1*)+1,MONTH(A1),DAY(*A1*)-1)
Structural Condition Rating = 5	0 year	=DATE(YEAR(*A1*)+0,MONTH(A1),DAY(*A1*))
Structural Condition Rating = 6		
Structural Condition Rating = 7		

**A1* cell reference within Excel

Please speak to a member of the Data Quality team if unsure how to calculate this field.

If the Structural Condition Rating = 6 or 7 **do not populate** ATR_57 – Date Next Struct Test Required

List of generic requirements

Structural Test certificate or any associated documents should be loaded in to the Asset Management System for every asset involved.

Note: Document Type – LSTC (Lighting Structural Test Cert)

Origin of Supply for electrical assets:

For all TfL electrical assets the Origin of Supply attribute is there to record the associated **Asset ID** of any Post or Feeder Pillar which lies at the start of a circuit where a 'cut out' from the DNO network also exists, i.e. its DNO entry point.

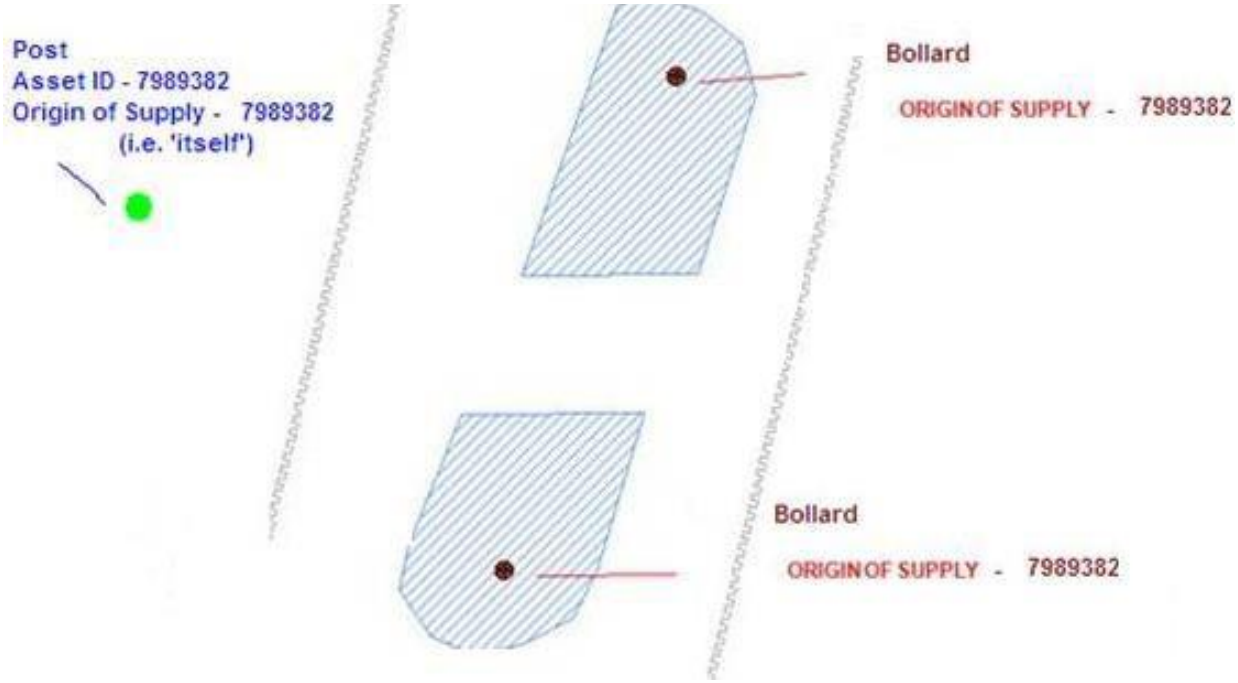
The attribute will inform the user where to completely isolate the circuit in its entirety from the DNO network so the electrical assets *along that circuit* can be tested or fixed. It should be noted that TFL are not allowed to work on the *actual DNO network.*

If the asset acting as the origin of supply is not a TfL asset or lies beyond the HA boundary it still needs collecting so engineers can identify its location.

The example below shows a Post (Lighting Column) as the origin for two safety bollards. Notice that the Post Asset ID also **matches** its 'Origin of Supply'. That is because the Post in this case is acting as its own origin of supply. We need to record this differentiation as not all posts act as such. The same rule applies to Feeder Pillars, some act as origins of supply and some merely link and extend private networks.

For *non-electrical* assets this attribute should be left empty.

The 'Supply Point if TfL Own' attribute is to be populated with an 'Asset ID' (rather than the asset Label number as it is currently) so that every electrical asset link with its *nearest supply point* can be captured in a more structured manner.
It will be worth getting those who install & rectify electrical items familiar with using these two attributes as soon as possible.



46.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

46.2 Exceptions to the End Date and Modification Rules

Effects on Hierarchical Assets:

Scenario (where a Post supports a Luminaire)	Action
New Post (with Luminaires)	Create/Load a new PS (make sure it's 'Type' is compatible with the Luminaire 'Type'). Create/Load its related LP(s) storing the PS's asset id in the LP's 'Parent' attribute
Post & Luminaires removed	End date PS and related LP(s)
Post removed (but Luminaire re-used)	End date PS and create/load a new one. **Modify** related LP(s) 'Parent' attribute to store the **new** PS's asset id
New Luminaire put on an existing Post	End-date existing LP and create/load a new one Hierarchically link it to the existing PS by storing

	the **existing** PS's asset id in the new LP's 'Parent' attribute
Column is stumped but is **not** removed at the same time	The Column Type attribute needs modifying to 'Stump' and the Height to 1 (m) or near equivalent. The associated Lantern (Lighting Point) should also be end dated.

Attribute Updates

If the purpose of a post has changed from holding a sign to supporting a traffic signal, then the Type attribute could be changed, providing the physical location of the Post has not altered.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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47 PEDESTRIAN CROSSING (PX)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
1.1	Update	Huw Harries	15/03/06	Changed ii, vi
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.1	Update	Huw Harries	10/12/10	Added maintenance rule
8.3	Update	Huw Harries	14/02/12	Added rule (ii) to the end date & modification rules section. And amended (i) to 'if 50% or more'

47.1 Pedestrian Crossing (PX)

A transverse strip of Carriageway marked to indicate where pedestrians have priority to cross the road.

47.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

47.1.2 Rules

(i) Traffic Signals and push button control boxes associated with a Pedestrian Crossing should be recorded under the Traffic Signals (TS) asset type.

(ii) The strip of Road Markings / Studs each side of a pedestrian or cycle crossing (whether they are painted or metal) should be considered as an individual asset and must be collected under the Transverse and Special Road Markings asset type as Class: *24 - Crossing Markings.*

(iii) When there is no means of identifying the type of pedestrian crossing, e.g. no signals are present, record the PX as Type – Other.

(iv) Belisha Beacons associated with a Zebra Pedestrian Crossing must be recorded separately under the Lighting Point (LP) asset type.

(v) If a Pedestrian Crossing area has surface dressing its surface type and colour should be recorded under the upper most carriageway layer.

(vi) Pedestrian Crossings should be recorded in their entirety (as one object) when they lie over two survey envelopes of any Adoption and they must be referenced to the section against which the **majority** of the asset lies. (This is so that counts can be carried out on them).

(vii) The following outlines how to identify a Pelican, Puffin, Toucan and Pegasus crossing:

PELICAN

(PEdestrian LIght CONtrolled crossing)

A pedestrian only crossing that is controlled by the pedestrian using a push button wait box; unlike the PUFFIN it has **far side** pedestrian signals and the length of time given to the pedestrian green phase does NOT alter.

The defining characteristic of a PELICAN crossing is the presence of far side pedestrian signals. The majority of crossings in London will be Pelican.

PUFFIN

(Pedestrian User-Friendly INtelligent or Pedestrian User-Friendly Interface)

A pedestrian only crossing that makes use of sensors to **extend** or **cancel** the pedestrian green phase.

The defining characteristic of this crossing is the presence of a **near side** pedestrian signal (red and green man)

N.B. Pedestrian crossings that do **NOT** feature a near side pedestrian signal should **NOT** be classified as PUFFIN crossings.

TOUCAN

Pedestrian and Cycle crossing facility, which caters for cyclists in addition to pedestrians. The only obvious difference between this type of crossing and a puffin is the width of the crossing; it is extra wide to allow for cycles, and it has an extra optic next to the green man showing a green peddle cycle. If there is a **dedicated** area for cycles to cross this is NOT a toucan but a Cycle Crossing (CX)

PEGASUS

The Pegasus crossing is similar to any other light controlled crossing, but in **addition** to provision for pedestrians and / or cyclists the Pegasus provides special access for horses. For the riders there is a high level Push Button Pegasus to operate the crossing.

47.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

47.2 Exceptions to the End Date and Modification Rules

Capital Schemes

If a Pedestrian Crossing: **Type = Zebra** has been re-lined through Scheme works the asset type must be end dated and a new one collected (populating the scheme ID and install date fields as appropriate). N.B. ***Never split this asset*** as it is required for counts.

Maintenance/Service Instruction work:

(i) If 50% or more of a Pedestrian Crossing: **Type = Zebra** has been re-lined through maintenance the asset type must have its last remarked date updated.

N.B. These two rules apply to PX because the white stripes on zebras are not covered by the RM asset type

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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48 TRANSVERSE AND SPECIAL ROAD MARKINGS (RM)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
1.1	Update	Huw Harries	19 09 05	Changed pedestrian crossing markings and ix rule
1.2	Update	Huw Harries	15 11 05	Amended arrow diagram to include description
1.3	Update	Huw Harries	24 11 05	Amended Class numbering order
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	14/01/11	Added maintenance rules
8.3	Update	Huw Harries	11/09/11	Added CSH route number rule at xi (amended 13/02/12 to say its diag. no. now 1058)
8.3	Update	Huw Harries	07/12/11	Added clarification of revenue lining on resurfaced rds
8.3	Update	Huw Harries	01/02/12	Added rule xii on Zebra crossing diagram no.
8.3	Update	Huw Harries	13/02/12	Added rule on cycle crossing markings
8.3	Update	Huw Harries	27/02/12	Changed maint rule (i) '50% / entire' to '50% or more' amended Zebra crossing rule to encompass both scheme and maintenance works and amended re-surface roads' rule to include assets not previously present on the system. Plus a directionality note under representation. Plus xiv note collecting red lines beyond HAB
11	Quality Review	Shayna Meyers	15/05/19	

Reference Documents

The Traffic Signs Regulations and General Directions

48.1 Transverse and Special Road Markings (RM)

Road Markings which lie across the Carriageway, on the Kerb, at the edge of the Carriageway or are Special Markings.

48.1.1 Input Details

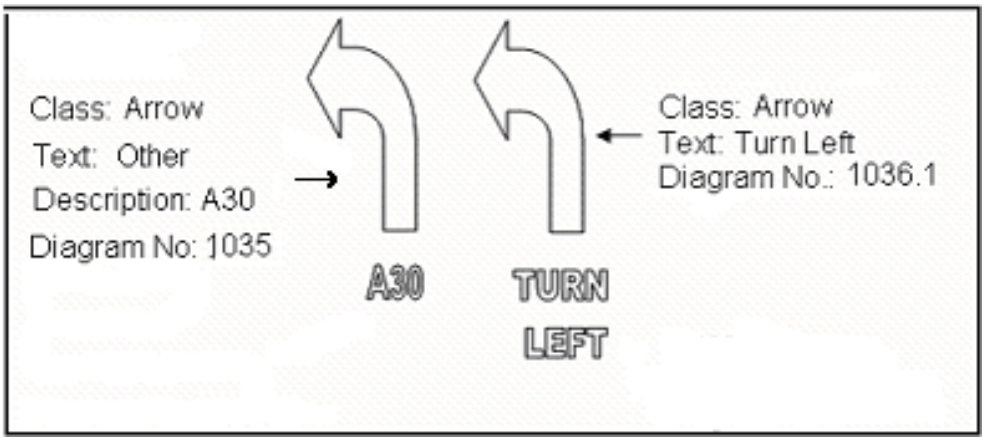
Please See 'Asset Metamodel – Attributes and Lists'

48.1.2 Rules

(i) *Class: Bus Cage* is used to record those yellow broken lines associated with a Bus Stop. These include those that run across the entrance of a Lay-by.

(ii) Bays are often defined by their associated Signs (and sometimes text on the ground). Whether a Loading Box has Disabled Access or not is always defined by the accompanying Sign and the presence of a Blue Badge. (See the RM topic in the Asset Management System Asset Photos document for some examples).

(iii) If the asset is given a *Class: Words* associate it to its appropriate *RM Text* value. All RM Class *other* than Words should have an *RM Text* value of *None,* **except** words associated with **arrow markings;** they should be collected as below.



(iv) If the *RM Text* values available in the pick list do not match the words on site an entry should be made into the free text *Description* Field (like the A30 example in the diagram above).

(v) Only collect textual markings as *Class: - Words* if they do **NOT** have any associated lines or symbols in the TSRGD (i.e. the words

SLOW should be collected as Class: –Words but the words BUS STOP, within a bus cage marking, should not). There is one exception to this - Sometimes on site a textual marking like 'A30' is **not** accompanied by its TSRGD arrow marking (which is allowed in the regulations). In these situations record the asset as RM – Class: **Words** with the Diagram number 1035.
To find out which textual markings have associated lines or symbols see The Traffic Signs Regulations and General Directions (TSRGD).

(vi) When you find two or more words on site which are connected, they must be collected as ONE asset, e.g. Brent Cross A406.

(vii) The triangle associated with a give-way line should be recorded as Class *2*= Give-way.

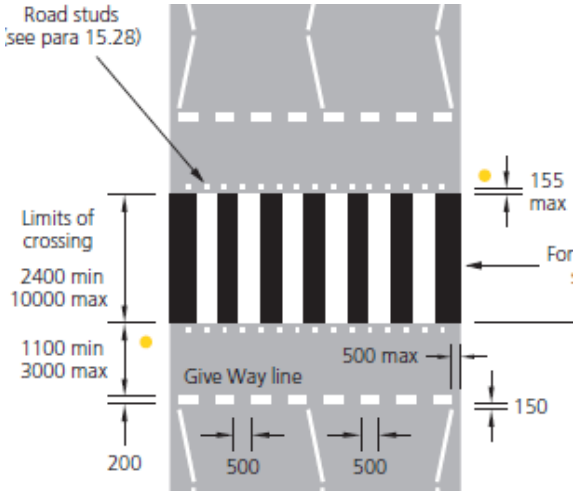
(viii) A mini roundabout **without** a raised centre should be recorded here. Those **with** a raised centre must be collected under the Central Island (CI) asset type.

(ix) The *Class: Crossing Markings* is for the collection of thermoplastic lines or metal studs associated with a cycle or pedestrian crossing. Where **metal** studs exist use Material: *Other* and Colour: *Not Applicable*.

(x) The Diagram Number should be populated with the appropriate values from the Traffic Signs Regulations and General Directions 2016.
For RM **red route** bays, the diagram number should be taken from the associated red route sign. These numbers can be found in the Red Route and Congestion Charge Sign Diagram Document.

(xi) Cycle Super Highway cycle symbols laid down alongside a route number, e.g. 'CS7' should be recorded under the RM asset as: cycle symbol > diagram number = 1057 and RM Words > Text = CS7 > diagram number 1058.

(xii) On Zebra Crossings, the dashed lines at the outer edges of the crossing should be collected as Giveway (Diag No. 1003.1). (see below):



(xiii) Record elephant crossing markings used to delineate carriageway crossing for cyclists as RM – with a diagram no. WB24

(xiv) If you come across any red lines (or signs) beyond the current highway authority boundary limit please collect what you see painted on the ground. If the works include the Removal or Installation of other asset types beyond the boundary, check with the person who authorised the Revenue W.O. or the Schemes project manager and write to the Data Quality Team.

Please see the RM topic in the Asset Management System Asset Photos document for more details.

(xv) If a sign associated to a bay has had to be re-installed as the wrong one was originally erected then the line marking should be modified to amend the Diagram Number to its new value so there is an audit trail of site work.

48.1.3 GIS representation

This asset must be represented by a **LINE** feature.

(a) In the case of arrows and text; the line should be drawn along the main axis of the feature.

(b) Directionality of the arrows is important; however, directionality of any symbols or writing is not.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

48.2 Exceptions to the End Date and Modification Rules

Capital Schemes

If the road markings are re-lined as part of a **resurfacing scheme**, the original asset should be end-dated and a new one submitted, with the corresponding Scheme ID **and** Installation Date.

Zebra Crossing:

If a Zebra Crossing has been re-lined through **Scheme works** the 'PX' asset type must be end dated and a new one collected (populating the scheme ID and install date fields as appropriate).

Maintenance/Service Instruction work:

(i) If 50% or more of the asset is remarked then the 'Last Remarked' field should be updated with the date that the renewal / remarking order was completed.

When a road is given a new surface course and re-lined to the same layout as before, the existing lining should be retained and have its 'Last Remarked Date' updated.

However, if the layout has changed significantly***** or a new LL is laid *that was not present previously*; end date the old asset / add a new asset with an 'Install Date' matching the W.O. repair date and leave 'Last remarked date' Empty. *(a cycle symbol re-lined a few metres from its original position would only require a mod to its location and last remark date).

If the asset is missing from the system but was re-lined on site and is *shown to have been on the ground previously* then create a new asset and Only populate the 'last remark date' (taken from the W.O. repair date) and leave the install date Empty.

Zebra Crossing:

If a Zebra Crossing has been re-lined through **maintenance** the 'PX' asset type must have its last remarked date updated.

N.B. This is because the white stripes on zebras are not covered by the R.M. asset type

If the existing marking is extended by 50% or more, populate the 'Last Remarked' date and modify the geometry as well.

If the existing marking is shrunk (burnt off) just modify the geometry (the asset can be identified using the 'Work Order ID' column).

Applicable to BOTH Scheme & Maintenance work:

If the change to the asset requires a change to the diagram number then the old asset must be end dated and a new asset created with the date that the renewal or remarking order was completed.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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49 RIVER WALL (RR)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

49.1 River Wall (RR)

A structure to resist lateral pressure for an adjoining river, stream or brook.

49.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

49.1.2 Rules

(i) If the identity code is unreadable or not present an asterisk (*) should be used.

(ii) For more information on Date Last Cleaned please refer to the Cyclic Asset Update by Service document.

(iii) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

49.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

49.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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50 ROAD STUDS (RS)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
10	Update	Huw Harries	20/10/15	Added percentage threshold update rule

50.1 Road Studs (RS)

A stud placed in the Carriageway to guide traffic.

50.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

50.1.2 Rules

- Use Class: 1 = P*rohibitory* for Studs which occur in continuous single or double lines (usually red or amber). Use Class: 2= *Warning/Informatory* for Studs which occur in dotted lines and where Road Markings are non-prohibitory or advisory (usually white or green).
- White Studs may also be prohibitory when employed in a double white line system.

50.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

50.2 Exceptions to the End Date and Modification Rules

An asset update is required when 50% or more of the asset has been replaced or the Type, Class, Colour has changed

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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51 RETENTION SOCKET (RT)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
10.1	Update	Huw Harries	02/02/16	Added new asset type retention socket

51.1 Retention Socket (RT)

Are sockets, sunk into the pavement, which securely retain various types of illuminated and non-illuminated street furniture and post asset types. They enable assets to be installed or removed with ease and without the need for ground penetrating surveys.

51.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

51.1.2 Rules

51.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

51.2 Exceptions to the End Date and Modification Rules

An asset update is required when the purpose of the asset has changed, i.e. the asset type that it retains.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules)

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52 RETAINING WALL (RW)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

52.1 Retaining Wall (RW)

A structure constructed to resist lateral pressure from the adjoining ground, or to maintain a mass of earth in position.

52.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

52.1.2 Rules

(ii) If the identity code is unreadable or not present an asterisk (*) should be used.

(iii) For more information on Date Last Cleaned please refer to the Cyclic Asset Update by Service document

(iv) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

52.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

52.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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53 SAFETY BOLLARD (SB)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	24/01/11	Amended capital scheme & maintenance rules
8.3	Update	Huw Harries	24/08/11	Update to Rules (iii)
9.3	Update	Huw Harries	15/10/15	Added rule Origin of Supply
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

53.1 Safety Bollard (SB)

A device designed to warn drivers of obstructions or hazards, e.g. those located on refuges, traffic islands, or at the side of the Carriageway.

53.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

53.1.2 Rules

(i) A Bollard with the purpose of warning an oncoming driver of a hazard should be recorded under this asset type; hence it is a Safety Bollard.

(ii) *Number of Lamps* should be used to record the total amount of bulbs / tubes on the asset, e.g. If you had two lantern casings and two bulbs / tubes per casing, the total amount of bulbs / tubes should be recorded as **four.**

(iii) LED Base Box, the Number of Lamps should be 1 and the Watts should be the total wattage of the LED. Please refer to manufacturer website to get this information.

(iv) If the identity code is not present or unreadable, (tbc) should be entered.

(v) The Sign Diagram Number should be populated with the appropriate values from the Traffic Signs Regulations and General Directions 2016.

(vi) When no Sign is present on the safety bollard "none" should be provided for the *Sign Diagram* column.

(vii) If reflective patches exist on the safety bollard it should have a Reflectorised value 1 = Yes.

Origin of Supply for electrical assets:

For all TfL electrical assets the Origin of Supply attribute is there to record the associated **Asset ID** of any Post or Feeder Pillar which lies at the start of a circuit where a 'cut out' from the DNO network also exists, i.e. its DNO entry point.

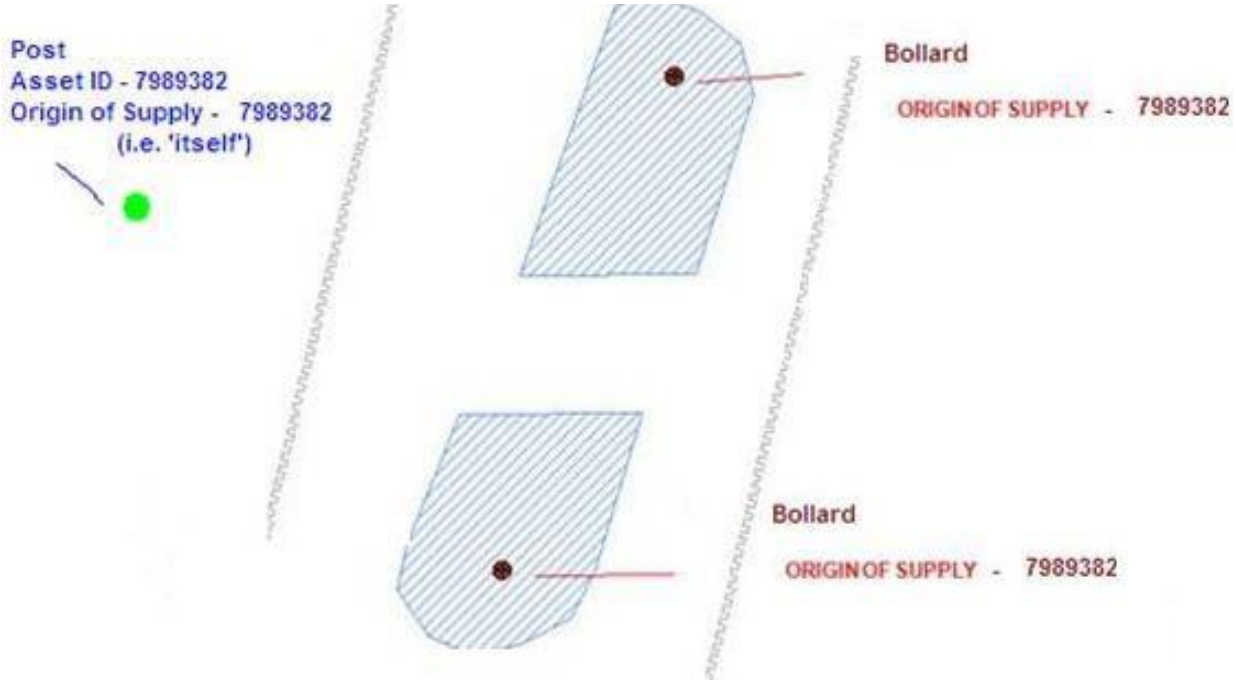
The attribute will inform the user where to completely isolate the circuit in its entirety from the DNO network so the electrical assets *along that circuit* can be tested or fixed. It should be noted that TFL are not allowed to work on the *actual DNO network.*

If the asset acting as the origin of supply is not a TfL asset or lies beyond the HA boundary it still needs collecting so engineers can identify its location.

The example below shows a Post (Lighting Column) as the origin for two safety bollards. Notice that the Post Asset ID also **matches** its 'Origin of Supply'. That is because the Post in this case is acting as its own origin of supply. We need to record this differentiation as not all posts act as such. The same rule applies to Feeder Pillars, some act as origins of supply and some merely link and extend private networks.

For *non-electrical* assets this attribute should be left empty.

The 'Supply Point if TfL Own' attribute is to be populated with an 'Asset ID' (rather than the asset Label number as it is currently) so that every electrical asset link with its *nearest supply point* can be captured in a more structured manner.
It will be worth getting those who install & rectify electrical items familiar with using these two attributes as soon as possible.



53.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

53.2 Exceptions to the End Date and Modification Rules

Applicable to BOTH Scheme & Maintenance work:

If the cover is replaced but the attributes remain the same then the asset is **not** end dated.

But if the base light is replaced – update 'Date Last Lamp Replacement'

If the base light gets changed to an LED system, (i.e. retro-fitted) electrically related fields, like 'watts' will need updating.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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54 SAFETY FENCE (SF)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
9.2	Update	Huw Harries	25/11/13	Completely new Rules list and example images added to cover upcoming value management strategy on SF
9.2	Quality Review	Herbert Micallef	02/12/13	
9.3	Update	Huw Harries	27/06/14	Further survey clarifications added
10	Update	Huw Harries	20/10/15	VRS clarification rules x to xv

Reference Documents

BS EN 1317

HA Standard TD19/06

54.1 Safety Fence (SF)

A Vehicle Restraint System (VRS) is a system installed on a road to provide a level of containment for an errant vehicle. They are sometimes referred to as Safety Barriers or Safety Fences. They do not include systems or fences to restrain pedestrian movement, such as Pedestrian Guard Rail (PGR), or highway items that are used to restrict vehicular access, success as gates and bollards.

The term Vehicle Restraint Systems is used by TfL to refer to all the safety barriers, terminals and transitions on the TLRN, excluding those on structures (referred to as Vehicle Parapets), which form part of Structures.

54.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

54.1.2 Rules

(i) The asset should be split where any of the defining attributes change, i.e. they should be homogeneous assets. When a fence crosses a network section envelope it should also be split and its 'end type' attribute given the value 'Section Break'
(ii) The asset should 'belong' to the most nearside lane in the direction of travel;
(iii) Where an asset is shared (e.g. it is in the central reservation of a dual carriageway), it shall 'belong' to the primary direction of travel (i.e. outward from London or clockwise).
(iv) Each asset may have a 'start type' with a Terminal or N/A option but it must end with a Terminal, Anchor, Transition or Section Break option;
(v) VCB, GRD, WIR, RHS are always Double Sided;
(vi) Adjacent Network Section only applies where a fence is separating traffic e.g. slip road or central reserve;
(vii) Post Spacing is designed spacing for that particular type of system rather than actual measured spacing (see separate Technical Note).
(viii) Containment Level provides an indication of the magnitude of vehicle impact that a safety restraint system can withstand without failure

The following table outlines the criteria for crash barrier systems under the safety standard EN1317 dynamic testing:

Containment Level	Vehicle Impact Test				
	Test	Impact Speed (km/h)	Impact Angle (degrees)	Vehicle Mass (t)	Vehicle Type
Normal Containment N1 N2	 TB 31 TB 32	 80 110	 20 20	 1.5 1.5	 Car Car
Higher Containment H1 H2 H3	 TB 42 TB 51 TB 61	 70 70 80	 15 15 20	 10.0 13.0 16.0	 Rigid HCV Bus Rigid HCV
Very High Containment H4a H4b	 TB 71 TB 81	 65 65	 20 20	 30.0 30.0	 Rigid HCV Articulated HCV

(ix) 'System Reference code' relates to the code / model number of the fence system. It directly relates to the 'Design Post Spacing', 'Containment Level' & 'Working Width' of the fence, e.g. below: the Hill and Smith 'FlexBeam' fence with a 'Ref' **FB03** tells the user that it has a 'Normal containment level 2'; 'Working Width W3' & 'Design Post Spacing' of '1.2m'

Single-Sided

Containment/ Working Width	System Ref.	Post Spacing	ISL
N2 W2	FB02	800mm	A
N2 W3	FB03	1200mm	A
N2 W4	FB04	2400mm	A
N2 W4	FB04b	3200mm	A
N2 W4	CEFB04	4000mm	A

(x) The use of 'End Type' value '97' (Non Applicable) is dependent upon the type of system the SF terminates at, e.g. if a box beam ended into a VarioGuard or Concrete barrier there would be no real end type.

(xi) Use ‘End Type’ = ‘Transition’ when an SF continues into another type of fence instead of ending at a terminal or survey envelope boundary, e.g. a fence transitioning from a type N2W1 into an N2W2.

(xii) There is **not** a one to one relationship between ‘Working Width’ and ‘Post Spacing’. Post spacing is dependent upon the working width *and* manufacturer.

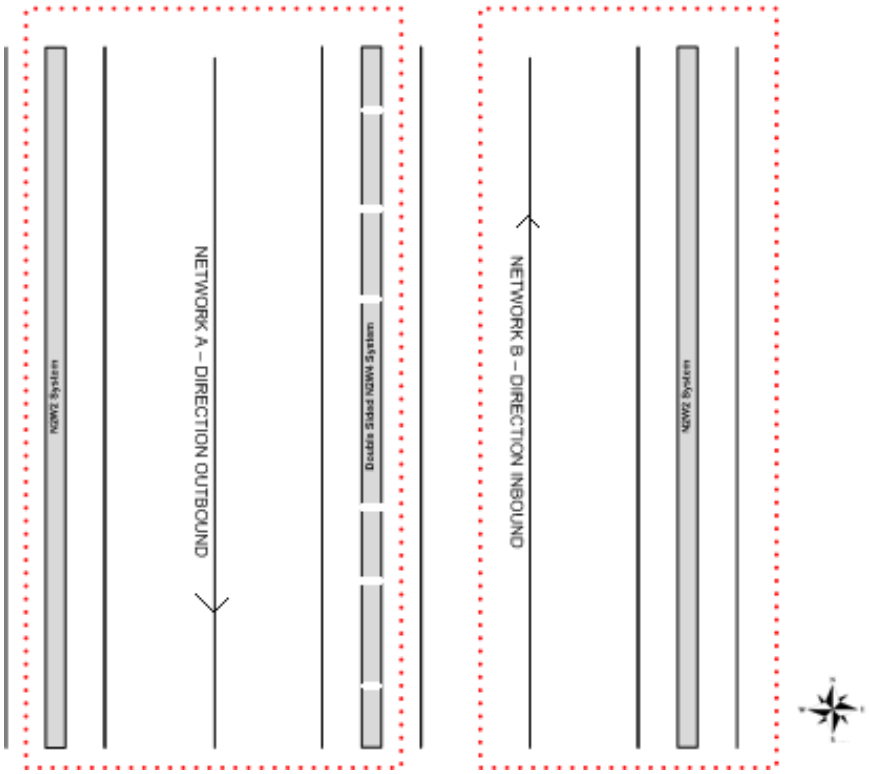
(xiii) If a TFL road parallels a private or borough road the ‘Adjacent Road Network’ would still = ‘yes’.

(xiv) The Anti-Glare characteristic of a fence should now be collected against SF’s.

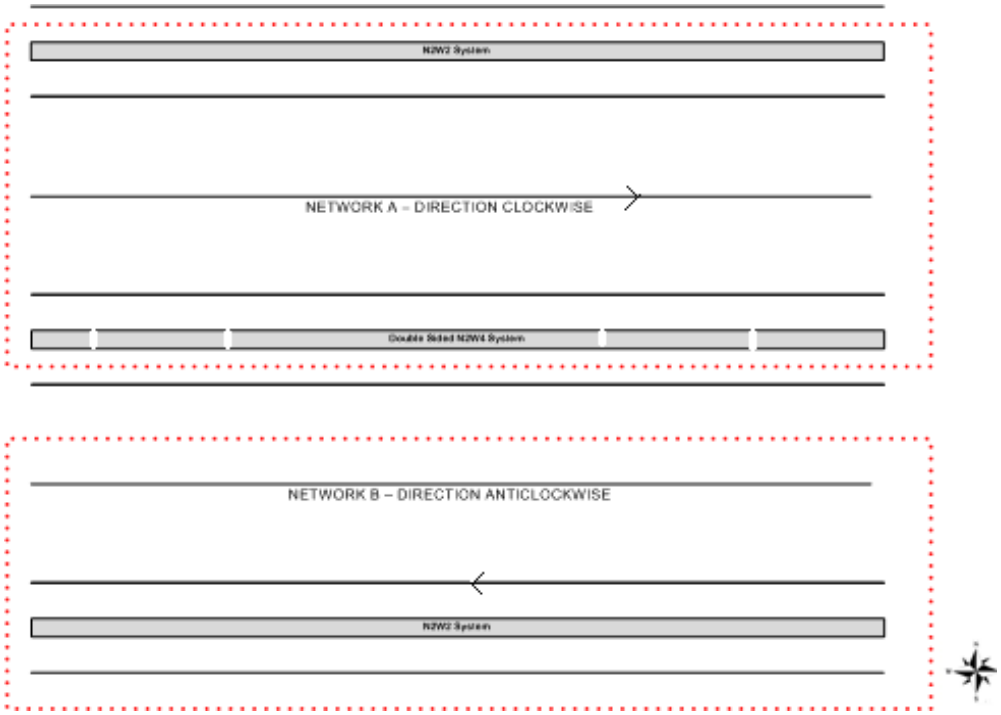
(xv) To find out which post types and start / end terminal types are permitted by which fence system see the ‘Permitted Attribute Options’ matrix at the end of this chapter.
N.B. some fence systems do not have Product / Reference Codes, e.g. Open Box Beams (OBB)

Examples

North bound / South bound differentiation of Central Reserve safety fences:



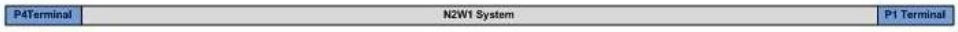
Clockwise / Anti-Clockwise differentiation of Central Reserve safety fences:



VRS Asset Collection – Real world vs Database Storage

Example 1 (Kerbside) direction of travel ----->

In Real World:



In the Database:

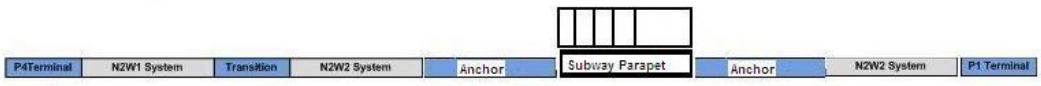
Made up of:
1 Asset

Asset A

START TYPE	CONTAINMENT LEVEL	WORKING WIDTH	END TYPE
P4 Terminal	Normal Level 2	Working Width Class W1	P1 Terminal

Example 2 (Kerbside) direction of travel ----->

In Real World:



In the Database:

Made up of:
3 Assets

Asset	START TYPE	CONTAINMENT LEVEL	WORKING WIDTH	END TYPE
A	P4 Terminal	Normal Level 2	Working Width W1	Transition
B	N/A	Normal Level 2	Working Width W2	Full Height Anchor
C	Full Height Anchor	Normal Level 2	Working Width W2	P1 Terminal

System Type	Permitted Attribute Options																					
	Start Type						End Type								Post Type							
	P1	P4	OTH	QuadGD	None	N/A	P1	P4	OTH	QuadGD	None	N/A	Sect Break	Transition	Driven	Socket	Surf Mounted Socket	Surf Mounted Stud	N/A	Wall Mounted	Wooden	UKN
GRD Guard (inc Varioguard)						✓						✓	✓						✓			
OBB Open Box Beam	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
DROBB Double Rail OBB	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
PAR Parapet						✓						✓	✓				✓	✓	✓			
PRP Proprietary System	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓
RHS Rectangular Hollow Section	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓
TCB Tensioned Corrugated Beam	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓
UCB Untensioned Corrugated Beam	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓
VCB Vertical Concrete Barrier						✓						✓	✓	✓					✓			
WIR Wire Rope	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓
OTH Other (if none of the above)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

54.1.3 GIS representation

This asset must be represented by a **LINE** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

54.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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55 SIGNS (SG)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	19/07/11	Rule (vi) change
8.3	Update	Huw Harries	07/11/11	Amended rule (x) to include detail on combined SG'S in TSRGD
8.3	Update	Huw Harries	01/02/12	Added xviii Red route sign collection beyond HAB
9.3	Update	Huw Harries	15/10/15	Added rule Origin of Supply
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract
11	DQ Team Review		20/10/2015	Added rule xxiii on changing bay signs

Reference Documents

Traffic Signs Regulations and General Directions

55.1 Signs (SG)

A Sign, signal or other device for the purpose of regulating, warning, guiding or informing traffic.

55.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

55.1.2 Rules

(i) If the identity code is not present or unreadable, (tbc) should be used.

(ii) To simplify the entry of sign sizes a set of default dimensions, i.e. width and height, can be found in the Traffic Signs Regulations and General Directions 2016 for triangular, rectangular and circular signs. Sign dimensions need to be recorded to the nearest 0.1m.

(iii) The mounting height of a sign is defined as the height from the bottom of the sign to the road level.

(iv) *Number of Lamps* should be used to record the total amount of bulbs / tubes on the asset, e.g. If you had two lantern casings and two bulbs / tubes per casing, the total amount of bulbs / tubes should be recorded as **four.**

(v) Only permanent Signs need to be recorded. So ignore temporary ones such as the yellow signs associated with new housing developments or road works.

(vi) If you come across signs that do not exist in the TSRGD or Red Route and Congestion Charge Sign Diagram Document, please email the TfL Data Quality team, who will be able to assign a new identity code.

(vii) If two identical Signs occur on the same Post they must be recorded as separate Signs at the same location, e.g. the numerous signs that exist on a single 'finger post'.

(viii) Category: Hazard Warning should ONLY be used to record Wig-Wag Signs that are used around Schools and Fire Stations that consist of two alternately flashing amber lights. However, Wig-wags that incorporate a **Red Light** for stopping traffic should be recorded under **Traffic Signal** Type: *Wig-Wag***.**

(ix) When the dimensions of the sign are not applicable a **null** value needs to be provided, e.g. a circular Sign will have a diameter measurement but not a height or width measurement.

(x) If a number of Signs are displayed on a single faceplate, each Sign must be recorded separately; at the same location. Be aware though that a few sign types in the TSRGD Manual *are* combined under one diagram number. In these special cases you would only record ONE sign. Some examples of this special case include diagrams: **675**, **880 and 818.4.** (Each asset record should only have one diagram number against it).

(xi) Street Name Plates, if they are free standing must be recorded under this asset type. If the Posts that hold up a name plate are **part of** the plate, then the posts must **not** be recorded. If a name plate is located on another feature, such as a Lighting Point, both the Street Name Plate and the Lighting Point must be recorded separately

(xii) When a sign is mounted on anything but a post (i.e. a structure or a section of pedestrian guard rail) a **null** value should be provided for the *Number of posts* attribute.

(xiii) Signs found on traffic signals, e.g. No Left Turn, need to have a Mounting Method: 6 (Traffic Signal)

(xiv) Signs found on bollards must have a Mounting Method: 1 (Post)

(xv) All Red Route control signs (including Congestion charge signs) should have the Ownership value 1 = TfL

(xvi) The Categories of signs are based on the classifications from the TSRGD and Red Route & Congestion Charge Diagram Number documents. For example, the following diagram numbers would have a Category = *Bus:* 958, 959, 960, 962 or 964. **N.B.** 958 and 959 are diagram numbers for Bus Lanes with Cycle access, but the predominant use (i.e. Bus) defines the Category of the sign.

(xvii) For more information on Date Last Cleaned, Date Last Bulk Change, Date Last Elect Test and Date Last Inspected please refer to the Cyclic Asset Update by Service document.

(xviii) If you come across any signs (or red lines) beyond the current highways authority boundary limit please collect what you see on site. If the works include the Removal or Installation of other asset types beyond the boundary, check with the person who authorised

the Revenue W.O. or the Schemes project manager and write to the Data Quality Team.

Origin of Supply for electrical assets:

For all TfL electrical assets the Origin of Supply attribute is there to record the associated **Asset ID** of any Post or Feeder Pillar which lies at the start of a circuit where a 'cut out' from the DNO network also exists, i.e. its DNO entry point.

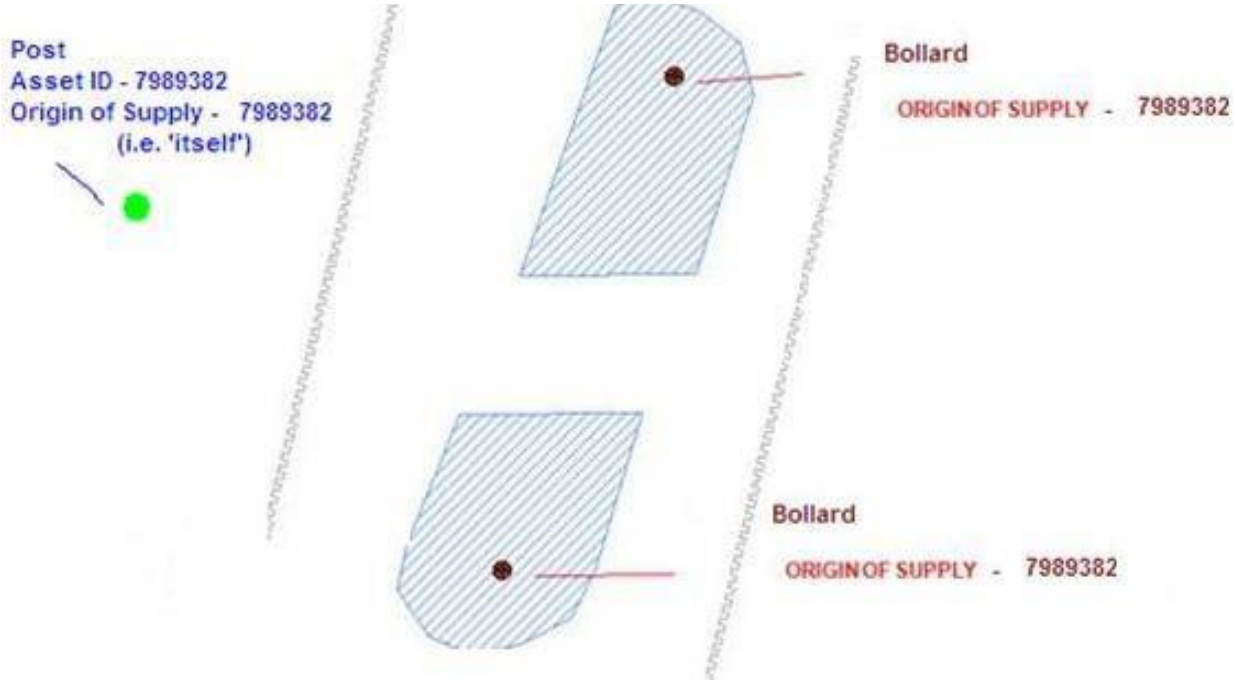
The attribute will inform the user where to completely isolate the circuit in its entirety from the DNO network so the electrical assets *along that circuit* can be tested or fixed. It should be noted that TFL are not allowed to work on the *actual DNO network.*

If the asset acting as the origin of supply is not a TfL asset or lies beyond the HA boundary it still needs collecting so engineers can identify its location.

The example below shows a Post (Lighting Column) as the origin for two safety bollards. Notice that the Post Asset ID also **matches** its 'Origin of Supply'. That is because the Post in this case is acting as its own origin of supply. We need to record this differentiation as not all posts act as such. The same rule applies to Feeder Pillars, some act as origins of supply and some merely link and extend private networks.

For *non-electrical* assets this attribute should be left empty.

The 'Supply Point if TfL Own' attribute is to be populated with an 'Asset ID' (rather than the asset Label number as it is currently) so that every electrical asset link with its *nearest supply point* can be captured in a more structured manner.
It will be worth getting those who install & rectify electrical items familiar with using these two attributes as soon as possible.



55.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

55.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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56 SUBWAY (SU)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

56.1 Subway (SU)

A structure carrying pedestrians (or cyclists) under the highway. This asset includes Subways relating to Underground Stations that pass under the highway.

56.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

56.1.2 Rules

(i) If the identity code is either not present or unreadable, an asterisk (*) should be entered.

(ii) On dual carriageways Subways must only be recorded against one section but shall be assessed in respect of the total length spanning both Carriageways.

(iii) Stairwells and ramps associated with the section of Subway under the highway should be recorded as the same inventory item.

(iv) All Mirrors, Gullies, Channels, Cameras and Lighting Points located within a Subway should be recorded within their respective asset types if they are maintained by TfL.

(v) For more information on Date Last Cleaned and Date Last Cycl Maint please refer to the Cyclic Asset Update by Service document

(vi) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

56.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

56.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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57 EMERGENCY TELEPHONE BOX (TB)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract

57.1 Emergency Telephone Box (TB)

A telephone located adjacent to the Carriageway, solely for use in an emergency.

57.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

57.1.2 Rules

(i) If the identity code is not present or unreadable, an asterisk (*) should be used.

(ii) Only Emergency Telephone Boxes which are the sole responsibility of TfL shall be recorded.

(iii) If it is unclear whether an asset is maintained by TfL, the item should be recorded.

57.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

57.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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58 TREE (TR)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	14/01/11	Added end date & Modification felling, pruning & watering rules
8.1	Update	Huw Harries	11/07/11	Updated end date & modification pruning rules
8.2	Update	Huw Harries	20/10/14	Update on self-sown, Woodland and Street tree differences
9.3	Update	Huw Harries	20/10/15	Added rule vii on Tree Faults

58.1 Tree (TR)

A perennial plant with a single woody, self-supported trunk and branches.

58.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

58.1.2 Rules

(i) Only Trees which are the responsibility of TfL should be recorded. If there is any doubt as to the ownership, then the Trees should be recorded.

(ii) ***When a Tree is completely removed from site a modification must be made to the Reason for Removal attribute*** - this attribute change can be made as part of the end date load. The ***Reason for Removal value*** will then be used by TfL to monitor why Trees are being felled on the network. Use *Data Error* if the removal of the asset is due to an inaccuracy in the inventory.

(iii) *When a tree has been felled,* ***but left as a stump –*** *leave the asset as* ***Live*** *and populate the Reason for Removal with a value.* This will then allow us to identify how many stumps are on our network. **Once the stump is removed from site end date the asset as above.**

(iv) Street trees that are at least 1 metre high and/or have a diameter exceeding 5cm need to be recorded under this asset item.

(v) Where a significant number of Trees are located very closely together (e.g. a copse or wooded area) then the Woodland asset should be used to record their area rather than trees. If a collection of trees already exists on the system and approval has been given to convert them to Woodland: then (a) resolve all outstanding work orders against them (if any) (b) then populate their Reason for Removal with 'Replaced by Woodland' and end date them.

(vi) Atr_14 - CAVAT SULE – it should be expressed as a **% Value Retained** (Please see table below: e.g. a value of 41 would translate to a SULE value of 95).

Safe Life Expectancy Adjustment:

Life Expectancy (Years)	% Value Retained
80+	100
40 – 80	95
20 – 40	80
10 – 20	55
5 – 10	30
<5	10

(vi) Tree Fault attributes are there to hold details of tree 'characteristics' rather than being a defect **flag** that requires immediate action. Therefore these fault values should only change after the next annual defect survey or five year survey (if a change has occurred)

58.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

58.2 Exceptions to the End Date and Modification Rules

When several Trees are felled / removed from a Woodland – Just add ONE new tree asset at that location. Assign all works to that record. Then end date the Tree (and provide a Reason for Removal value) when the work is complete.

Scenario:	The Attribute(s) to update:
Tree cut down to a stump only	**Reason for Removal** (with appropriate value) and **Physiological Condition** (with **'Stump'** value)
Tree Removed (*After* a separate piece of work has already stumped it)	Just the **End Date –** as the attribs above should already be populated
Tree stumped & removed from site (in one go)	**Reason for Removal** (with appropriate value) & **end date**
Tree Pruning (e.g. crown reduction, lifting, thinning, pollarding, dead wood removal)	The only pruning requiring maintenance recording is of the **Cyclic kind**. (And **even** on cyclic pruning you just populate the **Last Cyclically Pruned** date field. If it is unclear whether the work is cyclic contact the TfL Arboriculture Team for clarification. (Note: there is **NO** need to change fields like: **'crown spread', 'tree size' or 'height'**
Weed control; watering	N/A

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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59 TRAFFIC SIGNALS (TS)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
1.1	Update	Huw Harries	31/05/06	Added puffin box details to iv
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract

59.1 Traffic Signals (TS)

A system of different coloured lights, including arrow-shaped lights and pedestrian shaped lights, for stopping streams of vehicular and pedestrian traffic or permitting them to move.

59.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

59.1.2 Rules

(i) If the identity code is not present or is unreadable, an asterisk (*) should be used.

(ii) Each Post supporting a set of Traffic Signals must be included as a separate item under the Post asset type.

(iii) Type: *Cycle* should be used to record those lights controlling Cycle Crossings

(iv) Type: *Push Button Puffin* must only be used to collect those near side boxes that incorporate a Red and Green Man. These are ONLY found at puffin crossings. Sometimes a Push Button Puffin will appear as two separate boxes on a post (one box containing the push button, and one containing the green and red man lights). In such a case, just record **one** Push Button Puffin asset. Puffin crossings have no uniquely associated signal heads that is why **no** Type: *'Puffin'* exists.

(v) Type: *Wig-wag* is there to record the warning lights often found at level crossings or emergency service stations IF they incorporate a **red traffic signal**. Those wigwags **without** a red traffic signal (such as those outside schools) should be recorded under the ***Sign*** asset type with *Category: Hazard Warning.*

(vi) See the TS section of the Asset Management System Asset Photos document for more Type examples.

(vii) Sensors associated with Traffic Signals should **not** be recorded as a separate asset. They are part of the TS.

(viii) Control cabinets associated with a set of Traffic Signals are a separate inventory item. They should be collected under the Communication Cabinet (CC) asset type.

59.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

59.2 Exceptions to the End Date and Modification Rules

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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60 VERGE (VG)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
1.1	Update	Huw Harries	07/12/05	Added clarification rule about xo at (ii) and shifted existing point (ii) along by one
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
8.2	Update	Huw Harries	14/01/11	Amended maintenance rule on date last cut
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

60.1 Verge (VG)

The part of the road outside the Carriageway and generally at substantially the same level.

60.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

60.1.2 Rules

(i) If a Verge is recorded with *Surface Type: Grass* it should have a Grass Cutting Regime applied to it. If the *Surface Type* is **not** *Grass*, it should always have a *Grass Cutting Regime:* ***None***.

(ii) The grassed areas on Embankment and Cuttings (EC) and Planted Areas (PL) should be recorded under this asset type. They will also need a Grass Cutting Regime applied to them.

(iii) Verge polygons collected for grass cutting maintenance on Embankments and Planted Areas will be non-exclusive. (See the 'Exclusivity of Polygon Assets' topic in section 2.7.3 for more clarification).

(iv) Verges are often mistaken for Footway. One way of identifying Verges is by their construction. They are often built of a more durable material than the Footway so that when a vehicle mounts the Kerb less damage is caused. There also tends to be more items of Street Furniture installed on verges than on the footway.

(v) Refer to Footway (FW) for examples of how FW, VG and XO interact.

(vi) For more information on Date Last Cut please refer to the Cyclic Asset Update by Service document.

60.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

60.2 Exceptions to the End Date and Modification Rules

Maintenance / Service Instruction work

If grass on an island is re-seeded or cut the Attribute PA6-10 ‘Date Last Cut’ would need populating with the date the order was complete.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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61 VENT SHAFT (VS)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

61.1 Vent Shaft (VS)

A structure that provides ventilation for a tunnel.

61.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

61.1.2 Rules

(i) For ventilation points at ground level often found in the road (e.g. those used for tube tunnels) a *Cover Type: Other* should be used and a **null** value should be provided for the *Height* attribute.

(ii) No Edits should ever be made to the following attributes:

Structure Number
Structure Name
Type, Owner
BS Unique Number
BS Structure Type
Inspection programme

61.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

61.2 Exceptions to the End Date and Modification Rules

Attribute Updated

Cover Type and Height can be changed as an attribute update assuming that the location of the asset has not changed.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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62 WOODLAND (WL)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	19/10/09	
2	Quality Review	Huw Harries	19/10/09	
8.2	Update	Huw Harries	24/01/11	Added felling in woodland rule
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

62.1 Woodland (WL)

An area covered with trees

62.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

62.1.2 Rules

(i) Individual Trees (TR) should never be recorded where they overlap a woodland polygon, i.e. this asset type is the equivalent to a group of individual trees.

62.1.3 GIS representation

This asset must be represented by a **POLYGON** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

62.2 Exceptions to the End Date and Modification Rules

When several Trees are felled / removed from a Woodland – Just add ONE new tree asset at that location. Assign all works to that record. Then end date the Tree (provide a Reason for Removal value) when the work is complete.

(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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63 CROSS OVER (XO)

Author(s)

Data Quality Team

Quality Assurance & History

Version	Description	Undertaken by	Date	Remarks
1	Update	Huw Harries	15/03/05	
2	Quality Review	John Cook	01/04/07	
2	Update	Huw Harries	01/04/07	Changes to reflect new contract
11	Update	Shayna Meyers	15/05/19	Changes to reflect new contract

63.1 Crossover (XO)

A vehicular crossing of a Footway, Verge or Central Reserve. Includes minor junctions, driveways, field entrances and Central Reserve Crossovers.

63.1.1 Input Details

Please See 'Asset Metamodel – Attributes and Lists'

63.1.2 Rules

(i) A Crossover should be recorded in the Footway to represent the fact that a vehicular crossing is present at this location. Only **one** XO is required per crossing (even if two houses have access to the XO). This allows TfL to carry out more precise counts of areas of footway that have been strengthened.

(ii) A text entry (maximum 20 characters) to describe the Crossover IS required (e.g. factory entrance).

(iii) Central Reserve Crossovers need to be recorded even when barriers are present to prevent the passage of vehicles.

(iv) Crossovers should only be used for Vehicle Crossovers and **NOT** cycle or pedestrian ones.

(v) The width attribute is used to record the longitudinal width of the Crossover where it has been lowered to road level.

(vi) Refer to Footway (FW) for examples of how FW, VG and XO interact.

63.1.3 GIS representation

This asset must be represented by a **POINT** feature.

Refer to sections 2.7.1, 2.7.2 and 2.7.3 for more details.

63.2 Exceptions to the End Date and Modification Rules

Attribute Updated

The width attribute will require modifying if it is extended or reduced by more than a metre.
(See sections 2.8 and 2.9 for details of the End Date and Modification rules).

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Transport for London

64 APPENDIX A - CARRIAGEWAY ATTRIBUTE BREAKDOWN BY CONSTRUCTION LAYER

Rqd Key:

Yes = Expect data
* = This does not apply to all material types
Des = Useful to have but not mandatory
N/A = Attribute does not apply to the construction layer

Where Rqd is marked *, DES or N/A we would rather have a null submission if you are uncertain of

Surface Dressing			
Column	Attribute Name	Rqd	**Further Information**
ATR_1	ASSET_ID	Yes	
ATR_2	BOROUGH_NAME	Yes	
ATR_3	MATERIAL _TYPE	Yes	'High Friction Surfacing' relates to anti-skid – i.e. where material is laid down to assist in vehicular braking – This is usually made up of 'Bauxite' 'Aggregate Types'; Whereas 'Hardened Red' aggregate will apply to 'Surface Dressed' items
ATR_4	SURFACE_COLOUR	Yes	Should **never** have a Colour of 'None'
ATR_5	INSTAL_DATE	Yes	
ATR_6	TYPE_OF_LANE	Yes	
ATR_7	CONSTRUCTION_LAYER	Yes	
ATR_8	MATERIAL_NAME	*DES*	
ATR_9	HAPAS_CERTIFICATE_NO	*Yes*	
ATR_10	APPLICATION_TYPE	*Yes*	Usually 'Cold Applied'. (The words 'Resin' will imply cold applied & 'Thermoplastic' hot applied)
ATR_11	AGGREGATE_TYPE	Yes	If it is a bauxite but you don't know whether it is Chinese or Guyanan put down 'calcined'
ATR_12	INSTALLER_NAME	*DES*	
ATR_13	INSTALLER_CERTIFICATE_NO	*DES*	
ATR_14	LAYER_THICKNESS	N/A	
ATR_15	AGGREGATE_SOURCE	N/A	
ATR_16	TEXTURE_DEPTH	N/A	
ATR_17	POLYMER_NAME	N/A	
ATR_18	DEPTH_OF_INSTALLATION	N/A	
ATR_19	MATERIAL_DESCRIPTOR	N/A	
ATR_20	AGGREGATE_SIZE	N/A	
ATR_21	HRA_GRADING	N/A	
ATR_22	DESCRIPTOR	N/A	
ATR_23	LAYER_TYPE	N/A	
ATR_24	BINDER_TYPE	YES	
ATR_25	BINDER_GRADE	N/A	
ATR_26	WHEEL_TRACKING_CLASS	N/A	
ATR_27	POLISHED_STONE_VALUE	N/A	

ATR_28	HRA_CHIPPING_AGG_SIZE	N/A	
ATR_29	DESIGN_MIX	N/A	

Surface Course			
Column	Attribute Name	Rqd	**Further Information**
ATR_1	ASSET_ID	Yes	
ATR_2	BOROUGH_NAME	Yes	
ATR_3	MATERIAL _TYPE	Yes	If H&S or asbuilt does not define the material type of the (TSCS) thin surface course then record it as 'Asphalt Concrete'. Technically, 'SMA', 'ULM' & 'Enrobe' are types of 'Asphalt concrete' – they are just in the list to provide more detail when the material is known, instead of just saying asphalt concrete for every thin surface course.
ATR_4	SURFACE_COLOUR	Yes	(whether the aggregate has been colour treated – most will be 'None')
ATR_5	INSTAL_DATE	Yes	
ATR_6	TYPE_OF_LANE	Yes	
ATR_7	CONSTRUCTION_LAYER	Yes	
ATR_8	MATERIAL_NAME	DES	
ATR_9	HAPAS_CERTIFICATE_NO	*Yes*	
ATR_10	APPLICATION_TYPE	N/A	
ATR_11	AGGREGATE_TYPE	N/A	
ATR_12	INSTALLER_NAME	DES	
ATR_13	INSTALLER_CERTIFICATE_NO	DES	
ATR_14	LAYER_THICKNESS	Yes	
ATR_15	AGGREGATE_SOURCE	DES	e.g. Westleigh quarry. Can find on Certificate of Conformity under 'Source'.
ATR_16	TEXTURE_DEPTH	Yes	(In HAPAS)
ATR_17	POLYMER_NAME	DES	(& only if binder is a polymer)
ATR_18	DEPTH_OF_INSTALLATION	N/A	
ATR_19	MATERIAL_DESCRIPTOR	YES	If your 'Material Type' is 'asphalt concrete', 'ultra mince' (ULM) or 'Enrobe a module eleve' - its 'Material Descriptor' **will be 'AC'** – similarly 'hot rolled asphalt' will be 'HRA' & 'stone mastic asphalt' will be 'SMA'. For any other 'material type' leave the 'material descriptor' **blank/null**
ATR_20	AGGREGATE_SIZE	YES	
ATR_21	HRA_GRADING	*	
ATR_22	DESCRIPTOR	*	

ATR_23	LAYER_TYPE	YES	
ATR_24	BINDER_TYPE	*	**If this course uses H+ Binder please record as bitumen – Polymer Modified**
ATR_25	BINDER_GRADE	YES	Look for HAPAS info on 'penetration grade'
ATR_26	WHEEL_TRACKING_CLASS	Yes	Can get from 'Performance Level' value in HAPAS Wheel Tracking table
ATR_27	POLISHED_STONE_VALUE	Yes	TfL requires minimum of 65 which you can assume if not known. 68 or 70 can also be applied.
ATR_28	HRA_CHIPPING_AGG_SIZE	*	
ATR_29	DESIGN_MIX	DES	

Binder Course			
Column	Attribute Name	Rqd	**Further Information**
ATR_1	ASSET_ID	Yes	
ATR_2	BOROUGH_NAME	Yes	
ATR_3	MATERIAL _TYPE	Yes	
ATR_4	SURFACE_COLOUR	N/A	
ATR_5	INSTAL_DATE	Yes	
ATR_6	TYPE OF LANE	Yes	
ATR_7	CONSTRUCTION_LAYER	Yes	
ATR_8	MATERIAL_NAME	DES	
ATR_9	HAPAS_CERTIFICATE_NO	N/A	
ATR_10	APPLICATION_TYPE	N/A	
ATR_11	AGGREGATE_TYPE	N/A	
ATR_12	INSTALLER_NAME	N/A	
ATR_13	INSTALLER_CERTIFICATE_NO	N/A	
ATR_14	LAYER_THICKNESS	Yes	
ATR_15	AGGREGATE_SOURCE	N/A	
ATR_16	TEXTURE_DEPTH	N/A	
ATR_17	POLYMER_NAME	DES	(& only if binder is a polymer)
ATR_18	DEPTH_OF_INSTALLATION	*N/A*	
ATR_19	MATERIAL_DESCRIPTOR	*Yes*	If your binder is HDM or DBM its material type & descriptor **will be 'AC'**. If the binder is not AC, HRA or SMA leave this field **null**
ATR_20	AGGREGATE_SIZE	*Yes*	

ATR_21	HRA_GRADING	*	
ATR_22	DESCRIPTOR	*	
ATR_23	LAYER_TYPE	*Yes*	
ATR_24	BINDER_TYPE	*Yes*	
ATR_25	BINDER_GRADE	*Yes*	Because the new European standard uses ranges xx/xx – you must choose the relevant range that your binder grade value fits into, e.g. **'HDM50'** fits into **40/60**
ATR_26	WHEEL_TRACKING_CLASS	Yes	(When Binder is HRA with PMB we only expect tracking performance values of **either 1 or 2**)
ATR_27	POLISHED_STONE_VALUE	DES	
ATR_28	HRA_CHIPPING_AGG_SIZE	N/A	
ATR_29	DESIGN_MIX	Yes	

Stress Absorb Membrane (SAMI) **(Ignore membranes laid just to target cracks (i.e. anything looking like small patching)**			
Column	Attribute Name	Rqd	**Further Information**
ATR_1	ASSET_ID	Yes	
ATR_2	BOROUGH_NAME	Yes	
ATR_3	MATERIAL _TYPE	Yes	Bituminous is sometimes called flexiplast. Polyfelt & GlassGrid are both types of Geogrid (if there is difficulty finding this out, you can check the Bill of Quantities on the work order).
ATR_4	SURFACE_COLOUR	N/A	
ATR_5	INSTAL_DATE	Yes	
ATR_6	TYPE OF LANE	*Yes*	
ATR_7	CONSTRUCTION_LAYER	*Yes*	
ATR_8	MATERIAL_NAME	DES	
ATR_9	HAPAS_CERTIFICATE_NO	N/A	
ATR_10	APPLICATION_TYPE	N/A	
ATR_11	AGGREGATE_TYPE	N/A	
ATR_12	INSTALLER_NAME	N/A	
ATR_13	INSTALLER_CERTIFICATE_NO	N/A	
ATR_14	LAYER_THICKNESS	N/A	

ATR_15	AGGREGATE_SOURCE	N/A	
ATR_16	TEXTURE_DEPTH	N/A	
ATR_17	POLYMER_NAME	N/A	
ATR_18	DEPTH_OF_INSTALLATION	*Yes*	(i.e. from the surface). So just add up the depth of the layers above it! So if you had e.g. a surface course & binder of 35 mm & 65mm above it this value would be 100
ATR_19	MATERIAL_DESCRIPTOR	N/A	
ATR_20	AGGREGATE_SIZE	N/A	
ATR_21	HRA_GRADING	N/A	
ATR_22	DESCRIPTOR	N/A	
ATR_23	LAYER_TYPE	N/A	
ATR_24	BINDER_TYPE	N/A	
ATR_25	BINDER_GRADE	N/A	
ATR_26	WHEEL_TRACKING_CLASS	N/A	
ATR_27	POLISHED_STONE_VALUE	N/A	
ATR_28	HRA_CHIPPING_AGG_SIZE	N/A	
ATR_29	DESIGN_MIX	N/A	

Base Course			
Column	Attribute Name	Rqd	**Further Information**
ATR_1	ASSET_ID	Yes	
ATR_2	BOROUGH_NAME	Yes	
ATR_3	MATERIAL _TYPE	Yes	
ATR_4	SURFACE_COLOUR	N/A	
ATR_5	INSTAL_DATE	Yes	
ATR_6	TYPE OF LANE	Yes	
ATR_7	CONSTRUCTION_LAYER	Yes	
ATR_8	MATERIAL_NAME	DES	
ATR_9	HAPAS_CERTIFICATE_NO	N/A	
ATR_10	APPLICATION_TYPE	N/A	
ATR_11	AGGREGATE_TYPE	N/A	

ATR_12	INSTALLER_NAME	N/A	
ATR_13	INSTALLER_CERTIFICATE_NO	N/A	
ATR_14	LAYER_THICKNESS	YES	
ATR_15	AGGREGATE_SOURCE	N/A	
ATR_16	TEXTURE_DEPTH	N/A	
ATR_17	POLYMER_NAME	N/A	
ATR_18	DEPTH_OF_INSTALLATION	N/A	
ATR_19	MATERIAL_DESCRIPTOR	*Yes*	If your base is HDM or DBM its material type & descriptor **will be 'AC'**. If the base is not AC, HRA or SMA leave this **null**
ATR_20	AGGREGATE_SIZE	*Yes*	
ATR_21	HRA_GRADING	N/A	
ATR_22	DESCRIPTOR	N/A	
ATR_23	LAYER_TYPE	N/A	
ATR_24	BINDER_TYPE	N/A	
ATR_25	BINDER_GRADE	N/A	
ATR_26	WHEEL_TRACKING_CLASS	N/A	
ATR_27	POLISHED_STONE_VALUE	N/A	
ATR_28	HRA_CHIPPING_AGG_SIZE	N/A	
ATR_29	DESIGN_MIX	Yes	

Layer = Sub-Base			
Column	Attribute Name	Rqd	Further Information
ATR_1	ASSET_ID	Yes	
ATR_2	BOROUGH_NAME	Yes	
ATR_3	MATERIAL _TYPE	Yes	
ATR_4	SURFACE_COLOUR	N/A	
ATR_5	INSTAL_DATE	Yes	
ATR_6	TYPE OF LANE	Yes	
ATR_7	CONSTRUCTION_LAYER	Yes	

ATR_8	MATERIAL_NAME	N/A	
ATR_9	HAPAS_CERTIFICATE_NO	N/A	
ATR_10	APPLICATION_TYPE	N/A	
ATR_11	AGGREGATE_TYPE	N/A	
ATR_12	INSTALLER_NAME	N/A	
ATR_13	INSTALLER_CERTIFICATE_NO	N/A	
ATR_14	LAYER_THICKNESS	YES	
ATR_15	AGGREGATE_SOURCE	N/A	
ATR_16	TEXTURE_DEPTH	N/A	
ATR_17	POLYMER_NAME	N/A	
ATR_18	DEPTH_OF_INSTALLATION	N/A	
ATR_19	MATERIAL_DESCRIPTOR	N/A	
ATR_20	AGGREGATE_SIZE	N/A	
ATR_21	HRA_GRADING	N/A	
ATR_22	DESCRIPTOR	N/A	
ATR_23	LAYER_TYPE	N/A	
ATR_24	BINDER_TYPE	N/A	
ATR_25	BINDER_GRADE	N/A	
ATR_26	WHEEL_TRACKING_CLASS	N/A	
ATR_27	POLISHED_STONE_VALUE	N/A	
ATR_28	HRA_CHIPPING_AGG_SIZE	N/A	
ATR_29	DESIGN_MIX	N/A	

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APPENDIX N4
Asset Management Information System
Cyclic Updates by Core Service

CORE SERVICE	SERVICE NAME	ACTIVITY	FREQUENCY & TYPE	IN ACCORDANCE WITH CLAUSE	ASSET MANAGEMENT SYSTEM ASSETS INVOLVED	ATTRIBUTES OR DOCUMENTS INVOLVED	CHECK / UPDATE / ATTACH
1	Safety Inspections	Cyclic safety inspections.	Specification - Appendix 33/1A	3351AR	N/A	N/A	N/A
2	Service Inspections of Traffic Signs	Cyclic inspections of traffic signs.	Signs and Markings associated with entry to Congestion Charging Zone (CCZ), Ultra Low Emission Zone (ULEZ), Safer Heavy Good Vehicle Zone and the Low Emission Zone (LEZ) shall be inspected monthly	3352AR	SG [excl. ones mounted on Traffic Signal], LH, LL, RM, RS	CA2_Date Last Service Insp	U
			All other Signs and Markings inspected quarterly		SG [excl. ones mounted on Traffic Signal], LH, LL, RM, RS	CA2_Date Last Service Insp	U
3	Night Scouting	Night scouting.	Prinipal Road, High Pedestrain Density, High Cycle Flows: From April 1st until Oct 31st- Once Every Two Weeks From Nov 1st until March 31st- Once Every Week	3353AR	LP, SB, SG	N/A	N/A
			All other parts of the Client's Property: From April 1st until Oct 31st- Once every 4 weeks From Nov 1st to March 31st- Once every 2 weeks				
4	Road Markings (Excludes Road studs)	Edge of carriageway & parking control markings	Within 8 years of intial marking or last renewal (and at least once in service period)	1257AR	LL & RM	CA8_Last Remarked Date	U
		Transverse markings (e.g. stop lines, box junction markings)	Within 1 year of initial marking or last renewal and every 1 year thereafter		RM & LH	CA8_Last Remarked Date	U
					PX (Where type= Zebra)	CA8_Last Remarked Date	U
		All other road markings (e.g. lane markings, letters, numerals and symbols)	Within 2 years of initial marking or last renewal and every 2 years thereafter	1257AR	LL & RM	CA8_Last Remarked Date	U
5	Lighting and Electrical	Bulk change lamps for all road lighting, lit sign units, belisha beacons, and bus station units, including those in pedestrian subways, excludes LEDs.	Asset Management Information System	Bulk lamp change 1453AR Cyclic Maintenance Sign Lighting 1251AR and 1450AR Street lighting 1350AR and 1450AR.	LP (where lamp replacement does not constitute a whole new LP unit/ asset), SG & SB (where internally illuminated and where lamp replacement does not constitute a whole new LP unit/ asset)	CA10_Date_Last_Bulk_Change	U
		Road lighting and traffic sign routine maintenance				Review the asset against its record within the asset inventory management system and make appropriate update or amendment as necessary	C
		Routine maintenance of feeder pillars, intake boxes, cabinets for all road lighting and in Bus Stations.	Frequencies of no more than 6 years Where electricity meters are present record engergy consumption no less than every two years	1455AR	FP (& PS If meter present)	CA10_Meter_reading CA10_Date_Meter_reading_taken (otherwise the data will have no context)	U
		Electrical Testing.	During routine maintenance activity and at inverals of no more than once every 10 years	1424	LP, SG, SB, FP, & PS (SG & SB where internally illuminated)	CA2_Date_Last_Electrical_Test	U
						Ele test cert ref no	U
						• Identity Code • Electricity supplier (And if has a meter or is origin of supply then also): • MPAN no • Isolation Point (Y/N) • Fuse Rating • Origin of supply	C
						Periodic 7671 Inspection form associated at asset level	A

CORE SERVICE	SERVICE NAME	ACTIVITY	FREQUENCY & TYPE	IN ACCORDANCE WITH CLAUSE	ASSET MANAGEMENT SYSTEM ASSETS INVOLVED	ATTRIBUTES OR DOCUMENTS INVOLVED	CHECK / UPDATE / ATTACH
6	Drainage	Clean gullies, linear drainage channel systems, combined drainage and kerb systems, interceptors, catchpits, chambers and soakaways	Intervals not exceeding 24 months	Series 0500 & 0550	CA (where Owner = TFL)	CA13_Date Last Cleaned	U
					CH	CA13_Date Last Cleaned	U
					NI	CA13_Date Last Cleaned	U
					IB	CA13_Date Last Cleaned	U
					LD	CA13_Date Last Cleaned	U
					PG	CA13_Date Last Cleaned	U
					GY	CA17_Date Last Cleaned	U
						Percntge of Pot Holding Debris	U
						Percntge of Debris Removed	U
						• Cover Type • Gully Type • Chamber Material	C
		Clean piped subways, culverts and open water surface water systems	Intervals not exceeding 24 months	Series 0500 & 0550	CV (where Owner = TFL)	CA13_Date Last Cleaned	U
		Removie all accumulated silt, detritus, vegetation and roots from inverts and banks of drainage ditches	Intervals not exceeding 24 months	Series 0500 & 0550	DI	CA13_Date Last Cleaned	U
		Cleaning of filter drains, loosening the filter material, controlling weeds and removing detritus from filter drains	Intervals not exceeding 36 months	Series 0500 & 0550	FD	CA13_Date Last Cleaned	U
7	Landscape and Ecology	Enhanced High frequency grass Cutting	20 times p/a	3007MR	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = ENHANCED HIGH FREQUENCY)	CA15_Date Last Grass Cut	U
						• Grass Cutting Regime • Surface	C
		High frequency grass Cutting	14 times p/a	3007MR	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = HIGH FREQUENCY)	CA15_Date Last Grass Cut	U
						• Grass Cutting Regime • Surface	C
		High frequency grass Edge Trimming	4 times p/a	3007MR.10	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = HIGH FREQUENCY)	CA15_Date of Last Edging	U
						• Grass Cutting Regime • Surface	C
		High frequency grass Edge Reforming	2 times p/a	3007MR	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = HIGH FREQUENCY)	CA15_Date Last Reformed	U
						• Grass Cutting Regime • Surface	C
		Medium frequency grass Cutting	8 times p/a	3007MR	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = MEDIUM FREQUENCY)	CA15_Date Last Grass Cut	U
						• Grass Cutting Regime • Surface	C
		Medium frequency grass Edge Trimming	2 times p/a	3007MR.14	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = MEDIUM FREQUENCY)	CA15_Date of Last Edging	U
						• Grass Cutting Regime • Surface	C
		Medium frequency grass Edge Reforming	annualy		CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = MEDIUM FREQUENCY)	CA15_Date Last Reformed	U
						• Grass Cutting Regime • Surface	C
		Low frequency grass Cutting	4 times p/a	3007MR	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = LOW FREQUENCY)	CA15_Date Last Grass Cut	U
						• Grass Cutting Regime • Surface	C
		Minimal frequency grass Cutting	Once p/a	3007MR	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = MINIMAL FREQUENCY)	CA15_Date Last Grass Cut	U
						• Grass Cutting Regime • Surface	C
		Wildflower Areas Cutting	Two p/a	3007MR sub-clause 3007.26 (i) sub-clause 3007.26 (ii)	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = WILDFLOWER)	CA15_Date Last Grass Cut	U
						• Grass Cutting Regime • Surface	C
		1.8m edge of Carriageway Cutting	Once p/a	3007MR	CI, CR, VG (SURFACE = GRASS)	CA15_Date Last Grass Cut	U
						• Surface	C
		Weed control in high and medium frequency grassed areas	6 times p/a	sub-Clause 3002MR.6	CI, CR, VG (SURFACE = GRASS AND GRASS CUTTING REGIME = HIGH & MEDIUM FREQUENCY)	N/A	N/A
		Weed control in cultivated beds and areas	4 times p/a	3010.2	PL (REGIME_CATEGORY = GENERAL)	CA15_Date_last_weeded	U
		Weed Removal Hedges	Twice p/a	sub-Clause 3002MR.7	HG	CA15_Date Last Weeded	U
		Weed Removal in paved areas of roads wtih a speed limit of 40mph or more	Twice p/a	sub-Clause 3002MR.3	N/A	N/A	N/A
		Prune Shrubs	Annually	3010.5 to 3010.9	PL REGIME_CATEGORY = GENERAL SHRUB or HIGH AMENITY	CA15_Date last pruned	U
						• Regime_Category	C
		Trim Hedges	Twice p/a	sub-Clause 3010.11 through to sub-Clause 3010.31	HG	CA15_Date last pruned	U
						Condition Dominant Species Leaf size Nesting Bird potential Notes	C
		Coppicing of shrubs grown for their stem colour	Once every three years during February and March.		PL (SHRUBS GROWN FOR COLOURED STEMS => 1 %)	CA15_Date_last_coppiced	U
		Remove basal sucker growths and epicormic growth from trees	Annually	sub-Clause 3010MR.53(i) sub-Clause 3010.53(v)	TR	CA15_Date last growth removal	U
		Manage water bodies (lagoons and balancing ponds)		3011MR	SA (TYPE = BALANCING POND)	TO BE CONFIRMED	U
		Remove silt, overlying rubbish, and debris from water bodies	Every 4 years	3011MR.8	SA (TYPE = BALANCING POND)	Date Last Cleared	U

CORE SERVICE	SERVICE NAME	ACTIVITY	FREQUENCY & TYPE	IN ACCORDANCE WITH CLAUSE	ASSET MANAGEMENT SYSTEM ASSETS INVOLVED	ATTRIBUTES OR DOCUMENTS INVOLVED	CHECK / UPDATE / ATTACH
8	Street Cleaning	Cleaning of Traffic Signs and Bollards (both lit and unlit)	Traffic Bollards: Twice p/a in March and November Traffic Signs mounted on Gantries: Every 6 years All other Traffic Signs: Every 3 years	3158AR	SB, SG (Both lit & unlit) Excludes: signs that are part of traffic signals	CA8_Date_Last_Cleaned	U
		Street Sweeping of roads	Every 6 weeks	3150AR	CW	N/A	N/A
		Cleaning of Pedestrian Subways and Footbridge	annual	3151	BO, BU & SU	TO BE CONFIRMED	TBC
		Clean of all surface mounted expansion joints	annual	3161AR	TBC	TO BE CONFIRMED	TBC
		Clean of all bearing shelves and bearings on road and foot bridges on or over roads	annual	3160	TBC	TO BE CONFIRMED	TBC
		Cleaning of drinking fountains	As Clause 3164AR	3164AR	TBC	TO BE CONFIRMED	TBC
10	Winter Service	Winter Service Activities		Series 2850	N/A	N/A	N/A

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APPENDIX N5
Asset Management Information System Integration

1. Interface Methodology

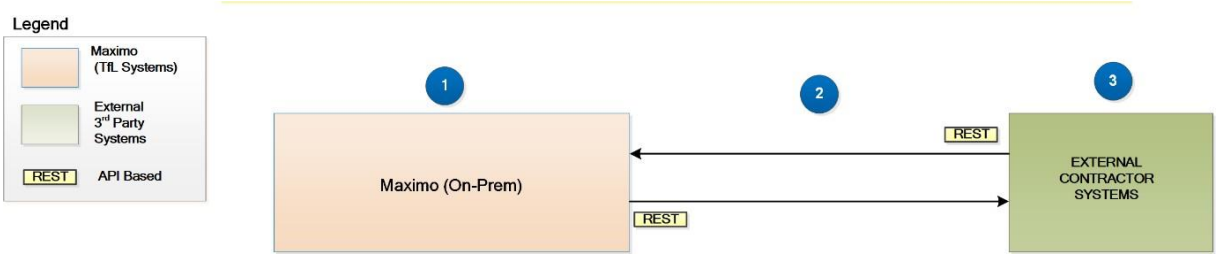
This document provides high level information should the Contractor opt to exchange information via an interface rather than use the *Client's* AMIS directly.

Interface Specifications, which will provide lower level details to enable a remote system to interact with the AMIS system, will be provided to the *Contractor* following contract award.

The *Contractor* is responsible for connecting to a public Application Programming Interface (API) connection and transform data into and back from their own system(s). The *Client*'s primary Asset Management Information System (AMIS) (IBM Maximo) will connect to the *Contractor's* system(s) using a two-way public Representational State Transfer (REST) API.

Figure 1 below depicts the planned integration.

Figure 1 – Example *Client*'s AMIS (IBM Maximo) to *Contractor* System Interface



1) IBM Maximo extends relevant asset, work order and invoice data journeys through REST based API's to be consumed by the *Contractor*'s system(s).
2) Access is connected through the *Client* and *Contractor* firewalls passing through an API management service which wraps the IBM Maximo out of box workflow APIs and JSON Web token (JWT) for external systems to consume and interact with.
3) The *Contractor* is served via a REST based interface as a means of integration. The *Contractor* consumes these services and interacts with the *Client's* standard business process for relevant asset, work order and invoice data journeys.

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APPENDIX O
Contract Management Communication Systems for Projects

Contract Management Communication Systems for Projects

The *Contractor* shall implement an extranet based NEC4 Contract Management System.

For the purposes of this contract the *Client* shall provide access to the “ASITE” System (or similar) at no cost to the *Contractor* and training will be provided for use of the system. The system will manage high level processes and workflows within the contract, including but not limited to, Task Orders, Drawings, Early Warnings, Compensation Events and other contract communications.

The *Contractor* shall provide and operate the ASITE Document Management System for use by all parties to the contract.

For day to day communications the *Contractor* and *Client* shall use the Autodesk BIM360 digital management tool, in relation but not limited to:

a) The transfer of latest construction drawings and revisions, including ‘marked up drawings’, attaching site photographs and recording of site instructions.
b) The transfer of checklists to facilitate compliance with H&S Standards and the ‘look and feel’ of construction sites.
c) The capture of safety issues, recording snags or incomplete works for use by TfL Quality Officers, Project Managers and the *Contractor*.

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APPENDIX P
Drivers and Vehicles

***Contractor*'s Vehicles**

Definitions

1 For the purposes of this appendix to the Scope the following expressions shall have the following meanings:

a) "Agreed DVS Plan" means the Initial DVS Plan as updated and approved in accordance with the terms of this appendix to the Scope;

b) "Approved Progressive Driver Training" means an ongoing programme of Drivers' training to ensure they have the appropriate knowledge, skills and attitude to operate safely on urban roads, (including on-road experience from a cyclist's perspective), which is required to be repeated at least once every 5 years;

c) "Category N2 HGV" means a vehicle designed and constructed for the carriage of goods having a MAM exceeding 3,500 kilograms but not exceeding 12,000 kilograms;

d) "Category N3 HGV" means a vehicle designed and constructed for the carriage of goods and having a MAM exceeding 12,000 kilograms

e) "Car-derived Van" means a vehicle based on a car, but with an interior that has been altered for the purpose of carrying larger amounts of goods and/or equipment;

f) "Collision Report" means a report detailing all collisions during the previous 12 months involving injuries to persons or fatalities;

g) "Delivery and Servicing Vehicle" means HGV, a Van or a Car-derived Van;

h) "Driver" means any of the *Contractor's* employee (including an agency or contracted driver), who operates Delivery and Servicing Vehicles on behalf of the *Contractor* while delivering the Services;

i) "DVLA" means Driver and Vehicle Licensing Agency;

j) "Direct Vision Standard" or "DVS" means Direct Vision Standard, a performance based assessment and rating tool, as updated from time to time that measures how much direct vision a Driver has from a Category N3 HGV cab in relation to other road users. Further information can be found at: www.tfl.gov.uk ;

k) "FORS" means the Fleet Operator Recognition Scheme, which is an accreditation scheme for businesses operating commercial vehicles including vans, HGV, coaches and motorcycles. It offers impartial, independent advice and guidance to motivate companies to improve their compliance with relevant laws and their environmental, social and economic performance;

l) "FORS Standard" means the standard setting out the accreditation requirements for the Fleet Operator Recognition Scheme, a copy of which can be found at: www.fors-online.org.uk

m) "Gold Accreditation" means the highest level of accreditation within the FORS Standard, the requirements of which are more particularly described at: www.fors-online.org.uk

n) "HGV" means a vehicle with an MAM exceeding 3,500 kilograms;

o) “MAM” means the maximum authorised mass of a vehicle or trailer including the maximum load that can be carried safely while used on the road;

p) “Non-road mobile machinery” or “NRMM” is any mobile machine or vehicle that is not solely intended for carrying passengers or goods on the road.

q) “Silver Accreditation” means the minimum level of accreditation within the FORS Standard, the requirements of which are more particularly described at: www.fors-online.org.uk

r) “Van” means a vehicle with a MAM not exceeding 3,500 kilograms.

Emissions requirements

2 The Contractor ensures that for all vehicles used to Provide the Service;

a) CO2, air quality exhaust emissions and noise impacts are minimised; and a technology neutral approach is adopted (i.e. the *Contractor* is free to choose which vehicle propulsion/fuel/energy source is adopted to meet these requirements);

b) Meet or better the following CO2 limits and European emission standards (Euro Standards) from the *starting date*:

i) M1 category cars - maximum certified CO2 emissions of 99 g/km (as measured on the NEDC cycle) and a minimum of Euro 6 emission standard;

ii) N1 Class I vans equal to or less than 1,205 kg kerb weight - maximum certified CO2 emissions of 115 g/km (as measured on the NEDC cycle) and a minimum of Euro 6 emission standard;

iii) N1 Class II vans between 1,205 and 1,660 kg kerb weight - maximum certified CO2 emissions of 155 g/km (as measured on the NEDC cycle) and a minimum of Euro 6 emission standard;

iv) N1 class III vans greater than 1,660 kg kerb weight - maximum certified CO2 emissions of 189 g/km (as measured on the NEDC cycle) and a minimum of Euro 6 emission standard;

v) N2 and N3 category vehicles exceeding 3,500 kg kerb weight - Euro VI emission standard.

c) Any replacement vehicle/engine meets the European or UK regulated emissions standard in force for new vehicles at the time of replacement (currently Euro 6/VI). Replacement vehicles must also meet the CO2 limits, as applicable, set out above.

d) The *Contractor* and any Subcontractor uses zero or ultra low emission vehicles in their fleet where and when feasible. The *Contractor* and any Subcontractor mirrors the GLA group, London boroughs and wider public sector support fleet aims, to achieve:

i) All cars to be zero emission capable by 2025;

ii) All new cars and vans (not exceeding 3,500 kg kerb weight) to be zero emission capable from 2025;

iii) All new and replacement commercial vehicles exceeding 3,500 kg kerb weight to be fossil fuel-free from 2030.

3 The *Contractor* sets out the procedures and responsibilities for managing their vehicle fleet within their Environmental Management Plan (EMP). In addition, to achieve continual improvement in relation to fleet vehicle emissions, the *Contractor* proposes improvement actions within their annual EMP and agree these with the *Service Manager*. once agreed, the *Contractor* implements the improvement actions and keep the *Client* apprised of progress.

4 The *Contractor* ensures that all vehicles and NRMM are switched off when not in use.

Non Road Mobile Machinery

5 The *Contractor* and all Subcontractors ensure that NRMM used to Provide the Service meets the progressively tightening emission requirements of the Greater London Authority's (GLA's) NRMM Low Emission Zone, as set out in the Mayor's London Environment Strategy (Policy 4.2.3). Further information may be found in guidance published by the GLA.

6 The *Contractor* demonstrates compliance with the NRMM Low Emission Zone by using the GLA's NRMM register to log all applicable NRMM used to Provide the Service.

7 The *Contractor* applies to the GLA for an exemption to the NRMM Low Emission Zone for any NRMM that does not meet the requirements because the machinery is not available or it is not feasible to meet the requirements.

8 The *Contractor* and all Subcontractors comply with the progressively tightening standards of the NRMM Low Emission Zone for the Service Period and any changes to the requirements of the NRMM Low Emission Zone do not constitute a change to the Scope.

Fleet Operator Recognition Scheme

9 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Service, within 90 days of the *starting date* the *Contractor*:

a) registers for FORS (unless already registered);

b) attains the standard of Silver Accreditation (or higher) (unless already so accredited); and

c) maintains the standard of Silver Accreditation by way of an annual independent audit in accordance with the FORS Standard up to and including 31 March 2025. Alternatively, where the *Contractor* has attained Gold Accreditation, the maintenance requirements are undertaken in accordance with the periods set out in the FORS Standard.

10 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Service, from and including 1 April 2025 the *Contractor*:

a) attains the standard of Gold Accreditation; (unless already so accredited) and

b) maintains the standard of Gold Accreditation by way of an annual independent audit in accordance with the FORS Standard for the remaining duration of the *service period*.

11 Within 90 days of the *starting date* the *Contractor* ensures that every HGV, which it uses to Provide the Service, is fitted with safety features consistent with the FORS Silver Accreditation for the period up to and including 31 March 2025.

12 From 1 April 2025 the *Contractor* ensures that every HGV, which it uses to Provide the Service, is fitted with safety features consistent with the FORS Gold Accreditation.

Driver Training

13 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Services the *Contractor* ensures that each of its Drivers attend the Approved Progressive Driver Training at least once every 5 years.

Collision Reporting

14 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Service, the *Contractor* within 15 days of the *starting date* provides to the *Client* a Collision Report. The *Contractor* provides to the *Client* with an updated Collision Report within five Business Days of a written request from the *Client* at any time.

Self-Certification of Compliance

15 Where the *Contractor* operates Delivery and Servicing Vehicles to Provide the Services, within 90 days of the *starting date*, the *Contractor* provides a written report to the *Client* detailing its compliance with Clauses 9, 10, 11, 12, 13 and 14 of this appendix to the Scope (as applicable)(the "**WRRR Self-Certification Report**"). The *Contractor* provides updates of the WRRR Self-Certification Report to the *Client* on each six month anniversary of its submission of the initial WRRR Self-Certification Report.

FORS Obligations of the *Contractor* Regarding Subcontractors

16 The *Contractor* ensures that those of its Subcontractors who operate Category N2 HGVs, Category N3 HGVs, Vans and/or Car-derived Vans to provide the Services comply with the corresponding provisions of this appendix to the Scope:

a) Clauses 9, 10, 11, 12, 13, 14, 15, 18 and 27,

as if those Subcontractors were a party to the contract.

Failure to Comply

17 Without limiting the effect of any other clause of the contract relating to termination, if the *Contractor* fails to comply with clauses 9, 10, 11, 12, 13, 14, 15 and 16 of this appendix to the Scope;

a) the *Contractor* has committed a material breach of its obligations; and

b) the *Client* may refuse the *Contractor*, its employees, agents and Delivery and Servicing Vehicles entry onto any property that is owned, occupied or managed by the *Client* or any other *Client* for any purpose (including but not limited to deliveries).

Direct Vision Standard

18 The *Contractor* ensures that:

a) from 1 April 2021 all Category N3 HGVs used to Provide the Services achieve a minimum of a three (3) star Direct Vision Standard rating up to and including 31 March 2025;

b) from and including 1 April 2025 all Category N3 HGVs used in the provision of the Services achieve a minimum of five (5) star Direct Vision Standard rating.

19 Within ninety (90) days of the *starting date* the *Contractor* develops and submits to the *Service Manager* an Initial DVS Plan using the template set out in clause 29. The Initial DVS

plan captures how the *Contractor* plans to meet the DVS requirements under 18 a) and 18 b).

20 The *Service Manager* either;

a) approves the Initial DVS Plan, in which case such plan becomes the Agreed DVS Plan; or

b) provides the *Contractor* with any comments on and/or amendments to the Initial DVS Plan.

21 Within thirty (30) days of receipt of any comments and/or amendments on the Initial DVS Plan from the *Service Manager,* the *Contractor*:

a) develops the Initial DVS Plan to reflect such comments and/or amendments; and

b) submits an updated Initial DVS Plan to the *Service Manager* for approval.

22 Within fifteen (15) days of receipt of the updated Initial DVS Plan, the *Service Manager* confirms that either the updated Initial DVS Plan:

a) is approved, in which case it becomes the Agreed DVS Plan; or

b) not approved and provide its further comments and/or amendments to the *Contractor* and the *Contractor* revises and re-submit the updated Initial DVS Plan for approval in accordance with clause 21.

The process set out in clauses 21 and 22 shall be repeated until the updated Initial DVS Plan is approved by the *Service Manager*.

23 Where the *Service Manager,* acting reasonably, has not approved the updated Initial DVS Plan, the *Contractor* may refer that decision to the dispute resolution process set out in the contract.

24 Without limiting any other provision of the contract, the *Contractor*, at no additional cost to the *Client*, and as part of the *Services*:

a) implements, observes and complies with the Agreed DVS Plan; and

b) reviews and amends the Agreed DVS Plan (as necessary) on each 12 month anniversary of the *starting date* or earlier if requested by the *Service Manager*, to reflect:

i) any changes to the nature of the Services; and

ii) any comments and/or amendments made or proposed by the *Service Manager.*

25 The *Contractor* nominates a member of the *Contractors* personnel with the necessary experience, competency and authority to:

a) be responsible for implementation and compliance with the Agreed DVS Plan; and

b) act as the *Contractors* authorised representative on all matters concerning the Agreed DVS Plan ("**DVS Co-ordinator**").

On each 12 month anniversary of the *starting date* , the *Contractor* submits a report to the *Service Manager* which sets out the progress in respect of implementation of the Agreed DVS Plan and confirms (with supporting evidence) that the *Contractor* has complied with the Agreed DVS Plan.

26 Without limiting the effect of any other provision of the contract relating to termination, if the *Contractor* fails to comply with the DVS requirements terms of this clause:

a) the *Contractor* shall be deemed to have committed a material breach of the contract and

b) the *Service Manager* may refuse the *Contractor*, its employees, agents, Subcontractors and each Category N3 HGV entry onto any property that is owned, occupied or managed by or on behalf of the *Client* for any purpose (including but not limited to deliveries).

27 The *Contractor* can apply to the S*ervice Manager* for an exemption to the DVS requirements for any particular vehicle where, in the *Contractors* view, it is not feasible to meet the requirements. An application for an exemption shall include the vehicle/s for which an exemption is required, the duration of which the exemption shall apply and the reasons why the exemption is required. The *Service Manager* reviews and either:

a) accepts in writing the exemption for the duration requested; or

b) declines the application for an exemption and the DVS requirements under this appendix to the Scope are maintained.

28 So far as is practicable, all vehicles used by the *Contractor* to Provide the Service, while in use, bears on both sides and the rear, identity marks bearing the trading name of the *Contractor*. The identity marks are maintained by the *Contractor* throughout the *service period*.

29 Initial Direct Vision Standard Plan Template

Note: This Template illustrates how the *Contractor* plans to meet the DVS requirements.

Contact details

Contractor		
Contract name	Contract ref	
DVS Coordinator	Name	
Job title	Email	
Phone number	Mobile number	

Contract overview

Provide the HGV delivery and servicing requirements of the contract to which the DVS requirements are applicable and have been applied.

DVS Plan

The *Contractor* shall complete the following tables outlining how you plan to meet your DVS obligations in delivering the contract.

Fleet details	Metric	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5
Does the *Contractor* operate 'own account' HGVs to deliver the services?	Y/N						
How many own account N3 Category HGVs does the *Contractor* operate to deliver the services?	Quantity						
How many sub-contract fleet operators does the *Contractor* employ to deliver the services?	Quantity						
How many sub-contract N3 Category HGVs does the *Contractor* operate to deliver the services?	Quantity						

What is the total number of N3 Category HGVs employed to Provide the Service?	*Total						

DVS Rating	Priority	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5
What is the total number of zero-star rated N3 Category HGVs employed to deliver the services?	High						
What is the total number of one star rated N3 Category HGVs employed to deliver the services?	Medium						
What is the total number of two-star rated N3 Category HGVs employed to deliver the services?	Medium						
What is the total number of three-star rated N3 Category HGVs employed to deliver the services?	Low						
What is the total number of four-star rated N3 Category HGVs employed to deliver the services?	Low						
What is the total number of five-star rated N3 Category HGVs employed to deliver the services?	Low						
What is the total number of N3 Category HGVs employed to deliver the services?	*Total						

HGV DVS method statement

Please provide details of the activities you will undertake to achieve compliance with the DVS requirements. This should include any information and assumptions made to inform the DVS Plan and any engagement with subcontractors, vehicle suppliers and off-road site operators that are relevant to what has been included in your DVS Plan.

Describe how the *Contractor* Category N3 HGV fleet used to deliver the contract will meet the outputs of the DVS Plan.

Describe the engagement activities with Subcontractors that are required to deliver the contract, and how they will meet the outputs of the DVS Plan.

Describe any engagement activities for *Contractor* owned or operated Off-road Sites, and with Off-Road Site operators used to deliver the contract in order to meet the outputs of the DVS Plan.				
Provide details of the Off-Road Sites that are required to deliver the contract.				
Site name	Site operator	Site location	Site type	Ground rating

Routeing of Vehicle(s)

30 The *Service Manager* may exercise discretion in instructing the *Contractor* on the routes to be used by the *Contractor* and Subcontractors when travelling to and from a site. In some circumstances, the *Service Manager* may place restrictions on the allowable routes. This may include Projects or Tasks where the movement of equipment or material is significant, or where a school, town centre or other sensitive area is to be avoided, or avoided at sensitive times.

31 The *Contractor* minimises the impacts of construction traffic on the public highways and access routes by:

- consolidating loads to reduce the number of deliveries,
- planning delivery routes and times to avoid sensitive sites or activities (such as schools at the start or end of the school day),
- implementing measures to prevent the deposition of mud on roads (such as: the provision of hardstandings and wheel cleaning facilities at access points, the sheeting of lorries, or the use of mechanical road sweepers) and
- avoiding, wherever practicable, the stacking of vehicles on public highways.

Contractor's Maintenance Vehicles

32 So far as is practicable, all vehicles used by the *Contractor* and Subcontractors to Provide the Service shall, while in use, be equipped with a communications system to which the *Client* has continuous access.

33 So far as is practicable, all vehicles used by the *Contractor* and Subcontractors to Provide the Service shall be fitted with GPS tracking devices. Each GPS tracking device shall transmit data in real time to a web-based reporting system which maps and records the location of each vehicle in the fleet.

34 The web-based reporting system shall be capable of reporting the passage of the Contractor's vehicles at any location, together with details of the vehicle. Access to the web-based reporting system is to be made available to the Client.

SCOPE

APPENDIX Q
Roadworks Charter

The Roadworks Charter

The Charter is focused on meeting the challenges of managing roadworks in the UK's largest growing city, while aligning with Vision Zero.

We will work together to ensure roadworks are carried out safely, keeping disruption to a minimum and supporting sustainable travel.

By signing this Charter, we agree to follow the principles outlined below:

- We will follow the guidance from the TfL Traffic Management Handbook
- We will ensure the safety of all vulnerable road users
- We will adopt new technology and innovate to improve working methods
- We will use innovative reinstatement solutions

Safe and secure Vision Zero

- We will strive for zero high risk safety failures at our works by 2021
- We will ensure at least 70 per cent of our drivers/fleet are FORS accredited or its recognised equivalent
- We will ensure 100 per cent of high-risk failures are made safe within two hours

Sustainable travel supporting Healthy Streets

- We will minimise the duration and impact of our works on busy bus routes by working with TfL in the planning of our works
- We will ensure 100 per cent of our works sites include suitable provision for cyclists and pedestrians to pass through
- We will use additional information boards on all applicable major works sites to ensure our customers are updated on our progress

Efficiency maximising resources

- By devising and sharing our long-term plans, we will reduce the number of early start permits submitted without prior agreement by five per cent
- We will increase the number of collaborative works sites by five per cent to avoid repetitive digging up of the same roads
- We will further minimise disruption by reducing the duration of works wherever possible and avoiding working during peak periods

Cadent Your Gas Network · BT · SGN Your gas. Our network. · Thames Water · UK Power Networks Delivering your electricity · VISION ZERO Travel Safe • Save Lives

MAYOR OF LONDON

TRANSPORT FOR LONDON
EVERY JOURNEY MATTERS

Additional information

The Charter is a collaboration between TfL and Utility companies outlining a set of expected standards on the TLRN which reflect the Mayor's Transport Strategy, specifically Healthy Streets and Vision Zero.

As well as the actions below we have included a series of pledges:

- **Follow guidance in the TfL Temporary Traffic Management Handbook**
- **Ensure the safety of all vulnerable road users** – Advice can be found within the TM handbook, participate in TfL Roadworks Patrols https://ccsbestpractice.org.uk/entries/tfl-roadworks-patrol/, implement 20mph speed limits at works where applicable
- **Adopt new technology and innovate to improve working methods** – examples include non-excavation techniques and CISBOT
- **Use innovative reinstatement solutions** - to reduce carriageway occupation wherever possible; examples include concrete accelerants and flexible reinstatements

Safe and secure		
Action	Current Performance	Target by end 2021
We will strive for zero high risk safety failures at our works by 2021	Individual performance is reported in the periodic PPM	0%
We will ensure at least 70% of our drivers/fleet are accredited FORS or its equivalent	Performance on this needs to be provided by the Promoter	70% of contractors
We will make safe 100% high risk failures within 2 hours	Performance on this needs to be provided by the Promoter	100% within 2hrs. Also includes receiving EToN response within 24hrs for high-risk Section 81s and within 10 working days for low-risk S81s

Sustainable Travel		
Action	Current Performance	Target by end 2021
We will minimise the duration and impact of our works on busy bus routes by working with TfL in the planning of our works	2018/19 15.5M bus passenger journeys were saved through early engagement reduction in the proposed duration of works	16 million journeys to be saved through a reduction in durations of works on busy bus routes
We will ensure 100% of our works sites include suitable provision for cyclists and pedestrians to pass through	n/a	100%
We will use additional information boards on all applicable major works sites to ensure our customers are updated on our progress	n/a	This includes concrete curing signs, info about how much of the project is completed etc. Required on major works >10 days duration only

Efficiency		
Action	Current Performance	Target by end 2021
By devising and sharing our long term plans we will reduce the number of early start permits submitted without prior agreement by 5%	Average refusal rate for early starts which had been submitted over last 3yrs was 21% - please note this is not the same as REFU19 which is a % of all refused permits	5% reduction in refused early start requests. All major works programmes sent to Coordination Meetings
We will increase the number of collaborative works sites by 5% to avoid repetitive digging up of the same roads	2494 days saved through collaborative works in 2018/19	5% increase
We will further minimise disruption by reducing durations of works wherever possible and avoiding working during the peak periods	Days of disruption saved 2018/19 was 5500, peak periods saved 3500	5% increase on overall days of disruption saved through collaboration, reducing durations of works and avoiding works during peaks

SCOPE

APPENDIX R
London Permit Scheme

LONDON PERMIT SCHEME

For Road Works and Street Works

Traffic Management Act 2004

Approved Version

15 October 2009

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1 INTRODUCTION

1.1 This is the London Permit Scheme for Road Works and Street Works, ("the LoPS"), and is made pursuant to Part 3 of the Traffic Management Act 2004 ("TMA") (Sections 32 to 39) and the Traffic Management Permit Schemes (England) Regulations 2007 ("the Regulations"), Statutory Instrument 2007 No. 3372 made on 28 November 2007. It is a Permit Scheme within the meaning of Section 32 (1) TMA.

1.2 The highway and traffic authorities in London, to which the LoPS applies, in preparing this Permit Scheme have had regard to the guidance contained in the Statutory Guidance dated March 2008 as required under Section 33 (5) (b) TMA which has been issued by the Secretary of State to assist highway authorities wishing to become Permit Authorities under the legislation indicated in Section 1.1. In addition the highway authorities have had regard to the Code of Practice for Permits dated March 2008 and the Permits Fees Guidance dated June 2008 issued by the Department for Transport.

1.3 As a Permit Scheme within the meaning of the TMA, the LoPS is a scheme which is designed to control the carrying out of specified works in specified streets in a specified area. It replaces the "notice system" under the New Roads and Street Works Act 1991 (NRSWA) whereby utility companies inform highway authorities of their intentions to carry out works in their areas. It uses similar concepts to the notice system in a number of key areas, such as road categories and works categories. This is to ensure consistency, and facilitate better co-ordination.

1.4 Those provisions of the NRSWA which are disapplied and modified in respect of works to which the LoPS applies in line with the Statutory Regulations and Guidance are set out in Appendix B.

1.5 The LoPS is a Common Permit Scheme (which may be contrasted with a Joint Permit Scheme as set out in the Glossary in Appendix A). This means that a number of highway and traffic authorities, in London in the case of LoPS, have developed a common scheme. The scheme has a single set of rules which each London highway authority operating the scheme apply independently to their own roads, subject to normal cross boundary liaison and co-operation. As individually operated schemes these have required an application and an Order for each participating authority. Where either a Design, Build, Finance and Operate (DBFO) or a Contracting out Order is in force for an organisation, then it will be necessary for the authority controlling the contracting out provision or the DBFO contract to apply to operate this Permit Scheme on their behalf or pass that arrangement to the contracted out organisation or the DBFO operator in accordance with current legislation.

1.6 Contact details for the Permit Authorities operating the LoPS may be found on the web site www.londonstreetworks.net However contact details can change regularly and activity promoters are encouraged to make full and constant use of that website.

1.7 In addition appropriate details of all registered road works and street works to which this Permit Scheme applies will be registered on the Londonworks Central Register. It is of particular importance that these details are accurate, this is because they will be available to the public, as a consequence, through the Londonworks facility and, which is more, will be relied upon especially by people with disabilities and those who are likely to be most affected by such works.

1.8 The highway and traffic authorities in London, to which the LoPS applies, in preparing this Permit Scheme have also had regard to the requirements of Section 49A of the Disability Discrimination Act 1995, compliance with which requires performance of the Disability Equality Duty.

1.9 In order to identify the nature and content of the obligation under the 1995 Act and the steps required to comply with it, particular regard has been paid both to the terms of Section 49A and to relevant codes of practice and guidance including:

a) the guidance set out in "Doing the Duty - An overview of the Disability Equality Duty for the public sector;

b) the "Duty to Promote Disability Equality: Statutory Code of Practice"; and

c) the advice and references provided on the Equality and Human Rights Commission website (www.equalityhumanrights.com).

1.10 Specific and careful consideration has been given in developing the LoPS to reflect the needs of pedestrians and motorists with disabilities. There has been wide ranging consultation with a number of groups well placed to assist on issues arising which concern, in particular, those with disabilities including The Disabled Persons Transport Advisory Committee and The Guide Dogs for the Blind Association.

1.11 The LoPS reflects the above principles and requirements and there has been full compliance with the Discrimination Equality Duty.

2 OBJECTIVES

2.1 Section 59 of NRSWA places a duty on highway authorities to co-ordinate works of all kinds on the highway. Equally important is the parallel duty on undertakers to co-operate in this process under Section 60.

2.2 The TMA and the associated Regulations widened the Section 59 co-ordination duty to include other prescribed activities that involve temporary occupation or use of road space and incorporates any activities included in a Permit Scheme.

2.3 Each of the authorities to which this Permit Scheme relates has a duty under Section 16 of the TMA, as well as the duty to co-ordinate under Section 59 of NRSWA, to manage their road network, or Network Management Duty (NMD) with a view to achieving, so far as may be reasonably practicable having regard to their other obligations, policies and objectives, the following overriding objectives:

a) securing the expeditious movement of traffic on the authority's road network; and

b) facilitating the expeditious movement of traffic on road networks for which another authority is the traffic authority.

2.4 This Permit Scheme seeks to enable more effective co-ordination applying the following guiding principles:

a) to ensure safety;

b) to minimise inconvenience to people using a street, including a specific reference to people with a disability; and

c) to protect the structure of the street and the integrity of apparatus in it.

2.5 The LoPS has been prepared in accordance with the aforementioned statutory duties.

2.6 It is the objective of the LoPS to:

a) Provide an environment to help each of the Permit Authorities operating the LoPS to meet their NMD; and

b) Support those seeking to minimise disruption and inconvenience across London by encouraging good practices, mutual and collaborative working arrangements and a focus on co-ordination and getting it right; and

c) Encourage a high emphasis on safety for everyone including site operatives and all other road users with special emphasis on people with disabilities; and

d) Encourage a sharing of knowledge and methodology across the industries working within the London Permit Scheme; and

e) Emphasise the need to minimise damage to the structure of the highway and all apparatus contained therein; and

f) Provide a common framework for all activity promoters who need to carry out their works in London; and

g) Treat all activities covered by the scheme and activity promoters on an equal basis.

2.7 In accordance with the Regulations the Permit Authorities will evaluate these objectives so as to measure whether they are being met. The means by which that will be achieved are set out in Section 22.

3 COMMON ELEMENTS WITH NRSWA NOTICE SYSTEM

3.1 In order to facilitate working across all highway authority boundaries, this Permit Scheme uses the same or similar definitions or requirements as are used in the NRSWA notice system for:

a) Registerable activities/works;

b) Categories of activities/works (Major, Standard, Minor and Immediate);

c) Street gazetteers, including street referencing by means of Unique Street Reference Number (USRN) and Additional Street Data (ASD);

d) Street reinstatement categories as defined in the Specification for the Reinstatement of Openings in Highways;

e) The distinction between main roads and minor roads, where such distinctions are relevant; and

f) Streets designated as protected, having special engineering difficulty or traffic sensitivity.

3.2 In accordance with Regulation 39, authorities operating this Permit Scheme must be set up to receive applications, issue notices and otherwise communicate electronically. All such communications relating to works on the highway will be made using the Electronic Transfer of Notices (EToN) system where ever possible.

4 SCOPE OF PERMIT SCHEME

4.1 Registerable Activities

4.1.1 Permits are required under the LoPS in respect of all registerable activities as referred to in the Code of Practice for Permits and the Statutory Guidance both dated March 2008.

4.1.2 The term "registerable activities" corresponds to what are "specified works" under the Regulations. The following activities defined in the Regulations as specified works are registerable for all activity promoters and information related to them has to be recorded on the register:

a) all activities that involve the breaking up or resurfacing of any street;

b) all activities that involve the opening of the carriageway or cycleway of traffic sensitive streets at traffic-sensitive times;

c) all activities that require the use of any form of temporary traffic control as defined in the Code of Practice for Safety at Street Works and Road Works*;*

d) all activities that reduce the number of lanes available on a carriageway of three or more lanes;

e) all activities that require a Temporary Traffic Regulation Order or notice, or the suspension of pedestrian crossing facilities;

f) all activities that require a reduction in width of the existing carriageway of a traffic-sensitive street at a traffic-sensitive time; and

g) pole testing which involves excavation and any reinstatement following pole testing whether it involves any of the above criteria or not.

h) Street lighting.

4.1.3 Bar Holes which are used to detect and monitor gas leaks fall into this category under particular circumstances. When bar holes are carried out and it is known that no further activity in the street is required (such as when a gas leak is reported but none detected), a registration under Section 70 (3) of NRSWA should be sent within 10 ten days, once final monitoring checks have been established. The bar holes will count as a single excavation and reinstatement for registration purposes.

4.1.4 An application for a Permit in respect of a bar hole must be made within two hours of the commencement of any other registerable activity (i.e. excavation, or any other activity defined above) associated with the bar