

Road Asset Management  
Planning

Asset Valuation Report  
2015 - 2016

Falkirk Council



**Falkirk Council**

# Falkirk Council Asset Valuation Report 2015 - 2016



Falkirk Council

## Document History

Version	Status	Date	Author	Changes from Previous Version
1.0	Draft	Sep 16	Ewan Hogg	<ul style="list-style-type: none"> <li>• First draft of the document.</li> </ul>
2.0	Draft	Oct 16	Ewan Hogg	<ul style="list-style-type: none"> <li>• Section 3 – Carriageways: paragraph under section 3.8 amended.</li> <li>• Section 5 – Structures: paragraphs added under sections 5.8 and 5.9.</li> <li>• Section 10 – Road Asset Valuation Summary: two bullet points under section 10.3 added.</li> </ul>
3.0	Final	April 17	Dot Reid	<ul style="list-style-type: none"> <li>• Minor date changes throughout the document.</li> </ul>

## Document Control

Version	Status	Date	Authorised for Issue by Roads Services Asset Management Team

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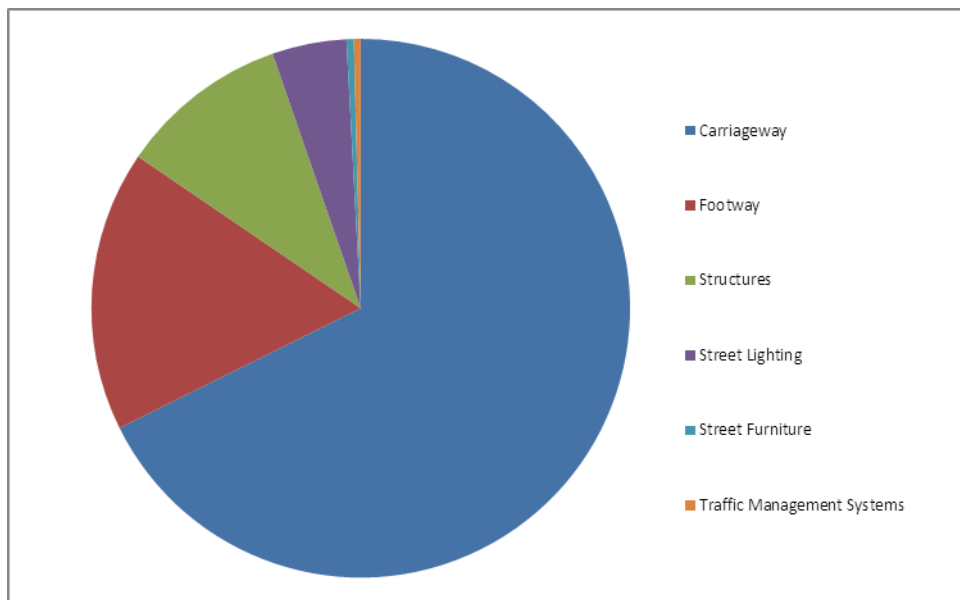
Date: 17/7/17

Director of Development Services: Rhona Geisler

# Road Asset Valuation Report

## Falkirk Council

### 2016



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<b>Date</b>	09/09/16
<b>Submitted To</b>	Director of Development Services

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## Asset Valuation Report 2015 - 2016



### Summary

This report presents a depreciated replacement cost valuation of Falkirk Council's road assets for 2015/2016. It complies with the CIPFA Transport Infrastructure Asset Code<sup>(1)</sup>.

### Road Assets at March 2016

The assets included in this valuation are:

Road Assets					
Asset Type	Quantity		Quantity Added During Year		Comment
Carriageways	974	km	1	km	
Footways	1715.432	km	3	km	
Cycle Tracks	0	Km	0	km	
Structures: Bridges & culverts	239	no.	1	no.	
Structures: Retaining Walls	177	no.	0	no.	
Highway Lighting (Columns)	25248	no.	288	no.	
Highway Lighting (Luminaires)	27624	no.	288	no.	
Street Furniture (approx)	21310	no.	6	no.	
Traffic Signals (junctions)	38	no.	2	no.	
Pedestrian Crossings	49	no.	1	no.	
Other Traffic Management Systems	255	no.	0	no.	
Land		ha.		ha.	

Since the last valuation in 2015 the following additions have been made to the asset:

Road Assets Added During the Year		
Asset Type	Quantity	
Carriageways	1.39	km
Footways	3	km
Cycle Tracks	0	km

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Road Assets Added During the Year		
Asset Type	Quantity	
Structures: Bridges, culverts, subways	1	no.
Structures: Retaining Walls	0	no.
Highway Lighting (Columns)	288	no.
Highway Lighting (Luminaires)	288	no.
Street Furniture (approx)	6	no.
Traffic Signals (junctions)	2	no.
Pedestrian Crossings	1	no.

Since the last valuation in 2015 the following disposals have been made from the asset:

Road Assets Disposed During the Year		
Asset Type	Quantity	
Carriageways	0	km
Footways	0	km
Cycle Tracks	0	km
Structures: Bridges, culverts, subways	0	no.
Structures: Retaining Walls	0	no.
Highway Lighting (Columns)	0	no.
Highway Lighting (Luminaires)	0	no.
Street Furniture (approx)	5	no.
Traffic Signals (junctions)	0	no.
Pedestrian Crossings	0	no.

### Road Asset Valuation at 2016

Road Asset Valuation Summary			
Asset Type	Gross Replacement Cost £'000	Depreciated Replacement Cost £'000	Annualised Depreciation Cost £'000
Carriageway	£1,038,480	£831,039	£18,023
Footway	£258,579	£90,514	£8,550
Structures	£156,116	£149,656	£832
Street Lighting	£68,562	£35,150	£1,764
Street Furniture	£6,679	£3,180	£339

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Road Asset Valuation Summary			
Asset Type	Gross Replacement Cost £'000	Depreciated Replacement Cost £'000	Annualised Depreciation Cost £'000
Traffic Signals	£6,238	£4,259	£278
Land	£641,733		
<b>Total</b>	<b>£2,176,385</b>	<b>£1,113,798</b>	<b>£29,785</b>

### Change in Road Asset Valuation since Last Year

The value of the road asset has changed since the last year's valuation as shown below:

Change in Road Asset Value			
Year	Gross Replacement Cost £'000	Depreciated Replacement Cost £'000	Annual Depreciation £'000
2014/2015	£2,271,418	£1,325,801	£22,048
2015/2016	£2,176,385	£1,113,798	£29,785
Change	<b>-£95,033</b>	<b>-£212,003</b>	£7,737

Comment here on why the valuation has changed since last year: e.g.

- The GRC has decreased as a result of land values decreasing.
  - o E.g. Deterioration in the measured condition of carriageway has resulted in a reduction in DRC of £212m; this is in part attributable to on-going deterioration and the fact that current investment levels are insufficient to prevent deterioration.

### Depreciation vs Investment Levels

Annual Depreciation vs Investment Level			
Asset	Annualised Depreciation Cost £'000	Investment £'000 (Planned Maintenance)	Investment/Annual Depreciation
Carriageway	£18,023	£2,523	14%

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Annual Depreciation vs Investment Level			
Asset	Annualised Depreciation Cost £'000	Investment £'000 (Planned Maintenance)	Investment/Annual Depreciation
Footway	£8,550	£369	4%
Structures	£832	£0	0%
Street Lighting	£1,764	£583	33%
Street Furniture	£339	£0	0%
Traffic Signals	£278	£0	0%
<b>Total</b>	<b>£29,784.82</b>	<b>£3,474.83</b>	<b>12%</b>

### Investment in Roads

During the last financial year (2015/2016) the following investment was made in roads:

Investment on Roads in 2015/2016 by Capital and Revenue				
Asset Type	Total £'000	Revenue £'000	Capital £'000	Notes
Carriageways	£3,895	£1,605	£2,290	Inc. winter maintenance expend.
Footways and Cycle Tracks	£578	£215	£363	Inc. winter maintenance expend.
Structures	£872	£167	£705	
Highway Lighting	£2,159	£1,575	£583	
Street Furniture	£122	£122	£0	Inc. winter maintenance expend.
Traffic Management Systems	£346	£346	£0	
Land	N/A	N/A	N/A	
Operating Costs	£3,749	£3,727	£22	
Overheads	£2,881	£2,881	£0	
<b>Total</b>	<b>£14,601</b>	<b>£10,637</b>	<b>£3,963</b>	



## 1 Introduction

### Purpose

This report summarises the result of a valuation of Falkirk Council road assets as at April 2016.

### 1.1 Use

The valuation provides the council with a depreciated replacement cost valuation of the asset. It provides an understanding of the process; the assumptions and limitations of the data used and will enable the council to plan data and systems improvements that will make future valuations more accurate.

### 1.2 Date

The council's road assets have been valued as at April 2016.

### 1.3 Valuers

This valuation has been carried out by the council personnel listed in Appendix A using information created as part of the SCOTS Road Asset Management Planning and Road Maintenance Condition Surveys<sup>(3)</sup>.

### 1.4 Standard

The valuation has been undertaken in accordance with the methods set out in the CIPFA Transport Asset Infrastructure Code<sup>(1)</sup>. The valuation is based upon the calculation of a depreciated replacement cost (DRC) i.e. *"the current cost of replacing an asset with its modern equivalent asset, fewer deductions for all physical deterioration and impairment"*.

### 1.5 Results

This report includes the following, summarised by asset type:

- The quantity of council owned road assets
- The estimated cost of replacing the existing asset (gross replacement cost, GRC)
- The estimated current value of the asset (depreciated replacement cost, DRC)
- The estimated average sum that needs to be spent year on year to maintain the assets in a steady state (the annual depreciation, AD).

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## 2 Method

The method used to create the figures included in this report is summarised as follows;

### 2.1 Depreciation

Depreciation has been calculated using straight-line depreciation over the useful life of the assets. The depreciated replacement cost has been calculated using the equation:

$$\text{DRC} = \text{RV} + [(\text{GRC} - \text{RV}) \times (\text{RL} / \text{UL})]$$

For assets or components with no residual value the equation is simplified to:

$$\text{DRC} = \text{GRC} \times (\text{RL} / \text{UL})$$

The annual depreciation (of depreciable components) is computed as:

$$\text{AD} = \text{GRC} / \text{UL}$$

In general terms the following method has been used to determine the GRC, DRC and AD:

#### 1. Create Valuation Schedule

Quantities of asset have been compiled from databases and hard copy sources by the officers responsible for their management. A list of data sources is provided for each asset type in sections 4 to 9. Where appropriate, the assets have been broken down to identify, and value, assets and components that would be replaced discretely from one another and have differing lives.

#### 2. Consider Modern Equivalent

The asset types and components have been reviewed to identify where the replacement asset would differ from existing due to present day standards and construction techniques. Modern equivalent assets have been used as the basis for determining replacement rates.

#### 3. Compute Unit Rates

Unit rates for carriageway gross replacement cost have been provided on a national basis by CIPFA. The GRC unit rates are deemed to include for removal and disposal of the existing asset, supply and installation of the modern equivalent asset and associated traffic management requirements, staff costs and overheads. Maintenance treatment rates have been determined by council officers using available cost records. Details of how these rates have been derived are included in sections 4 to 9. GRC rates for Structures were collated nationally by SCOTS.

#### 4. Consider Residual Values

It has been assumed that none of the assets or components has any residual value.

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### 5. Determine Ages

The ages used have been taken from data where it exists. In the main, asset ages are estimates made by council staff. In the case of carriageways a specific method has been used to create an estimate of age and useful life based upon condition data. Details of this method are set out in Technical Note 46 (4).

### 6. Estimate Useful Lives

For each item an estimate has been made of its useful life. These estimates have been made by council staff based upon their knowledge and experience. For some asset types national default figures have been agreed under the SCOTS RAMP project. SCOTS has recommended that authorities use these figures unless they have data to support alternative figures.

### 7. Calculate Values

A calculation of GRC, DRC and AD has been computed using the equations given above.

## 2.2 Valuation Spreadsheets

The figures included in this report have been computed using the following:

- The DRC figures for carriageways have been computed using UKPMS and the data collected under the SRMCS and Welsh Government carriageway condition project
- All other figures use SCOTS Road Asset Management Project Financial Reporting Tool spreadsheets.

## 2.3 Current Investment Levels

The level of investment currently being made in the road asset has been identified from the council's budgets. Under the SCOTS RAMP these have been categorised and these figures are reported to show the comparison between AD and current investment levels. The current total revenue and capital budgets are also reported.

## 2.4 SCOTS Financial Reporting Tool

As part of the SCOTS RAMP project SCOTS commissioned the development of a financial reporting tool. The tool assists councils to comply with financial reporting requirements.

In addition to the figures in this report, predictions of performance/condition based upon future funding scenarios can be provided. The predictions will assist council to make decisions about funding levels. This report includes the information that the reporting tool will provide where it is currently possible to do so.

### 3 Carriageways

#### 3.1 Assets Included

The assets included in the valuation are as listed below:

<b>Table 3.1 Carriageway Assets Included in the Valuation</b>		
<b>Level 1 : Asset Type</b>	<b>Level 2: Asset Group</b>	<b>Components</b>
Carriageways	A Urban	Pavement layers
	A Rural	Other surface types, e.g. paved
	B Urban	Central reservation, roundabout, lay-by, traffic island, etc
	B Rural	Earthworks (embankments and cuttings, retaining walls height <1.35m)
	C Urban	
	C Rural	
	U Urban	Traffic calming
	U Rural	Fords and causeway
		Kerbs Line markings Road studs Road drainage elements (gullies, drains, etc., but not large structures) Boundary fences and hedges Hard strip/shoulder verges/vegetation

#### 3.2 Quantities

The quantity of carriageways assets included in the valuation is as shown in Table 3.2:

<b>Table 3.2 Carriageways Quantities</b>			
<b>Road Classification</b>	<b>Length (m)</b>	<b>Width (m)</b>	<b>Area (sqm)</b>
Principal (A) Roads (Urban)	68240	9.8	670799
Principal (A) Roads (Rural)	49220	9.1	447902

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<b>Table 3.2 Carriageways Quantities</b>			
<b>Road Classification</b>	<b>Length (m)</b>	<b>Width (m)</b>	<b>Area (sqm)</b>
Classified (B) Roads (Urban)	51490	8.8	452082
Classified (B) Roads (Rural)	44910	7.4	331436
Classified (C) Roads (Urban)	45400	8.2	370010
Classified (C) Roads (Rural)	72730	6.6	478563
Unclassified Roads (Urban)	581030	7.0	4049779
Unclassified Roads (Rural)	61200	5.4	329868
<b>Total</b>	<b>974220</b>	<b>62</b>	<b>7130440</b>

### 3.3 Sources of Information

The basis and source of the information used to compile this valuation is as shown below:

#### Inventory

The lengths used in this valuation are those reported to government for the Grant Aided Expenditure calculation (GAE).

The widths used in this valuation have been derived from the polygonised areas held on the GIS system divided by the known lengths.

<b>Table 3.3 Basis and Source of Inventory Data</b>				
<b>Road Classification</b>	<b>Length (Basis)</b>	<b>Length (Source)</b>	<b>Width (Basis)</b>	<b>Width (Source)</b>
Principal (A) Roads (Urban)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM
Principal (A) Roads (Rural)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM
Classified (B) Roads (Urban)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM
Classified (B) Roads (Rural)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM
Classified (C) Roads (Urban)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM

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**Table 3.3 Basis and Source of Inventory Data**

Road Classification	Length (Basis)	Length (Source)	Width (Basis)	Width (Source)
Classified (C) Roads (Rural)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM
Unclassified Roads (Urban)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM
Unclassified Roads (Rural)	Actual Inventory	Roadnet (ArcGIS)/ WDM	Actual Inventory	Roadnet (ArcGIS)/ WDM

### 3.4 Expected Service Lives

#### Condition

The condition data has been used as the basis for this valuation. It is collected under the SRMCS/SCANNER condition surveying project and is stored and processed in UKPMS (a national standards software application used for the storage and analysis of carriageway pavement condition data). The methodology set out in the Transport Asset Code has been used to compute % depreciation figures. In order to carry out this calculation figures for initial deterioration and total useful life are required. Default figures for  $T_{ini}$  and  $T_{tul}$  have been established by SCOTS and used in this valuation. The values used are shown in 3.4 below.

**Table 3.4 Useful Life Values**

Road Classification	Deterioration initiation - $T_{ini}$ (years)	Total Useful Life $T_{tul}$ (years)
Principal (A) Roads (Urban)	7	21
Principal (A) Roads (Rural)	7	21
Classified (B) Roads (Urban)	6	21
Classified (B) Roads (Rural)	6	21
Classified (C) Roads (Urban)	6	21
Classified (C) Roads (Rural)	6	21
Unclassified Roads (Urban)	6	21
Unclassified Roads (Rural)	6	21

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### 3.5 Data Quality

The quality of the input data used in the valuation is assessed using a method developed under the SCOTS RAMP project. The quality of the data used for the valuation has been assessed as shown in table 3.5.

<b>Table 3.5 Data Quality (Carriageways)</b>			
<b>Inventory Data:</b>	<b>Source</b>	<b>Extent</b>	<b>Basis</b>
Length	Roadnet (GIS)/WDM	Complete	Actual
Width or area	Roadnet (GIS)/WDM	Complete	Actual
<b>Condition Data</b>			
Condition survey data	WDM	Complete	Actual
<b>Cost Data</b>			
Gross replacement cost (GRC) rates	MSExcel	N/A	Actual
Maintenance treatment cost rates	MSExcel	N/A	Actual
<b>Useful Lives</b>			
Total useful life	MSExcel	N/A	Actual

### 3.6 Cost Data

The rates used to compute the carriageway gross replacement cost were supplied by CIPFA. The rates used for maintenance treatments are summarised below. The source of the rates is noted in the table below:

<b>Table 3.6a Unit Rates Used</b>			
<b>Road Classification</b>	<b>"100mm Inlay" Rate (£/sqm)</b>	<b>"Reconstruction" Rate (£/sqm)</b>	<b>DRC Cost (Unit Rate)</b>
Principal (A) Roads (Urban)	£48.00	£99.06	£53.08
Principal (A) Roads (Rural)	£48.00	£99.06	£53.08
Classified (B) Roads (Urban)	£48.00	£99.06	£53.08
Classified (B) Roads (Rural)	£48.00	£99.06	£53.08
Classified (C) Roads (Urban)	£48.00	£99.06	£53.08
Classified (C) Roads (Rural)	£48.00	£99.06	£53.08
Unclassified Roads (Urban)	£48.00	£99.06	£53.08
Unclassified Roads (Rural)	£48.00	£99.06	£53.08

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The DRC rate is deemed to include an allowance for a small percentage of reconstruction being required. The "DRC" rate has been calculated on the basis of 95% of the "100mm inlay" rate with a 5% allowance for reconstruction. This rate has then had a further 5% added to it.

**Table 3.6b Basis and Source of Unit Rates Used**

Road Classification	100mm Inlay Rate		Reconstruction Rate	
	Basis	Source	Basis	Source
Principal (A) Roads (Urban)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Principal (A) Roads (Rural)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Classified (B) Roads (Urban)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Classified (B) Roads (Rural)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Classified (C) Roads (Urban)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Classified (C) Roads (Rural)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Unclassified Roads (Urban)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR
Unclassified Roads (Rural)	Actual (based on rates)	Calculated from Moderate Carriageway Inlay on B class roads	Actual (based on rates)	Calculated from SOR



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### 3.7 Valuation

<b>Table 3.7 Carriageways Valuation</b>			
<b>Road Classification</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Principal (A) Roads (Urban)	£127,443,593	£108,358,532	£1,695,546
Principal (A) Roads (Rural)	£68,085,464	£55,793,825	£1,132,139
Classified (B) Roads (Urban)	£82,613,993	£70,015,664	£1,142,706
Classified (B) Roads (Rural)	£42,946,751	£33,446,624	£837,754
Classified (C) Roads (Urban)	£58,328,565	£47,899,528	£935,256
Classified (C) Roads (Rural)	£52,030,431	£37,754,250	£1,209,641
Unclassified Roads (Urban)	£573,505,276	£453,769,823	£10,236,424
Unclassified Roads (Rural)	£33,525,980	£24,000,753	£833,791
<b>Total</b>	<b>£1,038,480,053</b>	<b>£831,038,999</b>	<b>£18,023,256</b>

### 3.8 Interpretation of Results

The gross replacement cost represents the value of the full depth of the road construction. It includes elements that are unlikely to ever need replacement. The surface layers do require replacement. The extent of depreciation of the surface layers (the depreciable component) would provide an indication of the extent to which investment levels have matched depreciation to date. It is not currently possible to report depreciation as a percentage of the GRC of the depreciable component. This would be a more informative figure than the depreciation of the overall carriageway.

Comparing annual depreciation with current levels of investment gives an indication of the extent to which long term replacement needs are currently being met.

### 3.9 Recommendations

None

## 4 Footways and Cycleways

### 4.1 Assets Included

The Footways & Cycleways assets included in this report are:

<b>Table 4.1 Footway Assets Included</b>		
<b>Level 1 : Asset Type</b>	<b>Level 2: Asset Group</b>	<b>Components</b>
Footways & Cycleways	Footways	Wearing course, base course, foundation and edgings.
	Pedestrian areas	
	Footpaths	
	Cycletracks	

The following footway and cycleway assets are not included:

- Footpaths in housing estates
- Cycletracks

### 4.2 Quantities

The quantities of footway asset in this report are as summarised below. The footways are divided up by a functional hierarchy that reflects the use of the footways. Higher Amenity Footways are made up of Prestige Walking Zones, Primary Walking Routes and Secondary Walking Routes. Other Footways consist of Link Footways and Local Access Footways.

<b>Table 4.2a Footways Quantities by Hierarchy</b>		
<b>Footway Hierarchy</b>	<b>Length (m)</b>	<b>Area (sqm)</b>
Higher Amenity Footways	47,142	103,512
Other Footways	1,668,290	2,585,850
<b>Total</b>	<b>1,715,432</b>	<b>2,689,362</b>

The footways are made up of a range of material types as shown below. These materials deteriorate at different rates.

<b>Table 4.2b Footways Quantities by Material Type</b>		
<b>Material Type</b>	<b>Length (m)</b>	<b>Area (sqm)</b>
Bituminous	1,523,475	2,368,028
Slabs	182,679	289,930

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Material Type	Length (m)	Area (sqm)
Stone	354	1,062
Concrete	0	0
Blocks	8,924	30,342
<b>Total</b>	<b>1,715,432</b>	<b>2,689,362</b>

### 4.3 Sources of Information

The information used to compile this valuation has come from the following sources:

Footway Hierarchy	Length (Basis)	Length (source)	Width/Area (Basis)	Area (Source)
Higher Amenity Footways	Actual Inventory	Roadnet (ArcGIS)	Default Values	Roadnet (ArcGIS)
Other Footways	Actual Inventory	Roadnet (ArcGIS)	Default Values	Roadnet (ArcGIS)

### 4.4 Data Quality

The quality of the input data used in the valuation is assessed as follows:

Inventory Data:	Source	Extent	Basis
Length	Roadnet (GIS)/WDM	Complete	Actual
Width or area	Roadnet (GIS)/WDM	Moderate	Actual
<b>Condition Data</b>			
Condition survey data	WDM	Initial	Actual
<b>Cost Data</b>			
Gross replacement cost (GRC) rates	MSExcel	N/A	Actual
Maintenance treatment cost rates	MSExcel	N/A	Actual
<b>Useful Lives</b>			
Total useful life	MSExcel	N/A	Actual

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### 4.5 Useful Lives

The useful lives used are shown in table 4.5. The lives have been established as default values by SCOTS based upon the road asset management project steering committees' collective knowledge.

4.5 Useful Life of Maintenance Treatments		
Treatment	Description	Useful Life
Resurface (Bituminous)	Removal of existing footway surface and binder courses and replacement with new. Also includes replacement of a flagged footway with bituminous construction	40
Resurface (Concrete)	Removal of existing concrete surfacing and replacement with new.	100
Resurface (PC Blocks)	Removal of existing block footway surface and replacement with new PC blocks	60
Resurface (PC Slabs)	Removal of existing flagged footway surface and replacement with new PC Slabs.	50
Resurface (Stone)	Removal of existing stone footway surface and replacement with new.	60
Slurry Seal	Application of a thin screed surfacing to the existing bituminous footway. Includes pre-patching and regulating as required.	5

### 4.6 Cost Data

The valuation method used for this valuation is based upon the fact that different material types have different useful lives and therefore depreciate at different rates. For this reason unit replacement rates have been used for the valuation that is not the default values supplied by HAMFIG/CIPFA.

The rates used in this calculation are:

Table 4.6 Unit Rates Used		
Treatment	Description	Rate (£/sqm)
<b>Reconstruction Rates</b>		
Reconstruction (Bituminous)	Removal of existing footway construction, full depth including sub-base, and replacement with new including strengthening. Also includes replacement of a flagged footway with bituminous construction.	£95.0

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<b>Table 4.6 Unit Rates Used</b>		
<b>Treatment</b>	<b>Description</b>	<b>Rate (£/sqm)</b>
Reconstruction of Concrete Footway	Removal of existing footway construction, full depth including sub-base, and replacement with new concrete construction.	£105.0
Reconstruction (PC Blocks)	Removal of existing block footway construction, full depth including sub-base and replacement with new.	£128.0
Reconstruction (PC Slabs)	Removal of existing flagged footway construction, full depth including sub-base, and replacement with new.	£102.0
Reconstruction (Stone)	Removal of existing stone footway construction, full depth including sub-base, and replacement with new.	£150.0
<b>Maintenance Treatment Rates</b>		
Resurface (Bituminous)	Removal of existing footway surface and binder courses and replacement with new. Also includes replacement of a flagged footway with bituminous construction.	£137.0
Resurface (Concrete)	Removal of existing concrete surfacing and replacement with new.	£70.0
Resurface (PC Blocks)	Removal of existing block footway surface and replacement with new PC Blocks.	£96.0
Resurface (PC Slabs)	Removal of existing flagged footway surface and replacement with new PC Slabs.	£67.0
Resurface (Stone)	Removal of existing stone footway surface and replacement with new.	£118.0
Slurry Seal	Application of a thin screed surfacing to the existing bituminous footway. Includes pre-patching and regulating as required.	N/A

The maintenance treatment rates used in the valuation were derived from rates in the current Falkirk Council Schedule of Rates (SOR) and from tendered schemes undertaken within the last 2 years. The unit rates were adjusted to take account of traffic management costs, preliminaries and design and supervision costs. The method of derivation of rates is included in appendix B together with an example rate derivation.

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### Remaining Lives

The remaining lives of the components that depreciate have been based upon the condition data. Under the SCOTS RAMP project a method of assessment of footway condition has been defined. The method categorises condition into 4. The following rules have been used to assess remaining lives:

1. Assets in condition 4: it is assumed that these assets will require replacement within the next 3 years. An average residual life of 2 years has been ascribed to them
2. Assets in Condition 3: these assets/components will require replacement within the subsequent 5 years. An average residual life of 6 years has been ascribed to them
3. Assets in Condition 2: these assets are only differentiated by their appearance from condition 1. Their residual life has thus been the same as assets in Condition 1
4. Assets in Condition 1: these assets/components have been assumed to be on average half way through the difference between their total expected service life minus 8 yrs (the estimated time they could on average spend in conditions 3 & 4 before replacement)

### 4.7 Footways Valuation Summary

Based upon the figures shown above and the assumptions stated the current value of the council's footway assets has been estimated as:

<b>Table 4.7a Footway Valuation by Hierarchy</b>			
<b>Footway Hierarchy</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Higher Amenity Footways	£11,063,366	£6,296,279	£246,971
Other Footways	£247,515,208	£84,217,435	£8,302,668
<b>Total</b>	<b>£258,578,574</b>	<b>£90,513,714</b>	<b>£8,549,638</b>

<b>Table 4.7b Footways Valuation by Material Type</b>					
<b>Material Type</b>	<b>Length (m)</b>	<b>Area (sqm)</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Bituminous	1523475	2368028	£224,962,684	£67,968,965	£8,110,497

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<b>Table 4.7b Footways Valuation by Material Type</b>					
<b>Material Type</b>	<b>Length (m)</b>	<b>Area (sqm)</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Slabs	182679	289930	£29,572,865	£19,858,387	£388,506
Stone	354	1062	£159,300	£103,340	£2,089
Concrete	0	0	£0	£0	£0
Blocks	8924	30342	£3,883,725	£2,583,022	£48,547
<b>Total</b>	<b>1715432</b>	<b>2689362</b>	<b>£258,578,574</b>	<b>£90,513,714</b>	<b>£8,549,638</b>

## 5 Structures

### 5.1 Assets Included

The Structures assets included in this report are:

<b>Table 5.1 Footway Assets Included</b>		
<b>Level 1 : Asset Type</b>	<b>Level 2: Asset Group</b>	<b>Components</b>
Structures	<ul style="list-style-type: none"> <li>- Bridges (span &gt;1.5m)</li> <li>- Cantilever road sign</li> <li>- Chamber/cellar/vault</li> <li>- Culverts (span &gt;0.9m)</li> <li>- High mast lighting columns (height &gt;20m)</li> <li>- Retaining walls (height &gt;1.35m)</li> <li>- Sign/signal gantries and cantilever road signs</li> <li>- Structural earthworks, eg strengthened / reinforced soils (all structures with an effective retained height of 1.5m or more)</li> <li>- Subway: pipe</li> <li>- Tunnel (enclosed length of 150m or more)</li> <li>- Underpass/subway: pedestrian (span of 1.5m or more)</li> <li>- Underpass: vehicular</li> <li>- Special structure</li> </ul>	<p>All elements identified on the CSS inspection pro forma</p> <p>Smaller water-carrying structures are considered as road drainage</p>

The following structures assets are not included:

- Harbour walls etc.

### 5.2 Quantities

The quantities of structures asset in this report are:



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Table 5.2: Structures Quantities	
	Quantity
Road Bridges	212
Footbridges	27
Unusual Structures	0
Retaining Walls	177
Height, Sign and Signal Gantries	0
Culverts	0
Subways	23
<b>Total</b>	<b>439</b>

### 5.3 Sources of Information

The information used to compile this valuation has come from the following sources:

Table 5.3 Basis and Source of Inventory Data		
Structures Assets	Quantity (Basis)	Quantity (Source)
Road Bridges	Actual	WDM Database
Footbridges	Actual	WDM Database
Unusual Structures		
Retaining Walls	Local Engineers Estimate	Spreadsheet
Height, Sign and Signal Gantries		
Culverts		
Subways	Actual	WDM Database

### 5.4 Data Quality

The quality of the input data used in the valuation is assessed as follows:

Table 5.4 Data Quality		
Inventory Data:	Basis	Source
Quantity	Actual	WDM Database
Cost Data		
Gross replacement cost (GRC) rates	Default Values	SCOTS spreadsheet 6ST
Maintenance treatment cost rates	Default Values	SCOTS spreadsheet 6ST
Expected Service Lives		

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**Table 5.4 Data Quality**

Inventory Data:	Basis	Source
Total useful life		

### 5.5 Useful Lives

The useful lives used are shown in 6ST Structures Cost Projection spreadsheet as developed by the SCOTS RAMP Project and agreed with the Project Board and Structures Working Group. The useful lives of typical maintenance treatments have been used. The figures used have been estimated by the members of the structures working group representing all the local authority bridge engineers across Scotland and Wales. The figures are used as the basis for the calculation of depreciation.

### 5.6 Cost Data

The rates used for gross replacement cost and maintenance treatments are shown in the 6ST Structures Cost Projection spreadsheet as developed by the SCOTS RAMP Project and agreed with the Project Board and Structures Working Group. The figures used have been estimated by the members of the structures working group representing all the local authority bridge engineers across Scotland and Wales. The figures are used as the basis for the calculation of depreciation. *The unit rates take account of traffic management costs, preliminaries and design and supervision costs.*

### Remaining Lives

The remaining lives of the components that depreciate have been based upon the Bridge Condition Indicator (BClave) data as derived from the bridge inspections undertaken as per recommended practice.

### 5.7 Structure Valuation Summary

Based upon the figures shown above and the assumptions stated the current value of the council's structures assets has been estimated as:

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<b>Table 5.5 Structures Valuation Summary</b>			
<b>Structure Type</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Road Bridges	£85,286,847	£78,909,643	£677,051
Footbridges	£7,552,254	£7,495,522	£146,913
Unusual Structures			
Retaining Walls	£59,673,918	£59,651,877	£7,079
Height, Sign and Signal Gantries			
Culverts			
Subways	£3,602,921	£3,599,400	£767
<b>Totals</b>	<b>£156,115,940</b>	<b>£149,656,442</b>	<b>£831,810</b>

### 5.8 Interpretation of Results

The Gross and Depreciated Replacement Costs are based on estimated rates derived in the SCOTS asset management project. These rates are considered out of date and give lower replacement costs than expected. The effect of this is to give a false Annual Depreciation by narrowing the gap between the Gross and Depreciated Replacement Costs. The values which relate to retaining walls are estimates, as a full retaining wall survey has still to be completed. The costs outlined in table 5.5 however, will give a comparison between local authorities as the costs are calculated on base rates.

### 5.9 Recommendations

More accurate unit rates require to be developed to produce realistic Gross and Depreciated Replacement Costs to allow accurate future financial planning.

## 6 Street Lighting

### 6.1 Assets Included

The Road Lighting assets included in this report are:

<b>Table 6.1 Road Lighting Assets Included</b>		
<b>Level 1 : Asset Type</b>	<b>Level 2: Asset Group</b>	<b>Components</b>
Road Lighting	<ul style="list-style-type: none"> <li>- Lighting columns</li> <li>- Lighting unit attached to wall/wooden pole</li> <li>- Heritage columns</li> <li>- Illuminated Bollards</li> <li>- Illuminated traffics signs</li> </ul>	<ul style="list-style-type: none"> <li>- Column and foundation</li> <li>- Bracket</li> <li>- Luminaires</li> <li>- Control equipment, cables</li> <li>- Control gear, switching, internal wiring cabling (within ownership)</li> </ul>

For the purposes of this valuation the lighting assets have been categorised based open column material type (to reflect the different life expectancies of different material types) and by height (to reflect different unit replacement costs).

The following Lighting assets are not included:

- VAS and VMS signs, floodlighting for buildings. Lighting which is the responsibility of Falkirk Community Trust e.g. lighting in parks and sports ground floodlighting. Lighting which is the responsibility of Falkirk Council Housing services e.g. back court lighting and stair lighting.

### 6.2 Quantities

The quantities of Road Lighting Assets in this report are:

<b>Table 6.2a Street Lighting Column Quantities</b>	
<b>Column Material</b>	<b>Quantity</b>
Non Galvanised Steel	4,226
Galvanised Steel	17,874
Concrete	1,346
Aluminium (pre 2000)	238
Aluminium (post 2000)	1,564

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Table 6.2a Street Lighting Column Quantities	
Column Material	Quantity
Stainless Steel	0
Cast Iron	0
<b>Total</b>	<b>25,248</b>

Table 6.2b Street Lighting Luminaire Quantities	
Luminaires	Quantity
All	0
<b>Total</b>	<b>0</b>

Table 6.2c Street Lighting Cable Quantities	
Cable Assets	Quantity (m)
Cable under Carriageway	16,129
Cable under Footway	697,443
Cable under Verge	36,707
<b>Total</b>	<b>750,279</b>

Table 6.2d Illuminated Sign Assets	
Illuminated Signs	Quantity
Signs	1,481
Bollards	846
<b>Total</b>	<b>2,327</b>

Table 6.2e Other Street Lighting Assets	
Other Street Lighting Assets	Quantity
Wall Bracket	283
Wooden Pole	454
High Mast Column	0
Control Cabinet	950
<b>Total</b>	<b>1,687</b>

### 6.3 Sources of Information

The information used to compile this valuation has come from the following sources:

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<b>Table 6.3a Basis and Source of Inventory Data</b>		
<b>Street Lighting Column Assets</b>	<b>Quantity (Basis)</b>	<b>Quantity (Source)</b>
Non Galvanised Steel	Actual Inventory	WDM
Galvanised Steel	Actual Inventory	WDM
Concrete	0	0
Aluminium (pre 2000)	Actual Inventory	WDM
Aluminium (post 2000)	Actual Inventory	WDM
Stainless Steel	0	0
Cast Iron	0	0
<b>Cable Assets</b>		
Cable under Carriageway	1758.85	0
Cable under Footway	76055.1	0
Cable under Verge	4002.9	0
<b>Other Street Lighting Assets</b>		
Wall Bracket	Actual Inventory	WDM
Wooden Pole	Actual Inventory	WDM
High Mast Column	0	0
Control Cabinet	0	0

<b>Table 6.3b Basis and Source of Inventory Data</b>		
<b>Luminaires</b>	<b>Quantity (Basis)</b>	<b>Quantity (Source)</b>
All	Actual Inventory	0

<b>Table 6.3c Basis and Source of Inventory Data</b>		
<b>Illuminated Signs</b>	<b>Quantity (Basis)</b>	<b>Quantity (Source)</b>
Signs	Actual Inventory	0
Bollards	Actual Inventory	0

### 6.4 Data Quality

The quality of the input data used in the valuation is assessed as follows:

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<b>Table 6.4 Data Quality</b>			
<b>Inventory Data:</b>	<b>Source</b>	<b>Extent</b>	<b>Basis</b>
Quantity	WDM	Good	Local Engineers Estimate
<b>Age Data</b>			
Date of installation records	WDM	Good	Local Engineers Estimate
<b>Cost Data</b>			
Gross replacement cost (GRC) rates	0	N/A	0
Maintenance treatment cost rates	0	N/A	0
<b>Useful Lives</b>			
Total useful life	0	N/A	0

### 6.5 Useful Lives (UL)

The rates useful lives used are shown in table. The useful lives have been established by SCOTS Street Lighting Groups as standard default figures. The figures are used as the basis for the calculation of depreciation.

<b>Table 6.5a Useful Life (UL) Values</b>	
<b>Street Lighting Column Assets</b>	<b>UL (years)</b>
Non Galvanised Steel	25
Galvanised Steel	30
Concrete	30
Aluminium (pre 2000)	40
Aluminium (post 2000)	50
Stainless Steel	70
Cast Iron	100
<b>Cable Assets</b>	
Cable under Carriageway	60
Cable under Footway	60
Cable under Verge	60
<b>Other Street Lighting Assets</b>	
Wall Bracket	40
Wooden Pole	50

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Table 6.5a Useful Life (UL) Values	
Street Lighting Column Assets	UL (years)
High Mast Columns	50
Control Cabinet	50

Table 6.5b Useful Life Value		
Luminaires	Useful Life (years)	Basis (Useful Life)
All	20	0

Table 6.5c Useful Life Value Data		
Illuminated Signs	Useful Life (years)	Basis (Useful Life)
Signs	25	Default Values
Bollards	25	Default Values

## 6.6 Cost Data

Table 6.6a Unit Rates Used Street Lighting Column Assets					
Column Material	Height (m)	Supply	Renewal Rate	Basis	Source
Non Galvanised Steel	5	Private Supply	£1,207.00	Local Engineer Estimate	
		DNO Supply	£1,372.00	Local Engineer Estimate	
	6	Private Supply	£1,207.00	Local Engineer Estimate	
		DNO Supply	£1,372.00	Local Engineer Estimate	
	8	Private Supply	£1,740.00	Local Engineer Estimate	
		DNO Supply	£1,905.00	Local Engineer Estimate	
	10	Private Supply	£2,184.00	Local Engineer Estimate	
		DNO Supply	£2,349.00	Local Engineer Estimate	



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Table 6.6a Unit Rates Used Street Lighting Column Assets						
Column Material	Height (m)	Supply	Renewal Rate	Basis	Source	
	12	Private Supply	£2,274.00	Local Engineer Estimate		
		DNO Supply	£2,439.00	Local Engineer Estimate		
Galvanised Steel	5	Private Supply	£1,207.00	Local Engineer Estimate		
		DNO Supply	£1,372.00	Local Engineer Estimate		
	6	Private Supply	£1,207.00	Local Engineer Estimate		
		DNO Supply	£1,372.00	Local Engineer Estimate		
	8	Private Supply	£1,740.00	Local Engineer Estimate		
		DNO Supply	£1,905.00	Local Engineer Estimate		
	10	Private Supply	£2,184.00	Local Engineer Estimate		
		DNO Supply	£2,349.00	Local Engineer Estimate		
	12	Private Supply	£2,274.00	Local Engineer Estimate		
		DNO Supply	£2,439.00	Local Engineer Estimate		
	Concrete	5	Private Supply	£1,207.00	Local Engineer Estimate	
			DNO Supply	£1,372.00	Local Engineer Estimate	
6		Private Supply	£1,207.00	Local Engineer Estimate		
		DNO Supply	£1,372.00	Local Engineer Estimate		
8		Private Supply	£1,740.00	Local Engineer Estimate		
		DNO Supply	£1,905.00	Local Engineer Estimate		
10		Private Supply	£2,184.00	Local Engineer Estimate		
		DNO Supply	£2,349.00	Local Engineer Estimate		
12		Private Supply	£2,274.00	Local Engineer Estimate		
		DNO Supply	£2,439.00	Local Engineer Estimate		

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Table 6.6a Unit Rates Used Street Lighting Column Assets						
Column Material	Height (m)	Supply	Renewal Rate	Basis	Source	
				Estimate		
Aluminium (pre 2000)	5	Private Supply	£1,207.00	Local Engineer Estimate		
		DNO Supply	£1,372.00	Local Engineer Estimate		
	6	Private Supply	£1,207.00	Local Engineer Estimate		
		DNO Supply	£1,372.00	Local Engineer Estimate		
	8	Private Supply	£1,740.00	Local Engineer Estimate		
		DNO Supply	£1,905.00	Local Engineer Estimate		
	10	Private Supply	£2,184.00	Local Engineer Estimate		
		DNO Supply	£2,349.00	Local Engineer Estimate		
	12	Private Supply	£2,274.00	Local Engineer Estimate		
		DNO Supply	£2,439.00	Local Engineer Estimate		
	Aluminium (post 2000)	5	Private Supply	£1,207.00	Local Engineer Estimate	
			DNO Supply	£1,372.00	Local Engineer Estimate	
6		Private Supply	£1,207.00	Local Engineer Estimate		
		DNO Supply	£1,372.00	Local Engineer Estimate		
8		Private Supply	£1,740.00	Local Engineer Estimate		
		DNO Supply	£1,905.00	Local Engineer Estimate		
10		Private Supply	£2,184.00	Local Engineer Estimate		
		DNO Supply	£2,349.00	Local Engineer Estimate		
12		Private Supply	£2,274.00	Local Engineer Estimate		
		DNO Supply	£2,439.00	Local Engineer Estimate		
Stainless Steel		5	Private Supply	£1,207.00	Local Engineer Estimate	

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Table 6.6a Unit Rates Used Street Lighting Column Assets						
Column Material	Height (m)	Supply	Renewal Rate	Basis	Source	
	6	DNO Supply	£1,372.00	Local Engineer Estimate		
		Private Supply	£1,207.00	Local Engineer Estimate		
	8	DNO Supply	£1,372.00	Local Engineer Estimate		
		Private Supply	£1,740.00	Local Engineer Estimate		
	10	DNO Supply	£1,905.00	Local Engineer Estimate		
		Private Supply	£2,184.00	Local Engineer Estimate		
	12	DNO Supply	£2,349.00	Local Engineer Estimate		
		Private Supply	£2,274.00	Local Engineer Estimate		
	Cast Iron	5	DNO Supply	£2,439.00	Local Engineer Estimate	
			Private Supply	£1,207.00	Local Engineer Estimate	
6		DNO Supply	£1,372.00	Local Engineer Estimate		
		Private Supply	£1,207.00	Local Engineer Estimate		
8		DNO Supply	£1,905.00	Local Engineer Estimate		
		Private Supply	£1,740.00	Local Engineer Estimate		
10		DNO Supply	£2,349.00	Local Engineer Estimate		
		Private Supply	£2,184.00	Local Engineer Estimate		
12		DNO Supply	£2,439.00	Local Engineer Estimate		
		Private Supply	£2,274.00	Local Engineer Estimate		
Cable	Carriageway	All	£102.50	0		
	Footway	All	£41.00	0		
	Verge	All	£20.50	0		
Wall Bracket	inc. surface	Private Supply	£550.00	0		

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<b>Table 6.6a Unit Rates Used Street Lighting Column Assets</b>					
<b>Column Material</b>	<b>Height (m)</b>	<b>Supply</b>	<b>Renewal Rate</b>	<b>Basis</b>	<b>Source</b>
	cabling / supply	DNO Supply	£0.00	0	
Wooden Pole	inc. surface cabling / supply	Private Supply	£550.00	0	
		DNO Supply	£0.00	0	
High Mast Column		Private Supply	£0.00	0	
		DNO Supply	£0.00	0	
Control Cabinet		Large	£1,200.00	0	
		Mini	£0.00	0	

<b>Table 6.6b Unit Rates Used</b>				
<b>Luminaire Type</b>	<b>Luminaire Subtype</b>	<b>Renewal Rate</b>	<b>Basis</b>	<b>Source</b>
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	

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Table 6.6b Unit Rates Used				
Luminaire Type	Luminaire Subtype	Renewal Rate	Basis	Source
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	

Table 6.6c Unit Rates Used			
Illuminated Signs	Renewal Rate (£)	Basis	Source
Signs	£450.00	Local Engineer Estimate	Local Engineer Estimate
Bollards	£150.00	Local Engineer Estimate	Local Engineer Estimate

The renewal rates used were derived from rates in the current schedule of rates maintenance contract and adjusted to take account of traffic management costs, preliminaries and design and supervision costs.

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### 6.7 Lighting Valuation Summary

Based upon the figures shown above and the assumptions stated the current value of the councils Lighting assets has been estimated as:

<b>Table 6.7a Street Lighting Column Valuation</b>			
<b>Street Lighting Column Assets</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Non Galvanised Steel	£5,813,601	£232,544	£232,544
Galvanised Steel	£25,227,175	£11,487,177	£840,906
Concrete	£1,867,499	£62,250	£62,250
Aluminium (pre 2000)	£294,728	£25,656	£7,368
Aluminium (post 2000)	£2,210,463	£2,036,432	£44,209
Stainless Steel	£0	£0	£0
Cast Iron	£0	£0	£0
<b>Cable Assets</b>			
Cable under Carriageway	£1,653,207	£1,081,393	£27,553
Cable under Footway	£28,595,167	£18,704,742	£476,586
Cable under Verge	£752,491	£492,217	£12,542
<b>Other Street Lighting Assets</b>			
Wall Bracket	£155,650	£49,335	£3,891
Wooden Pole	£58,300	£30,800	£1,166
High Mast Column	£0	£0	£0
Control Cabinet	£1,140,000	£559,056	£22,800
<b>Total</b>	<b>£67,768,282</b>	<b>£34,761,602</b>	<b>£1,731,816</b>

<b>Table 6.7b Street Lighting Luminaire Valuation</b>			
<b>Street Lighting Luminaires Assets</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Total	£0.00	£0.00	£0.00

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<b>Table 6.7c Illuminated Signs Valuation</b>			
<b>Illuminated Signs Assets</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Charge</b>
Signs	£666,450.00	£326,583.00	£26,658.00
Bollards	£126,900.00	£62,226.00	£5,076.00
<b>Total</b>	<b>£793,350.00</b>	<b>£388,809.00</b>	<b>£31,734.00</b>

<b>Table 6.7d Street Lighting Valuation All assets</b>			
<b>All Street Lighting Assets</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
Total	£68,561,631.68	£35,150,410.83	£1,763,549.64

## 6.8 Interpretation of Results

### Gross Replacement Cost

The GRC valuation is calculated on the basis of the number of units multiplied by the cost of replacement, with the cost of replacement varying depending on the type of asset. The data for the above ground assets is considered reasonably accurate i.e. lighting columns and luminaires but may be less accurate for underground assets i.e. underground cable. The GRC for street lighting luminaires is included in the column valuation and is not identified separately in table 6.7b.

### Depreciated Replacement Cost

The DRC assumes various life expectancies depending on the type of asset. These life expectancies are based on accepted industry standards and are considered reasonably accurate for above ground assets i.e. lighting columns but may be less accurate for underground assets i.e. underground cables. The age profile of the lighting stock has been determined by records and by physical inspection, this requires on site data validation which is now approximately 80% complete.

### Annual Depreciation

The annual depreciation shows a slight decrease from the 2014/15 value. This is attributable to a reduction in the estimated renewal rates, due to more competitive rates being achieved

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by using Independent Connection Providers for electricity supplies and disconnections, and also due to a reduction in the cost of LED lanterns.

### **Comparison With Current Investment Levels**

Capital investment in lighting column renewals in 2015/16 amounted to £583k. This budget, together with contributions from the lighting revenue budget, funded the replacement of 468 deteriorated columns. Currently 6245 lighting columns (24.7% of the lighting stock) have exceeded their design life of 30 years.

The annualised depreciation cost represents the amount required to maintain the stock at the current level i.e. without replacing the life expired columns.

Current levels of investment allow for the replacement of the most deteriorated columns only. This level of investment is insufficient to allow the condition of the stock to be maintained at the present level and the stock will continue to deteriorate unless investment is increased

## **6.9 Recommendations**

### **Inventory Data Quality**

The existing information is reasonably accurate. Validation of inventory data is ongoing and is currently 80% complete. Recommendation is that the data validation exercise continues with an anticipated completion by March 2017.

### **Condition Data**

Condition data is reasonably accurate, all columns over 25 years old are structurally inspected and tested. Electrical inspection and test frequency has fallen behind the recommended 6 year cycle although additional resources were committed in 2015/16 to accelerate the testing programme. Recommendation is that budget should be allocated to achieve the recommended structural and electrical testing frequencies.

### **Unit Cost Rates**

Unit cost rates are based on an industry consensus agreed by the SCOTS lighting group. The unit rates should be reviewed annually to confirm that they are accurate for works within the Falkirk Council area.



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## Useful Lives

The useful lives are based on industry standard values and should be reviewed annually.

## 7 Traffic Management Systems

### 7.1 Assets Included

The Traffic Management Systems assets included in this report are:

<b>Table 7.1 Traffic Management Systems Assets Included</b>		
<b>Level 1 : Asset Type</b>	<b>Level 2: Asset Group</b>	<b>Components</b>
Traffic Management Systems	<ul style="list-style-type: none"> <li>- Traffic signals</li> <li>- Pedestrian signals</li> <li>- Zebra crossings</li> <li>- In-station</li> <li>- Information systems</li> <li>- Safety cameras</li> </ul>	<ul style="list-style-type: none"> <li>- Different types</li> <li>- Complete installation</li> <li>- Variable message signs</li> <li>- Vehicle activated signs</li> <li>- Real time passenger information</li> </ul>

The following Traffic Management Systems assets are not included:

- Information systems and safety cameras are not present on the adopted road network.

### 7.2 Quantities

The quantities of Traffic Management Systems asset in this report are:

<b>Table 7.2a Traffic Management System Quantities</b>	
<b>Traffic Signal Types</b>	<b>Quantity</b>
<b>Traffic Signal (Junction) Subtypes</b>	
Minor Junction	6
Medium Junction	31
Major Junction	1
Complex Junction	0
<b>Traffic Signal (Pedestrian Crossing) Subtypes</b>	
Single Carriageway	40
Dual Carriageway	9
<b>Total</b>	<b>87</b>

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<b>Table 7.2b Other Traffic Management System Quantities</b>	
<b>Other Traffic Management System Types</b>	<b>Quantity</b>
Information Systems	0
Safety Cameras	0
Variable Message Signs	222
Vehicle Activated Signs	33
Real Time Passenger Information	0
<b>Total</b>	<b>255</b>

### 7.3 Sources of Information

The information used to compile this valuation has come from the following sources:

<b>Table 7.3 Basis and Source of Inventory Data</b>		
<b>Traffic Management System Assets</b>	<b>Quantity (Basis)</b>	<b>Quantity (Source)</b>
<b>Traffic Signal (Junction) Subtypes</b>		
Minor Junction	Actual Inventory	0
Medium Junction	Actual Inventory	0
Major Junction	Actual Inventory	0
Complex Junction	Actual Inventory	0
<b>Traffic Signal (Pedestrian Crossing) Subtypes</b>		
Single Carriageway	Actual Inventory	0
Dual Carriageway	Actual Inventory	0
<b>Other Traffic Management System Subtypes</b>		
Information Systems	0	0
Safety Cameras	0	0
Variable Message Signs	Actual Inventory	Local Engineer Estimate
Vehicle Activated Signs	Actual Inventory	Local Engineer Estimate
Real Time Passenger Information	0	0

### 7.4 Data Quality

The quality of the input data used in the valuation is assessed as follows:

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<b>Table 7.4 Data Quality</b>			
	<b>Source</b>	<b>Extent</b>	<b>Basis</b>
<b>Inventory Data</b>			
Quantity	100	Complete	MSExcel
<b>Age Data</b>			
Date of installation records	MSExcel	Complete	MSExcel
<b>Cost Data</b>			
Gross replacement cost (GRC) rates	MSExcel	Complete	MSExcel
Maintenance treatment cost rates	No Record Held	N/A	0
<b>Useful Lives</b>			
Total useful life	0	N/A	0

### 7.5 Useful Lives

The rates useful lives used are shown in table.

<b>Table 7.5 Useful Lives</b>				
<b>Traffic Management System Assets</b>	<b>Equipment</b>		<b>Civils</b>	
	<b>Useful Life (years)</b>	<b>Basis</b>	<b>Useful Life (years)</b>	<b>Basis</b>
<b>Traffic Signal (Junction) Subtypes</b>				
Minor Junction	20	Default Values	40	Default Values
Medium Junction	20	Default Values	40	Default Values
Major Junction	20	Default Values	40	Default Values
Complex Junction	20	Default Values	40	Default Values
<b>Traffic Signal (Pedestrian Crossing) Subtypes</b>				
Single Carriageway	20	Default Values	40	Default Values
Dual Carriageway	20	Default Values	40	Default Values
<b>Other Traffic Management System Subtypes</b>				
Information Systems	15	0		
Safety Cameras	15	0		
Variable Message Signs	10	Default Values		

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Table 7.5 Useful Lives				
Traffic Management System Assets	Equipment		Civils	
	Useful Life	Basis	Useful Life	Basis
Vehicle Activated Signs	10	Default Values		
Real Time Passenger Information	15	0		

The useful lives of typical maintenance treatments have been used. The figures used for have been estimated by Russell Steedman, Network Co-Ordinator. The figures are used as the basis for the calculation of depreciation.

### 7.6 Cost Data

The rates used for maintenance treatments were derived from rates in the current term maintenance contracts and from tendered schemes undertaken within the last 5 years. The unit rates were adjusted to take account of traffic management costs, preliminaries and design and supervision costs.

Table 7.6 Unit Rates Used					
Traffic Management System Assets	Equipment		Civils		Source
	Renewal Rate (£/site)	Basis	Renewal Rate (£/site)	Basis	
<b>Traffic Signal (Junction) Subtypes</b>					
Minor Junction	£20,000.00	Actual (based on rates)	£30,000.00	Actual (based on rates)	0
Medium Junction	£40,000.00	Actual (based on rates)	£60,000.00	Actual (based on rates)	0
Major Junction	£56,000.00	Actual (based on rates)	£84,000.00	Actual (based on rates)	0
Complex Junction	£0.00	Actual (based on rates)	£0.00	Actual (based on rates)	0

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<b>Table 7.6 Unit Rates Used</b>					
<b>Traffic Management System Assets</b>	<b>Equipment</b>		<b>Civils</b>		<b>Source</b>
	<b>Renewal Rate (£/site)</b>	<b>Basis</b>	<b>Renewal Rate (£/site)</b>	<b>Basis</b>	
<b>Traffic Signal (Pedestrian Crossing) Subtypes</b>					
Single Carriageway	£15,000.00	Actual (based on rates)	£20,000.00	Actual (based on rates)	0
Dual Carriageway	£20,000.00	Actual (based on rates)	£25,000.00	Actual (based on rates)	0
<b>Other Traffic Management System Subtypes</b>					
Information Systems	£0.00	0			0
Safety Cameras	£0.00	0			0
Variable Message Signs	£3,500.00	Local Engineer Estimate			Local Engineer Estimate
Vehicle Activated Signs	£3,500.00	Local Engineer Estimate			Local Engineer Estimate
Real Time Passenger Information	£0.00	0			0

### Remaining Lives

The remaining lives of the components that depreciate have been based upon the condition data.

### 7.7 Traffic Management Systems Valuation Summary

Based upon the figures shown above and the assumptions stated the current value of the councils Traffic Management Systems assets has been estimated as:

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<b>Table 7.7 Traffic Management Systems Valuation</b>			
<b>Traffic Management System Assets</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
<b>Traffic Signal (Junction) Subtypes</b>			
Minor Junction	£300,000	£256,250	£10,500
Medium Junction	£3,100,000	£2,148,000	£108,500
Major Junction	£140,000	£56,700	£4,900
Complex Junction	£0	£0	£0
<b>Traffic Signal (Pedestrian Crossing) Subtypes</b>			
Single Carriageway	£1,400,000	£988,750	£50,000
Dual Carriageway	£405,000	£317,250	£14,625
<b>Other Traffic Management System Subtypes</b>			
Information Systems	£0	£0	£0
Safety Cameras	£0	£0	£0
Variable Message Signs	£777,000	£427,700	£77,700
Vehicle Activated Signs	£115,500	£64,050	£11,550
Real Time Passenger Information	£0	£0	£0
<b>Total</b>	<b>£6,237,500</b>	<b>£4,258,700</b>	<b>£277,775</b>

### 7.8 Interpretation of Results

The number of traffic signal sites continues to increase year on year. As a result the level of funding will require increasing accordingly.

### 7.9 Recommendations

None

## 8 Street Furniture

### 8.1 Assets Included

The Street Furniture assets included in this report are:

<b>Table 8.1 Street Furniture Assets</b>			
<b>Level 1: Asset Type</b>	<b>Level 2: Asset Group</b>	<b>Level 3: components that level 2 implicitly includes</b>	
Street Furniture	Transport	Traffic Signs (non-illuminated)	
	Highway	Safety Fences	
	Street scene /amenity		Pedestrian Barriers
			Street Name Plates
			Bins
			Bollards
			Bus Shelters
			Grit Bins
			Cattle Grids
			Gates
			Trees
			Seating
	Verge Marker Posts		
Weather Stations			

### 8.2 Quantities

The quantities of Street Furniture asset include are:

<b>Table 8.2 Street Furniture Quantities</b>		
<b>Street Furniture Assets</b>	<b>Quantity of Assets</b>	<b>Unit</b>
Traffic Signs (non-illuminated)	6,010	Number
Safety Fences	2,000	Length (m)
Pedestrian Barriers	500	Length (m)
Street Name Plates	4,343	Number
Bins	1,968	Number
Bollards	3,000	Number
Bus Shelters	467	Number
Grit Bins	1,018	Number



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Table 8.2 Street Furniture Quantities		
Street Furniture Assets	Quantity of Assets	Unit
Cattle Grids	0	Number
Gates	0	Number
Trees	0	Number
Seating	0	Number
Verge Marker Posts	2,000	Number
Weather Stations	4	Number
<b>Total</b>	<b>21,310</b>	

### 8.3 Sources of Information

The information used to compile this valuation has come from the following sources:

Table 8.3 Basis and Source of Inventory Data		
Street Furniture Assets	Quantity (Basis)	Quantity (Source)
Traffic Signs (non-illuminated)	Local Engineer Estimate	0
Safety Fences	Local Engineer Estimate	0
Pedestrian Barriers	Local Engineer Estimate	0
Street Name Plates	Local Engineer Estimate	0
Bins	Actual Inventory	C & N Services
Bollards	Local Engineer Estimate	0
Bus Shelters	Actual Inventory	L Drive
Grit Bins	Actual Inventory	W Drive
Cattle Grids	0	0
Gates	0	0
Trees	Local Engineer Estimate	0
Seating	0	0
Verge Marker Posts	Local Engineer Estimate	0
Weather Stations	Actual Inventory	Known

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### 8.4 Data Quality

The quality of the input data used in the valuation is assessed as follows:

<b>Table 8.4 Data Quality</b>			
	<b>Source</b>	<b>Extent</b>	<b>Basis</b>
<b>Inventory Data</b>			
Quantity	Various Sources	Partial	Local Engineer Estimate
<b>Cost Data</b>			
Gross replacement cost (GRC) rates	SCOTS	N/A	Local Engineer Estimate
Maintenance treatment cost rates	Historical	N/A	Local Engineer Estimate
<b>Expected Service Lives</b>			
Total useful life	SCOTS	N/A	Local Engineer Estimate

### 8.5 Useful Lives

The rates useful lives used are shown in table 7.3 below.

<b>Table 8.5 Street Furniture Useful Lives</b>		
<b>Street Furniture Assets</b>	<b>Useful Life</b>	<b>Basis</b>
Traffic Signs (non-illuminated)	20	Local Engineer Estimate
Safety Fences	20	Local Engineer Estimate
Pedestrian Barriers	25	Local Engineer Estimate
Street Name Plates	20	Local Engineer Estimate
Bins	15	Local Engineer Estimate
Bollards	25	Local Engineer Estimate
Bus Shelters	20	Local Engineer Estimate
Grit Bins	15	Local Engineer Estimate
Cattle Grids	25	0
Gates	20	0
Trees	25	Local Engineer Estimate
Seating	20	0
Verge Marker Posts	15	Local Engineer Estimate
Weather Stations	20	Local Engineer Estimate

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The useful lives of typical maintenance treatments have been used. The figures are used as the basis for the calculation of depreciation.

For the majority of street furniture asset condition information is not recorded. The scale of these assets does not warrant this level of data. The valuation is based upon the following assumptions:

- Where no condition data exists it has been assumed that 90% of the asset is in an acceptable condition
- The remaining 10% is in a condition that warrants replacement in the near future and the remaining life of these has been assumed to be 3 years.

### 8.6 Cost Data

The rates used for maintenance treatments were obtained from the internal benchmarked Schedule of Rates.

<b>Table 8.6 Unit Rates Used</b>			
<b>Street Furniture Assets</b>	<b>Renewal Rate (£)</b>	<b>Basis</b>	<b>Source</b>
Traffic Signs (non-illuminated)	300	Local Engineer Estimate	0
Safety Fences	300	Local Engineer Estimate	0
Pedestrian Barriers	300	Local Engineer Estimate	0
Street Name Plates	200	Local Engineer Estimate	0
Bins	330	Actual (based on rates)	0
Bollards	350	Local Engineer Estimate	0
Bus Shelters	2500	Local Engineer Estimate	0
Grit Bins	120	Local Engineer	0

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Table 8.6 Unit Rates Used			
Street Furniture Assets	Renewal Rate (£)	Basis	Source
		Estimate	
Cattle Grids	0	0	0
Gates	0	0	0
Trees	50	Local Engineer Estimate	0
Seating	0	0	0
Verge Marker Posts	120	Local Engineer Estimate	0
Weather Stations	7000	Local Engineer Estimate	0

### 8.7 Street Furniture Valuation Summary

Based upon the figures shown above and the assumptions stated the current value of the council's Street Furniture assets has been estimated as:

Table 8.7 Street Furniture Valuation			
Street Furniture Assets	Gross Replacement Cost	Depreciated Replacement Cost	Annualised Depreciation Cost
Traffic Signs (non-illuminated)	£1,803,000.00	£856,425.00	£90,150.00
Safety Fences	£600,000.00	£270,000.00	£30,000.00
Pedestrian Barriers	£150,000.00	£63,750.00	£6,000.00
Street Name Plates	£868,600.00	£390,915.00	£43,430.00
Bins	£649,440.00	£308,550.00	£43,296.00
Bollards	£1,050,000.00	£519,750.00	£42,000.00
Bus Shelters	£1,167,500.00	£584,187.50	£58,375.00
Grit Bins	£122,160.00	£56,032.00	£8,144.00
Cattle Grids	£0.00	£0.00	£0.00
Gates	£0.00	£0.00	£0.00
Trees	£0.00	£0.00	£0.00
Seating	£0.00	£0.00	£0.00
Verge Marker Posts	£240,000.00	£116,000.00	£16,000.00
Weather Stations	£28,000.00	£14,000.00	£1,400.00

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<b>Table 8.7 Street Furniture Valuation</b>			
<b>Street Furniture Assets</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annualised Depreciation Cost</b>
<b>Total</b>	<b>£6,678,700.00</b>	<b>£3,179,609.50</b>	<b>£338,795.00</b>

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## 9 Land

### 9.1 Assets Included

The area of land occupied by roads/highways includes carriageways footways and verges. Regardless of whether the council owns the land upon which the road/highway sits.

### 9.2 Quantities

The area of land occupied by roads is summarised in table 9.5 below.

### 9.3 Sources of Information

#### Inventory

The area of land included is based upon default widths. These default widths are added to the width used for carriageways and footways in order to derive the areas.

#### Unit Rates

Unit rates for land value have been supplied by the VAO (Valuation Office) at the request of Transport Scotland.

### 9.4 Land Valuation

<b>Table 9.5: Land Valuation</b>		
	<b>Area M<sup>2</sup></b>	
	<b>Urban</b>	<b>Rural</b>
Carriageway	5,542,671	1,587,769
Footway	2,689,362	0
Verge Area	0	912,240
Total Area	8,232,032	2,500,009
Land Rates £/ha	£775,000	£15,000
Land Valuation ( £000's)	£637,983	£3,750

## 10 Road Asset Valuation Summary

### 10.1 Asset Values

<b>Table 10.1 Road Asset Valuation</b>			
<b>Asset Type</b>	<b>Gross Replacement Cost</b>	<b>Depreciated Replacement Cost</b>	<b>Annual Depreciation</b>
Carriageway	£1,038,480	£831,039	£18,023
Footway	£258,579	£90,514	£8,550
Structures	£156,116	£149,656	£832
Street Lighting	£68,562	£35,150	£1,764
Street Furniture	£6,679	£3,180	£339
Traffic Signals	£6,238	£4,259	£278
Land	£641,733		
<b>Total</b>	<b>£2,176,385</b>	<b>£1,113,798</b>	<b>£29,785</b>

### 10.2 Comparison with Current Investment Levels

<b>Table 10.2 Annual Depreciation vs Investment in Planned Maintenance</b>			
<b>Asset Type</b>	<b>Annual Depreciation</b>	<b>Current Investment (planned maintenance)</b>	<b>Investment/Annual Depreciation</b>
Carriageway	£18,023	£2,523	14%
Footway	£8,550	£369	4%
Structures	£832	£0	0%
Street Lighting	£1,764	£583	33%
Street Furniture	£339	£0	0%
Traffic Signals	£278	£0	0%
<b>Total</b>	<b>£29,784.82</b>	<b>£3,474.83</b>	<b>12%</b>

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### 10.3 Recommendations

- Completion of electronic capture of link footpath asset data using the Local Street Gazetteer system, RoadNet with the RAMP tool to develop this.
- Collection of inventory data for the more minor asset groups.



## Terms and Abbreviations

The following terms and Abbreviations are used in this report.

### **Gross Replacement Cost (GRC)**

The total admissible cost of replacing either the whole of an existing highway network or some part of it with an equivalent new asset.

### **Depreciated Replacement Cost (DRC)**

A method of valuation which provides the current cost of replacing an asset with its modern equivalent asset less deductions for all physical deterioration and all relevant forms of obsolescence and optimisation.

### **Depreciation**

The systematic allocation of the depreciable amount of an asset over its useful life arising from use, ageing, deterioration or obsolescence.

### **Impairment**

A reduction in net asset value due to a sudden or unforeseen decrease in condition and/or performance of an asset compared to the previously assessed level which has not been recognised through depreciation.

### **Annual Depreciation (AD)**

The aggregate cost of all the capital replacements/ treatments needed to maintain/restore the asset's service potential over its life cycle, spread over the estimated number of years in the cycle.

### **Useful Life (UL)**

The period for which an asset is expected to be available for use by an entity.

### **Residual Value (RV)**

The net amount that could be obtained for an asset at the end of its useful life.

### **Remaining Life (RL)**

The difference between the useful life and current age.

### **Accumulated Consumption**

A measure of the proportion of the gross asset value that has been consumed to date.

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### References

1. Code of Practice on Transport Infrastructure Assets, Guidance to Support Asset Management, Financial Management and Reporting, CIPFA, 2013.  
<http://www.cipfa.org/policy-and-guidance/publications/c/code-of-practice-on-transport-infrastructure-assets-2013-edition-book>
2. Whole of Government Accounts, Guidance,  
<https://www.gov.uk/government/publications/whole-of-government-accounts-2014-to-2015-guidance-for-preparers>.
3. The SCOTS Road Asset Management Project is a joint project under which all 32 Scottish Road Authorities are developing their Road Asset Management Plan under a consistent framework.  
(<http://scots.sharepoint.apptix.net/asset/default.aspx>)
4. SRMCS project is a joint project under which all 32 Scottish Road Authorities have jointly procured vehicle based road condition surveys. (insert hyperlink to SCOTSNET)

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### Appendix A: Personnel

The following council personnel completed this valuation:

Asset Type	Name	Position
Carriageways	Ewan Hogg/Dorothy Reid	Asset Management Officer/Area Roads Engineer
Footways and Cycletracks	Ewan Hogg/Dorothy Reid	Asset Management Officer/Area Roads Engineer
Structures	Ralph Ridley	Bridge and Structure Design Co-Ordinator
Highway Lighting	Graham Speirs	Area Lighting Engineer
Street Furniture	Russell Steedman	Network Co-Ordinator
Traffic Management Systems	Ewan Hogg/Dorothy Reid	Asset Management Officer/Area Roads Engineer
Land	Ewan Hogg/Dorothy Reid	Asset Management Officer/Area Roads Engineer