

## **SECTION – D**

# **COMMUTED SUMS PAYMENTS FOR FUTURE MAINTENANCE IN RELATION TO ADOPTION AND TRANSFER OF INFRASTRUCTURE ASSETS**

**Issue Date: January 2014**

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## 1 Highways Suitable for Adoption

- 1.1 Local Authority's have increasing pressure on their budgets, which has resulted in the requirements for the commuted sums to cover the cost of maintaining additional highway facilitating a development and the "extra over" costs involved in maintaining new roads offered for adoption.
- 1.2 Commuted sums will generally be secured by way of section 38 and 278 agreements. The statutory authority for these payments is covered under section 38(6) and section 278(3) of the Highways Act 1980.
- 1.3 It is intended that developers use this guidance in the spirit in which it is meant and that innovation is not stifled as a result of financial contributions towards the future maintenance of innovative design, use of materials and landscaping.
- 1.4 The guidance provides a transparent and consistent approach towards seeking financial contribution as well as giving developers sufficient notification as to the requirements of the Council.
- 1.5 Commuted sum is a "one-off" payment of a capital sum to the Highway Authority, as a contribution towards future maintenance of the asset to be adopted or transferred.
- 1.6 Commuted sums will be required for the future maintenance of highways that fall into the following categories:-
- a) Alterations to the existing highway to form an access to a development that would not have been required should the development not take place. Usually roundabouts, traffic signal controlled junctions carried out under Section (278 (111)) or hybrid S38/278 Agreements.
  - b) New highway constructed, usually under Section 38(6) Agreements, any additional areas and features over and above that necessary for safe operational requirements.
  - c) Additional features to be adopted that require maintenance over and above that normally expected to access a development.
  - d) The use of approved alternative materials over and above the standard highway construction materials.
  - e) Utilisation of existing highway infrastructure by the proposed development.

The above items are now described in more detail.

- 1.7 Alterations to the existing highway; this will cover the future maintenance of the alterations and should cover the following:-
- a) Traffic signal controlled junctions; the cost of maintenance of traffic signal apparatus, additional carriageway and footway construction over and above areas of existing highway, additional street lighting requirements including illuminated signs and bollards, traffic signs and road markings, highway drainage, safety fencing, landscaping and any additional items that will require future maintenance.
  - b) Roundabouts; additional carriageway and footway construction over and above areas of existing highway, additional street lighting requirements including illuminated signs and bollards, traffic signs and road markings, highway drainage, safety fencing, landscaping and any additional items that will require future maintenance.
  - c) Junctions; additional carriageway construction over and above areas of existing highway for dedicated right turn lanes, additional street lighting requirements including illuminated signs and bollards, traffic signs and road markings, highway drainage, safety fencing, landscaping and any additional items that will require future maintenance.
- 1.8 New highway constructed; any additional area over and above that necessary for safe operational requirements, examples are: -
- a) Over sized turning areas above that required for accommodating a standard turning area.
  - b) Grassed areas to be adopted as highway verge, which could consist of vision splay, forward vision or soft margin strip.
  - c) Widened carriageway to provide on street parking facilities over and above the standard carriageway width.
  - d) Traffic calming facilities.
  - e) New trees/shrubs.
- 1.9 Additional features to be adopted that require maintenance over and above that normally expected for a development. These include items such as: -
- a) Bridges.
  - b) Retaining structures.
  - c) Traffic signals.
  - d) Controlled Pedestrian Crossings
  - e) Safety fencing.
  - f) Traffic calming

- g) Traffic Signs
- h) Additional Areas of Carriageway
- i) On Street Parking Laybys
- j) Road markings.
- k) Salt/grit bins.
- l) Street lighting.
- m) Bollards.
- n) Bus shelters.
- o) Highway Drainage:-
  - i. Culverted watercourses.
  - ii. Highway drainage attenuation.
  - iii. Flow control devices.
  - iv. Highway soakaways.
  - v. Sustainable Urban Drainage Systems (SUDS).
  - vi. Combined kerb drainage units.
  - vii. Drainage Gullies
- p) Landscaping.

It should be noted that this list is not exhaustive and other features may also attract commuted sums.

- 1.10 The use of approved alternative materials over and above the standard highway construction materials. Examples are: -
  - a) Alternative carriageway and footway construction.
  - b) Ornamental street-lighting where approved.
  - c) Ornamental pedestrian railings.
- 1.11 Standard highway construction definitions will typically include: -
  - a) Carriageway and footway construction in flexible asphalt concrete and block paving.
  - b) Standard street lighting columns and lanterns.
  - c) Pedestrian guardrails.
  - d) Pre-cast concrete kerbs, edgings and gullies.
  - e) Manhole covers, gully gratings, carrier drains and outlet structures.
- 1.12 The utilisation of existing highway infrastructure by the proposed development, an example being the discharge of highway or domestic surface water runoff into an existing highway drain or culvert.

- 1.13 The commuted sum is payable prior to the issue of the Final Certificate or adoption of the highway asset subject of the commuted sum.

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## 2 Highway Drainage Commuted Sums (Vetting and Connection Charges)

- 2.1 Commuted sums will be required for the extra over maintenance associated with SUDS, attenuation tanks, flow control mechanisms, soakaways and discharge of additional run-off into an existing highway drainage system.
- 2.2 Prior to an application for connection, the developer must first consider and discount other strategies in the following order:-
- Sustainable Drainage Systems (SuDS) Techniques (For more information refer to The SuDS Manual (CIRIA C697, 2007);
  - Discharge to a watercourse;
  - Discharge to public sewer
- 2.3 Where a developer intends to discharge run off from newly created highway into an existing highway drain, the developer will:-
- In addition to assessing integrity and capacity, determine that the highway drainage does not outfall to a DCWW combined sewer
  - Be responsible for determining the extent of the existing highway drainage network, (where records are not available) and assessing the capacity and integrity of the existing highway drainage to accommodate the net additional flow up to its discharge point.
  - Be required to pay the Council fees for the vetting and approving of the submitted documents and calculations relating to the drainage connection. The fee, which will be subject to periodic review is currently, (2014), £2,000, for the review in relation to residential, commercial and industrial developments and £375 for review in relation to single properties. Charges must be paid in advance of any review being made.
  - Pay the connection charge of £375 per connection. Payment must be received before any connection to the highway drainage system is made.
  - Be required to pay a commuted sum payment for the annual inspection and increased maintenance necessary as a result of the net increase in flow put into the system for a period of 30 years. This is based on the additional impermeable area to be drained and is currently, (2013), as follows: - (calculated by using the formula in Section 3).

|                         |                          |
|-------------------------|--------------------------|
| Up to 500m <sup>2</sup> | £1.00/m <sup>2</sup> /yr |
| Over 500m <sup>2</sup>  | £0.50/m <sup>2</sup> /yr |

- f) Where measures are taken to restrict flow by means of attenuation tanks, flow control mechanisms, rainwater harvesting and other appropriate SUDS measures the commuted sums referred to in (c) above will be reduced as follows.

|                         |                          |
|-------------------------|--------------------------|
| Up to 500m <sup>2</sup> | £0.30/m <sup>2</sup> /yr |
| Over 500m <sup>2</sup>  | £0.15/m <sup>2</sup> /yr |

- 2.4 Where a developer intends to connect attenuated highway drainage to a DCWW maintained surface water drain or a watercourse, the developer will: -

- a) Be responsible for assessing the size and design of the attenuation system and flow control mechanism, and to gain all necessary consents from the Lead Local Flood Authority (Rhondda Cynon Taf County Borough Council), DCWW or the Environment Agency.
- b) Pay commuted sums for the future maintenance of the attenuation and flow control mechanism:-
  - i) Attenuation tanks require more specialised equipment than that used on normal highway drainage maintenance to complete cleaning operations due to the high levels of silt and debris deposited in the system whilst water is held back. Refer to section 3 for calculating the commuted sums.
  - ii) Flow control devices require regular routine inspections to ensure they operate effectively, inspections would currently be required at 6 monthly intervals.

### **Attenuation Tanks**

- 2.5 Highway drainage attenuation tanks and soakaways may require vehicular access complete with turning facility to enable maintenance vehicles to enter and leave in a forward gear. The access and turning area shall be in permanent materials as approved by this Council. The developer must also pay a commuted sum for a period of 30 years for the future maintenance of the access, where such facility does not form part of the adopted highway.

### **Attenuation Ponds**

- 2.6 Maintenance requirements for attenuation ponds will generally be in accordance with the recommendations contained within CIRIA C697 'The SUDs Manual', as outlined in Table 1 below. The commuted sum required may be reviewed on a site by site basis to reflect any site specific maintenance requirements.



2.7 Lagoons / Ponds are to be designed to minimise the requirements for ongoing maintenance and to ensure that the pond does not cause nuisance to nearby properties. It is expected that off line ponds will be grassed utilising a slow growing grass mixture that will tolerate the prevailing conditions and will be cut at a frequency of 6 cuts per year. Planting of trees and shrubs will be such that falling leaves branches and root systems will not have an adverse impact on the pond.

| Maintenance Schedule   | Required Action   | Frequency  |
|------------------------|---|--|
| Regular maintenance    | Litter and debris removal   | Monthly  |
|                        | Grass cutting - access route  | Monthly (during growing season), or as required              |
|                        | Grass cutting - meadow grass in and around basin  | Half yearly (spring - before bird nesting season and autumn) |
|                        | Manage other vegetation and remove nuisance plants  | Monthly (at start, then as required)                         |
|                        | Tidy all dead growth before start of growing season   | Annually   |
|                        | Remove sediment from inlet and outlet   | Annually (or as required)                                    |
|                        | Flow Control Device – cleaning  | Six Monthly or as manufacturers recommendations              |
| Occasional maintenance | Re-seed areas of poor vegetation growth   | Annually (or as required)                                    |
|                        | Prune and trim trees and remove cuttings  | 2 years (or as required)                                     |
| Remedial actions       | Repair of erosion or other damage by re-seeding or re-turfing.                                    | As required  |
|                        | Repair/rehabilitation of outlet   | As required  |
|                        | Re-level uneven surfaces and reinstate design levels  | As required  |
| Monitoring             | Inspect outlet for blockages and arrange clearance if required                                    | Monthly/after large storms                                   |
|                        | Inspect bank sides, structures, pipework etc for evidence of physical damage                      | Monthly/after large storms                                   |
|                        | Inspect facility surface for silt accumulation and establish appropriate silt removal frequencies | Half yearly  |
|                        | Check flow control device and arrange clearance/maintenance if required.                          | Monthly / After large storms                                 |

Table 1 - Maintenance requirements based on Table 16.2 CIRIA C697 'The SuDs Manual'

### Highway Soakaways

2.8 Where a developer intends to utilise SUDS and drain highway drainage to soakaways, the developer will be responsible for assessing the size and design of the soakaways together with ground permeability testing in accordance with BRE Digest 365 or alternative agreed method.

- 2.9 Highway soakaways require regular cleansing, and silt trap manholes cleansed on a regular basis. More specialised equipment is required to cleanse the soakaways due to the high levels of silt and debris deposited in the system whilst water is held back. Refer to section 3 for calculating the commuted sums.

### **Oil Interceptor/Separator**

- 2.10 In line with the Natural Resources Wales guidelines an oil interceptor/separator should be provided where there is a car park with spaces for 50 or more vehicles or in locations where oil/hydrocarbons are likely to be used or stored.
- 2.11 In some circumstances, gully pots may be adequate as long as they are suitable for the frequency of oil contamination and can be properly inspected and maintained.
- 2.12 It is advisable to provide oil interceptor in the delivery areas due to higher risk of oil spill from Lorries.
- 2.13 Oil interceptors/separators which are to be maintained by the Highway Authority would be subject of a commuted sum for the future maintenance.

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### 3 Method of Calculating Commuted Sums

The commuted sums required for extra maintenance liability will be calculated based on the current (2014) rates as detailed below.

The following formula has been used to calculate the maintenance obligation:-

$$\text{Commuted sum} = \sum M_p / (1+D/100)^T$$

where:  $M_p$  = Estimated periodic maintenance cost based on current rates.

$D$  = Periodic Discounted Rate (effective annual interest rate)(%)

$T$  = Time period before expenditure will be incurred or cyclical period (years)

Periodic Discounted Rate (D).

The discount rate (effective annual interest rate) is 2.2% which is calculated as follows: -

$$D = ((\text{LTNBR} / \text{RPIX}) - 1) \times 100$$

where LTNBR is the Long Term Neutral Base Rate (Currently 4.5% ie 1.045)

RPIX is the Retail Price Index excluding mortgage payments, taken as 2.25% i.e. 1.0225 for this example.

therefore  $D = ((1.045 / 1.0225) - 1) \times 100 = 2.2\%$

The RPIX rate is published by the office of National Statistics on a monthly basis and suitable figures for the calculation will be adopted as necessary to reflect any significant long term changes in the rate. Similarly the current rates may be amended to reflect any changes in costs.

#### Example Calculation

For a sum deposited in respect to a future maintenance activity, interest will be accrued up until the activity must be carried out, although over the same period inflation will tend to reduce the value of the deposit. This effect is taken into account by the use of the Periodic Discounted Rate which represents the effective interest rate.

The calculation is based on the conversion of future expenditure, (the cost of which is known at today's prices), being converted into a Net Present Value (NPV). This is the sum which if deposited today and invested at the periodic discounted rate would provide the sum required for the activity to be undertaken when it becomes due in 'T' years.

Considering the costs for a soakaway.

The commuted sum must include for the inspection, cleaning and desilting of the soakaway every 10 years.

The cost of undertaking the inspection, cleaning and desilting requires labour and hire of a vactor unit and the safe disposal of arisings. The cost has been determined to be £850 at current rates. The activity will be required in 10, 20 and 30 years time.

Using the formula

$$\text{NPV factor} = \sum 1 / (1 + D / 100)^T \quad \text{where D is the Periodic Discounted Rate calculated at 2.2\% as outlined above.}$$

$$\begin{aligned} \text{NPV factor} &= 1 / (1 + D / 100)^{10} + 1 / (1 + D / 100)^{20} + 1 / (1 + D / 100)^{30} \\ &= 1 / (1 + 2.2/100)^{10} + 1 / (1 + 2.2/100)^{20} + 1 / (1 + 2.2/100)^{30} \\ &= 0.80444 + 0.64712 + 0.52056 \\ &= 1.97211 \end{aligned}$$

$$\begin{aligned} \text{Commutated sum for inspection} &= \text{Current Cost} \times \text{NPV factor} \\ &= £850.00 \times 1.97211 \\ &= £1676.30 \end{aligned}$$

Commutated sums are rounded to the nearest pound therefore the commuted sum required would be £1676. For ease of manual calculation NPV factors for various periods are listed in Appendix A.

A typical commuted sum expenditure is shown in Appendix B.

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## 4 Highway Assets Subject of Commuted Sums.

The following list reflects highway assets which attract commuted sums and may change from time to time including the amount which is based on LTNRB and RPIX interest rates published by the Office of National Statistics.

The commuted sums are reviewed on a regular basis and updated accordingly.

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## Traffic Signals

| Item No. | Description             | Element                        | Quantity | Unit | Frequency        | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element 30 yrs | Commuted Sum 30yrs | Comments  |
|----------|-------------------------|--------------------------------|----------|------|------------------|------------|------------------------|-----------------------------|--------------------|---|
| 1        | <b>Traffic Signals</b>  | Posts                          | 2        | no   | 1 every 20 years | 0.6471     | £534.65                | £691.96                     | £ 55,466           | Calculate on a site specific basis to take account the exact number of posts and signal heads.  |
|          |                         | Vehicle Signal Head (LED)      | 2        | no   | 1 every 20 years | 0.6471     | £590.00                | £763.60                     |                    |   |
|          |                         | Solar Cell                     | 1        | no   | 1 every 15 years | 1.2421     | £35.00                 | £43.47                      |                    |   |
|          |                         | Electricity usage Signal Heads | 2        | no   | 1 every 1 year   | 21.7926    | £10.00                 | £435.85                     |                    |   |
|          |                         | Signal Controller              | 1        | no   | 1 every 15 years | 1.2421     | £4,500.00              | £5,589.28                   |                    |   |
|          |                         | MOVA Unit                      |          | item | 1 every 15 years | 1.2421     | £4,338.41              | £5,388.58                   |                    |   |
|          |                         | Outstation Monitoring Unit     |          | item | 1 every 15 years | 1.2421     | £3,200.00              | £3,974.60                   |                    |   |
|          |                         | Electricity usage Controller   |          | item | 1 every 1 year   | 21.7926    | £75.00                 | £1,634.45                   |                    |   |
|          |                         | Inspection/Test                |          | item | 1 every 1 year   | 21.7926    | £150.00                | £3,268.89                   |                    |   |
|          |                         | Maintenance (Siemens)          |          | item | 1 every 1 year   | 21.7926    | £1,500.00              | £32,688.90                  |                    |   |
|          |                         | Refresh Stop Lines/ Studs      |          | item | 1 every 10 years | 1.9721     | £500.00                | £986.06                     |                    |   |
| 2        | <b>Pelican Crossing</b> | Posts                          | 4        | no   | 1 every 20 years | 0.6471     | £534.65                | £1,383.92                   | £ 27,579           | Calculate on a site specific basis to take account the exact number of posts and signal heads.<br>(All new controlled pedestrian crossings within RCTCBC are to be Puffin type crossings) |
|          |                         | Vehicle Signal Heads           | 4        | no   | 1 every 20 years | 0.6471     | £590.00                | £1,527.19                   |                    |   |
|          |                         | Pedestrian Signal Heads        | 2        | no   | 1 every 20 years | 0.6471     | £217.70                | £281.75                     |                    |   |
|          |                         | Push Button Boxes              | 2        | no   | 1 every 20 years | 0.6471     | £246.77                | £319.38                     |                    |   |
|          |                         | MVDs                           | 2        | no   | 1 every 20 years | 0.6471     | £341.38                | £441.82                     |                    |   |
|          |                         | Audible Units                  | 2        | no   | 1 every 20 years | 0.6471     | £41.93                 | £54.27                      |                    |   |
|          |                         | Tactile Cones                  | 2        | no   | 1 every 20 years | 0.6471     | £283.92                | £367.46                     |                    |   |
|          |                         | Solar Cell                     | 1        | no   | 1 every 15 years | 1.2421     | £35.00                 | £43.47                      |                    |   |
|          |                         | Controller                     | 1        | no   | 1 every 15 years | 1.2421     | £2,500.00              | £3,105.16                   |                    |   |
|          |                         | Inspection/Test                |          | item | 1 every 1 year   | 21.7926    | £150.00                | £3,268.89                   |                    |   |
|          |                         | Electricity                    |          | item | 1 every 1 year   | 21.7926    | £175.00                | £3,813.71                   |                    |   |
|          |                         | Maintenance (Siemens)          |          | item | 1 every 1 year   | 21.7926    | £550.00                | £11,985.93                  |                    |   |
|          |                         | Refresh Stop Lines /Studs      |          | item | 1 every 10 years | 1.9721     | £500.00                | £986.06                     |                    |   |

### Traffic Signals continued

| Item No.              | Description                        | Element                        | Quantity       | Unit    | Frequency        | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element 30 yrs | Commuted Sum 30yrs | Comments   |
|-----------------------|------------------------------------|--------------------------------|----------------|---------|------------------|------------|------------------------|-----------------------------|--------------------|--|
| 3                     | <b>Puffin Crossing</b>             | Posts                          | 4              | no      | 1 every 20 years | 0.6471     | £534.65                | £1,383.92                   | £ 31,092           | Calculate on a site specific basis to take account the exact number of posts and signal heads. |
|                       |                                    | Vehicle Signal Heads           | 4              | no      | 1 every 20 years | 0.6471     | £590.00                | £1,527.19                   |                    |  |
|                       |                                    | Puffin Red/Green Man Boxes     | 2              | no      | 1 every 20 years | 0.6471     | £850.00                | £1,100.10                   |                    |  |
|                       |                                    | MVDs                           | 2              | no      | 1 every 20 years | 0.6471     | £341.38                | £441.82                     |                    |  |
|                       |                                    | Audible Units                  | 2              | no      | 1 every 20 years | 0.6471     | £41.93                 | £54.27                      |                    |  |
|                       |                                    | Tactile Cones                  | 2              | no      | 1 every 20 years | 0.6471     | £283.92                | £367.46                     |                    |  |
|                       |                                    | On-crossing Detectors          | 2              | no      | 1 every 15 years | 1.2421     | £469.68                | £1,166.74                   |                    |  |
|                       |                                    | Kerbside Detectors             | 2              | no      | 1 every 15 years | 1.2421     | £1,061.17              | £2,636.08                   |                    |  |
|                       |                                    | Controller                     | 1              | no      | 1 every 15 years | 1.2421     | £2,500.00              | £3,105.16                   |                    |  |
|                       |                                    | Solar Cell                     | 1              | no      | 1 every 15 years | 1.2421     | £35.00                 | £43.47                      |                    |  |
|                       |                                    | Inspection/ Test               |                | item    | 1 every 1 year   | 21.7926    | £150.00                | £3,268.89                   |                    |  |
|                       |                                    | Refresh Stop Lines/ studs      |                | item    | 1 every 10 years | 1.9721     | £100.00                | £197.21                     |                    |  |
|                       |                                    | Electricity                    |                | item    | 1 every 1 year   | 21.7926    | £175.00                | £3,813.71                   |                    |  |
| Maintenance (Siemens) |                                    | item                           | 1 every 1 year | 21.7926 | £550.00          | £11,985.93 |                        |                             |                    |  |
| 4                     | <b>Pedestrian Crossing (Zebra)</b> | LED flasher unit               | 2              | no      | 1 every 10 years | 1.9721     | £25.00                 | £98.61                      | £ 1,944            |  |
|                       |                                    | Globe                          | 2              | no      | 1 every 10 years | 1.9721     | £49.00                 | £193.27                     |                    |  |
|                       |                                    | Post                           | 2              | no      | 1 every 25 years | 0.5804     | £350.00                | £406.28                     |                    |  |
|                       |                                    | Refresh Markings replace studs |                | item    | 1 every 15 years | 1.2421     | £500.00                | £621.03                     |                    |  |
|                       |                                    | Inspection/Test                |                | item    | 1 every 6 years  | 3.4374     | £150.00                | £515.61                     |                    |  |
|                       |                                    | Electricity                    |                | item    | 1 every 1 year   | 21.7926    | £5.00                  | £108.96                     |                    |  |

## Structures

| Item No. | Description                              | Element          | Quantity | Unit | Frequency         | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element 120 yrs | Commuted Sum 120yrs | Comments   |
|----------|--|------------------|----------|------|-------------------|------------|------------------------|------------------------------|---------------------|--|
| 5        | <b>Road Bridges (site by site basis)</b> | Inspection       |          | item | 1 every 2 years   | 20.82921   | £200.00                | £4,165.84                    | £ 74,980            | Costs to be determined on an individual scheme basis. Figures given for guidance only. |
|          |  | Bearings         |          | item | 1 every 60 years  | 0.34442    | £25,000.00             | £8,610.47                    |                     |  |
|          |  | Expansion Joints |          | item | 1 every 20 years  | 1.69913    | £15,000.00             | £25,486.96                   |                     |  |
|          |  | Replacement      |          | item | 1 every 120 years | 0.07343    | £500,000.00            | £36,716.60                   |                     |  |
| 6        | <b>Footbridges</b>                       | Inspection       |          | item | 1 every 2 years   | 20.82921   | £200.00                | £4,165.84                    | £ 11,509            | Costs to be determined on an individual scheme basis. Figures given for guidance only. |
|          |  | Replacement      |          | item | 1 every 120 years | 0.07343    | £100,000.00            | £7,343.32                    |                     |  |
|          |  |                  |          |      |                   |            |                        |                              |                     |  |
| 7        | <b>Retaining Structure / Wall</b>        | Inspection       |          | item | 1 every 2 years   | 20.82921   | £200.00                | £4,165.84                    | £ 6,920             | Costs to be determined on an individual scheme basis. Figures given for guidance only. |
|          |  | Replacement      |          | item | 1 every 120 years | 0.07343    | £37,500.00             | £2,753.75                    |                     |  |
|          |  |                  |          |      |                   |            |                        |                              |                     |  |



## Drainage

| Item No. | Description                         | Element                          | Quantity | Unit           | Frequency       | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element | Commuted Sum 30yr | Comments   |
|----------|-------------------------------------|----------------------------------|----------|----------------|-----------------|------------|------------------------|----------------------|-------------------|--|
| 8        | <b>Culverted Watercourse</b>        | Inspection/desilting/cleaning    | 1        | m              | 1 every 5 years | 4.1700     | £30.00                 | £125.10              | £ 125             |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
| 9        | <b>Combined Kerb Drainage Units</b> | Inspection / Cleansing/Desilting | 1        | m              | 1 every 5 years | 4.1700     | £30.00                 | £125.10              | £ 125             |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
| 10       | <b>Drainage Gully</b>               | Inspection / Cleansing           | 1        | no             | 1 every 1 year  | 21.7926    | £5.00                  | £108.96              | £ 109             |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
| 11       | <b>Drainage Ditch</b>               | Inspection/Desilting/Cleaning    | 1        | m              | 1 every 5 years | 4.1700     | £30.00                 | £125.10              | £ 129             |  |
|          |                                     | Grass cutting                    | 1        | m <sup>2</sup> | 1 every 2 years | 10.7777    | £0.40                  | £4.31                |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
|          |                                     |                                  |          |                |                 |            |                        |                      |                   |  |
| 12       | <b>Soakaways</b>                    | Inspection/Desilting/Cleaning    | 1        | m <sup>2</sup> | 1 every 5 years | 4.1700     | £4.50                  | £18.77               | £ 18,542          | Maintenance rate is based on the Gross Impermeable Area draining to the soakaway |
| 13       | <b>Oil Separator</b>                | Inspection/Desilting/Cleaning    | 1        | item           | 1 every 1 year  | 21.7926    | £850.00                | £18,523.71           | £ 18,524          |  |

## Drainage continued

| Item No.                  | Description                | Element  | Quantity         | Unit           | Frequency        | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element | Commuted Sum 30yr | Comments   |
|---------------------------|----------------------------|--|------------------|----------------|------------------|------------|------------------------|----------------------|-------------------|--|
| 14                        | <b>Attenuation Tanks</b>   | Inspection/Desilting/Cleaning                                  |                  | item           | 1 every 5 years  | 4.1700     | £850.00                | £3,544.50            | £ 12,547          |  |
|                           |                            | Structural inspection  |                  | item           | 1 every 10 years | 1.9721     | £1,500.00              | £2,958.17            |                   |  |
|                           |                            | Flow Control Inspection  |                  | item           | 1 every 2 years  | 10.7777    | £150.00                | £1,616.66            |                   |  |
|                           |                            | Flow Control Maintenance                                       |                  | item           | 1 every 5 years  | 4.1700     | £500.00                | £2,085.00            |                   |  |
|                           |                            | Flow Control Replacement.                                      |                  | item           | 1 every 30 years | 0.5206     | £4,500.00              | £2,342.53            |                   |  |
| 15                        | <b>Attenuation Ponds</b>   | Inspection   |                  | item           | 2 every 1 year   | 43.5852    | £150.00                | £6,537.78            | £ 52,106          | Based on Guidance in CIRIA Report C697 Items may be omitted if not applicable. Include actual area for grass cutting. Note Large features may require commuted sums to be calculated over a 120 year period. |
|                           |                            | Clear Inlet & Outlet   |                  | item           | 2 every 1 year   | 43.5852    | £150.00                | £6,537.78            |                   |  |
|                           |                            | Litterpicking  | 1                | m <sup>2</sup> | 6 every 1 year   | 130.7556   | £0.01                  | £1.31                |                   |  |
|                           |                            | Grass cutting (Strim)  | 1                | m <sup>2</sup> | 6 every 1 year   | 130.7556   | £0.06                  | £7.85                |                   |  |
|                           |                            | Replace/Maintain Fence   | 1                | m              | 1 every 15 years | 1.2421     | £82.59                 | £102.58              |                   |  |
|                           |                            | Reinstate erosion  |                  | item           | 1 every 5 years  | 4.1700     | £1,000.00              | £4,170.00            |                   |  |
|                           |                            | Desilting Cleaning   |                  | item           | 1 every 5 years  | 4.1700     | £2,000.00              | £8,340.00            |                   |  |
|                           |                            | Clear dead vegetation  |                  | item           | 1 every 1 year   | 21.7926    | £400.00                | £8,717.04            |                   |  |
|                           |                            | Prune vegetation/trees/shrubs                                  |                  | item           | 1 every 3 years  | 7.1067     | £500.00                | £3,553.35            |                   |  |
|                           |                            | Inspect / Maintain Safety Equipment / Signage (where required) |                  | item           | 2 every 1 year   | 43.5852    | £50.00                 | £2,179.26            |                   |  |
|                           |                            | Structural Inspection / Report                                 |                  | item           | 1 every 15 years | 1.2421     | £800.00                | £993.65              |                   |  |
|                           |                            | Flow Control Inspection  |                  | item           | 2 every 1 year   | 43.5852    | £150.00                | £6,537.78            |                   |  |
|                           |                            | Flow Control Maintenance                                       |                  | item           | 1 every 5 years  | 4.1700     | £500.00                | £2,085.00            |                   |  |
| Flow Control Replacement. |                            | item   | 1 every 30 years | 0.5206         | £4,500.00        | £2,342.53  |                        |                      |                   |  |
| 16                        | <b>Flow Control Device</b> | Inspection   |                  | item           | 2 every 1 year   | 43.5852    | £150.00                | £6,537.78            | £ 10,965          |  |
|                           |                            | Cleaning / Adjustment / Repairs                                |                  | item           | 1 every 5 years  | 4.1700     | £500.00                | £2,085.00            |                   |  |
|                           |                            | Replacement / Refurbishment                                    |                  | item           | 1 every 30 years | 0.5206     | £4,500.00              | £2,342.53            |                   |  |

## Street Lighting and Signage

| Item No. | Description  | Element                      | Quantity | Unit | Frequency        | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element | Commuted Sum 30yr | Comments   |
|----------|--|------------------------------|----------|------|------------------|------------|------------------------|----------------------|-------------------|--|
| 17       | <b>Street Lighting Columns</b>                           | Electricity                  |          | item | 1 every 1 year   | 21.7926    | £40.00                 | £871.70              | £ 1,053           |  |
|          |  | Lamp replacement             | 1        | no   | 1 every 4 years  | 4.2468     | £40.00                 | £169.87              |                   |  |
|          |  | Inspection                   |          | item | 1 every 10 years | 1.9721     | £6.00                  | £11.83               |                   |  |
| 18       | <b>Illuminated Traffic Bollard</b>                       | Electricity                  |          | item | 1 every 1 year   | 21.7926    | £5.00                  | £108.96              | £ 411             |  |
|          |  | Lamp replacement             | 1        | no   | 1 every 4 years  | 4.2468     | £40.00                 | £169.87              |                   |  |
|          |  | Inspection                   |          | item | 1 every 6 years  | 3.4374     | £6.00                  | £20.62               |                   |  |
|          |  | Replacement Shell            | 1        | no   | 1 every 15 years | 1.2421     | £90.00                 | £111.79              |                   |  |
| 19       | <b>Retroreflective Bollard (non-illuminated) Bollard</b> | Reflective Shell Replacement | 1        | no   | 1 every 25 years | 0.5804     | £401.00                | £232.74              | £ 233             |  |
| 20       | <b>Illuminated Traffic Sign</b>                          | Electricity                  |          | item | 1 every 1 year   | 21.7926    | £5.00                  | £108.96              | £ 610             |  |
|          |  | Lamp replacement             | 1        | no   | 1 every 4 years  | 4.2468     | £40.00                 | £169.87              |                   |  |
|          |  | Inspection / Test            |          | item | 1 every 6 years  | 3.4374     | £6.00                  | £20.62               |                   |  |
|          |  | Post & Plate Replacement     |          | item | 1 every 15 years | 1.2421     | £250.00                | £310.52              |                   |  |
| 21       | <b>Ornamental Columns</b>                                | Electricity                  |          | item | 1 every 1 year   | 21.7926    | £40.00                 | £871.70              | £ 2,185           | Figures are for guidance only. Actual costs to be based on the proposed column and lamp. |
|          |  | Lamp replacement             |          | item | 1 every 4 years  | 4.2468     | £55.00                 | £233.58              |                   |  |
|          |  | Inspection / Test            |          | item | 1 every 10 years | 1.9721     | £6.00                  | £11.83               |                   |  |
|          |  | Replacement Column           |          | item | 1 every 25 years | 0.5804     | £1,500.00              | £870.60              |                   |  |
|          |  | Painting/maintenance         |          | item | 1 every 10 years | 1.9721     | £100.00                | £197.21              |                   |  |
| 22       | <b>Non-illuminated Single Post Sign</b>                  | Post & Plate Replacement     |          | item | 1 every 15 years | 1.2421     | £125.00                | £155.26              | £ 413             |  |
|          |  | Inspection/Cleaning          |          | item | 1 every 6 years  | 3.4374     | £75.00                 | £257.81              |                   |  |
| 23       | <b>Non-illuminated Advance Direction Sign</b>            | Post & Plate Replacement     |          | item | 1 every 15 years | 1.2421     | £175.00                | £217.36              | £ 475             |  |
|          |  | Inspection/Cleaning          |          | item | 1 every 6 years  | 3.4374     | £75.00                 | £257.81              |                   |  |

SECTION – D  
 COMMUTED SUMS PAYMENTS FOR FUTURE  
 MAINTENANCE IN RELATION TO ADOPTION  
 AND TRANSFER OF INFRASTRUCTURE ASSETS

## Miscellaneous Items

| Item No. | Description  | Element                     | Quantity | Unit           | Frequency        | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element | Commuted Sum 30yr | Comments |
|----------|--|-----------------------------|----------|----------------|------------------|------------|------------------------|----------------------|-------------------|----------|
| 24       | Cantilever 3 Bay Bus Shelter                                   | Shelter                     |          | item           | 1 every 20 years | 0.6471     | £3,000.00              | £1,941.35            | £ 4,071           |          |
|          |  | Maintenance                 |          | item           | 1 every 1 year   | 21.7926    | £92.71                 | £2,020.39            |                   |          |
|          |  | Change Timetable            |          | item           | 1 every 1 year   | 21.7926    | £5.00                  | £108.96              |                   |          |
| 25       | Enclosed 3 Bay Bus Shelter                                     | Shelter                     |          | item           | 1 every 20 years | 0.6471     | £3,500.00              | £2,264.91            | £ 4,394           |          |
|          |  | Maintenance                 |          | item           | 1 every 1 year   | 21.7926    | £92.71                 | £2,020.39            |                   |          |
|          |  | Change Timetable            |          | item           | 1 every 1 year   | 21.7926    | £5.00                  | £108.96              |                   |          |
| 26       | Bus Stop Flagpole  | Pole, Flag & Timetable case |          | item           | 1 every 10 years | 1.9721     | £155.00                | £305.68              | £ 415             |          |
|          |  | Change Timetable            |          | item           | 1 every 1 year   | 21.7926    | £5.00                  | £108.96              |                   |          |
| 27       | Bollard  | Bollard                     | 1        | no             | 1 every 15 years | 1.2421     | £200.00                | £248.41              | £ 248             |          |
| 28       | Safety Barrier (Galvanised)                                    | Safety Barrier              | 1        | m              | 1 every 15 years | 1.2421     | £250.00                | £310.52              | £ 311             |          |
| 29       | Safety Barrier Endpost   | Replacement                 | 1        | No             | 1 every 25 years | 0.5804     | £3,500.00              | £2,031.40            | £ 2,031           |          |
| 30       | Galvanised Pedestrian Guardrail                                | Replacement                 | 1        | m              | 1 every 15 years | 1.2421     | £82.59                 | £102.58              | £ 103             |          |
| 31       | Grit Bin   | Bin                         |          | Item           | 1 every 15 years | 1.2421     | £400.00                | £496.83              | £ 1,586           |          |
|          |  | Refill with Grit            |          | item           | 1 every 1 year   | 21.7926    | £50.00                 | £1,089.63            |                   |          |
| 32       | Carriageway as part of a Highway Agreement over and above that | Plane & Re-surface          | 1        | m <sup>2</sup> | 1 every 15 years | 1.2421     | £10.96                 | £13.61               | £ 14              |          |
| 33       | Roadmarkings as part of a Highway Agreement over and above the | Refresh Markings            | 1        | m              | 1 every 10 years | 1.9721     | £2.50                  | £4.93                |                   |          |
|          |  | Refresh Markings            | 1        | no             | 1 every 10 years | 1.9721     | £25.00                 | £49.30               |                   |          |
|          |  | Refresh Markings            | 1        | no             | 1 every 10 years | 1.9721     | £5.00                  | £9.86                |                   |          |

## Miscellaneous Items continued

| Item No. | Description                                     | Element   | Quantity | Unit           | Frequency      | NPV Factor | Unit Cost @ 2014 Rates | Commuted Sum Element | Commuted Sum 30yr | Comments  |
|----------|---|---|----------|----------------|----------------|------------|------------------------|----------------------|-------------------|---|
| 34       | <b>Grass Cutting 'Highway Verge</b>             | Strim cut grass, any size area Gradient >1 in 5 | 1        | m <sup>2</sup> | 6 every 1 year | 130.7556   | £0.06                  | £7.85                | £ 8               |   |
| 35       | <b>Grass Cutting 'Highway Verge</b>             | Mow cut grass, any size area Gradient <1 in 5   | 1        | m <sup>2</sup> | 6 every 1 year | 130.7556   | £0.03                  | £3.92                | £ 4               |   |
| 36       | <b>Tree in Highway Land</b>                     | Prune tree                                      |          | no             | every year     |            |                        |                      | £ -               | Rate and frequency to be determined on a site by site basis |
| 37       | <b>Trim Hedges to Maintain Visibility Splay</b> | Flail cut hedgerow and dispose of arisings      | 1        | m <sup>2</sup> | 2 every 1 year | 43.5852    | £0.56                  | £24.41               | £ 24              |   |

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## APPENDIX A- NET PRESENT VALUE FACTORS

Formula used:

Net present value factor =  $\sum 1 / (1+D\%)^T$       Where 'D' = Periodic Discount Rate rate and 'T' = number of years forward

Commuted Sum =  $\sum$  Cost at Current Rate x NPV Factor

|   |   |      |   |                            |   |        |   |
|---|---|------|---|----------------------------|---|--------|---|
| Long Term Neutral Bank Rate (LTNBR).....                            | = | 4.5  | % | Periodic Discount Rate (D) | = | 2.20   | % |
| Retail Price Index excluding Mortgage Interest Payments (RPIX)..... | = | 2.25 | % | (1+D%)                     | = | 1.0220 |   |

**Table 1 : NPV Factors for - 30years**      **Net Present Value factors for £1.00 expenditure at various intervals during 30 year period**

| Interval                 | Every Year | Every 2 Years | Every 3 Years | Every 4 years | Every 5 Years | Every 6 Years | Every 10 years | Every 15 years | Every 20 Years | Every 25 Years | Every 30 Years | Twice per year | Four Times per year | SixTimes per year | 12 Times per year |
|--------------------------|------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------|-------------------|-------------------|
| NPV Factor $1/(1+D\%)^T$ | 21.79260   | 10.77774      | 7.10671       | 4.24683       | 4.17092       | 3.43740       | 1.97211        | 1.24206        | 0.64712        | 0.58040        | 0.52056        | 43.58520       | 87.17040            | 130.75560         | 261.51120         |

**Table 2 : NPV Factors for - 120years**      **Net Present Value factors for £1.00 expenditure at various intervals during 120 year period**

| Interval                 | Every Year | Every 2 Years | Every 3 Years | Every 4 years | Every 5 Years | Every 6 Years | Every 10 years | Every 15 years | Every 20 Years | Every 25 Years | Every 30 Years | Every 60 Years | Every 120 Years | Two Times per year | Four Times per year |
|--------------------------|------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|--------------------|---------------------|
| NPV Factor $1/(1+D\%)^T$ | 41.60823   | 20.82921      | 13.73452      | 10.18801      | 8.06077       | 6.64317       | 3.81133        | 2.40043        | 1.69913        | 1.22626        | 1.00605        | 0.34442        | 0.07343         | 166.43291          | 332.86582           |

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## APPENDIX B – EXAMPLE OF COMMUTED SUM EXPENDITURE

### Typical Commuted Sum Expenditure

As shown in the example calculation:-

Cyclical expenditure of £850 every 10 years

RPIX = 2.25% ( Effective inflation rate)

LTNBR = 4.50% ( Effective Interest Rate)

NPV factor = 1.97211 From Table 1 based on the above RPIX and LTNBR

Commuted sum for 30 years £850.00 x 1.972 = £1,676.30

To the nearest pound this would be £1676

### Effect of Inflation on Maintenance Cost (RPIX)

| Years | Cost    | Inflation Rate % (RPIX) | Increase in Maint. Cost | Cost of Maintenance |
|-------|---------|-------------------------|-------------------------|---------------------|
| 1     | 850.00  | 2.25                    | 19.13                   |                     |
| 2     | 869.13  | 2.25                    | 19.56                   |                     |
| 3     | 888.68  | 2.25                    | 20.00                   |                     |
| 4     | 908.68  | 2.25                    | 20.45                   |                     |
| 5     | 929.12  | 2.25                    | 20.91                   |                     |
| 6     | 950.03  | 2.25                    | 21.38                   |                     |
| 7     | 971.40  | 2.25                    | 21.86                   |                     |
| 8     | 993.26  | 2.25                    | 22.35                   |                     |
| 9     | 1015.61 | 2.25                    | 22.85                   |                     |
| 10    | 1038.46 | 2.25                    | 23.37                   | 1061.82             |
| 11    | 1061.82 | 2.25                    | 23.89                   |                     |
| 12    | 1085.71 | 2.25                    | 24.43                   |                     |
| 13    | 1110.14 | 2.25                    | 24.98                   |                     |
| 14    | 1135.12 | 2.25                    | 25.54                   |                     |
| 15    | 1160.66 | 2.25                    | 26.11                   |                     |
| 16    | 1186.78 | 2.25                    | 26.70                   |                     |
| 17    | 1213.48 | 2.25                    | 27.30                   |                     |
| 18    | 1240.78 | 2.25                    | 27.92                   |                     |
| 19    | 1268.70 | 2.25                    | 28.55                   |                     |
| 20    | 1297.24 | 2.25                    | 29.19                   | 1326.43             |
| 21    | 1326.43 | 2.25                    | 29.84                   |                     |
| 22    | 1356.28 | 2.25                    | 30.52                   |                     |
| 23    | 1386.79 | 2.25                    | 31.20                   |                     |
| 24    | 1418.00 | 2.25                    | 31.90                   |                     |
| 25    | 1449.90 | 2.25                    | 32.62                   |                     |
| 26    | 1482.52 | 2.25                    | 33.36                   |                     |
| 27    | 1515.88 | 2.25                    | 34.11                   |                     |
| 28    | 1549.99 | 2.25                    | 34.87                   |                     |
| 29    | 1584.86 | 2.25                    | 35.66                   |                     |
| 30    | 1620.52 | 2.25                    | 36.46                   | 1656.98             |

### Interest earned on Deposited Sum (LTNBR)

| Years | Deposited Sum | Interest rate % (LTNBR) | Interest | Deposited Sum plus Interest | Expenditure | Deposited Sum + Interest - Expenditure |
|-------|---------------|-------------------------|----------|-----------------------------|-------------|--|
| 1     | 1676.00       | 4.5                     | 75.42    | 1751.42                     |             | 1751.42                                |
| 2     | 1751.42       | 4.5                     | 78.81    | 1830.23                     |             | 1830.23                                |
| 3     | 1830.23       | 4.5                     | 82.36    | 1912.59                     |             | 1912.59                                |
| 4     | 1912.59       | 4.5                     | 86.07    | 1998.66                     |             | 1998.66                                |
| 5     | 1998.66       | 4.5                     | 89.94    | 2088.60                     |             | 2088.60                                |
| 6     | 2088.60       | 4.5                     | 93.99    | 2182.59                     |             | 2182.59                                |
| 7     | 2182.59       | 4.5                     | 98.22    | 2280.80                     |             | 2280.80                                |
| 8     | 2280.80       | 4.5                     | 102.64   | 2383.44                     |             | 2383.44                                |
| 9     | 2383.44       | 4.5                     | 107.25   | 2490.70                     |             | 2490.70                                |
| 10    | 2490.70       | 4.5                     | 112.08   | 2602.78                     | 1061.82     | 1540.95                                |
| 11    | 1540.95       | 4.5                     | 69.34    | 1610.30                     |             | 1610.30                                |
| 12    | 1610.30       | 4.5                     | 72.46    | 1682.76                     |             | 1682.76                                |
| 13    | 1682.76       | 4.5                     | 75.72    | 1758.48                     |             | 1758.48                                |
| 14    | 1758.48       | 4.5                     | 79.13    | 1837.62                     |             | 1837.62                                |
| 15    | 1837.62       | 4.5                     | 82.69    | 1920.31                     |             | 1920.31                                |
| 16    | 1920.31       | 4.5                     | 86.41    | 2006.72                     |             | 2006.72                                |
| 17    | 2006.72       | 4.5                     | 90.30    | 2097.03                     |             | 2097.03                                |
| 18    | 2097.03       | 4.5                     | 94.37    | 2191.39                     |             | 2191.39                                |
| 19    | 2191.39       | 4.5                     | 98.61    | 2290.00                     |             | 2290.00                                |
| 20    | 2290.00       | 4.5                     | 103.05   | 2393.05                     | 1326.43     | 1066.62                                |
| 21    | 1066.62       | 4.5                     | 48.00    | 1114.62                     |             | 1114.62                                |
| 22    | 1114.62       | 4.5                     | 50.16    | 1164.78                     |             | 1164.78                                |
| 23    | 1164.78       | 4.5                     | 52.41    | 1217.19                     |             | 1217.19                                |
| 24    | 1217.19       | 4.5                     | 54.77    | 1271.97                     |             | 1271.97                                |
| 25    | 1271.97       | 4.5                     | 57.24    | 1329.20                     |             | 1329.20                                |
| 26    | 1329.20       | 4.5                     | 59.81    | 1389.02                     |             | 1389.02                                |
| 27    | 1389.02       | 4.5                     | 62.51    | 1451.52                     |             | 1451.52                                |
| 28    | 1451.52       | 4.5                     | 65.32    | 1516.84                     |             | 1516.84                                |
| 29    | 1516.84       | 4.5                     | 68.26    | 1585.10                     |             | 1585.10                                |
| 30    | 1585.10       | 4.5                     | 71.33    | 1656.43                     | 1656.98     | -0.55                                  |

The above tables show that the commuted sum invested and earning interest at the LTNBR will be sufficient to cover maintenance costs, which will increase annually at the RPIX rate, over a period of 30 years.

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