

## POLLUTION REMOVAL & WATER QUALITY MANAGEMENT SCHEDULE

CIRIA 753 The SuDS Manual Chapter 26, provides design advice to meet water quality standards by adopting the SuDS train treatment mechanism and thereby reduce the risk of pollution by evaluating potential pollution hazards at the outset.

As the proposed drainage strategy proposes to discharge runoff to ground, Chapter 26.3 'Protecting Groundwater' is particularly relevant.

Runoff from residential roofing and pedestrian areas is viewed as low risk (Table 4.3) and the proposed site layout provides the opportunity to introduce SuDS into the scheme to reduce potential contaminant risk still further. For example, the use of porous paving reduces flow velocities and increase retention times promoting a level of absorption into the upper soils (intergranular flow) prior to discharge to ground (fracture flow).

We propose to apply a simple qualitative method to assess the risk (Simple Index Approach) and proposed mitigation measures as defined in Table 26.1 CIRIA SuDS Manual.

$$\text{Total SuDS Mitigation Index} = \text{Mitigation Index}_1 + 0.5 \text{ Mitigation Index}_2$$

Roof capture and using a weighted mean:

| Commercial / Industrial Roof (100%) | Pollution Hazard Level | Total Suspended Solids | Metals     | Hydrocarbons |
|-------------------------------------|------------------------|------------------------|------------|--------------|
|                                     | (Low)                  | (0.3)                  | (0.2)      | (0.05)       |
| Weighted value                      |                        | 0.3                    | 0.2        | 0.05         |
| <b>Total hazard Index</b>           |                        | <b>0.3</b>             | <b>0.2</b> | <b>0.05</b>  |

Paved Hard surface only of and using a weighted mean:

| Weighted value                                      |                        | 0.00                   | 0.00       | 0.00         |
|-----------------------------------------------------|------------------------|------------------------|------------|--------------|
| Non-Residential Parking with frequent Change (100%) | Pollution Hazard Level | Total Suspended Solids | Metals     | Hydrocarbons |
|                                                     | (Medium)               | (0.7)                  | (0.6)      | (0.7)        |
| Weighted value                                      |                        | 0.7                    | 0.6        | 0.7          |
| <b>Total hazard Index</b>                           |                        | <b>0.7</b>             | <b>0.6</b> | <b>0.7</b>   |

Comparing against the mitigation indices shown below.

### SuDS Individual Component Mitigation Indices

|                                     | Suspended Solids  | Metals            | Hydrocarbons      |
|-------------------------------------|-------------------|-------------------|-------------------|
| Bio-Retention Planter               | 0.8               | 0.8               | 0.8               |
| Pervious Pavement                   | 0.7               | 0.6               | 0.7               |
| <b>Comparison with Hazard Index</b> | <b>ALL&gt;0.7</b> | <b>ALL&gt;0.8</b> | <b>ALL&gt;0.8</b> |

- 1.1 However, within the outline drainage scheme a multi staged treatment is proposed for the majority of the site where practical, creating a Suds Management Train improving treatment locally and further reducing risk with the best and worst case outlined within Table 4.

Table 4 – Total SuDS Mitigation Index

$$\text{Total SuDS Mitigation Index} = \text{Mitigation Index}_1 + 0.5 \text{ Mitigation Index}_2$$

|                                                                      | Suspended Solids      | Metals                | Hydrocarbons           |
|----------------------------------------------------------------------|-----------------------|-----------------------|------------------------|
| SCENARIO 1<br>(Roof Runoff)<br>Bioretention Planter-Permeable Paving | 1.15                  | 1.10                  | 1.15                   |
| SCENARIO 2<br>(Hard Paved)<br>Permeable Paving                       | 0.7                   | 0.6                   | 0.7                    |
| Comparison with Hazard Index                                         | <b>ALL&gt;0.3-0.7</b> | <b>ALL&gt;0.2-0.6</b> | <b>ALL&gt;0.05-0.7</b> |