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SuDS Simple Index Assessment – Cheadle Ph 2

The SUDS Manual contains guidance on how to assess water quality, stating *“Determining the hazard posed by the land use activities at a site and the extent to which underlying soil layers and/or proposed treatment components reduce the associated risk can be done using a variety of methods that vary in complexity and data requirements.”*

The assessment methodology required is determined by reference to Table 4.3 of the SuDS Manual. Based on this, the quality impacts of the proposed development can be summarised with the following pollution hazard levels and management requirements for discharge to the receiving surface water (there will be no infiltration on site, therefore receiving groundwater is not considered here):

- Residential roofs – Very Low Pollution Hazard – Simple Index Approach;
- Individual property driveways, roofs, residential car parks, low traffic roads, non-residential car parking with infrequent change (schools, offices) – Low Pollution Hazard – Simple Index Approach;

It is therefore considered appropriate to use the Simple Index Approach (SIA) for the purpose of this assessment. The Simple Index Approach (SIA) to assessing water quality management requirements has been developed by CIRIA to support the implementation of the water quality management design methods set out in the SuDS Manual, with appropriate cross referencing to the relevant 'Design Conditions'. The CIRIA Susdrain website contains a spreadsheet-based procedure that can be used for all the UK.

Simple Index Approach

Table 26.1 of the SUDS Manual indicates that for the Simple Index Approach:

- Simple pollution hazard indices should be based on land use (e.g. Table 26.2).
- Risk reduction for Surface Water should be done using Simple SuDS hazard mitigation indices (e.g. Table 26.3).

Extracts of Tables 26.2 and 26.3 are replicated below, highlighting the relevant features applicable to this site:



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Extract of SuDS Manual Table 26.2: Pollution hazard indices for different land use classifications

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very Low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. <300 traffic movements/day	Low	0.5	0.4	0.4

Extract of Table 26.3: Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation Indices		
	TSS	Metals	Hydro-carbons
Permeable Paving	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6

The SuDS Manual States:

**Total SuDS mitigation index $\geq$ pollution hazard index
 (for each contaminant type) (for each contaminant type)**

When two or more SuDS components are used in a series:

Total SuDS mitigation index = mitigation index ₁ + 0.5 (mitigation index ₂)

Where: Mitigation index _n = mitigation index for component n

A factor of 0.5 is used to account for the reduction performance of secondary or tertiary components associated with already reduced inflow concentrations.

Taking each land type use in turn:

- Residential roofs – has a TSS index of 0.2, a Metals index of 0.2 and a Hydrocarbons index of 0.05.
- Individual property driveways, residential car parks – has a TSS index of 0.5, a Metals index of 0.4 and a Hydrocarbons index of 0.4.

Land Use/ SuDs component	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Residential roofs	0.2	0.2	0.05
Permeable Paving	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
SuDS mitigation index	0.725	0.825	1.0

Land Use/ SuDS component	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Individual property driveways, residential car parks, low traffic roads	0.5	0.4	0.4
Permeable Paving	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
SuDS mitigation index	0.725	0.825	1.0

As is required by the SuDS manual, the total SuDS mitigation index is greater than the total pollution hazard index.

In summary, the use of a combination of SuDS as outlined above should demonstrate that in line with current guidelines, runoff is limited from the site following redevelopment and the use of treatment train consisting of permeable paving and an attenuation basin will also provide significant water quality benefits.

Yours sincerely,

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