

WATER QUALITY RISK MANAGEMENT

Job Name:	Boorley Green	Job No.	11909	By:	CJB
Element:	Pollution Mitigation	Date:	06/09/2022	Chk:	
Site Address:	50°55'33.4"N 1°16'48.5"W	Link:	Click for Google Map		

SITE & COMPONENT SUMMARY

Read with AWA drg 11909/D20 - SuDS Elements plan

The existing site comprises a series of industrial/commercial units in the form of portal framed sheds and associated concrete hard standings, with a tarmac access way from Winchester Road. The buildings are aged, with the existing roofs made up of felts and corrugated steel in varying states of deterioration. The site has little in the way of formalised infrastructure for surface water runoff, which currently discharges via overland flow to an existing ditch. The existing runoff is uncontrolled and benefits from no pollution mitigation.

The proposed development at Boorley Green is a low impact residential development, with runoff coming from a mixture of domestic roofing and low volume estate roads and parking.

The SuDS for the site comprises:

- Silt traps – to filter run-off from roofs and capture debris and sediment in removable baskets. (Proprietary system)
- Porous asphalt – access road with tanked coarse graded aggregate sub-base to store and clean run-off.
- Permeable block paving – driveways and parking bays with tanked coarse graded aggregate sub-base to store and clean run-off.
- Pond – a permanent pool with aquatic vegetation to provide additional treatment to the run-off and settling out of finer sediment.

For the purpose of analysing the water quality the Simple Index Approach in the CIRIA SuDS Manual 2015 has been employed. This allows stages of treatment to be analysed and pollution mitigation indices to be applied to each component in the treatment train.

The following assessment for Boorley Green has conservatively determined the hazard index by combining the two land uses, which is more onerous than the typical approach of selecting the land use with the highest pollution hazard index. Furthermore, the benefits of the proprietary silt trap systems are ignored in this assessment but in reality they will provide additional pollution mitigation, particularly in the reduction of T.S.S.

The use of a fully tanked Type C permeable pavement offers the best protection to the groundwater by omitting infiltration, therefore no additional groundwater mitigation is required. There are no water abstractions noted from the surface water body that the SuDS discharge to, nor is the site within Source Protection Zone 1.

Conclusion

The following routes and treatment trains are applied at Boorley Green

Name	Designation	Pre-treatment	Treatment 1	Treatment 2
Route 1	Dwelling	Silt trap	Permeable Paving	Pond
Route 2	Road	N/A	Permeable Paving	Pond

Note: the pre-treatment from the silt trap is not considered in the assessment due to the low risk posed by the development. However, as noted above, the silt traps will make a significant contribution to mitigating TSS within the runoff and are therefore noted within the overall treatment train.

WATER QUALITY RISK MANAGEMENT: Design using Simple Index Approach (CIRIA SuDS Manual 2015)

Job Name:	Boorley Green	Job No.	11909	By:	CJB
Element:	SuDS Pollution Matrix	Date:	06/09/2022	Chk:	
Site Address:	50°55'33.4"N 1°16'48.5"W	Link:	Click for Google Map		

SIMPLE INDEX APPROACH DESIGN

Determine the Pollution Hazard Index for the runoff area discharging to the proposed SuDS scheme
Allocate suitable pollution hazard indices for the proposed land use

If the land use varies across the 'runoff area', either:

- use the land use type with the highest Pollution Hazard Index
 - apply the approach for each of the land use types to determine whether the proposed SuDS design is sufficient for all.
- If it is not, consider collecting more hazardous runoff separately and providing additional treatment.

If the generic land use types suggested are not applicable, select 'Other' and enter a description of the land use of the runoff area and agreed user defined indices in the row below the drop down lists.

		Pollution Hazard Indices			
Runoff Area Land Use Description		Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Select land use type from the drop down list (or 'Other' if none applicable):	Low traffic roads (e.g. residential roads and general access roads, < 300 traffic movements/day)	Low	0.5	0.4	0.4
If the generic land use types in the drop down list above are not applicable, select 'Other' and enter a description of the land use of the runoff area and agreed user defined indices in this row:	Residential Roofing	Very Low	0.2	0.2	0.05
	Land use Pollution Hazard Index	Low	0.7	0.6	0.45

STEP 2A: Determine the Pollution Mitigation Index for the proposed SuDS components

Select the proposed SuDS components that will be used to treat runoff - before it is discharged to a receiving surface waterbody or downstream infiltration component
components and move
[to Step 2B](#)

This step should be applied to evaluate the water quality protection provided by proposed SuDS components for discharges to receiving surface waters or downstream infiltration components (note: in England and Wales this will include components that allow any amount of infiltration, however small, even where infiltration is not specifically accounted for in the design).

If fewer than 3 components, select 'None' for the components that are not required

If the proposed component is bespoke and/or a proprietary treatment product and not generically described by the suggested components, then 'Proprietary treatment system' or 'User defined indices' should be selected and a description of the component and agreed user defined indices should be entered in the rows below the drop down lists

		Pollution Mitigation Indices		
SuDS Component Description		Total Suspended Solids	Metals	Hydrocarbons
Select SuDS Component 1 (i.e. the upstream SuDS component) from the drop down list:	Pervious pavement (where the pavement is not designed as an infiltration component)	0.7	0.6	0.7
Select SuDS Component 2 (i.e. the second SuDS component in a series) from the drop down list:	Pond or wetland	0.7	0.7	0.5
Select SuDS Component 3 (i.e. the third SuDS component in a series) from the drop down list:	None	0	0	0
If the proposed SuDS components are bespoke/proprietary and/or the generic indices above are not considered appropriate, select 'Proprietary treatment system' or 'User defined indices' and enter component descriptions and agreed user defined indices in these rows:				
Aggregated Surface Water Pollution Mitigation Index		>0.95	0.95	0.95

Is the runoff now discharged to an infiltration component?

Yes ? [Go to Step 2B](#)

No ? [Go to Step 2C](#)

STEP 2B: Determine the Pollution Mitigation Index for the proposed Groundwater Protection
 Type of groundwater protection that is either part of the SuDS component or lie between the component and groundwater

This step should be applied where a SuDS component is specifically designed to infiltrate runoff (note: in England and Wales this will include components that allow any amount of infiltration, however small, even where infiltration is not specifically accounted for in the design).
 'Groundwater protection' describes the proposed depth of soil or other material through which runoff will flow between the runoff surface and the underlying groundwater.
 Where the discharge is to surface waters and risks to groundwater need not be considered, select 'None'
 If the proposed groundwater protection is bespoke and/or a proprietary product and not generically described by the suggested measures, then a description of the protection and agreed user defined indices should be entered in the row below the drop down list.

			Pollution Mitigation Indices		
			Total Suspended Solids	Metals	Hydrocarbons
Select type of groundwater protection from the drop down list:	None		0	0	0
bespoke/proprietary and/or the generic indices above are not considered appropriate, select 'Proprietary product' or 'User defined indices' and enter a description of the protection and agreed user defined indices in this row:					
Groundwater Protection Pollution Mitigation Index			0	0	0

STEP 2C: Determine the Combined Pollution Mitigation Indices for the Runoff Area

Combine the proposed SuDS Pollution Mitigation Indices with any Groundwater Protection Pollution Mitigation Indices
 Nb. Combined Mitigation indices are limited to max 0.95

Combined Pollution Mitigation Indices for the Runoff Area	>0.95	0.95	0.95
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STEP 2D: Determine Sufficiency of Pollution Mitigation Indices for Selected SuDS Components

When the combined mitigation index exceeds the land use pollution hazard index, then the proposed components are considered sufficient in providing pollution risk mitigation.
 In England and Wales, where the discharge is to protected surface waters or groundwater, an additional treatment component (ie over and above that required for standard discharges), or other equivalent protection, is required that provides environmental protection in the event of an unexpected pollution event or poor system performance. Protected surface waters are those designated for drinking water abstraction.
 In England and Wales, protected groundwater resources are defined as Source Protection Zone 1.

		Sufficiency of Pollution Mitigation Indices		
		Total Suspended Solids	Metals	Hydrocarbons
Is the surface water designated for drinking water abstraction?	No drinking water abstraction from the receiving watercourse			
Is the groundwater discharge in Source Protection Zone 1?	Site is not within SPZ 1	Sufficient	Sufficient	Sufficient

