

SURFACE WATER FLOW REGIME

1. ALL ACCESS ROADS/PARKING AREAS TO BE TYPE A PERMEABLE PAVING AND BODPAVE INFILTRATE TO THE GROUND.
2. TYPE A PERMEABLE PAVED AREAS INFILTRATE TO GROUND. AN INFILTRATION RATE OF 0.4M/HR HAS BEEN CALCULATED BASED ON THE LOWEST RECORDED BRE DR365 SOAKAGE TEST RESULTS UNDERTAKEN BY CIVILS CONTRACTING LTD ON 21 DEC 2021.
3. THE SUDS COMPONENT IS DESIGNED TO CONVEY/CONTAIN THE 1 IN 100 YEAR EVENT PLUS 40% CLIMATE CHANGE WITH NO FLOODING.

WATER QUALITY MANAGEMENT

THE EFFECT OF THE PROPOSED WORK ON LOCAL WATER QUALITY HAS BEEN ASSESSED USING THE SIMPLE QUALITATIVE METHOD AS SET OUT IN CIRIA REPORT C753 THE SUDS MANUAL 2015 [CHAPTER 26].

BOX 26.2 Steps of the simple index approach

Step 1 - Allocate suitable pollution hazard indices for the proposed land use

Step 2 - Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index

Step 3 - Where the discharge is to protected surface waters or groundwater, consider the need for a more precautionary approach

Note: 1 Designated as those protected for the supply of drinking water (Table 4.3).

TABLE 10.6 - EXTRACT FROM CIRIA REPORT C753 - STEPS OF THE SIMPLE INDEX APPROACH

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roads	Very low	0.2	0.2	0.05
Other roads (typically commercial/industrial roads)	Low	0.3	0.2 up to 0.8 where there is potential for metals to leach from the road	0.05
Individual property driveways, residential car parks, low traffic roads (eg cut out sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4

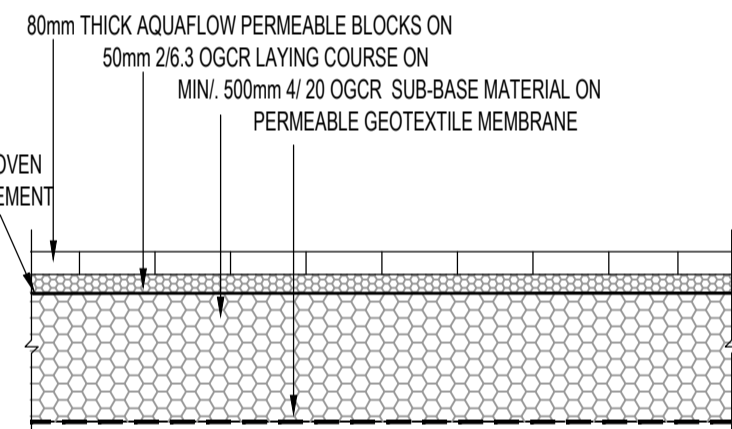
TABLE 10.7 - EXTRACT FROM CIRIA REPORT C753 - POLLUTION HAZARD INDICES FOR DIFFERENT LAND USE CLASSIFICATIONS

TABLE 26.4 Indicative SUDS mitigation indices for discharges to groundwater

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates*	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential† of at least 300 mm in depth?	0.6*	0.5	0.6
A soil with good contaminant attenuation potential† of at least 300 mm in depth?	0.4*	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential† of at least 300 mm in depth?	0.4*	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the infiltration underlain by a soil with good contaminant attenuation potential† of at least 300 mm in depth?	0.7	0.6	0.7
Bio-retention underlain by a soil with good contaminant attenuation potential† of at least 300 mm in depth?	0.8*	0.8	0.8
Proprietary treatment systems*†	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

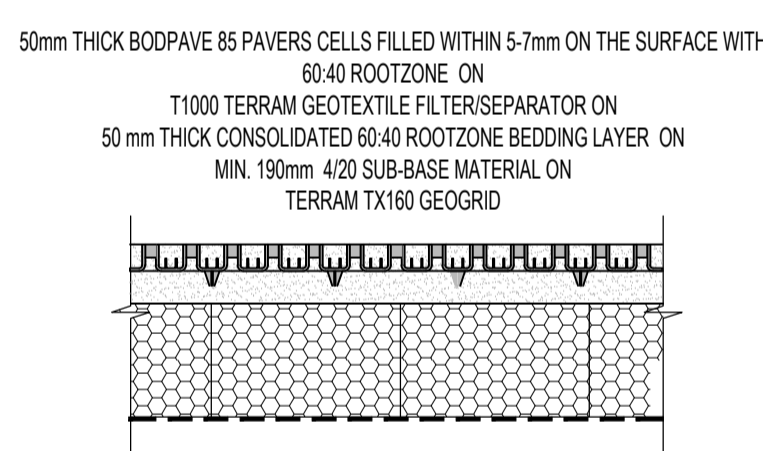
TABLE 10.8 - EXTRACT FROM CIRIA REPORT C753 - INDICATIVE SUDS MITIGATION INDICES FOR DISCHARGE TO GROUNDWATER

BASED ON THE INCORPORATION OF PERMEABLE PAVING IT CAN BE SEEN THAT THE TOTAL POLLUTION MITIGATION INDEX FOR THIS SUDS COMPONENT EXCEEDS THE POLLUTION HAZARD INDEX FROM ACCESS ROAD AND CAR PARKING AREAS.



1. ALL MANUFACTURERS PAVING AND ASSOCIATED PRODUCTS ARE TO BE INSTALLED TO MANUFACTURER'S GUIDELINES.
2. 2/6.3 AND 4/20 OPEN GRADED CRUSHED ROCK/GRAVEL MATERIAL TO BS EN 12620.
3. SUB-BASE TO HAVE A MINIMUM POROSITY OF 0.32 AND OFFER A STORAGE CAPACITY IN ITS VOIDS OF BETWEEN 30% AND 40%.
4. SC INTERGRID BY AQUAFLOW FORMPAVE - MIN. FLOW RATE THROUGH GEOTEXTILE TO BE 0.4m/hr.

TYPICAL PERMEABLE BLOCK PAVING ACCESS ROAD / CAR PARK TYPE A - FULL INFILTRATION
SCALE 1:20



BODPAVE 85 - GRASS SURFACE
NTS

1. ALL MANUFACTURERS PAVING AND ASSOCIATED PRODUCTS TO BE INSTALLED TO MANUFACTURERS GUIDE LINES.

CIVIL ENGINEERING NOTES GENERAL

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT.
3. THE DEVELOPMENT LAYOUT AND SURVEY HAVE BEEN TAKEN FROM CIVILS CONTRACTING LTD'S FOUL DRAINAGE LAYOUT DRG. NO. 2210-50 REV A DATED JANUARY 22.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO RECORD THE POSITION, SIZE, DEPTH, MATERIAL AND TYPE OF ALL EXISTING UTILITY MAINS AND SERVICES (E.G POWER, GAS, TELECOMS, WATER, SEWERAGE) IN CLOSE PROXIMITY TO THE PROPOSED WORKS PRIOR TO CONSTRUCTION COMMENCING ON SITE.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK ALL LEVELS AND SETTING OUT INFORMATION PRIOR TO CONSTRUCTION WORKS COMMENCING ON SITE. ANY DISCREPANCIES MUST BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
6. SIGNING, LIGHTING AND GUARDING OF ROADWORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH CHAPTER 8 OF THE TRAFFIC SIGNS MANUAL AND THE CODE OF PRACTICE SAFETY AT STREET WORKS AND ROAD WORKS PUBLISHED BY THE DEPARTMENT FOR TRANSPORT. TRAFFIC CONTROL SYSTEMS ARE TO BE AGREED WITH THE HIGHWAY AUTHORITY AND RELEVANT PERMITS OBTAINED. VEHICULAR AND PEDESTRIAN ACCESS MUST BE MAINTAINED THROUGHOUT THE DURATION OF THE WORKS.

DRAINAGE - DESIGN STANDARDS

1. DRAINAGE SYSTEMS TO REMAIN PRIVATE SHALL BE DESIGNED AND INSTALLED TO MEET THE REQUIREMENTS OF BS EN 752, BUILDING REGULATION DOCUMENT H AND NHBC STANDARDS.
2. SUSTAINABLE DRAINAGE SYSTEMS (SUDS) MUST BE DESIGNED, INSTALLED AND MAINTAINED TO MEET THE REQUIREMENTS OF THE NATIONAL STANDARDS FOR SUDS. IN THE INTERIM PERIOD BEFORE THE RELEASE OF THIS NEW DESIGN STANDARD SUDS MUST MEET THE DESIGN AND MAINTENANCE REQUIREMENTS OF THE APPROPRIATE SUDS APPROVING BODY (SAB) WHERE THE SAB HAS NO DESIGN STANDARD AVAILABLE SUDS MUST BE DESIGNED IN ACCORDANCE WITH CIRIA REPORT C697 THE SUDS MANUAL 2015.

SUDS INFILTRATION STRUCTURES

1. SUDS INFILTRATION STRUCTURES HAVE BEEN DESIGNED BASED ON THE SOIL INFILTRATION RATES PROVIDED BY CIVILS CONTRACTING LTD DATED DEC21. SOIL INFILTRATION RATES VARIED BETWEEN 0.3 AND 0.4m/hr. Bdr CANNOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THIS DATA, OR FOR ANY VARIATIONS IN INFILTRATION RATES ACROSS THE SITE.
2. SOME OTHERWISE PERMEABLE SOILS AND SOFT ROCKS(eg CHALK) CAN HAVE THEIR PERMEABILITY SIGNIFICANTLY REDUCED BY SMEARING OF THE SURFACE DURING EXCAVATION ESPECIALLY BY MECHANICAL EXCAVATORS. THE EXPOSED SURFACE OF THE SOIL MUST BE MANUALLY CLEANED OF ANY SMEARING BEFORE THE GEOTEXTILE AND GRANULAR FILL SURROUNDING THE CHAMBER ARE INSTALLED. THIS CAN BE ACHIEVED BY SCORING THE EXPOSED SURFACES OF THE EXCAVATION WITH A RAKE.
3. INFILTRATION DEVICES ARE TO BE CHECKED REGULARLY TO ENSURE THEY ARE EMPTYING AND DEBRIS/ SEDIMENT REMOVED ON A REGULAR BASIS.
4. WATER TABLE LEVEL - WHERE THIS WAS FOUND/ NOT FOUND DURING THE GROUND INVESTIGATIONS, VARIATIONS IN THE WATER TABLE LEVEL COULD IMPAIR THE PERFORMANCE OF THE INFILTRATION DEVICE RESULTING IN LOCALISED FLOODING/PONDING OF SURFACE WATER.

Notes:

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT.
3. THE DEVELOPMENT LAYOUT AND SURVEY HAVE BEEN TAKEN FROM CIVILS CONTRACTING LTD'S FOUL DRAINAGE LAYOUT DRG. NO. 2210-50 REV A DATED JANUARY 22.

CDM REGULATIONS 2015 - SIGNIFICANT RISKS -

1. NO SIGNIFICANT RISKS ASSOCIATED WITH THIS PROJECT.

DRAINAGE KEY

- SITE BOUNDARY
- ▨ TYPE A (FULL INFILTRATION) PERMEABLE PAVING
- ▩ BODPAVE (GRASS SURFACE)
- 33.08 ± PROPOSED LEVEL
- 33.08 ± EXISTING LEVEL

FOR THE DISCHARGE OF PLANNING CONDITION 4

Rev	Description	MA	CJM	Date
A	FOR APPROVAL	MA	CJM	22.02.22

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Drawing
DRAINAGE LAYOUT & CONSTRUCTION DETAIL

FOR APPROVAL

Scale @ A1	Date	Drawn by	Checked
1:250	22.02.22	MA	CJM
Job No.	Drg. No.	Rev	
22-0041	C10501 A		