



SUDS Management & Maintenance Plan

Land South of Lychgate Lane, Burbage, Leicestershire

As outlined under Condition 10 of the Appeal Decision APP/K2420/W/23/332670 dated 30 October 2023, Avant Homes are required, Prior to Commencement of development to submit details in relation to the long term maintenance of the sustainable surface water drainage system on the development. These are to be approved in writing by the LPA.

The SUDS approach for the development will consist of the following sustainable drainage measures:

1. The construction of shared private drives with a permeable paving surface finish
2. Gravel Filter Margin

These details are to be read in conjunction with the Private Drainage Drawings E323-90-01 C & E232-90-02C

Permeable Paving

Avant Homes will specify the Tobermore Hydropave Permeable Paving system. Appended to this document is a copy of their Paving Maintenance Guidelines v1.0

Gravel Filter Margin

Gravel Filter Margins are used as a SUDS approach to further cleanse surface water prior to it entering the surface water drainage system. The system is proposed by be used alongside the driveways of the plots proposed within the scheme. Filter Margins will be filled with gravel, whereby it will collect particles to help prevent pollutants from entering both the groundwater and the surface water drainage system. This is used as source control and to convey run-off between SUDS measures.

Occasionally, no more than once a year or so, the decorative gravel used to top-dress the filter drain may become clogged with old leaves, crisp packets and general detritus. This larger crud can be picked out and placed in a suitable bin, while the silt and sediment may need to be scraped away from the top of the geo-textile. If the surface aggregates are silted-up they are to be removed and placed in a riddle or sieve and wash through with clean water to remove all the detritus before putting them back over the cleaned geotextile.

September 2024



Hydropave Permeable Paving Maintenance Guidelines

v1.0

Guidelines for the maintenance of Tobermore Hydropave Permeable Paving

To ensure optimum performance of Hydropave permeable paving, Tobermore provide the following maintenance guidelines.

These guidelines are provided as a general maintenance regime but may be altered if necessary depending on the specific paved area or any factors which may impact the paving.

Hydropave permeable paving relies upon its ability to infiltrate surface water through its joints into a sub-base beneath. Hydropave Permeable Paving requires much less maintenance than is perceived by many however maintenance of the pavement should be carried out when necessary to ensure the infiltration of the paving is maintained and the paving is kept looking at its best. During design, construction and after construction care should be taken to ensure that the paved area is protected and maintained to minimise clogging of the joints.

With age and use, detritus and silt collects in jointing material at the top of the joints. This forms a thin crust like layer over the joints however this does not severely impact the ability of the joints to infiltrate surface water. Research has demonstrated that whilst the infiltration rate of the joints decreases over time it stabilises and still exceeds UK & Ireland hydrological requirements.

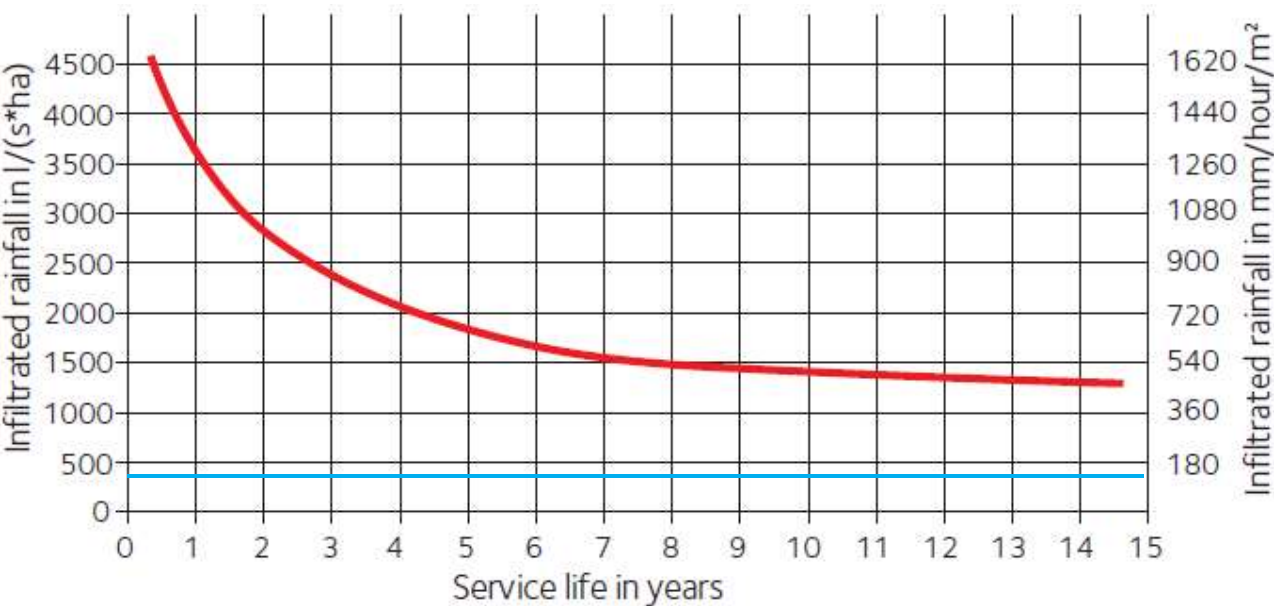
Rainfall experienced in the UK & Ireland is typically 20mm per hour with an extreme rainfall event being 75mm per hour. Research has concluded that the infiltration capacity of a newly installed Hydropave Concrete Block pavement is over 4,000mm per hour. The bedding course and sub-base aggregates will have even higher infiltration capacity.

The UK guidelines require the infiltration rate of the surface joints to be 400mm an hour which is only 10% of the actual rate of newly installed permeable paving. Even allowing for clogging over the long term there is a large factor of safety built in. See Figure 1.

Figure 1.

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“Long-term in-situ infiltration performance of permeable concrete block pavements”



Red Line: Reduction in surface infiltration over time

Blue Line: 100mm/hour extreme storm

General Maintenance Guidelines

Routine visual inspections.

A major benefit of permeable paving over traditional drainage systems is the ability to quickly and cost effectively assess that it is working correctly. This can be done by visually inspecting the paving during heavy rainfall or following heavy rainfall.

In general, routine visual inspections are all that is required to determine whether or not remedial maintenance is required. Any infiltration issues are shown up by water ponding on the surface of the paving. If ponding is not visible then remedial action is not required. If ponding is visible see section on Remedial Action for ponding.

In the unlikely event that individual blocks are damaged these should be removed and replaced. See section on structural maintenance.

Frequency: Once a year during or following heavy rainfall.

Remedial maintenance for ponding.

If surface water ponding is visible the joints should be brushed and vacuumed.

Brushing and vacuuming should be carried out in a manner which ensures that the paving blocks are not damaged and that jointing material is not removed from the joints. Any jointing material which is removed must be replaced, refer to Figure 2 for correct grading of jointing material. The size of sweeper used will be dependent on the overall size of the paved area. A range of large mechanical sweepers are now available as well as smaller lightweight equipment. These are available from specialist companies.

The structural integrity of permeable paving will be compromised if the joints are not filled to the top with jointing aggregate.

It is good practice to complete a trial area first and then any adjustments to suction rates can be made if necessary.

The effectiveness of Hydropave Permeable Paving is not significantly compromised by moss, leaves or weeds on the surface as these are not impenetrable barriers.

Frequency: As and when required.

Maintenance for aesthetics of the joints.

To help maintain the overall appearance of the paving joints it is recommended that the surface of the paving including the joints is brushed and vacuumed at least once a year. Brushing the paving either mechanically or manually helps to agitate the jointing material and breaks up the thin layer of crust. Brushing also helps to prevent any vegetation growing in the joints.

Joints must be topped up with jointing material if any is removed during the brushing or vacuuming process, refer to Figure 2 for correct grading of jointing material.

Frequency: Recommended annually however maintenance for aesthetics of the joints can be carried out at the discretion of the developer/client.

Maintenance for aesthetics of the paving blocks.

Brushing with soapy water and a stiff brush will revive the colour of concrete block permeable paving.

For a deeper clean of the block surface a pressure washer can be used to maintain the appearance and colour of the paving blocks. A pressure washer set to a light / medium pressure should be all that is required to remove general dirt and grime. **High pressure should not be used as this can damage the surface of the blocks.**

Tips:

- Hold the lance of the pressure washer at a 30 to 45 degree angle to the paved surface to avoid removal of the jointing material.
- After cleaning is finished ensure that any jointing material which has been removed is topped up with the correct material, refer to Figure 2 for correct grading of jointing material.

Maintenance during the winter months.

Hydropave Permeable Paving generally requires less de-icing than conventional concrete block paving.

The controlled use of conventional road de-icing techniques can be used without affecting the overall performance of the paving.

Some de-icing salts may leave temporary discoloration after the thaw. Normal weathering should soon remove this discoloration from the paving.

De-icing salts should be applied before snow or ice develops as this helps protect the concrete surface.

It is unlikely that the levels of chloride in the ground will increase significantly by employing conventional de-icing techniques.

Frequency: As required during winter.

Controlling weeds.

Weeds tend not to establish in areas which receive regular trafficking by vehicles. If weeds are an issue they can be dealt with by using a weed killer containing Glyphosate. The manufacturer's instructions should always be followed and adequate Health & Safety measures should also be put in place when handling chemicals.

Frequency: As required.

Structural Maintenance.

If a visual inspection has indicated that individual blocks have been damaged these blocks should be removed and replaced with new blocks.

If rutting of the surface has occurred the area needs to be lifted and reinstated immediately as it may be a hazard to users.

Any blocks which are removed need to be reinstated correctly ensuring that the correct sub-base, bedding and jointing aggregates are used. The installation method should be in accordance with BS 7533 Part 3. In particular, the joints should be filled to the top to ensure structural integrity, refer to Figure 2 for correct grading of jointing material. Any geotextiles or impermeable membranes which are damaged during the reinstating process should be replaced. If the blocks are not damaged they can be lifted, cleaned and re-used.

Frequency: As required

Jointing Material in Accordance with BS 7533 Part 13

Figure 2.

BS Sieve Size (BS EN 993-1) mm	Percentage Passing
14	100
10	98-100
6.3	80-99
2.0	0-20
1.0	0-5

Guidelines to minimise maintenance and ensure the long-term performance of Hydropave Permeable Paving.

Pre- construction (Design stage)

- It is essential that the system is designed correctly by a qualified engineer. Refer to BS 7533 Part 13
- The design and detailing of the project should ensure that soil from soft landscaping is prevented from spilling onto the paving.

During construction.

- It is essential that the paving is installed by an experienced contractor who is familiar with installing permeable paving and its components. Refer to BS7533 Part 3
- Mud / soil and other contaminants should be prevented from entering the sub-base, bedding course and jointing aggregates.
- Do not allow muddy construction traffic to use the paved area once completed.
- Do not allow soft landscaping to spill onto the paving surface. See Figure 3.

After construction.

- Do not store materials which may clog up the permeable joints such as soil and mulch on top of the paving.
- The joints between permeable paving should be filled to the top with the correct aggregate, refer to Figure 2 for correct grading of jointing material.

Figure 3.



Maintenance overview

SCHEDULE	ACTION	FREQUENCY
Routine visual inspection	Visually inspect the paving for ponding during heavy rainfall or following heavy rainfall.	Once a year
Remedial maintenance for ponding	Brush / vacuum joints Replace any lost jointing material	As required
Structural Maintenance	Replace damaged blocks Repair any rutting	As required
Maintenance for aesthetics of the joints	Brush / vacuum joints as required Replace any lost jointing material	Recommended once a year
Maintenance for aesthetics of the paving blocks	Brush with soapy water Light pressure wash	As required
Weed control	Treat with weedkiller	As required
Maintenance during the winter months	De-icing salts	As required during winter
WARNING !	Do not replace the jointing grit with kiln dried sand as this will block the joints and prevent infiltration. Do not store materials which may clog up the permeable joints such as soil and mulch on top of the paving.	

Further information on the maintenance of permeable paving can be found at www.circia.org

Important Information

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