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DRAINAGE STRATEGY

FOR

**22 Lambrook Road,
Fishponds,
Bristol
BS16 2EY**

Ref: 11584

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Introduction

This is a sustainable drainage strategy and is in support of planning approval 21/02162/F for condition 2. Sustainable Drainage System (SuDS)

This drainage strategy relates to the construction of a single new dwelling. It is proposed to add an additional dwelling on to an existing terrace of houses. The footprint of the new house will be similar to the other houses in the terrace.

This document outlines a strategy for surface water management and flood mitigation whereby a change in the impermeable area will not lead to a risk of flooding elsewhere and for the building roof water and the surface water run-off to be attenuated on site before discharging at a controlled rate into the existing sewer system.

1. Site Location

The site is located at 22 Lambrook Road, Fishponds, Bristol BS16 2EY.

2. Existing Sewers

The existing house currently discharges surface water into an existing chamber in the rear garden of the site. The proposed house will be connected to the existing house. The new surface water system will be connected into the existing chamber in the rear garden of the site. **Appendix A.**

3. Impermeable and Permeable / Porous Areas

The proposed development will contain 77m² of impermeable area in the form of the new house.

The remainder of the site will comprise grass, and soft landscaping.

4. Surface Water Disposal

The first consideration for the disposal of surface water in line with SUDS hierarchy is infiltration by means of soakaways or permeable surfaces. If possible, surface water should be discharged by infiltration into the ground. However for soakaways to be possible and to conform to building regulations they must be no closer than 5 m to a foundation of a building. This is not possible on the proposed site as there is not sufficient space.

The underlying soil strata in this area is typically impermeable clay, therefore if soakaways could be accommodated is unlikely to be feasible.

Where infiltration is not suitable a connection to a water course is the next consideration. There are no suitable watercourses in the vicinity of the site.

If disposal to a watercourse is not feasible a connection to a public sewer system is the final consideration.

Therefore for this site the SUDS system proposed is attenuation.

All landscaped areas (laid to lawn or planted beds) will be permeable and infiltrate into the ground. The footpath to the entrance will runoff to soft landscaped areas.

5. Sustainable Drainage Systems (SuDS)

In order to ensure the proposed new dwelling does not increase flood risk elsewhere, the new surface water drainage system will be restricted to a flow discharge of 1.4 l/s via a wavin garastor flow control manhole which is specifically designed for attenuation tanks for single dwellings. Drainage layout included in **Appendix A**.

6. Proposed Drainage Solution

In order to achieve a discharge rate of 1.4l/s to the new surface water sewer system on site attenuation storage will be required.

For an impermeable area of 77m² and a 1 in 100 year plus 45% for climate change event a storage volume of 2.24m³ will be required.

It is proposed to utilise an attenuation tank constructed using a perforated pipe and cellular crates such as Wavin Aquacell. A copy of the attenuation tank design sheets for a 3.0 x 2.0 x 0.4m deep tank is included in **Appendix B**.

The rainwater falling onto the footpath will drain off into the adjacent landscaping areas.

The stored water in the cellular crate attenuation tank is released at a controlled rate of 1.4l/s via a flow control manhole.

A copy of the proposed drainage layout is included in **Appendix A**.

7. Responsibility and Maintenance

The maintenance of any SuDS based designs should be undertaken in accordance with current guidance found in CIRIA C753 – The SuDS Manual 2015, in particular interest is Section 32 Operation and Maintenance.

During the construction phase of the development until handover of the site is complete, the Principal Contractor will be responsible for the inspection and maintenance of the drainage scheme in-line with the maintenance scheme outlined below.

CIRIA 753 recommends the following maintenance procedures as a basis for any maintenance plan:

- Litter and debris removal, this would reduce the chance of blockage and is generally good practice.

- Sediment removal is required to ensure long term performance of SuDS. This is largely dependent on location, design, silt volume and many others. Sediment removal within pipelines can be jetted and picked up within the next chamber.
- Incorporation of silt traps and/or screens would aid in preventing sediment within the system, as well as litter and debris removal.
- CCTV of the pipe network should be undertaken if the system is considered to not work at peak efficiency or if there are any concerns. Remedial works should be undertaken if any faults or issues occur.

Maintenance will consist of regular inspection and cleaning of guttering, down-pipes, any silt traps, drain runs and ditches throughout the site to prevent build-up of silt and debris. Routine inspection and maintenance of the attenuation system should include:

- Inspection of systems
- Removal of silts
- Jetting of pipe runs.
- A record of inspections and maintenance schedules to be kept by the property owner.

In the instance of spillage drain inlets in that area should be covered to prevent spillage entering the system and the spilled fluid cleaned up with absorbent material.

8. Flood Exceedance Events

The below ground storage area has been designed to provide storage for the 1 in 100 year plus 45% for climate change event.

If the capacity of the storage area is exceeded temporary shallow depth flooding may occur on the garden areas.

9. Pollution Control

There are a number of healthy habits for clean water that the property end users should be aware of and comply with: -

Landscaped areas

- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast indicates rain; otherwise, chemicals will be washed into your local system.
- Select native plants and grasses that are drought- and pest-resistant. Native plants require less water, fertilizer, and pesticides.
- Sweep up yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater landscaped areas. Water during the cool times of the day, and don't let water run-off into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off into local waterbodies. Vegetate bare spots to prevent soil erosion.

Property Repair and Improvement

- Before beginning an outdoor project, locate the nearest storm drains and protect them from debris and other materials.
- Sweep up and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the smallest amounts possible, and follow the directions on the label. Clean up spills immediately and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use nontoxic, biodegradable, recycled, and recyclable products whenever possible.
- Clean paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program or donate unused paint to local organizations.
- Reduce the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.

In order to capture any solid pollutants prior to entry into the cellular crate attenuation tank or the existing surface water drainage system catch pits are provided.

10. Summary

- **PROPOSED SUDS DRAINAGE SYSTEM.**

The surface water is to be attenuated on site before discharging to the existing drainage system at a controlled rate of 1.4l/s.

A below ground cellular crate attenuation tank is to be utilised to store the surface water before it's controlled release.

- **MAINTENANCE SUMMARY**

Maintenance will consist of regular inspection and cleaning of guttering, down-pipes, silt traps and drain runs throughout the site to prevent build-up of silt and debris.

During the construction phase of the development until handover of the site is complete, the Principal Contractor will be responsible for the inspection and maintenance of the drainage scheme.

Following handover, the owner will provide routine inspection and maintenance of the drainage scheme.

11. Appendices:

Appendix A – Proposed Site Layout

Appendix B – Attenuation tank design.