



SUSTAINABLE DRAINAGE REPORT

**Project:- Proposed Residential
1no 2-bed dwelling
r/o 142 Holtye Road, East Grinstead**

Sept 2022

INTRODUCTION

This is a Sustainable Drainage Report for the proposed development at 142 Holtye Road, East Grinstead, which currently features a semi-detached property. The proposal comprises a two storey 2-bed traditional dwelling to the south-east.

This report is part of the planning application submission and is intended to demonstrate compliance with the MSCC SuDS policies including reference to the SuDS manual and the non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems.

SITE LOCATION

The site is roughly rectangular in shape comprising an area of approximately **368m²** and is located in East Grinstead. The flat site is bounded by other domestic properties to two sides. An impermeable area has been calculated at **74m²** resulting in **294m²** permeable landscape.

Geological information, obtained from the British Geological Society online mapping service, shows that the underlying ground comprises of clay.

DEVELOPMENT PROPOSALS

Development proposals are contained on P A Gosling Architectural Consultants plan no. 191.22.01a. The proposal is in one block on 2 stories. The impermeable area makes up **74m²** consisting of the building and hard landscaping (the parking area is permeable) resulting in a permeable area of **294m²**.

DRAINAGE STRATEGY (foul water)

EXISTING: the existing dwelling includes 2no. WC's; 1no. baths; 1no. showers and 3no. hand basins/sinks. These appear to discharge into 1no 100mm vertical soil and ventilation pipe and thence to 1no. foul manholes adjacent to the property.

PROPOSED: In total the proposal contains 3no. WC's; 1no. bath; 2no. showers; 3no. hand basins and 1no. sink. To discharge into 1no. 100mm soil and ventilation pipe. The w.c. in the cloakroom will discharge into the s&vp and the kitchen sink will be served by a back inlet gulley.

Adequate ventilation to stack and branches will be provided, with air admittance valves on runs over 3m.

Access should be provided to clear blockages on all connections and bends of 90 deg.

Discharges into stack should not be such as to cause crossflow, i.e. they should be offset.

A discharge stack of 100mm has a capacity of 7.2 l/sec.

With WC's creating 2.3 l/sec. Baths 1.1 l/sec.; basins 0.6 l/sec. And sinks 0.9 l/sec. It is clear that this will allow for 2 WC's to be flushed together and still leave capacity for 1 sink and two basins. This is estimated as a worst case scenario and is well within tolerances.

There are 2no new inspection chambers serving the proposal discharging into the existing foul drain positioned centrally in the curtilage.

DRAINAGE STRATEGY (surface water)

PROPOSED

Based on this preliminary information it is assumed that shallow soakaways may be utilised as part of the surface water drainage solution – subject to the approval of the environmental regulators.

The new 2 storey dwelling has a pitched roof which will fall in two directions (also 2 small barn hips discharging onto the main roof slopes). There will be ½ round gutters discharging into 2no downpipes.

The new driveway will be permeable therefore not adding to any rainwater discharge, while the patio area, although impermeable will fall to the SW and drain naturally.

Therefore we need only consider the new roof area (63m²), which can adequately be dealt with via shallow soakaways.

Through the application of infiltration SuDS for the proposed development, surface water can be managed at source using positive drainage through rainwater downpipes, gullies and conventional pipework directed to infiltration devices. Soakaway locations will be governed in part by the results of the final site investigation, however it is anticipated that they will be located at the side garden area, or elsewhere with sufficient distance to avoid conflict with the proposed foundations.

In accordance with the non-statutory technical standards for sustainable drainage systems, the surface water drainage system should be designed so that flooding does not occur on any part of the site for a 1 in 30 year rainfall event, and so that flooding does occur during 1 in 100 year event in any part of a building or in any utility plant susceptible to water.

As a result of the low risk associated with surface water flooding, the anticipated site levels and external works layout are considered suitable to provide above ground storage of surface water in open area during the event that exceeds a 1 in 30 year rainfall event. Site levels should be designed such that there is no risk to the buildings during an exceedance event and excess surface water is migrated away from site in a controlled manner.

Infiltration testing to the Building Research Digest 365 should be undertaken to determine the infiltration rate at final proposed soakaway location and similar tests should be undertaken for potential permeable paving locations for the development. Once soakage rates are available for the chosen location, the sizing of soakaways and other infiltration SuDS elements can be determined.

As a guide, Quick Storage Estimate is based on Microdrainage Source Control for managing surface water runoff from post-development impermeable area for the 1 in 100 year storm event plus 40% allowance for climate change. Using an infiltration rate of 2x10.5 metres/sec and a safety factor of 2, in accordance with CIRIA Report 156, this shows that a storage volume of 19.6m³ is required to manage the surface water runoff using a soakaway.

Regarding water quality, both the SuDS Manual (CIRIA C753) and guidance from the EA, as outlined in the recently withdrawn Pollution Prevention Guidance 3 (PPG3), state that rainwater runoff from roof areas is considered to be very low risk of containing contaminants and does not require ant pollution control to be implemented prior to discharge, outside the removal of gross solids and sediments only.

Details of SuDS operation and management activities are provided within Chapter 32 of the SuDS Manual. A summary of typical key SuDS components is given in table 3.4. As can be seen, all SuDS components require regular inspection and for the first year the guidance states that monthly inspections are carried out and documented to inform the ongoing maintenance regime of the site drainage. SuDS components at the site are not to be adopted and will be maintained for their lifetime by the managing company of the development.

The key maintenance procedure for soakaways is to manage sediment. The risk of sedimentation to soakaways can be mitigated through the use of silt traps prior to the discharge with the crate system, installed with access and inspection points.

Further operational activities for the SuDS components described for the site include regular litter and debris removal and weed and invasive plant control to ensure the drainage systems function without their design infiltration characteristics being compromised.

Contractors should protect SuDS components from adverse sediment runoff during the construction phase and an initial pre-handover inspection is required to ensure that the drainage system has been constructed as designed.

CONCLUSIONS

Three number 1m³ soakaways constructed from 'crates' wrapped in Terram membrane situated a minimum of 5m from any foundations will, subject to porosity test, prove adequate.

The use of infiltration SuDS to manage surface water runoff from the site is considered compliant with EA guidance and the SuDS Manual in terms of water quantity and quality. The site is not located within an SPZ and no additional pollution control measures are required in this regard.

Maintenance requirements of SuDS elements during construction and operation phases have been identified in this report and should be included in the Operation and Maintenance and Health & Safety Manuals provided to the end client upon completion of the project.

The report has identified measures that reduce the level of flooding risk to the development and ensures the increase in the peak rate of surface water runoff and runoff volume are mitigated through the use of SuDS. This report shows that the proposals for the redevelopment can be successfully implemented and managed and that there should be no increase in risk to future users and neighbouring properties in regard to flooding over the expected lifetime of the development.

The foul drainage is expected to be only slightly increased from the existing therefore the existing 100mm foul system is deemed adequate.