Mr S RUTHERFORD

Civil & Structural Engineering Consultants

LAND BETWEEN 10&14 VICTORIA ROAD, ERITH, KENT, DA8 3AN

SuDS MAINTENANCE & MANAGEMENT PLAN

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DRAINAGE
- Drainage Strategies
- S104 Drainage Design
- SUDS
- Flood Risk Assessments
- CSH SUR1

HIGHWAYS
- Transportation Assessments
- S38/278 Highway Design
- Junction Modelling
- Traffic & Parking Surveys
- Remedial Assessments

STRUCTURAL ENGINEERING
- All Structural Design
- Temporary Works
- Specialist Foundations
- Multi Storey & Basements
- RC Detailing

SPECIALIST SERVICES
- Site Assessments
- CDM 2015 Support
- TEKLA - Steelwork Fabrication drawings
- Expert Witness

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Document Control Sheet

Issue	Status	Prepared / Revised by	Verified By	Date
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Appendix 1 Drainage Layout

1.0 Introduction

1.1 BdR has been appointed by Mr S Rutherford (the Client) to prepare a Sustainable Drainage System (SuDS) Maintenance & Management Plan for the proposed erection of one - two bed dwelling with associated amenity space and parking at Land between 10&14 Victoria Road, Erith, Kent, DA8 3AN.

1.2 The function of the SuDS Management Plan is to bring awareness to those responsible for maintenance of the SuDS components regardless of whether individual components are below ground or on the surface. All systems need to be monitored and maintained to ensure effective performance throughout the lifetime of the system and to prevent the increased risk of flooding both on and off site in accordance with the National Planning Policy Framework (NPPF).

1.3 Any contractor carrying out maintenance work must carry out a risk assessment and take all necessary precautions to comply with Health and Safety legislation current at the time that the work is to be carried out.

1.4 Where the user of the system is not responsible for the maintenance, then it is important to ensure that they know when the SuDS is not functioning correctly and who to contact if an issue arises.

1.5 This SuDS Management Plan includes brief details of the surface water design concepts and performance criteria for the Development and how the owner or operator should ensure that any works undertaken within the site do not compromise the systems performance.

2.0 Design Concept

2.1 Surface water runoff from the development is intercepted by the Type C non infiltration permeable paving which convey the water into a soakaway to then infiltrate to the ground based on the calculated infiltration rate.

3.0 Performance Criteria

3.1 The surface water network has been designed based on the following performance criteria;

Permeable paving:
No flooding up to and including the 1 in 100 year event plus 40% climate change.

Geocellular Soakaway:
No flooding up to and including the 1 in 100 year event plus 40% climate change.

4.0 Surface Water Drainage System

4.1 The above ground surface water system comprises roof drainage together with trapped gullies and the use of permeable paving for the external areas.

4.2 The below ground surface water system includes the geocellular soakaway.

5.0 Maintenance Requirements

5.1 Maintenance requirements fall into four categories;

Regular maintenance (including inspections and monitoring).

Consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

Occasional maintenance

Comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).

Remedial maintenance

Comprises intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.

Monitoring

Monitoring must be carried out regularly to identify the maintenance required.

5.2 Maintenance should be carried out in accordance with the recommendations of the CIRIA C753 SuDs Manual 2015, reproduced in the following paragraphs.

6.0 Private Drains

6.1 The private drains are those serving a single property, and typically comprises 100mm diameter pipework connected from the trapped gullies into the permeable paving sub-base.

7.0 Private Roads

7.1 Private driveway including any highway drainage are to remain private.

8.0 Permeable Pavements

8.1 Due to the made ground depth, all permeable paving is Type C – No Infiltration in order to convey the runoff to the soakaway. The laying course and sub-base will play an important role in the improvement of water quality before infiltrating into the ground.

8.2

TABLE 20.15 Operation and maintenance requirements for pervious pavements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

9.0 Geocellular Soakaway

9.1 The soakaway is located below the private driveway min. 5 metres away from dwelling and will allow peak runoff to be attenuated to reduce the risk of flooding from the developed site before entering the ground. Must be maintained to the standard set out in Table 21.3 of the CIRIA C753 SuDs Manual 2015.

9.2

TABLE 13.1 Operation and maintenance requirements for soakaways

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

10.0 Maintenance Responsibilities

10.1 The developer will appoint a Management Company to assume delegated responsibility for the maintenance of the private areas and infrastructure.

10.2 Responsibility for the management of all aspects of the surface water drainage system will be taken on by a SITE FACILITIES MANAGEMENT COMPANY appointed by the developer prior to the sale of the first property on the site.

The site facilities management company will be responsible for all common area maintenance above and below ground including but not limited to;

- Inspection at regular intervals of all observable manhole and inspection chambers associated with the surface water drainage system where such pipework is underground anywhere on the development area.
- Inspection of all metered facilities which are considered to be shared services such a common water, gas or electricity services used with the curtilage of the development area including power requirements of underground pump systems.

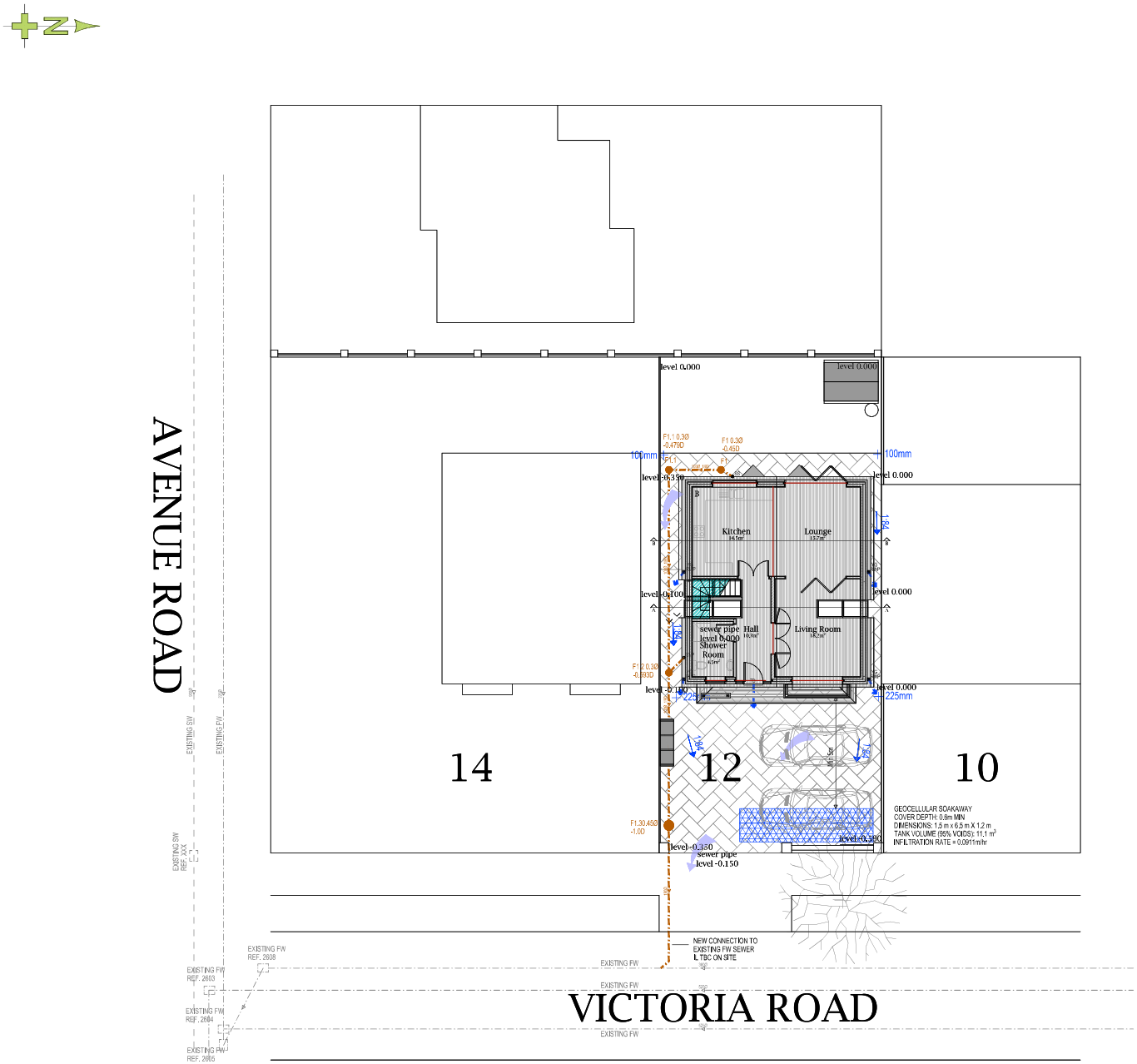
10.3 The responsibility for payment of these common area and amenity services including

necessary cleaning, servicing, repairs and consumables to pipework and associated equipment costs will be paid on a shared basis by all owners for all properties for the life time of the development as a condition of the contract for the purchase of each property.

10.4 The operation and maintenance of the development's surface water drainage infrastructure will be the responsibility of the following stakeholders.

System	Responsibility
Private drains	Home Owner
Private roads	Home Owner
Permeable paving	Home Owner
Geocellular soakaway	Home Owner

Appendix 1
Drainage Layout



SURFACE WATER FLOW REGIME

1. Runoff from roofs enters to permeable paving via rainwater pipe connection to a yard gully pot.
2. Runoff from external paths/patio and driveway drains via Type C permeable paving into a soakaway through base of sub-base.
3. Soakaway has been designed up to the 1 in 100 year plus 40% climate change allowance event with an infiltration rate of 0.0911m/hr. Soil infiltration rate has been based on the BRE DG365 Soakage test results taken on site provided by client dated 04.06.21

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 HAS BEEN TAKEN FROM CABTREE DESIGNS PROPOSED CONSTRUCTION PLANS DRG. NO. 12 VICTORIA-RD/BR/D1 A

CDM REGULATIONS 2015
- RESIDUAL RISKS -

1. THERE ARE NO SIGNIFICANT RESIDUAL RISKS ASSOCIATED WITH THIS PROJECT.

DRAINAGE KEY

- SITE BOUNDARY
- SURFACE WATER DRAINAGE - DIA GRADIENT/PIPE NUMBER
- FOUL WATER DRAINAGE - DIA GRADIENT/PIPE NUMBER
- TYPE E FW INSPECTION CHAMBER MIN 160DIA
- TYPE D FW INSPECTION CHAMBER MIN 450DIA
- YG — YARD GULLY
- TD — THRESHOLD, DRAIN OUTLET TO BE 100 DIA UNLESS STATED OTHERWISE
- EXCEEDANCE FLOW ROUTE
- GEOCELLULAR SOAKAWAY
- RWP — RAINWATER PIPE. DRAIN OUTLETS TO BE 100 DIA
- SVP — SOIL VENT PIPE / SOIL STACK. DRAIN OUTLET TO BE 100 DIA
- TYPE C - NON INFILTRATION PERMEABLE PAVING
- 1:40 — SUB-BASE GRADIENT
- 225mm — SUB-BASE DEPTH

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Project
LAND BETWEEN 10&14 VICTORIA ROAD,
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Drawing
DRAINAGE LAYOUT

FOR APPROVAL

Scale @ A1	Date	Drawn by	Checked
1:100	09.06.21	SBR	CJM

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