



ARCH
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APPENDIX 5

DRAINAGE MAINTENANCE MANUAL



**ARCH
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DRAINAGE MAINTENANCE PLAN



NOVARTIS – PHASE 3
HORSHAM, WEST SUSSEX



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DRAINAGE MAINTENANCE PLAN

for

NOVARTIS – PHASE 3
HORSHAM, WEST SUSSEX

Client:

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ISSUE		A	B	C
Issued By	T Ashby			
Date	31.07.2026			
Purpose	Information			
Approved By	CH			

Project No. AAL427

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1.0 An introduction to sustainable drainage systems or SuDS

SuDS are an environmentally friendly approach to managing rainfall that uses landscape features to deal with surface water. SuDS aim to:

- Control the flow, volume and frequency of water leaving a development area
- Prevent pollution by intercepting silt and cleaning runoff from hard surfaces
- Provide attractive surroundings for the community
- Create opportunities for wildlife

2.0 SuDS on Site

SuDS at this development have been designed to prevent flooding of both the proposed properties, neighbouring properties, and external hard landscaping.

Surface water run-off is directed into the piped gravity drainage system on site and is then discharged into the gravity public sewer crossing the site.

3.0 SuDS Maintenance Schedule

General Maintenance

In addition to the maintenance of specific SuDS features, such as attenuation tanks, the following table outlines general maintenance requirement of the surface water system.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment & debris from pre-treatment devices & floor of inspection chambers	Annually
	Cleaning of any gutters & any filters on downpipes	Annually
	Trimming and roots that may	Annually (or as required)

	be causing blockages	
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually

Attenuation Tank

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good conditions and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Road Gullies

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment & debris from grating and empty silt trap.	Monthly in the first year and then as required based on inspections
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Inspect for evidence of poor operation	Six monthly

Sump Catchpit Manholes

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment & debris from sump	Monthly in the first year and then as required based on inspections
Monitoring	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly in the first year and then annually

Permeable Block Paving

Permeable surfaces including permeable block paving, porous asphalt, gravel or free draining soils that allow rain to percolate through the surface into underlying drainage layers. They must be protected from silt, sand, compost, mulch, etc. Permeable block paving and porous asphalt can be cleaned by suction brushing.

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep	Once a year, after autumn leaf fall, or reduced frequency as

	over whole surface)	required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to area where water runs onto pervious surface from adjacent impermeable areas as this is most likely to collect sediment.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, though vegetation maintenance or soil slip, has been raised to within 50mm of the level of paving.	As required

Flow Control Chambers

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Visual inspection of chamber and flow control device	Monthly in the first year and then 3-6 monthly
	Remove sediment & debris from sump	Monthly in the first year and then as required based on inspections
	Check water levels	At each inspection
Remedial Actions	Clear blocked flow control	As required
	Repair or replace flow control device	As required



	Address surcharging or flooding	As required
	Emergency sediment & debris removal	As required
Monitoring	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly in the first year and then annually

Rain Gardens

Maintenance Schedule	Required Action	Frequency
Regular Inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc. and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular Maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around	Quarterly to biannually

	inlets or from forebays	
Occasional Maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair Minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial Actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

4.0 SuDS Maintenance Responsibility

The maintenance of the SuDS features, and drainage generally will be funded by the residents. They may set up a company that will formally appoint a drainage contractor (under a service agreement) to inspect and maintain the apparatus at the required frequency. The maintenance of any adoptable drainage assets will be the responsibility of the adopting authority.

5.0 Foul Drainage on Site

Foul water drainage refers to grey water and sewage and potentially wash-down water from plant rooms and bin stores or waste storage areas.

The foul drainage system on site comprises a gravity network serving the plots to the north of the development. Those that cannot drain by gravity are directed to an adoptable pumping station, where the flow is pumped up to the northern network such that a singular gravity connection to the existing public sewer is made.

6.0 Foul Drainage Maintenance

The foul drainage system has been designed in accordance with the relevant codes of practice and should achieve self-cleansing velocity with the anticipated foul water flows. Maintenance of the system should therefore be minimal, but blockages may occur with improper use, such as inappropriate objects being flushed down toilets, in which case rodding or jetting may be required. This work should be carried out on an ad hoc basis by a specialist contractor.

7.0 Drainage Component Design Life

In conjunction with the maintenance requirements set out above, primary drainage components shall be inspected at the design life extent, at which point they may require replacement if deemed unserviceable.

Design Life (Years)	
Pipework	50
PCC Manholes	100
PPICs	50
Attenuation Crates*	50

*based upon manufacturer guidance regarding products specified in drainage strategy.

8.0 Record Keeping

Records should be kept of all maintenance activities as part of the ongoing maintenance regime. A suggested format for record keeping is given below.

Date	Location	Action	Notes	Next Inspection

9.0 Risks Due to Lack of Maintenance

Failure to suitably inspect and maintain the drainage system is likely to eventually lead to a failure in the system to convey the run-off and this therefore is likely to lead to flooding. For example, if the silt in the surface water catch-pits is allowed to fill above the level of the catchpits themselves, then excessive silt will build up in the pipes, which will reduce their capacity and, if left long enough, lead to flooding on site.

10.0 Accidental Spillages

Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore small spillages of oil, milk or other known organic substances should be removed where possible using soak mats as recommended by the Environment Agency with residual spillage allowed to bio-remediate in the drainage system.

In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung(s). (A bung for blocking pipes may be made by wrapping soil or turf in a plastic sheet or close woven fabric.) Contact the Environment Agency immediately.

11.0 Future Alterations to the Drainage Regime

Future alterations to the drainage regime should be checked and approved by a suitably qualified civil engineering designer prior to implementation on site.

12.0 Emergency Procedures and Contacts

In the event of flooding of the drainage system on site, contact the following:

Lovell / appointed Management Company

In the event of any situation that may cause physical harm or injury, contact the following:

Emergency Services / 999

13.0 CDM/Health and Safety

The design of the system has avoided unusually deep manholes and/or drainage basins. The CDM risk associated with the maintenance of the drainage system is not considered to have any residual CDM risks beyond that which a competent contractor should be able to manage effectively.

14.0 Handover

A full inspection of the drainage system is to be completed by the contractor prior to handover. This should include, but not be limited to, the following:

- As built survey of the drainage confirming position, levels and diameters of all installed features for comparison to the design intent.
- CCTV survey of the drainage system to ensure all lines are in a suitable condition and free of debris.