

Hensingham House (Phase One and Two), Cumbria

Drainage Management and Maintenance Plan

September 2023



FAIRHURST

CONTROL SHEET

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1 INTRODUCTION

This document has been produced as a guide to the implementation, management and maintenance of the drainage system for the conversion of Hensingham House on Egremont Road, Hensingham to provide nine no. residential dwellings.

Details of the proposed drainage are shown on Fairhurst drawing 138443/2002. It is assumed that existing connections are already present for Hensingham House building and Georgian House to connect to United Utilities assets in the surrounding area. Existing connections are to be retained to drain the site post development where possible whilst offering a reduction in surface water runoff rates.

This document outlines how the drainage scheme will be constructed as well as defining the principles of good practice for operation and maintenance which will ensure the effectiveness reliability of the system over the lifespan of the development. A brief description for the drainage of different components for the development is described below:

The proposed site will be drained using existing sewer connections for the Hensingham House building. Attenuation storage will be provided through the installation of oversized piping and permeable paving.

2 IMPLEMENTATION

The construction of the proposed drainage infrastructure will be undertaken by a competent Civil Engineering Contractor in accordance with their method statements.

A timetable for the implementation of the drainage system will be determined primarily by the build programme of the overall scheme. There are various elements of the construction works which will need to be integrated with the installation of the drainage network, namely the foundations and floor slab of the proposed buildings and the road / carpark construction. For example, some of the surface water drainage serving the impermeable areas will need to be installed prior to the construction of the roadway, even if the external connecting pipework is yet to be completed. All drainage will need to be protected from sedimentation during the construction phase then fully inspected to ensure they function prior to completion.

By undertaking the works as detailed above, it will ensure that flood risk is minimised and will improve and protect water quality, even during the construction phase.

3 DEMOLITION AND CONSTRUCTION METHOD STATEMENT

It is understood that parts of the existing Hensingham House building are to be demolished, and some existing drainage is to be replaced as part of the development. This will be replaced in line with the proposals detailed below.

4 SURFACE WATER RUNOFF DURING CONSTRUCTION

Surface water runoff during the construction of the development will be controlled if necessary.

The Principal Contractor shall be responsible for the collection, treatment and disposal of surface waters to a suitable location. During the construction phase there will be a number of activities which could reduce surface water quality with respect to physical contaminants. These include:

- Materials handling, storage, stockpiling, spillage and disposal;
- Earthworks including the re-engineering of existing made ground as necessary;
- Excavation and foundation construction within the site and site preparation;
- Installation of temporary and permanent infrastructure;
- Construction of proposed development;
- Construction of drainage runs and utilities duct runs;
- Movement and use of static and mobile plant/construction vehicles.

These construction activities may lead to the disturbance and mobilisation of physical contaminants (sediments and silts). In particular, during periods of heavy rainfall, vehicle movements resulting in damage to soil structures may generate increased sedimentation within surface water runoff. In addition, during periods of dry, windy weather, wind-blown dusts generated by the excavation of soils have the potential to enter open or incomplete elements of the drainage network. These activities may therefore result in sediments directly or indirectly entering surface water features, impacting on the physical, chemical and biological quality of the surface water receptors in the surrounding area.

During the construction of the surface water and foul water drainage system, additional measures are to be implemented to minimise the potential for pollution beyond those considered for general site wide activities:

- The Principal Contractor will ensure that no debris or silt enters the drainage system during construction and will take appropriate action to remove and dispose of any debris/siltation which does occur.
 - All open ends of drains are to be capped off as the work proceeds using manufactures caps (not plastic bags or other informal measures which could be flushed in to the wider drainage network).
 - All manholes, silt pits and inspection chambers will be cleaned out and have covers fitted as soon as they are constructed so that no debris can enter.
 - The Principal Contractor will ensure that no soil or excavated material enters any attenuation system during construction.
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- Open landscaping should be constructed where possible at the end of the construction phase. This will minimise erosion and sedimentation.
 - The Principal Contractor will ensure that during construction and during the growth of any vegetation these areas are protected with silt fences or straw bales to prevent sediment runoff.
 - The Principal Contractor will ensure that geotextiles are not torn and soils are not compacted as this will reduce infiltration capacity.
 - Where applicable the Principal Contractor will ensure mulch is not applied until after planting; this prevents disease to plants and will not encourage pests. Mulch should be no more than 50-75mm deep and placed 50mm away from any stems to prevent excess moisture.
 - The Principal Contractor will ensure all landscaping activities are carefully designed and carried out to prevent the deposition of topsoil, turf and other materials on the surface of pavement. Infiltration surfaces will not be compacted.
 - Permeable paving must also be constructed at the end of the construction phase. This will minimise erosion and sedimentation. It is crucial to ensure no mud or silt enters the pavement surface, subgrade and subbase as this could prevent it from function during its design life.
 - The Principal Contractor will ensure that construction equipment will be kept away from the area and no heavy vehicles are to travel over the permeable paving during construction as this may damage the slabs and displace them. If required during construction, drainage channels that direct water away from the area, can be considered as a temporary drainage solution.
 - Off-site work to develop the site is minimal and localised to connections into surrounding services. Preliminary designs completed adhere to design guidance and specifications for the surrounding site services, however for the construction stage the Principal Contractor will achieve consent from the service companies in question to allow for connections to their assets as required and surface water will be managed appropriately.
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5 GENERAL MAINTENANCE REQUIREMENTS

5.1 *Maintenance Frequency*

Regular visits to the site by the management company or land owner should be made as often as is necessary to fulfil the required standard of maintenance. The necessary frequency can be divided in to:

1. Regular maintenance: basic tasks done on a frequent and predictable schedule,
2. Occasional maintenance: tasks that are likely to be required only periodically and much less frequently

5.2 *Maintenance Record*

The landowner/tenant or appointed management company will be provided with a 'Maintenance Record' so that they are aware of the function and maintenance requirements of the drainage system.

The record should include:

- Location of the drainage system features within the site which is shown on Fairhurst drawings.
 - 138443/2002 Proposed Drainage Layout

5.3 *Regular Maintenance*

Inspections of the drainage network should be conducted as per the maintenance schedule (Appendix 2) and could be integrated with the Landscape Management activities, like grass cutting or vegetation pruning, which may also be undertaken at similar intervals.

It is recommended that the frequency of inspections should be increased during the first year of operation so that inspections are also conducted after every significant storm event to ensure that it is functioning correctly and if necessary implement improvement works to optimise performance.

Elements which should be inspected include:

- Inlets and outlets – ensure that inlets and outlets are clear and that flows in/out are not impeded. Any obstruction or build-up of material must be removed as soon as possible.
 - Structure – a visual inspection of the drainage system, and associated pipe work to check for any seepages or leaks. This inspection should also include structural damage to any 'hard' features like headwalls or outlets. Any defects should be remediated as soon as possible.
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- Water quality – is there evidence of poor water quality in the surface water storage systems, e.g. algae, oils or odours, if so further inspection remedial actions should be taken.
- Sediment build up – a visual inspection of any tanks, manholes, sumps and channel drains to determine whether there is evidence of silt build up. Any evidence of silt build up should be reported and inspected further by an appropriate engineer to determine whether silt removal should be initiated (see below).
- Litter, debris or vegetation – removal of invasive vegetation and possibly irrigation during long dry periods are critical to the performance of the tree pits. As such, remedial actions should be taken immediately when an appropriate engineer deems it necessary.
- Evidence of inefficiencies – is there any visual evidence of surface water building up at the inlet which could indicate that the connections are blocked or damaged, if so remedial action should be implemented.

5.4 Occasional Maintenance

To ensure the long term effectiveness of the SuDS scheme, accumulated sediment should be periodically removed. The frequency at which this is done will vary over the lifetime of the scheme. Accumulation will be most acute during the construction period i.e. until such time as all landscaping within the catchment is well established and all developments are built. At this point, the amount of sediment entering the SuDS scheme will be reduced.

Until all development is complete, careful consideration should be given to sediment build up during the regular inspections outlined above. Following development completion, the frequency at which sediment removal will be required could be between 15 to 25 years. This could be extended if an appropriate maintenance regime is undertaken on the adopted network upstream of the drainage network.

Sediment removal should be undertaken in such a way as to prevent damage to the SuDS features, minimise the impact on ecological systems and maintain aesthetic appearance. The particular method of removal will depend upon the SuDS feature, access, wildlife concerns and sediment depth.

5.5 Pipework, Manhole Access, LDC, and General Maintenance

The following maintenance schedules are recommended.

- Local repair or local replacement of damaged pipes or other structures in order to maintain the functioning of the sewer;

- Cleaning and removal of sediments, obstructions etc. to restore hydraulic capacity;
- Jetting/vacuum of sewers to be undertaken as often as necessary to remove silts and/or ordinary debris;
- In the event that any extraordinary issues are encountered during an inspection, further information may be required such as a CCTV survey report;
- Maintenance to be undertaken on a six monthly schedule;
- All manhole covers should be lifted and the manholes visually inspected for silt, debris and signs of blockages within the drainage system. Check manhole covers and frames for damage and ensure correctly bolted together. This should be undertaken on a six monthly basis;
- Should any debris or blockages be detected, the manholes should be cleaned along with associated pipe runs using a high pressure jetter. On completion a CCTV surveyed should be undertaken to verify/identify that no further remedial works are required;
- To avoid damaging the pipe, PSI pressures need to be verified before jetting of plastic twin wall sewers. Cleaning of drainage systems may require the temporary sealing of the system and careful collection of the effluent for disposal off site.

5.6 Outfall maintenance

The proposed surface water outfall is via Snebra Beck to the north of the site, a new outfall will need to be constructed. The proposed foul network discharges into an existing sewer network, as such no new open outfall will be created, only a connection to the combined sewer will be constructed

5.7 Permeable Paving

Regular inspection and maintenance is important for the effective operation of pervious pavements. The maintenance should be conducted by an experienced team that has the appropriate training and safety qualifications, in accordance with the maintenance plan specified by the manufacturer, while the responsibility for this maintenance will be placed with the landowner/tenant or appointed management Company.

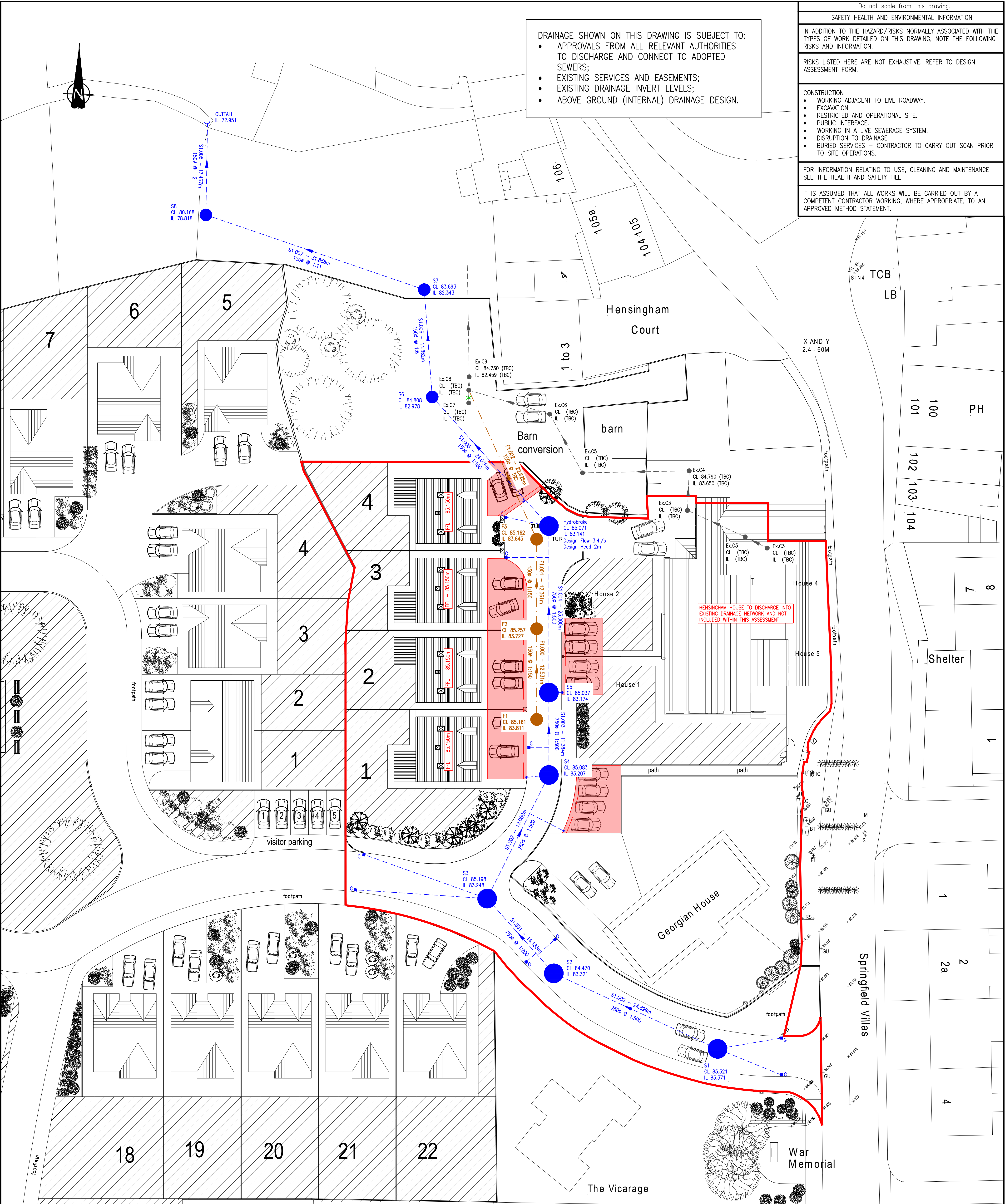
General maintenance requirements include inspection for clogging, litter, weeds and water ponding to identify the required remedial actions. A summary of the maintenance requirements is included in Appendix 2.

Permeable paving is located as described on drawing 138443/2002.



APPENDIX 1:
DRAWINGS

Reference	Originator	Drawing Title
138443/2002	Fairhurst	Proposed Drainage Layout



DRAINAGE SHOWN ON THIS DRAWING IS SUBJECT TO:

- APPROVALS FROM ALL RELEVANT AUTHORITIES TO DISCHARGE AND CONNECT TO ADOPTED SEWERS;
- EXISTING SERVICES AND EASEMENTS;
- EXISTING DRAINAGE INVERT LEVELS;
- ABOVE GROUND (INTERNAL) DRAINAGE DESIGN.

Do not scale from this drawing.

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARD/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING RISKS AND INFORMATION.

RISKS LISTED HERE ARE NOT EXHAUSTIVE. REFER TO DESIGN ASSESSMENT FORM.

CONSTRUCTION

- WORKING ADJACENT TO LIVE ROADWAY.
- EXCAVATION.
- RESTRICTED AND OPERATIONAL SITE.
- PUBLIC INTERFACE.
- WORKING IN A LIVE SEWERAGE SYSTEM.
- DISRUPTION TO DRAINAGE.
- BURIED SERVICES – CONTRACTOR TO CARRY OUT SCAN PRIOR TO SITE OPERATIONS.

FOR INFORMATION RELATING TO USE, CLEANING AND MAINTENANCE SEE THE HEALTH AND SAFETY FILE

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.

NOTES

1. This drawing is based on the following received information:
CDL Architecture Site Plan Detail – DS/TMP/2/RD/23 – Rev E

2. This drawing is to be read in conjunction with the following FAIRHURST drawings:
• 138443/1002 – Proposed Site Levels
• 138443/2003 – Drainage Construction Details Sheet 1
• 138443/2005 – Manhole Schedules
• 138443/2006 – Drainage Notes

3. Topographical data is based off LIDAR data downloaded from the EA.
4. Outfall into Snebri Beck subject to confirmation and acceptance from the EA.
Outfall should be subject to exception from flood risk activity permit.

KEY

- Site boundary (Phase 1 and 2)
- Proposed surface water sewer
- Proposed foul water sewer
- Existing combined water sewer
- x-x-x-x-x-x-x- Sewer to be grouted
- Proposed permeable paving

Rev.	Date	Description	Drawn	Checked	Approved
D	21/09/23	UPDATE TO SUIT UPDATE SITE LAYOUT. CL, IL AND PIPE DIAMETERS UPDATED.	FM	SNK	JG
C	28/04/23	DRAINAGE STRATEGY UPDATED TO SUIT REVISED SITE LAYOUT	FM	SNK	JG
B	19/02/21	DRAINAGE REVISED IN LINE WITH UPDATED SITE LAYOUT RECEIVED 26.01.2021.	AC	AL	MT
A	15/06/20	MINOR TITLEBOX AMENDMENTS.	JH	MT	MT

THOMAS MILBURN
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HENSINGHAM HOUSE
PHASE ONE AND TWO

Drawing Title:
HENSINGHAM HOUSE
PROPOSED DRAINAGE LAYOUT

FAIRHURST

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Scale at A1: 1:250	Status: Planning	
Drawn: JF	Checked: DN	Approved: MT
Date: 08/06/20	Date: 08/06/20	Date: 08/06/20

**APPENDIX 2:
MAINTENANCE SCHEDULE**



MAINTENANCE SCHEDULE

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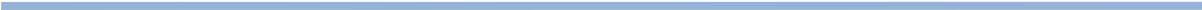
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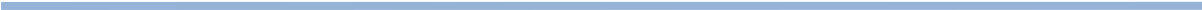
1 REGULAR MAINTENANCE

Inspection date (mm/yyyy):					
Regular Maintenance	Frequency	Details	Y/N	Action required	Date completed
General inspection items (During Construction)					
Inspection of inlets and outlets. Ensure they are clear and flows are not impeded.	As required				
Inspection of water quality. Ensure water quality is free of algae, oils, or odours.	As required				
Visual inspection of manholes, gullies, sumps, irrigation pads and channel drains for silt build-up.	As required				
Visual inspection for inefficiencies - such as surface water building up at the inlet.	As required				



2 OCCASIONAL MAINTENANCE

Inspection date (mm/yyyy):					
Occasional Maintenance	Frequency	Details	Y/N	Action required	Date completed
General inspection items (Post Construction)					
Visual inspection of manholes, gullies, sumps, irrigation pads and channel drains for silt build-up.	15 Years or appropriate				



3 PIPEWORK, MANHOLE ACCESS, AND GENERAL MAINTENANCE

Inspection date (mm/yyyy):					
Pipework and Manhole Access Maintenance	Frequency	Details	Y/N	Action required	Date completed
General inspection items					
Inspection of inlets and outlets. Ensure they are clear and flows are not impeded.	Bi-annually				
Inspection of manholes, gullies, sumps, and channel drains for debris and signs of blockages.	Bi-annually				
Inspection of manhole covers and frames for damage and ensure correctly bolted together.	Bi-annually				
Inspection of water quality. Ensure water quality is free of algae, oils, or odours.	Bi-annually				
Visual inspection for inefficiencies - such as surface water building up at the inlet.	Bi-annually				
Remove litter and debris from gully and channel drain surface.	Bi-annually				
Remove or control tree roots where they are encroaching the sides of the gully, using recommended methods (e.g. NJUG, 2007 or BS 3998:2010)	Bi-annually				



Inspection of gully and channel drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage.	Bi-annually				
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4 CONTROL (DOWNSTREAM) MANHOLE MAINTENANCE

Inspection date (mm/yyyy):					
Control man hole	Frequency	Details	Y/N	Action required	Date completed
General inspection items					
Inspection of the sump to ensure it is clear.	Monthly for three months after installation				
Inspection of inlet to ensure it is clear.	Biannually thereafter				

5 PERMEABLE PAVING

Inspection date (mm/yyyy):					
Permeable Paving	Frequency	Details	Y/N	Action required	Date completed
General inspection items					
Brushing and vacuuming (standard cosmetic sweep over whole surface)	Annually, after autumn leaf fall, or reduced frequency as required				
Stabilise and mow contributing and adjacent areas	As required				
Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required - annually on less frequently used pavements				
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				
Repair/rehabilitate inlets, outlet, overflows and vents	As required				


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Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years (if infiltration performance is reduced due to significant clogging)				
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 established appropriate brushing frequencies	Annually				
Monitor inspection chambers	Annually				

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