

Management & Maintenance for Drainage Strategy Plan

The private drainage systems shall be managed by the Management Company for this development. The maintenance activities listed below are considered to be the basic tasks necessary to keep the site drainage systems working at optimum efficiency, which is necessary to ensure that they have capacity to deal with extreme / unusual events. Other activities, such as litter removal / repairs etc. will also be required.

Area	Maintenance Activity	Frequency	Responsibility
'On Plot' Hard-Surfacing & Drainage	Inspection of manholes/Chambers	Recommended every 5 years	Management Company
	CCTV/Jetting of Sewers	Recommended every 10 years	Management Company
	Spillages	Provision of Spill Kits to contain contaminants	Management Company
	Inspection and cleaning of flow control	Annually	Management Company
	Inspection of Silt Traps	Annually	Management Company
Building Roof Drainage	Roof Gutters to be cleared debris	Recommended every 2 years	Management Company
	CCTV/Jetting of Sewers	Recommended every 10 years	Management Company
Building Foul Drainage	Cleaning of below ground pipe work	Recommended every 10 years	Management Company
	Attenuation Tank	Recommended every 2 years	Management Company
Hard-Surfacing & Drainage	Paved areas to be swept and deiced	As required during Spring and Summer months	Plot Owner
	Development Site Access	Periodic sweeping to remove debris, leaves, etc	Management Company

Notes

- Do not scale this drawing, other than for Planning Application purposes.
- All dimensions are in millimetres unless stated otherwise.
- This drawing to be read in conjunction with all other relevant drawings and specifications.
- All proprietary items to be installed in strict compliance with manufacturers instructions and recommendations.

STANDARD DRAINAGE NOTES:

- Except where specifically shown otherwise all below ground pipes / connections shall be 100mm dia PVC (to BS 4660) or VC (to BS 5481) with flexible joints and laid to minimum falls of 1 in 40, except where connected to WC when falls may be 1 in 80.
- All gravity pipe runs to be tested to a standing head of 1500mm head of water above the invert at the head of the pipe run (but not exceeding 4000mm at the lower end).
- For details of bed and surround requirements refer to long-sections and standard details. In all other situations provide 150mm of 10mm single-sized rounded gravel bedding and surround.
- Except where specifically shown otherwise, pipes to be a minimum of 900mm below roads/driveways and 600mm below gardens/fields.
- Ventilating pipes to be provided at the head of each drain and to any branch longer than 6m where a single appliance is connected, or 12m where a group of appliances is connected.
- Step-irons shall not be fitted in any chambers unless specified otherwise.
- Manhole/Gully covers shall be regulated to suit finished levels and crossfalls.
- All proprietary items to be installed in strict compliance with manufacturers instructions and recommendations.
- Drains passing beneath buildings to have minimum 100mm granular fill or flexible filling around pipe. Where the pipe crown is within 300mm of the underside of the slab, pipe shall be encased in concrete integral with the slab.
- Drains passing through walls below ground level to have minimum 50mm clearance all round and opening in walls to be masked all round with rigid sheet material to prevent ingress of fill or vermin. Openings in walls for pipes shall have concrete lintels to support wall construction above.
- Unless stated otherwise, pipes to be 150mm Diameter.
- Noted otherwise car parking spaces subbase to be 350mm type 3 granular material.

STANDARD ROADS / FOOTPATH NOTES:

- Existing structures to be broken out to minimum 450mm below top of finished surface level. Existing footpath to be broken out and rubble and existing subbase to be removed off-site.
- Subgrade to be proof rolled with one pass of a smooth-wheeled roller having a mass per M-width of roll of not less than 2,100-kg or a Vibrating Roller having a mass per M-width of roll of not less than 700-kg or a Vibrating Plate Compactor having a mass per m2 of not less than 1400-kg. Any soft spots shall be removed and replaced with Type 1 compacted in layers not exceeding 150mm thickness.
- All formations are to be treated with an approved herbicide before placing sub-base material on a geotextile separation membrane (Terram 1000 or similar approved).
- All sub-base material is to be non-frost-susceptible. All concrete to be sulphate resisting.

P02	Updated Site Layout Plan & Amended Drainage Design	EP	04-09-23
P01	Planning Issue	EP	07-08-23

Client
Mr Andrew Wright

Project
Piperell Way, Haverhill

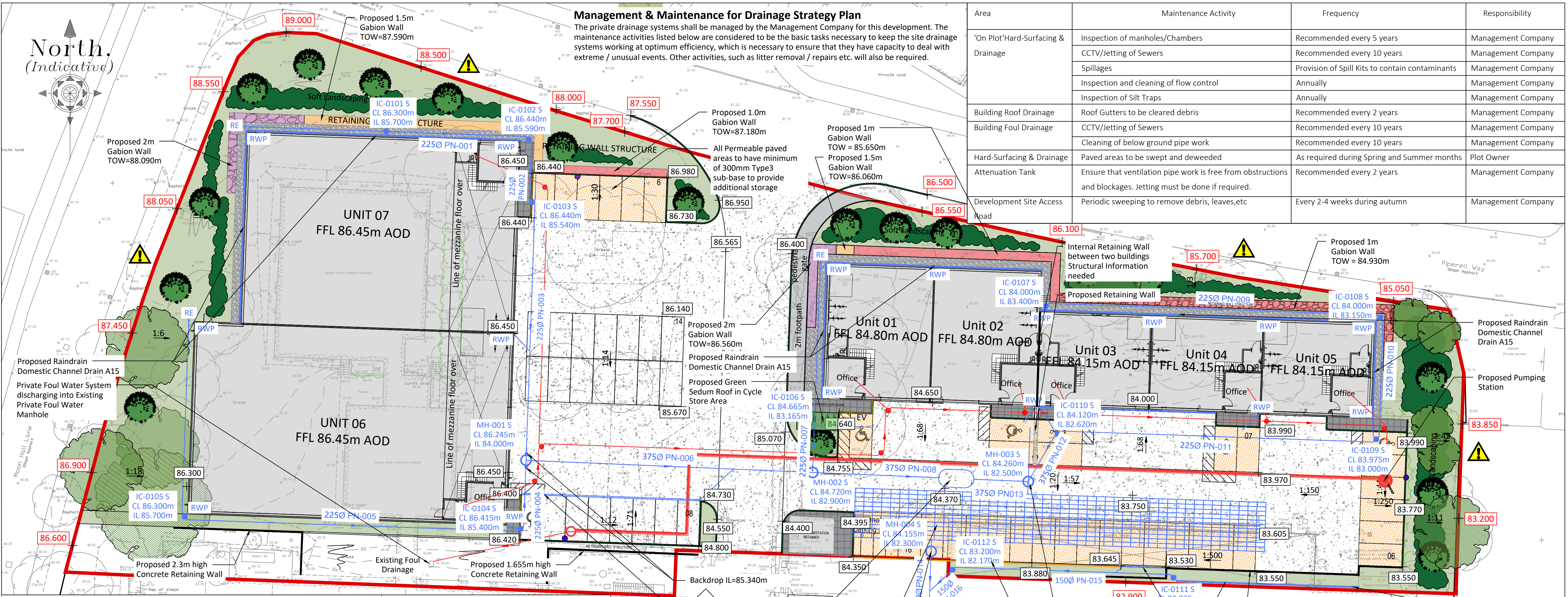
Drainage Strategy Plan Option 2

Job No	22111	
Drawing No	22111-004	P02
Status	Planning	Rev
Scale	1:250@A1	Date 07-08-2023
Project Engineer	TBP	Drawn By EP Checked By AJP Approved By



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Key

HB-HALF BATTERED KERB		Surface Water Pipeline
BN-BULLNOSE KERB		Surface Water Perforated Pipeline
TN-TRANSITION KERB		Rodding Eye
EF-EDGING OF FOOTPATH		Rain Water Pipe
	Concrete Surfacing	Drainage Channel
	Footpath Surfacing	Foul Water Polypropylene Inspection Chamber
	Permeable Surfacing	Foul Water Pipeline
	Proposed Levels	Foul Water Polypropylene Inspection Chamber
	Existing Levels	Existing Manhole
	Arrow Gradient	
	Site Boundary	
	Surface Water Polypropylene Inspection Chamber	

CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS 2015

THE CONTRACTOR'S ATTENTION IS DRAWN TO THE ABNORMAL RISKS IDENTIFIED BELOW, ANNOTATED ON THE DRAWING AND EXPLAINED IN THE ASSOCIATED DESIGN RISK REGISTERS.

LEGEND

- YOU MUST NOT DO
- HAZARD OR DANGER
- YOU MUST DO
- CAUTION

ABNORMAL RISKS IDENTIFIED:
Due to the level difference, ground can be collapsed during construction.

Project Details

The site is located on Piperell Way, Haverhill. The postcode of the site is CB9 8QW and the approximate centre of the site at National Grid Reference TL 67043 44451. The site size is 0.67 ha and all buildings are located in Flood Zone 1. The site is currently Brownfield area and occupied by the existing warehouse and car parking. The proposed development includes demolition of existing warehouse units 2 and 4 and construction of 7 no separate warehouse units with permeable parking areas as well as concrete access road and concrete driveway with tarmac footpath as follows.

- Proposed Buildings : 2195.25 m²
- Permeable Parking Areas : 468.75 m²
- Impermeable Access Road & Driveway : 1790.00 m²
- Impermeable Footpath : 57.00 m²
- Total Hardstanding Area : 2315.75 m²

According to the ground investigation report, the ground condition is typically up to 1m thick with mantled stiff or locally desiccated to very stiff Till of the lowestoft formation and therefore it is not suitable for soakaway system.

Drainage and SUDS Strategy

As stated in CIRIA SuDS Manual 2015 the objective of sustainable drainage systems is to maximize the benefits and minimize the negative impacts of surface water runoff from developed areas. By applying SuDS methodology, storm runoff from the Site is controlled to ensure that flow rates in downstream watercourses are not increased and the water is appropriately treated to remove any contaminants, thus ensuring the quality of the water in the natural environment downstream.

Drainage Hierarchy

Drainage Hierarchy	Y/N	Comment
1. Infiltration to maximum extent	N	Ground Condition is not suitable for Soakaway System
2. Discharge to Surface Waters	N	None Available
3. Discharge to Surface Water Sewer	Y	Discharge into Existing Private Storm Water Manhole and then discharge into Anglian Water Sewer System
4. Discharge to Combined Sewer	N	None available

Storm Water

Summary of Drainage Strategy

- A private drainage system is provided to collect storm runoff from roofs, parking spaces and the access road for all storms up to 1 in 100-year event + 40% climate change.
- The proposed storm water system is designed to drain through a filter media within permeable surfacing and discharge into the existing private storm water manhole through a gravity operated system then assumed to discharge into existing Anglian Water Sewer System.
- Runoff from the proposed dwellings shall be collected by rainwater pipes.
- Green Sedum Roof is proposed in the Cycle Stores area in front of Unit 01 as part of SUDS drainage design.
- Some of private parking spaces shall be surfaced with permeable block paving filtering runoff and receiving flows flows from roofs, driveways and footpath.
- Type 3 Sub-base attenuation which is located underneath the parking spaces, shall be used to receive runoff for all storms up to 1 in 100-year + 40% Climate Change.
- The access road, driveway and some of the private parking spaces shall be surfaced with impermeable concrete surfacing and footpath is surfacing with tarmac paving and water from those areas collected with the use of Aco Channel Drain through the proposed oil interceptor and then attenuated and discharged into existing private storm water manhole.
- Silt trap is proposed in MH-003 S to treat water before discharging into the storage system.
- Attenuation crates are proposed to provide storage and crates are as marked on plan.
- Hydrobrake is proposed in MH-004 S limiting discharging 10l/s before discharging into existing private storm water manhole.
- Hydraulic calculations are provided for these systems.

Storm drainage system performance for Drainage System:

Attenuation Volume Provided	:234.47m ³ (192.28m ³ Crates+42.19m ³ Subbase)
Attenuation Volume used in 1 in 2 yrs storm event	:46.89m ³ (20%)
Attenuation Volume used in 1 in 30 yrs storm event	:106.00m ³ (45%)
Attenuation Volume used in 1 in 30 yrs storm event + 35% Climate Change	:150.06m ³ (64%)
Attenuation Volume used in 1 in 100yrs storm event	:143.03m ³ (61%)
Attenuation Volume used in 1 in 100 yrs storm event + 40% Climate Change	:227.44m ³ (97%)

Foul Water

It is proposed that all foul water drainage from all the developments will pump into the break pressure chamber then will gravitate into the Existing Private Foul Water Manhole and it is assumed that existing private foul water system is going underneath the existing large industrial unit then discharging into the existing Anglian Water Sewer on Helions Bumpstead Road.

