

Drainage Strategy

Surface Water Drainage

Under part H of building regulations the following discharge hierarchy shall be considered:

1. Soakaways - The British Geological Survey maps of Britain indicate the 'solid' geology beneath the site is Lewes Nodular and Seaford Chalk Formation. Superficial deposits for this area were recorded as gravel over clay/silt. There are no nearby boreholes within 250m of the site. Trial pit tests conducted found the ground to be highly permeable at about 2.2m below the existing ground level. A standard infiltration rate of 1.94m/hr has been established in the Phase 2 Ground Investigation Report and has used in the hydraulic modeling.
2. Watercourses - There are no watercourses within the vicinity of the site.
3. Sewers - There is a Southern Water surface asset running north of the access of the site underneath Lower Higham Road.

- The gravity drainage system will culminate at a bank of cellular attenuation tank wrapped in a permeable membrane. This will act as a soakaway and will cater for all storms up to and including a 1 in 100 year storm plus 40% for climate change.
- Within the car parking area reinforced gravel structures will be constructed which will offer a degree of treatment before allowing infiltration into the sub-strata. The reinforced gravel structure will also remove hydrocarbons, heavy metals and other pollutants before the runoff is discharged to ground.
- Permeable Resin bound vehicular grade surfacing will be constructed within the access driveway and pedestrian footpath. The sub base will provide treatment and infiltration to surface water run off.
- Upstream of the soakaway inspection chambers with a 300mm sump will be constructed. This will prevent debris from being washed into the soakaway, extending its lifespan.

Foul Drainage

- The foul drainage system will discharge into the existing Southern Water foul sewer to the east of the site within the neighboring church's private garden. There is a public foul sewer running across the site location. It is proposed to reroute it to connect SW MH9901 south of the site within the private access road.
- A direct S106 agreement will be required with Southern Water before the system is connected into the existing public foul sewer.
- Third Party Agreements will be required with the relevant land owners to connect the foul drainage eastwards into the existing public sewer within private land and also to reroute the public foul asset running across the proposed site to SW MH9901. The geochemical and environmental impact of sewage from this pipe seeping into the ground for a prolonged time has been investigated and included in the Phase 2 Ground Investigation Report.

Flood Exceedance

- In the event of system failure or an exceptional rainfall event flood exceedance should be considered.
- The reinforced gravel and resin bound vehicular grade structures have not been considered within the storage calculations and therefore the voids within these structures will offer only a degree of storage before surface flooding occurs.
- Beyond this, flood exceedance will be contained within the kerb-bound car before they flow into the kerb-bound Lower Higham Road where they will have no adverse effect on the proposed property or neighbouring properties. Furthermore, the building will be set at least 150mm above the external levels which are proposed to slope away from the buildings offering more protection against water ingress.

4m x 2m x 0.4m deep cellular tank wrapped in a permeable membrane acting as a soakaway, suitably sized to cater for all storms up to and including a 1 in 100 year storm + 40% for climate change.

CL of Soakaway: 17.000m AOD
Soffit of Soakaway: 14.800m AOD
IL of Soakaway: 14.400m AOD

Due to site constraints and ground conditions, the cellular crates are to be placed a minimum of 6.9m away from both the proposed building and neighbouring property to the west of the site.

Based on results from trial pit tests, a standard infiltration rate of 1.94m/hr has been used in the hydraulic modeling of the soakaway.

Existing Foul Sewer from neighbouring property to be rerouted to connect to SW MH 9901 via new Adoptable Manhole

New position of Existing Foul Sewer from neighbouring property after rerouting. Suitable investigations needed to confirm invert of manhole and pipe.

Third Party Agreements to be agreed between Client, Neighbour and Southern Water prior to works

Permeable Resin Bound Vehicular Grade providing infiltrating and treatment to the surface water runoff

300mm deep sump acting as a catchpit

Southern Water Manhole 9001. Believed to have been made redundant to accommodate new parish hall.

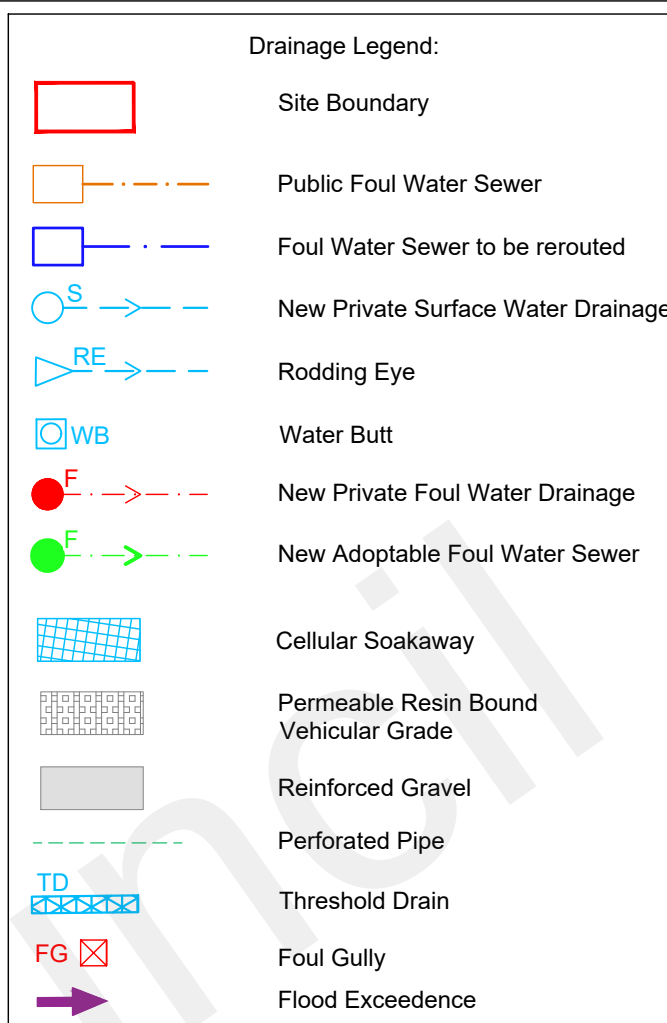
Given shallow nature, foul pipes to be wrapped in concrete to cope with vehicular loads.

Pipe going underneath building foundations to be a twin wall unjointed pipe wrapped in a compressible material to boost robustness and prevent damage during possible settlement.

Reinforced Gravel providing infiltrating and treatment to the surface water runoff

Direct S106 agreement required with Southern Water subject to a third party agreement between Client and Parish

Position, system type and invert level to be confirmed prior to construction. Engineer to be notified immediately.



SAFETY, HEALTH & ENVIRONMENTAL HAZARD INFORMATION BOX

The hazards noted below are in addition to the normal hazards and risks faced by a competent contractor when dealing with the types of works detailed on this drawing.

CONSTRUCTION RISKS:

- Striking unknown services
- Deep trenches
- Leptospirosis

MAINTENANCE / CLEANING RISKS:

- Leptospirosis

Notes:

1. DO NOT SCALE FROM THIS DRAWING.
2. All dimensions are in millimetres Unless Noted Otherwise (u.n.o.)
3. Drawing is to be read in conjunction with all relevant architect's drawings. Any inconsistencies should be reported to PRP immediately.
4. All levels and dimensions are to be checked on site before any work commences.
5. The Health and Safety at Work act is to be complied with at all times. Attention is drawn to the wearing of hard hats, reflectorised clothing, and the use of any other required safety equipment.

Drainage:

1. Invert levels of existing manholes to be checked on site prior to commencing any drainage works.
2. For positions of all rainwater pipes & foul outlets refer to Architect's drawings.
3. All joints between precast manhole components shall have a minimum uncompressed thickness of 10mm of proprietary bitumen or resin mastic sealant.
4. Storm & foul branch connections are to be laid at gradients of between 1:10 & 1:80
5. All in-situ concrete shall be minimum grade GEN3.
6. Precast concrete cover & reducing slabs to be heavy duty reinforced concrete to BS 5911.
7. Rising mains shall be black MDPE SDR11 as WI 4-32-03 & joints & fittings to be in accordance with WI 4-32-04. Other approved pipe materials to be in accordance with their relevant BS.
8. Manhole covers & frames shall be manufactured in cast iron or ductile iron & shall comply with requirements of BS EN 124 & shall be kite marked or equivalent.
9. Where there is no intermediate manhole between the start of a surface water pipe run and the soakaway the gradient of the run shall be not less than 1 : 60.
10. All completed work shall be suitably protected from damage by construction work. Damaged drainage will not be accepted. It is recommended that no heavy loading or underground work is permitted above or near unprotected drainage, and that dumpers, trucks, fork lifts or other heavy vehicles are not driven along or near pipe runs.

P4	14/10/2022	Drainage amended	NN / AGS
P3	08/09/2022	Foul Drainage outfall changed	NN / AGS
P2	05/09/2022	Rodding eye moved. Type B Permeable Paving replaced with Reinforced Gravel and Resin Bound Vehicular Grade	NN / AGS
P1	30/06/2022	Issued for comments	NN / AGS
Rev	Date	Description	By / Chk



consulting engineers & surveyors

Catherine House
Old Harborough Road
Brixworth, NN6 9BX

Telephone: 01604 889 870
northampton@prp.uk.com
www.prp.uk.com

Leicester
Northampton
London

engineering excellence | creating advantage

Client:
Stem Homes

Architect:
Office S&M

Project:
Goldsmith Mews Houses
Lower Higham Road, Gravesend
DA12 2ND

Title:
Drainage Strategy

Status:
PRELIMINARY

Engineer:	NN	Date:	June 2022
Drawn:	NN	Scales @ A1:	
Checked:	AGS	1:100	
Project No:	82455	Drg No:	101
		Rev:	P4