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- NOTES
- Do not scale this drawing.
 - 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 100mm Diameter.

- 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

Project Details

The site is located on the western side of Surfleet Road, Pinchbeck. The postcode for the site is PE11 3XY and the approximate centre of the site at National Grid Reference TF 24546 26997

The site size is more than a hectare (3.80 ha) and is located within Flood Zone 3. The site is currently Greenfield Vegetated Lane.

The proposed development includes proposals for the construction of 63 dwellings with roads, driveways and parking spaces as follows:

- Housing (Roofs) : 9,459m²
- Driveways and Parking : 3,386m²
- Adoptable Road and Footpath: 4,358m²
- Total Impermeable area: 17,203m² (Approx 45% of the Site)

Geological records indicate that the ground is a very silty Clay with occasional sand partings. Infiltration rate calculated at 8.96 x 10e-6 m/s. A Percolation test according to BRE365 conducted to confirm the infiltration rate as well as the Ground water table level.

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	Y	Soakaways are proposed for private drainage systems in areas with a high Ground Level
2 Discharge to Surface Waters	Y	Highway drainage shall be discharged to the IDB drain north and west of the Site
3 Discharge to Surface Water Sewer	N	None available
4 Discharge to Combined Sewer	N	None available

Summary of Drainage Strategy

- Key aspects proposed:
- It is proposed to filter runoff from private driveways parking spaces through a filter media within permeable surfacing and discharge to both the adoptable sewer running through the access road and through the use of infiltration rain gardens
 - The Adoptable Road shall drain via trapped gullies and shall discharge to the IDB Drain.
 - Discharge from the Site shall be restricted to 5-l/s (As stated in the approved Drainage Strategy). This is achieved by three hydrobrakes located as above.
 - Attenuated water shall be stored in a combination of lagoons, rain gardens, attenuation crates and Subbase below ground for all storm events up to 1 in 100-year +40% CC Storm event.

Storm Water

- Private driveways & parking spaces shall be surfaced in permeable blockwork filtering runoff and receiving flows from roofs. Subbase attenuation / crates shall be used to receive runoff for all storms up to 1 in 100-year + 40% CC.
- Storm water run-off from the adoptable road will be collected in trapped gullies and filtered through an oil interceptor before being discharged into the existing IDB Drain.
- Central plots will be provided with rain-gardens to receive and discharge runoff from roofs for storms up to 1 in 10-year events. Rear gardens will be landscaped to retain additional storm water from up to 1 in 100-year events, plus 40%, without risk of flooding to the dwellings (See Exceedence Flow diagram)

For the Private System

- Attenuation Volume Provided: 1,070m³
- Attenuation Volume used in 1 in 30 yrs storm event: 47%
- Attenuation Volume used in 1 in 100 yrs storm event: 65%
- Attenuation Volume used in 1 in 100 yrs storm event + 40% Climate Change : 97%

Foul Water

- An adoptable foul water system should be provided with effluent to an Adoptable Manhole just North of Milestone Lane.

Exceedence Flows

Storm Water System is designed to receive and contain within the site boundary all rainfall up to & including 1:100 +40% CC AEP. Exceedence Flows in exceptional events or due to blockages will be routed away from all buildings as shown on drawing '22157-002 Exceedence Flows'

Management & Maintenance

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
Hard-Surfacing & Drainage	Cleaning of Gullies	Recommended every 2-Years	Management Company
Building Roof Drainage	CCTV/Jetting of Sewers	Recommended Every 10-Years	Management Company
Building Foul Drainage	CCTV/Jetting of Sewers	Recommended Every 10-Years	Management Company
Hard-Surfacing & Drainage	Inspection of Manholes/Chambers	Recommended Every 5-Years	Management Company
Building Roof Drainage	Spillages	Provision of Spill Kits to Contain	Management Company
Building Foul Drainage	Gutters to be cleared of debris	Recommended Every 2-Years	Plot Owner
	Cleaning of below ground pipework	Recommended Every 10-Years	Management Company
Oil Interceptor	Maintenance in accordance with manufacturers specification	Recommended as per Manufacturer	Manufacturer
Development Site Access Roads	Periodic sweeping to remove, debris, leaves etc	Every 2-4 weeks during autumn	Highways Authority
Adoptable Road Drainage	Inspection and Maintenance, Gully cleaning etc.	As Required	Anglian Water
Riparian Ditch	CCTV / Jetting of Sewers	Recommended Every 10-Years	Plot Owner

Key

HB-HALF BATTERED KERB	
BN-BULLNOSE KERB	
TN-TRANSITION KERB	
EF-EDGING OF FOOTPATH	
Permeable Paving	
Tarmac	
Grass	
Proposed Levels	
Surface Water Polypropylene Inspection Chamber	
Private Storm Water Manhole	
Adoptable Storm Water Manhole (Anglian Water)	
Surface Water Pipeline	
Road Gully	
Rodding Eye	
Backdrop	
Arrow Gradient	
Foul Water Polypropylene Inspection Chamber	
Adoptable Foul Water Manhole	
Foul Water Pipeline	

Project
Green Lane, Pinchbeck

Drainage Strategy

Job No
22157

Drawing No
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Status
Preliminary

Scale
As Stated

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