

Notes

- 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 W/C 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 Pipwell Gate, Moulton Seas End, Spalding. The postcode of the site is PE12 6LU and the approximate center of the site at National Grid Reference TF 32181 27064. The site size is 0.045ha. The site is currently an unused land. The proposed site is within Flood Zone 2 and therefore, flood risk assessment should be carried out to identify the level of flooding. The proposed development includes the construction of single dwelling with associated parking space and driveway.

- Proposed Building : 82.00m²
- Permeable Areas : 93.50m²
- Impermeable Area (Paving Slab) : 39.00m²
- Total Hardstanding Area : 132.50m²

According to the Soakaway Test Report, the soil infiltration rate is 2.4 x 10⁻⁵ m/s.

Drainage Hierarchy

Drainage Hierarchy	Y/N	Comment
1. Infiltration to maximum extent	Y	Ground Condition is suitable for Soakaway System
2. Discharge to Surface Waters	N	None Available
3. Discharge to Surface Water Sewer	N	None Available
4. Discharge to Combined Sewer	N	None available

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 Strategy

Storm Water

- The drainage strategy has been designed to collect storm water runoff from roof, and parking areas for all storms up to 1:100-yr event + 40% climate change. The proposed storm water system will be discharged to the ground via a soakaway.
- Runoff from parking areas shall be filtered through permeable paving.
- Runoff from most parts of the roof area will be filtered via rain gardens, with remaining roof areas being treated through the silt trap.
- Rain gardens can provide a number of essential benefits for both environmental and encourage nature:

Environmental - Rain Gardens can reduce rainfall runoff rates entering into the proposed drainage system by creating an extra outlet into the rain gardens. Rain Gardens are mini filtering systems by taking runoff with its pollutants, absorbing it and releasing it freshly cleansed.

Encourage Nature - It provides micro-habitats for wildlife by creating rain gardens in each dwelling. Rain gardens could be a heaven for newts, frogs and toads who require only a small body of water in which to live and reproduce. Other insects including birds can look out for swooping house martins and swallows skimming the surface of the proposed rain gardens after a heavy shower.

Moreover, it can help as an extra dimension of visual interest as well as turning weather to your advantage, you will simultaneously be doing your bit for the natural world by introducing a rain garden to your own outdoor space.

Rain Gardens are designed storage to contain first flush which is 5mm depth of rainfall from storm event fully containing flows up to 1 in 5-yr events.

Storm drainage system performance:

- Attenuation Volume Provided : 11.6m³ (3.6 m³ soakaway + 8 m³ subbase storage)
- Attenuation Volume used in 1:2 yrs storm event : 22%
- Attenuation Volume used in 1:30 yrs storm event : 63%
- Attenuation Volume used in 1:100yrs storm event : 84%
- Attenuation Volume used in 1:100 yrs storm event + 40% Climate Change : 100%

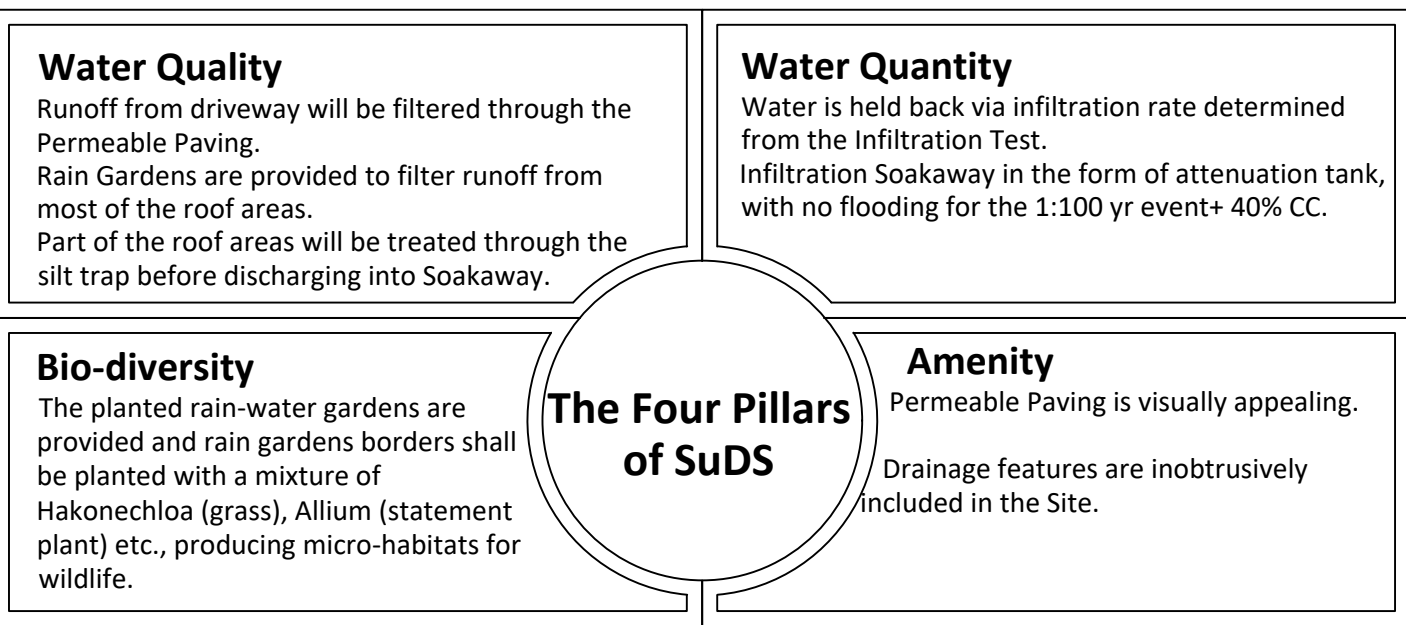
The Table below demonstrates how the Pollution Indices (As defined in Tables 26.2 and 26.3 from SuDS Manual) have been applied.

Simple Pollution Indices:

Area	Pollution Indices			Proposed Treatment	Mitigation Indices			Residual Indices		
	TSS	Metals	Hydro-Carbons		TSS	Metals	Hydro-Carbons	TSS	Metals	Hydro-Carbons
Roof	0.2	0.2	0.05	Rain Garden *	0.8	0.8	0.8	0.0	0.0	0.0
				Silt Trap	0.5	0.5	0.5			
Parking Area	0.5	0.4	0.4	Permeable paving	0.7	0.6	0.7	0.0	0.0	0.0

*NB: Pollution Mitigation Indices for Rain Gardens assume they are Bio-retention systems, treating circa 80% of the runoff from the new roof areas.

SUDS Strategy



Foul Water

The foul water drainage system from proposed dwelling will be designed to gravitate into the proposed cess tank located as in plan which will be installed with regular tankering.

