

KEY

- S.W. Foul
- Proposed Sewer
- Proposed Disconnection Manhole
- Existing Combined Sewer
- Existing Surface Water Sewer
- Proposed Finished Floor Level
- Proposed Level
- Existing Level
- Denotes possible retaining wall locations (above 600mm).
- Private Permeable Drive with underdrain. To be maintained by Homeowner (individual drives) or ManCo (shared drive areas). Impermeable areas are still accounted for within hydraulic calculations.
- Proposed Private Filter Drain to receive direct runoff from adjacent private shared drive. Filter Drain: 1.15m minimum depth, 0.5m wide, 1500 perforated pipe at base. To be maintained by private ManCo.
- Proposed Grass filter strip to act as pre-treatment prior to filter drain or swale. To be maintained by private ManCo.
- Proposed S104 Detention Basin. Max 1 in 3 side slopes. To be maintained by S104 Undertaker / private ManCo.
- Catchpit Manhole to minimise silt entering the downstream piped network. To be maintained by private ManCo (private SuDS).

* Water Butts to be provided for ALL plots as additional SuDS measure and to provide water for non-potable use (watering gardens).

DRAINAGE STRATEGY NOTES

Please refer to the below drainage strategy considerations when checking for compliance with the National Standards for Sustainable Drainage Systems.

1. Standard 1 (Runoff Destinations):

1.a) Non-Potable Use

The demand for non-potable use and the need for landscape irrigation (points 1 and 2 of 1.11 of the National SuDS Standards) will be both met by the incorporation of a water butt for every proposed property. This will allow water re-use for garden areas.

The development is in the north west which is NOT an area identified as seriously water stressed by the Environment Agency in 2021.

Rainwater harvesting systems above and beyond water butts are therefore not considered suitable for this development.

1.b) Infiltration to Ground

Ground investigations were carried out by IGE Consulting in September 2025. 1 no. infiltration test was attempted in 3 no. locations in accordance with BRE 365.

Only 1 no. test was attempted in each location due to limited drainage in all tests. Infiltration rates were in the order of 3.15×10^{-7} which is unlikely to be viable for proposed infiltration features. No further tests were therefore undertaken.

The poor infiltration rates recorded is conclusive that the site is not suitable for infiltration to ground.

1.c) Discharge to an Above Ground Surface Water Body

The closest watercourse (River Alt) is immediately to the north of the development.

Discharge to an above ground surface water body is therefore the most suitable for the discharge of surface water from this development.

2. Standard 2 (Management of Everyday Rainfall)

SuDS measure will be incorporated within development to assist with preventing runoff from the site for the first 5mm of rainfall of the majority of rainfall events.

2.a) Private Permeable Drives with underdrains to be provided with Engineered sub-base layer beneath the underdrain level to assist with first 5mm rainfall requirements.

Total Private Permeable Drive Area (highlighted) = 0.219 Ha
Total Private Permeable Drive Area with multiplication factor (x5) = 1.095 Ha

2.b) Private Filter Drains with no infiltration assumed, to provide a depth of stone below level of perforated pipe to assist with first 5mm rainfall requirements. To be treated as a permeable drive in terms of multiplication factor (no infiltration due to underlying ground).

Total Private Filter Drain Length = 83.6m; Filter Drain width 0.5m
Total Private Filter Drain Area = 41.8m² = 0.00418 Ha
Total Private Filter Drain Area with multiplication factor (x5) = 0.021 Ha

2.c) Detention Basins to provide topsoil or SuDS soils to basin base that achieves infiltration rate of 1×10^{-6} m/s.

Total Detention Basin Base Area = 0.0259 Ha
Total Detention Basin Base Area with multiplication factor (x25) = 0.647 Ha

Total Area of SuDS provided (with multiplication factors) = 1.763 Ha

Total Impermeable Areas = 1.075 Ha

Development is considered to comply with Standard 2 of the National Standards for Sustainable Drainage Systems.

3. Standard 3 (Management of Extreme Rainfall and Flooding)

3.a) Urban creep of an additional 10% has been applied to all private impermeable areas (plots and drives).

3.b) Peak Rainfall Climate Change Allowances of 40% and 45% have been applied in the 30 year and 100 year return periods respectively.

3.c) Pre-development QBar greenfield runoff rate:

Total Development Boundary = 2.216 Ha
Developable Area (Development Boundary excluding large areas of POS) = 1.741 Ha

Pre-development QBar greenfield runoff rate using Developable Area (1.741 Ha) = 13.7 l/s
(Based on FEH statistical method / FEH point data purchased).

3.d) Post development discharge rate:

Total Impermeable area (including urban creep allowance) = 1.075 Ha

Post development hydraulic calculations to only include impermeable areas (1.075 Ha), but are presented with a Cv of 1.0 and an additional storage value of 0.0 (MADD Factor). Using a Cv of 1.0 and MADD factor of 0.0 is an industry standard approach to account for the possible minor entries from permeable areas that may runoff onto the drained hard paved areas and some minor losses where some hard areas may runoff onto permeable un-drained areas.

Post development discharge to be limited to 13.7 l/s in all return periods (matching the QBar greenfield runoff rate) (FEH-22 rainfall methodology used in hydraulic calculations).

3.e) No flooding is designed to occur in all events up to and including the 100 year return period (+45% climate change).

3.f) Separate hydraulic calculations with a surcharged outfall have been prepared, which confirms no flooding in the 100 year return period + climate change (modelled with 1m surcharge level 30.600m - no modelled river levels available fronting site).

3.g) Exceedance events in excess of 100 year return period or in the case of blockages have been considered in drawing 30692/102.

A	18/02/26	RDE	Updated to suit latest development layout.
Rev	Date	Initials	Details

Drawing Revisions

North Arrow	Project	Huyton Cricket Club, Huyton	IronsidesFarrar Environmental Planners Civil Engineers Landscape Architects Graphic Design		
	Client	Breck Homes			
	Quality Assurance	UKAS 005 Quality Assurance ISO 9001:2015 SCS Certificate GB02/54539			
	Title	Preliminary Drainage Layout			
Original Site	Copyright, Act/plan/development	Drawn	Checked By	Drawing No.	Revision
A1	Ordnance Survey® ©Crown Copyright. All rights reserved. Licence No. AL100017966.	KF	RDE	30692/100	A
	Date	Scale			
	June 25	1:500			