

15084 Little Winton, Keymer Road, Burgess Hills saveas

1 Introduction

1.1 This document has been prepared to address the following planning condition:

The development hereby permitted shall not commence unless and until details of the proposed foul and surface water drainage and means of disposal have been submitted to and approved in writing by the local planning authority. No building shall be occupied until all the approved drainage works have been carried out in accordance with the approved details. The details shall include a timetable for its implementation and a management and maintenance plan for the lifetime of the development which shall include arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime. Maintenance and management during the lifetime of the development should be in accordance with the approved details.

Reason: To ensure that the proposal is satisfactorily drained and to accord with the NPPF requirements and Policy DP41 of the District Plan (2014 - 2031).

1.2 Additionally for Revision A of the document, information is provided to address items raised in the Detailed Drainage Design Checklist – Condition Discharge Stage (v2 issued 071125) and Detailed Drainage Design Technical Summary – Condition Discharge Stage (v2.0 issued 071125).

1.3 The following drawings and calculations are submitted to enable this pre-commencement condition to be discharged:

- 15084-TUL-XX-XX-DR-C-51001-E-Drainage Layout
- 15084-TUL-XX-XX-DR-C-51002-C-Surface Water Exceedance
- 15084-TUL-XX-00-DR-C-52001-E-External Ground Levels
- 15084-TUL-XX-XX-DR-C-57001-A-Impermeable Areas
- 15084-TUL-XX-XX-DR-C-66001-A-Private Drainage Details Sheet 1
- 15084-TUL-XX-XX-DR-C-66002-A-Private Drainage Details Sheet 2
- 15084-TUL-XX-XX-DR-C-67001-B-Manhole Schedules
- InfoDrainage calculations '15084- Little Winton - SW Attenuation - Rev B'

1.4 Also provided is various technical literature and supporting information from Others:

- 4No. Hydrobrake Optimum flow control devices by Hydro International.
- 1No. Downstream Defender propriety water quality treatment device by Hydro International.
- Pump design for 3No. package pump stations by Willow Pumps ref WQ34956 Rev A.

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2 Below Ground Surface Water

2.1 The surface water drainage design show on drawing no. 15084-Tul-XX-00-DR-C-51001 Rev D (with manhole schedules on dwg no. 15084-TUL-XX-XX-DR-C-67001 Rev B) is largely based on that proposed by Motion in the planning approved Drainage Statement report Rev C dated 27-03-2023. A series of below ground geocellular attenuation tanks and flow controls are provided with final discharge restricted to 1.0 l/s (a rate that was agreed between Motion and Southern Water). A vortex separator is provided downstream of the final flow control device to provide water quality treatment and silt removal prior to discharge offsite. The planning approved Drainage Strategy shows a new gravity connection from the north-west corner of the site into adopted manhole 6540 via a new connection through an existing private development (Barnden Close). However during detailed design this arrangement has proven to be unviable due to shallow depth of the existing drainage network (only 600mm deep at the head of the run near our site), insufficient spare capacity in the existing attenuation tanks to accept additional flows and insufficient space to provide additional storage capacity. Note also that the previous development was correctly designed to the design criteria in place at the time (around 2010) but the latest standards are more onerous, e.g. 45% climate change now compared to 30% previously, Cv 1.0 now compared to 0.75 & 0.84 previously and FEH rainfall now compared to FSR previously. As a result a significant upgrade would be required to raise the existing system to the current standards and then a further upgrade to accept additional flows from our site. We have also investigated laying new drainage separate to the Barnden Close attenuation/flow control system but this is also considered unviable due to the depths of excavations required (approx. 100m length up to 4.5m deep) through an occupied residential development in close proximity to mature trees. A Section 98 Sewer Requisition Feasibility Study by Southern Water describes two other outfall options:

- Option 1: Pumped connection to public manhole TQ31186450 (S98)

This is Southern Water's preferred approach. It involves a private pump station in our site and a requisitioned pumped main laid between a woodland buffer strip and the rear garden fences of the existing Barnden Close development.

- Option 2: Gravity Connection to public sewer in Hazel Grove (S98)

This option involves a new gravity connection to the west into a manhole at TQ31185354 but as noted by Southern Water this would involve substantial works through private garden of No. 45 Oak Hall Park Road. This has been investigated in detail but the occupants of No. 45 were not willing to accept the significant disruption and inconvenience that would be caused.

Given the above, it is proposed to proceed with S98 Option 1. It is recognised that pumping surface water is a non-preferred approach but it has not been possible to identify a viable gravity alternative.

2.2 Although the final discharge is now pumped rather than gravity, the max flow rate remains at 1.0 l/s as agreed at pre-planning stage between Motion and Southern Water; refer to Section 3.52 and Appendix I of the planning approved Drainage Statement which notes that the proposed rate of 1.0 l/s is lower than the stated spare capacity of 1.86 l/s at manhole 6450. The proposed rate of 1.0 l/s is based on a QBAR greenfield rate of 0.75 l/s (calculated using the UKSuDS greenfield run-off calculator) but with a small uplift to ensure appropriate minimum orifice size. Greenfield rates are described further and calculations provided in Sections 3.9 & 3.10 and Appendix G of Motion's Drainage Statement

Return Period	1 in 1	1 in 30	1 in 100	QBAR
Greenfield Rate (l/s)	0.63	1.71	2.38	0.75

2.3 Climate change allowances are 40% for a 1 in 30 year storm and 45% for the 100 year event. These are as described in detail in Sections 3.16-3.21 of the planning approved Drainage Statement and remain in line with current guidance.

1 in 30-year Rainfall Event	Central Allowance	Upper End Allowance
2050's epoch	20%	35%
2070's epoch	20%	40%
1 in 100-year Rainfall Event	Central Allowance	Upper End Allowance
2050's epoch	20%	45%
2070's epoch	25%	45%

- 2.4 In total attenuation of 174m³ is provided to accommodate a 1 in 100 year storm with 45% climate change; refer to the InfoDrainage calculations for modelling of this and other storm events. All storm events up to 10 year + 45% climate change are contained below ground.
- 2.5 FEH rainfall data has been used with the Cv runoff coefficient = 1.0.
- 2.6 10% urban creep has been applied to all houses, all private drives and the paths/patios around Plots 1 & 2; this gives a total impermeable area of approximately 1500m² for design purposes. The rear patios to Plots 3 to 5 drain overland to the adjacent soft landscaping and therefore are not included in the urban creep or attenuation calculations. This aligns with the approach described in Section 6 of the approved Drainage Statement.
- 2.7 Water quality treatment is provided via a proprietary product (Downstream Defender by Hydro International) located between the final Hydrobrake chamber and the pump chamber. This provides the required levels of treatment as shown in the tables below using the Simple Index Approach for this low pollution hazard level residential development. A full discussion is given in Section 5 of the approved Drainage Statement.

Hazard Indices:

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Low Traffic Roads	Low	0.5	0.4	0.4

Mitigation Indices:

Type of Proprietary Device	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Downstream Defender by Hydro International	0.5	0.4	0.8

- 2.8 Under exceedance events rainwater has been directed away from buildings as far as reasonably possible – exceedance flow arrows are shown on dwg no. 15084-TUL-XX-XX-DR-C-51002 Rev C. Some temporary, shallow depth ponding may occur in some areas of the site. Due to site topography, the garages to Plots 3 to 5 may experience temporary ponding under this exceedance scenario. In the north-west corner of the site, where ground levels are lowest, a soft landscaped bund and gabion baskets are proposed to provide shallow depth exceedance ponding (350mm max depth, approx. 6m³ volume) and to direct other exceedance flows north into an area of dense woodland to the rear of the adjacent Barnden Close development.

- 2.9 Typical details for the geocellular attenuation tanks and flow control chambers are given on dwg no. 15084-TUL-XX-XX-DR-C-66002 Rev A. Full details of each Hydrobrake flow control devices are given in the manufacture's technical literature which includes the unique head-discharge curves for each device, an O&M Manual and third party certification.
- 2.10 The propriety water treatment device is to be a Downstream Defender by Hydro International. Full details are given in the manufacture's technical literature which includes an O&M Manual and third party certification.
- 2.11 A pump design has been obtained from Willow Pumps – refer to quote no. WQ34956 Rev A dated 28 April 2026. This provides detailed pump designs and specifications.

3 Below Ground Foul Water

- 3.1 The foul drainage strategy is essentially as proposed by Motion in 2023, i.e. pumped outfall to the east into the existing adopted 225mm diameter foul sewer in Keymer Road via a new adoptable manhole approximately 20m upstream of existing manhole 7301. Drawing no. 15084-Tul-XX-00-DR-C-51001 Rev D includes the proposed foul drainage layout with invert levels provided in the schedules on drawing no. 15084-TUL-XX-XX-DR-C-67001 Rev B.
- 3.2 Two foul pump chambers are proposed on site; one to serve Plots 1 to 4 and a second to serve Plot 5. The Plot 5 pump discharges into the Plot 1 to 4 pump chamber. Emergency storage is provided sufficient for 24 hours of normal use by the residents in the event of a pump and/or power failure (based on a total of 21 people @ 150 l/person/day = 3.15m³ minimum).
- 3.3 The peaked average foul flow generated by the 5No. residential houses will be approximately 0.23 l/s but to ensure self-cleansing velocities in the pumped mains, both pumps will discharge at up to 3.8 to 4.5 l/s. Since one pump discharges into the other pump chamber, the pumped rate to the offsite sewer will be a maximum of 3.8 to 4.5 l/s.
- 3.4 A pump design has been obtained from Willow Pumps – refer to quote no. WQ34956 Rev A dated 28 April 2026. This provides detailed pump designs and specifications.
- 3.5 A pre-development enquiry was not submitted to Southern Water at planning stage. However the design flow for the 5No. houses is very low (0.23 l/s, or a much lower value of 0.04 l/s based on Southern Water's modelling criteria as stated in Section 4.5 of Motion's Drainage Statement) and so we do not anticipate any capacity issues arising from this particularly given that it is likely that some or indeed all of the surface water run-off from the existing/predevelopment 1No. house was connected to the foul system given the absence of other surface water discharge options in this area, e.g. even a small impermeable area such as 25m² would generate 0.35 l/s for the 2 year storm (and considerably higher flows for more extreme events) which would more than offset the small increase in foul flow. The pumped rate of 3.8 to 4.5l/s is higher than the incoming design flow of 0.23 l/s but the higher pumped rate occurs only for short periods of time so the receiving network experiences the same averaged flow under both scenarios.

4 Drainage Maintenance Schedule

- 4.1 The tables below provide a drainage maintenance schedule based on recommendations in the SuDS Manual published by CIRIA. Inspection/clearing should also be carried out after every major storm event and to the manufacturer's recommendations.
- 4.2 Earlswood Home or their successors in title will be responsible for maintenance of the private onsite drainage system including the various pump stations.

Item	Task	Frequency	Location	Access	Comments
Main Drainage Network					
Rainwater downpipes	Clean out at roof level and ground level	Twice yearly for the first 2 years of operation then annually	Roof level, around building perimeter	High level access required to roof outlets.	Works undertaken by appropriately qualified person(s).
Chambers, silt-traps & catchpits	Clean out chamber/sump				For RWP outlets at roof level follow health & safety regulations dealing with working at height
Pipe network & drainage channels	Pipes to be inspected and condition assessed. Pipes/channels to be cleaned (jetted) as necessary				
Flow Control, Pumps and Proprietary Water Quality Treatment Devices					
Hydrobrake flow control chambers	Clean out chamber/sump Inspect flow control unit and remove debris	Monthly for first 3 months then twice yearly	Main access road, communal open space and private rear garden	Communal vehicular area, communal soft landscaping and private hard/soft landscaping	Works undertaken by appropriately qualified person(s)
Pumps	As pump manufacture's maintenance schedule	Annually (or as otherwise defined by pump manufacture's maintenance schedule)	Main access road and private rear garden	Communal vehicular area and private hard & soft landscaping	Works undertaken by appropriately qualified person(s). It is recommended that an annual maintenance contract is arranged with the pump supplier
Proprietary water quality treatment device	Clean out chamber/sump Inspect unit and remove debris	Monthly for first 3 months then twice yearly	Private rear garden	Private hard/soft landscaping	Works undertaken by appropriately qualified person(s)

Item	Task	Frequency	Location	Access	Comments
Geocellular Attenuation Tanks					
Upstream & downstream catchpit chambers	Clean out chamber/sump	Twice yearly for the first 2 years of operation then annually	Main access road, communal open space and private rear garden	Communal vehicular area, communal soft landscaping and private hard/soft landscaping	Works undertaken by appropriately qualified person(s)
Inlets, outlets, vents and overflows	Inspect/check to ensure in good condition and correct operation	Annually and after large storms			
Geocellular units	CCTV inspection. Clean (jet) if required	5 Years or if excessive silt/debris observed in upstream & downstream catchpit chambers			

5 Timetable for Implementation

5.1 The drainage infrastructure will be in place prior to first occupation.