

Foul and Surface Water Drainage Report

Land Adjacent to the Meadow Little Park Farm, Hurstpierpoint

Planning Ref: DM/25/1549

For

Heathland Hurstpierpoint Ltd

Rev P2

Reference C3917

Date 24th October 2025

| Revision | Date of Issue | Comments | Prepared By | Checked By |
|----------|---------------|--------------------------|-------------|------------|
| P- | 24/10/2025 | Initial Issue | MR | CS |
| P1 | 10/12/2025 | Updated to new site plan | KCK | CS |
| P2 | 03/02/2026 | Updated to LLFA comments | KCK | CS |



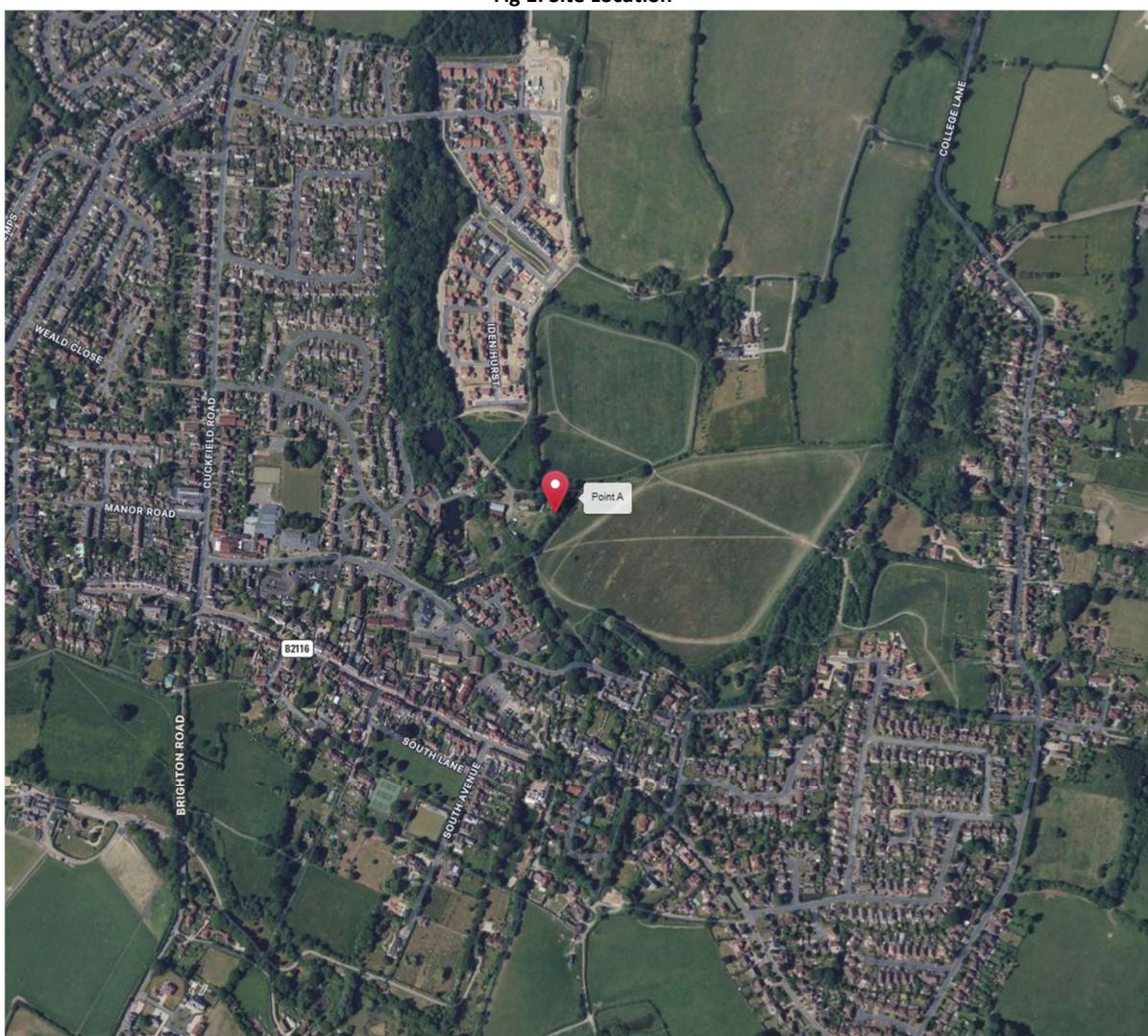
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1 Introduction

- 1.1.1 CGS Civils Ltd has been appointed to undertake a drainage strategy report for a proposed development at Land Adjacent to the Meadow Little Park Farm, Hurstpierpoint
- 1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere in order to clear Condition 1. The condition is in place on Decision Notice from **12th September 2025**, with the planning reference: **DM/25/1549**. The condition requires the Surface Water and Foul Sewage Assessment.
- 1.1.3 The existing site is currently occupied by storage buildings. The proposed development comprises the demolition of these buildings and the construction of a single new residential dwelling. The proposed development is located as OS Grid Reference **TQ 28492 16665** and has the post code **BN6 9UZ**.
- 1.1.4 The proposed site plan can be found in **Appendix A**.

Fig 1. Site Location



2 Executive Summary:

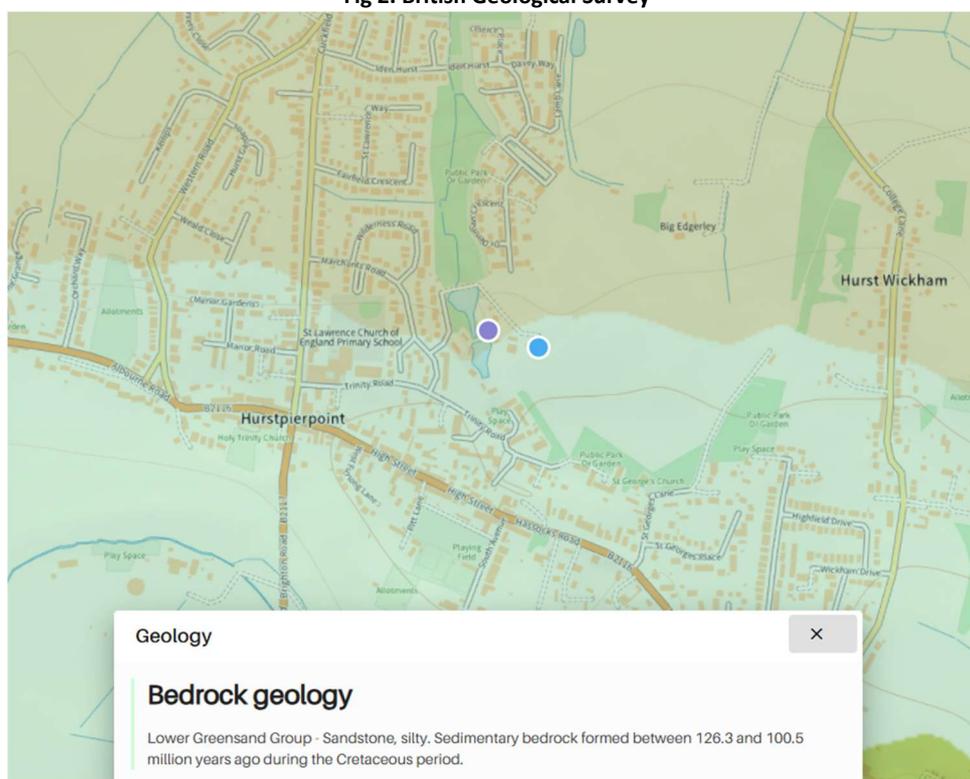
- 2.1.1 Surface water is proposed to be discharged into the existing ditch located to the north. The proposed storm water runoff will be attenuated on-site within a detention basin before being discharged into the ditch via an existing pipe connection at a restricted flow rate of 1.5 l/s. The proposed surface water network has been designed to accommodate the critical 1 in 100-year storm event, including an additional 45% allowance for climate change.
- 2.1.2 The foul water will discharge to the existing combined manhole located on the neighbouring site within client’s ownership. This connection is subject to Southern Water approval under a Section 106 agreement.

3 Site Geology

3.1 British Geological Survey information

- 3.1.1 The British Geological Survey confirms the bedrock geology to be made up Lower Greensand Group- Sandstone, silty. At the time of writing the British Geological Survey website does not have any recorded information of the Superficial deposits on site.
- 3.1.2 The British Geological survey also holds records of historical boreholes near the site which give some insight into the ground geology.
 - Borehole **TQ21NE18** (Located approx. 1200m South-East of the site) – Ground geology (Fine clayey sand)
- 3.1.3 The British Historical Borehole Log can be found in **Appendix B**.

Fig 2. British Geological Survey



Snippet from BGS Website showing Bedrock geology <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

Fig 3. British Geological Survey



Snippet from BGS Website showing Historical Borehole Logs location

3.2 Geological Assessment

- 3.2.1 No intrusive ground investigation has been undertaken on the proposed development site. However, a subsoil investigation was carried out on the neighbouring site, which is also within the client’s ownership.
- 3.2.2 The report undertaken by R.Caar Geotechnical Services (ref: 3903/21) confirmed that three trial pits were excavated and inspected on 4th October 2021. The soils encountered were summarised as follows: silty clay and sandy clay near the surface, underlain by a stiff, mottled silty sandy clay below approximately 0.7 m bgl.
- 3.2.3 The investigation recorded groundwater at an approximate depth of 2.0 mbgl.
- 3.2.4 The Ground Investigation report can be found in **Appendix C**.

4 Existing Drainage

- 4.1.1 The adjacent site, under the same client ownership, currently discharges surface water runoff to the existing ditch situated to the north through a combined manhole. The manhole functions as a combined outfall for both surface and foul flows due to the absence of a public foul sewer within the immediate vicinity of the site.

5 Proposed Drainage Strategy

5.1 SuDS Hierarchy

5.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Table 1. SuDS Hierarchy

| Discharge Destination | |
|----------------------------------|---|
| Rainwater Harvesting | Yes- Proposed rainwater harvesting tank to allow reuse of roof water for non-potable purposes and to reduce surface water runoff. |
| Discharge to Ground | No- No surface water infiltration proposed due to high groundwater levels and poor infiltration potential. |
| Discharge to Watercourse | N/A |
| Discharge to Surface Water Sewer | N/A |
| Discharge to Other Sewer | Yes- Storm water runoff is to be discharged into the existing drainage design approved under application reference: DM/22/1571 , with at restricted flow discharge rate of 1.5 l/s |

5.2 Proposed Hydraulic Calculation Specifications:

Table 2. SuDS Hierarchy

| Hydraulic Calculations Settings: | |
|--|---|
| Rainfall Methodology | FEH-22 |
| Volumetric Run-off Coefficient Cv | 1 |
| CV Winter and Summer | 1 |
| Additional Storage (m ³ / ha) | 0.0 |
| Maximum Rainfall (mm/hr) | 75 |
| Flow Control | 0.55m Head @ 1.5l/s discharge |
| Detention Basin | Base Coefficient (m/hr): 0.00000 |
| | Side Coefficient (m/hr): 0.00000 |
| | Factor of Safety: 2 |
| | Porosity: 100% |
| | Time to Half Empty (mins): 96 |

5.3 Surface Water Drainage

- 5.3.1 Based on information obtained from the British Geological Survey, the existing drainage layout on the neighbouring site approved under planning application DM/22/1571, and the ground investigation report prepared for the client in October 2021, discharge to ground via infiltration is considered not viable. Therefore, it is proposed that all surface water runoff be discharged to the existing combined manhole which connects to a watercourse network within the client's ownership, as approved under this application.
- 5.3.2 Surface water runoff is to be discharged into the existing ditch at a restricted rate of 1.5 l/s, reflecting the greenfield runoff rate for the site corresponding to the 1 in 1-year event, as calculated using the FEH Statistical Method (2025).

Table 3. Greenfield Runoff Calculations FEH Statistical (2025)

| Storm period | Greenfield runoff rate (l/s) | Proposed Discharge Rate (l/s) | Difference (l/s) |
|------------------|------------------------------|-------------------------------|------------------|
| Q _{BAR} | 1.7 | 1.5 | + 0.2 |
| 1 | 1.5 | 0.6 | + 0.9 |
| 2 | 1.5 | 0.6 | + 0.9 |
| 30 | 4.0 | 1.1 | + 2.9 |
| 100 | 5.5 | 1.5 | + 4.0 |

- 5.3.3 All roof runoff will be collected into a positive drainage network before discharge to the existing combined sewer. The network incorporates a detention basin, designed to accommodate the 1 in 100-year storm event, including a 45% allowance for climate change. The detention basin will be lined with an impermeable geomembrane to prevent groundwater ingress.
- 5.3.4 All hard-paved areas are to be constructed using a self-draining, permeable finish. The final running surface will be confirmed at the detailed design stage.
- 5.3.5 The rainwater harvesting tank is proposed to collect and reuse roof runoff for non-potable purposes, reducing overall runoff and promoting sustainable water use.
- 5.3.6 Proposed Drainage Strategy & Exceedance Flow Routes, Greenfield Runoff and Hydraulic calculations have been carried out which can be found at **Appendix D**.

5.4 Water Quality

- 5.4.1 A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution.
- 5.4.2 Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals, and various organic and inorganic contaminants) Therefore the first 5-10mm of rainfall should be adequately treated with SuDS.
- 5.4.3 The new SuDS Manual (Ciria C753, November 2015) introduces slightly different approach compared to the previous version for the water quality management of surface water. The Manual describes risks posed by the surface water runoff to the receiving environment as a function of:
- The pollution hazard at a particular site (i.e., the pollution source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels
 - The sensitivity of the receiving environment
- 5.4.4 The recommended approaches for water quality risk management are given in the SuDS Manual Table 26.1.

Table 26.1 from SuDS manual. Approaches to Water Quality Risk Management

| Table 26.1 Approaches to Water Quality Risk Management | | | |
|--|---|---|--|
| Design method | Hazard Characterisation | Risk Reduction | |
| | | For Surface Water | For Groundwater |
| Simple Index Approach | Simple pollution hazard indices based on land use (Table 26.2) | Simple SuDS hazard mitigation indices (Table 26.3) | Simple SuDS hazard mitigation indices (Table 26.4) |
| Risk Screening | Factors characterising traffic density and extent of infiltration likely to occur (Table 26.5) | N/A | Factors characterising unsaturated soil depth and type, and predominant flow type through the soils (Table 26.5) |
| Detailed Risk Assessment | Site specific information used to define likely pollutants and their significance | More detailed, component specific performance information used to demonstrate that the proposed SuDS components reduce the hazard to acceptable levels | |
| Process-based treatment modelling | Time series rainfall used with generic pollution characteristics to determine statistical distributions of likely concentrations and loadings in the runoff | Models that represent the treatment processes in the proposed SuDS components give estimates of reductions in even mean discharge concentrations and total annual load reductions delivered by the system | |

5.4.5 As per Table 26.1 Simple Index approach will be used as a design method for this site.

5.4.6 Table 26.2 will provide hazard classification of different land uses. The land uses for the surface water drainage for this site are.

- Residential Roofs
- Private driveway (**location to be confirmed**)

5.4.7 To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index for each contaminant type that equals or exceeds the pollution hazard index for each contaminant type. Therefore, the following must be achieved for the surface running off the site.

Total SuDS mitigation index >=pollution hazard index

5.4.8 Pollution Hazard Indices are given for different land uses in Table 26.2 of the SuDS manual;

Table 26.2 from SuDS manual. Pollution Hazard Indices for Different Land Use Classifications

| Table 26.2 Pollution hazard indices for different land use classifications | | | | |
|--|------------------------|------------------------------|--|---------------|
| Land Use | Pollution Hazard Level | Total Suspended solids (TSS) | Metals | Hydro-Carbons |
| Residential roofs | Very Low | 0.2 | 0.2 | 0.05 |
| Other roofs (Typically commercial/industrial roofs) | Low | 0.3 | 0.2 (up to 0.8 where there is potential for metals to leach from the roof) | 0.05 |
| Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements/day | Low | 0.5 | 0.4 | 0.4 |
| Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways | Medium | 0.7 | 0.6 | 0.7 |
| Sites with heavy pollution (e.g., haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways | High | 0.8 | 0.8 | 0.9 |

5.4.9 From Table 26.2 the following information is tabulated in Table 1

Table 1: Pollution hazard index and destination of runoff for the proposed site

| Table 3: Pollution Hazard Index and Destination of runoff for the proposed Site | | | | | |
|---|-----------------------|------------------------|------------------------|--------|--------------|
| Land Use | Destination of Runoff | Pollution Hazard Level | Total Suspended Solids | Metals | Hydrocarbons |
| Residential Roof | Surface Water | Very Low | 0.2 | 0.2 | 0.05 |
| Individual driveways, residential car parks and low traffic roads | Ground water | Low | 0.5 | 0.4 | 0.4 |

5.4.10 The SuDS mitigation index will be obtained from Table 26.4 (for groundwater) of the SuDS manual.

Table 26.3 from SuDS manual. Indicative SuDS Mitigation Indices for discharges to ground waters.

| Table 26.4 Indicative SuDS mitigation indices for discharges to groundwater | | | |
|---|--|---------------|---------------------|
| Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates | TSS | Metals | Hydrocarbons |
| A layer of dense vegetation underlain by a soil with good containment attenuation potential of at least 300mm in depth | 0.6 | 0.5 | 0.6 |
| A soil with good contaminant attenuation potential of at least 300mm in depth | 0.4 | 0.3 | 0.3 |
| Infiltration trench (where a suitable depth of filtration material is included that provides treatment, i.e., graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20mm gravel) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth. | 0.4 | 0.4 | 0.4 |
| Constructed permeable pavement (where a suitable filtration later is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth | 0.7 | 0.6 | 0.7 |
| Bioretention underlain by a soil with good contaminant attenuation potential of at least 300mm in depth | 0.8 | 0.8 | 0.8 |
| Proprietary treatment systems | These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area | | |

Table 26.3 from SuDS manual. Indicative SuDS Mitigation Indices for discharges to surface waters.

| Table 26.4 Indicative SuDS mitigation indices for discharges to surface waters | | | |
|---|--|---------------|---------------------|
| Type of SuDS Components | Mitigation Indices | | |
| | TSS | Metals | Hydrocarbons |
| Filter Strip | 0.4 | 0.4 | 0.5 |
| Filter Drain | 0.4 | 0.4 | 0.4 |
| Swale | 0.5 | 0.6 | 0.6 |
| Bioretention System | 0.8 | 0.8 | 0.8 |
| Permeable Pavement | 0.7 | 0.6 | 0.7 |
| Detention Basin | 0.5 | 0.5 | 0.6 |
| Pond | 0.7 | 0.7 | 0.5 |
| Wetland | 0.8 | 0.8 | 0.8 |
| Proprietary treatment systems | These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area | | |

5.4.11 SuDS mitigation indices are tabulated in Table 5 as follows:

Table 5: SuDS mitigation index

| Table 4 Mitigation Indices | | | | | | |
|--|-----------------------|---------------------------------|------------------------|------------------------------|--------|--------------|
| Runoff Source | Destination of Runoff | Mitigation Index Source | Type of SuDS Component | Total Suspended Solids (TSS) | Metals | Hydrocarbons |
| Residential Road | Surface Water | Table 26.4 (for surface waters) | Detention Basin | 0.5 | 0.5 | 0.6 |
| Individual driveways, residential car parks and low traffic roads (location to be confirmed) | Ground water | Table 26.3 (for ground waters) | Permeable Pavement | 0.7 | 0.6 | 0.7 |

5.4.12 The above analysis demonstrates that the SuDS devices within the design will mitigate any pollution present within the surface water system.

5.5 Foul water drainage

5.5.1 The proposed foul water will discharge into the existing combined manhole located on the neighbouring site, which is within the client's ownership. Prior to connection, the foul water shall be treated onsite via a treatment plant. This is required because the discharge from the combined manhole ultimately outfalls to the existing watercourse, in accordance with the approved drainage arrangements on the neighbouring site under planning application reference DM/22/1571.

5.5.2 The proposed connection subject to Southern Water approval under S106 application.

5.6 Construction Phase Drainage

5.6.1 It is an offence to cause or knowingly permit the entry of any polluting, poisonous or noxious material in the water environment. If the pollution is serious enough to lower the ecological status of the water body as set out in terms by the Water Framework Directive (2000/60/EC) than prosecution may occur.

5.6.2 Remediation of any damage caused will not require the polluter to be prosecuted first. If the water pollution is serious enough to be classed an environmental damage, the damage will require to be remediated such that the area is returned to the condition it would have been in if the damage had not occurred.

5.6.3 If any pollution has not been reported or the polluter has not taken actions to prevent any further damage; they would then be causing an offence. Third parties (e.g., Private water supply users, landowners, recreation users and the public) who may be affected by possible damage may also report the risk of any environmental damage to the enforcing authority.

5.6.4 The principles of SuDS (Sustainable Drainage Systems) shall be applied to all components of design and construction regarding surface water management. Any design or site works that may impact on the site drainage or the water quality shall:

- Soakaway where soils allow

- Consider and manage erosion
- Remove pollutants in surface water
- Retain any silts on site and prevent silts from discharging to watercourses or drains
- Keep runoff rates at existing greenfield runoff
- Prevent accidental spillages reaching watercourse

5.6.5 As infiltration is not feasible due to stiff clay soils and high groundwater level potential, temporary surface water drainage during the construction phase will be managed by a system of land drains with runoff pumped into the existing ditch. The discharge will be controlled to prevent flooding and siltation, with appropriate pollution control measures (including silt traps and settlement tanks) installed in accordance with the CIRIA SuDS Manual (C753) and CIRIA C532 guidance. The discharge will consist of clean, treated water and will be subject to the Environment Agency's water discharge permitting regime.

5.6.6 Pollution will be controlled via the use of catchpit manholes and geotextiles.

5.6.7 Any potential hazardous substances will be within a controlled compound with a separate drainage system that will contain a penstock valve / containment kit in the event of a spillage.

6 Summary and Conclusions

6.1.1 CGS Civils has been instructed to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for a construction of single residential dwelling.

6.1.2 The Surface Water will discharge into an existing ditch via an existing combined sewer at a restricted flow discharge rate of 1.5l/s, reflecting the greenfield runoff rate for the site corresponding to the 1 in 1-year event, as calculated using the FEH Statistical Method (2025). The network incorporates a detention basin, designed to accommodate the 1 in 100-year storm event, including a 45% allowance for climate change.

6.1.3 The Foul water will discharge into the existing combined manhole located on neighbouring site. The proposed connection is to be agreed under S106 application with Southern Water.

6.1.4 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water and foul drainage can be achieved for the proposed development.

6.1.5 A maintenance schedule has been written up for the drainage network including the SuDS features and can be found within **Appendix E**.

7 Appendices

7.1 Appendix A – Site Plan

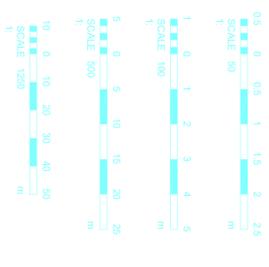
Site Plan 1:1250



Site Plan 1:500



Revisions



Materials

| | | | |
|----------------|-----------------------------------|-------|----------------------------|
| Drawing Number | 2025/208 | Sheet | 4 of 4 |
| Size | A1 | Scale | 1:50, 1:100, 1:500, 1:1250 |
| Project | Proposed details November 2025 | | |

Job Title

Proposed dwelling
Little Park Farm
Hursleypoint
BN9 5UZ

Do Not scale from this drawing except for plotting as drawings to be used in conjunction with all other Drawings and structural engineers contact drawings and specifications. Any discrepancies must be brought to the attention of the contractor must verify all dimensions by site measurement before ordering materials or manufacturing. Substitute materials and products to those named will be acceptable if proven to be of equal or higher performance and not in conflict with other elements

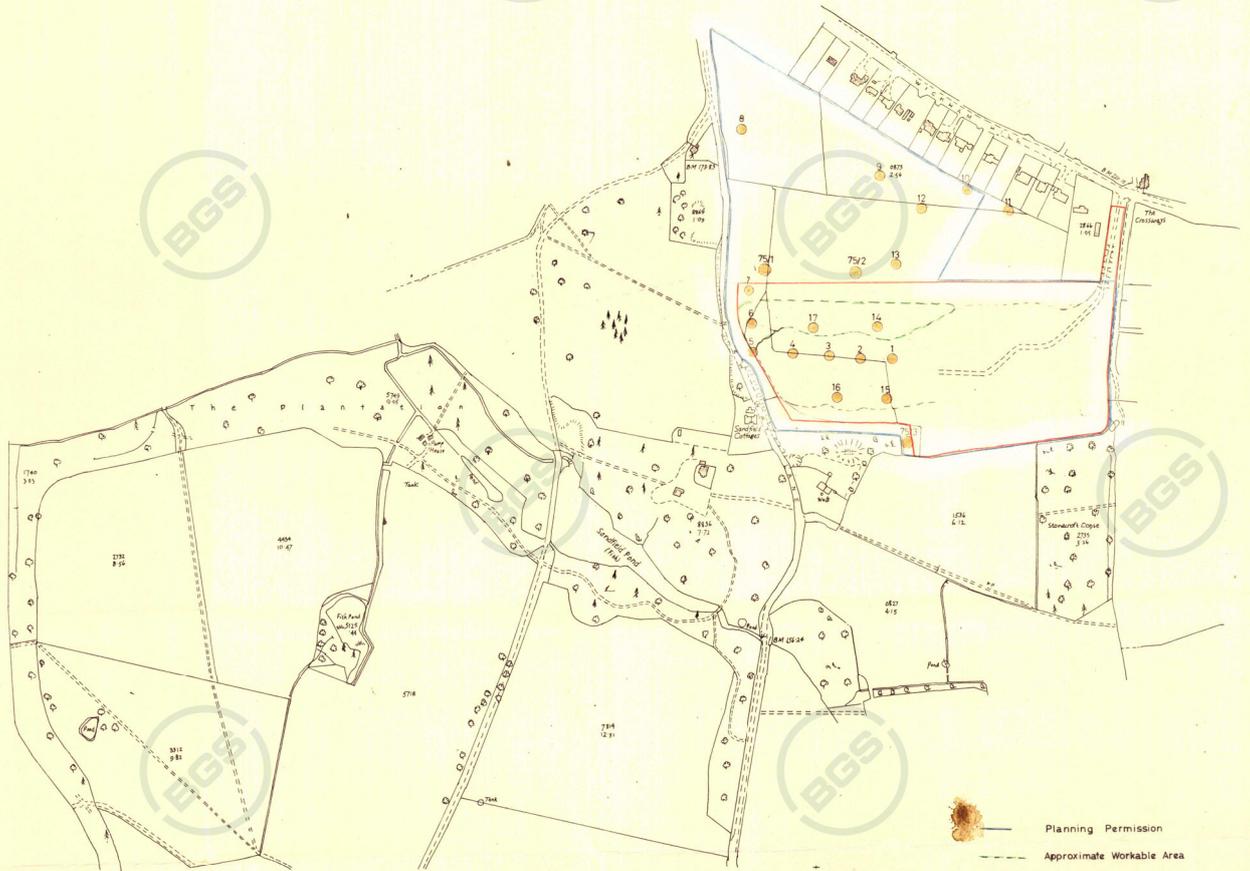
M.J.Humphrey
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7.2 **Appendix B – Borehole Log**

CONFIDENTIAL TQ 21 NE/7-26



Reference: TQ 21

Scale 1:2500

Hassocks Sand Pit.

RMC

June, 1975.

7.3 **Appendix C – Ground Investigation Report**

R. CARR GEOTECHNICAL SERVICES

Ref: 3903/21

**PROPOSED REDEVELOPMENT AT
LITTLE PARK FARM, MARCHANTS CLOSE,
HURSTPIERPOINT, WEST SUSSEX BN6 9UZ.**

PHASE 2 REPORT ON SUBSOIL INVESTIGATIONS

October 2021

R. Carr Geotechnical Services, 9 The Mallows, Maidstone, Kent ME14 2PX

Tel: 07974 758617 Email: RONCARR200@aol.com

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Appendix A Subsoil Investigations
Appendix B Laboratory Test Results

Little Park Farm, Marchants Close, Hurstpierpoint, West Sussex BN6 9UZ.

1. Introduction

- 1.1 This report has been prepared on behalf of Heathland Hurstpierpoint Ltd, prospective developers of the site located at Little Park Farm, Hurstpierpoint.
- 1.2 The proposed development comprises the construction of three detached dwellings and the conversion of an existing dairy building to residential use.
- 1.3 This report should be reviewed in conjunction with the Phase 1 Desk Study and Preliminary Risk Assessment previously undertaken for the site by R. Carr Geotechnical Services (report reference 3592/21 dated June 2018). Based upon the available information the site would appear to have supported an orchard which had been removed by 1976. The construction and removal of agricultural buildings had periodically occurred on the site. An inspection of the site undertaken during 2018 revealed it to be in a generally clean condition, a low to moderate risk being considered applicable to human health, plant life and groundwater from the following sources of potential contamination:
 - Localised petroleum hydrocarbon contamination (TPH) resulting from leakages and spillages of fuel and lubricants from farm machinery and vehicles
 - Residual lead arsenate and copper sulphate from pesticides historically used in orchards
 - Metals, polynuclear aromatic hydrocarbons (PAH) and TPH possibly present within existing surfacing
 - Asbestos possibly present within the fabric of the existing or demolished buildings
- 1.4 A low risk from off-site sources of potential contamination and migration of ground gases was identified to the site.
- 1.5 Contained within this report are the results of a Phase 2 intrusive investigation undertaken at the site, together with a revised risk assessment. This information has

been derived from trial pit investigations and subsequent laboratory testing of representative soil samples obtained from the site. The report has been compiled in general compliance with the following guidelines:

- Model Procedures for the Management of Land Contamination. Environment Agency Contaminated Land Report 11 (CLR 11)
- GPLC1 - Guiding Principles for Land Contamination. Environment Agency 2010
- National Planning Policy Framework (NPPF) (2012)
- NHBC Part 4 Foundations 4.1 *Land Quality: Managing Ground Conditions*

2. Topography

- 2.1 The site comprises a roughly triangular parcel of land situated to the east of Marchants Close at OS Land Ranger map reference TQ 284 166. At this point ground level is sloping gently downhill from south to north.
- 2.2 The site is enclosed by deciduous trees consisting mainly of moderate water demand Ash and Sycamores. Little change had occurred to the site since the time of the original inspection in 2018.

3. Geology

- 3.1 Reference to the local Geological Survey sheet (no. 318/333: Brighton & Worthing) has indicated that the site is underlain by the undivided Lower Greensand formation with exposures of the underlying Weald Clay denoted in close proximity to the north.
- 3.2 The Lower Greensand typically comprises interbedded fine to medium grained sandstones, glauconitic mudstone and calcareous sandstones with seams of Fullers earth.
- 3.3 The Weald Clay consists of dark grey shales and mudstones with subordinate sandstones, shelly limestones and clay ironstones, which weather in their upper regions to form mottled yellow and brown clays.

4. Hydrology and Hydrogeology

- 4.1 A large ornamental pond is located adjacent to the west boundary of the site.
- 4.2 The Lower Greensand is classified as a Major Aquifer. A Major Aquifer is defined by the Environment Agency as a “highly permeable formation with known or possible presence of significant fracturing”. These tend to be highly productive and capable of supporting public supply and other abstractions. Soil Classification: Soils of High Leaching Potential (U).
- 4.3 The Weald Clay is classified as a Non Aquifer.

5. Subsoil Investigations

- 5.1 Three trial pits excavated by the developer with a 360° tracked excavator were inspected on 4th October 2021, the locations of the pits being denoted on the accompanying site plan (TP1-TP3). The pits were positioned so as to target areas of proposed garden and to obtain an even coverage of the site. Disturbed samples of soil were retained in plastic containers and glass jars for contamination analysis and geotechnical tests at UKAS Accredited laboratories. The samples were transported to the respective laboratories immediately after completion of the site work.
- 5.2 Details of the soils encountered by the intrusive investigation are provided within strata logs contained in Appendix A, but can be conveniently summarised as follows

| Depth | Stratum |
|---------------------------|--|
| Ground level – 0.35m/0.4m | FILL – topsoil over silty clay with scattered fine to coarse chalk, flint and fine brick gravel |
| 0.3m – 0.7m (TP3 only) | HEAD DEPOSITS – firm, silty slightly sandy CLAY with occasional fine to coarse subangular flint gravel |
| 0.35m/0.7m – 2m+ | LOWER GREENSAND – stiff, mottled silty slightly sandy CLAY |

5.3 The trial pits had been excavated two days prior to the inspection, during which time heavy rain had fallen. Each pit contained water in its base, most of which was pumped out prior to the inspection of each excavation. No evidence of significant groundwater ingress was observed within the trial pits during the inspection and the sides of the pits had remained stable during the time that had elapsed since their excavation.

6. Laboratory Testing

Geotechnical Tests

6.1 Atterberg Classification tests carried out on five samples of soil obtained from the trial pits at depths between 1m and 2m have categorised the material as clay of high plasticity (CH). Such soils are susceptible to shrinkage and swelling following changes in moisture content.

6.2 Chemical testing undertaken on three representative soil samples recovered from the excavations at depths between 1m and 2m has determined soil pH level of 6.8 to 7.5, with water soluble sulphate of 0.03 to 0.13 g/L (Class DS-1).

Contamination Tests

6.3 Soil samples obtained from the trial pits at depths of 0.25m and 0.5m have been analysed for a suite of common contaminants including speciated PAH, petroleum hydrocarbon fractions (TPH/CWG) and presence of asbestos fibres. The results of the tests are provided in Appendix B, having been compared with the following soil screening criteria for residential development:

- Contaminated Land Exposure Assessment model (CLEA) 2015
- LQM/CIEH S4ULs for Human Health Risk Assessment 2015
- SP1010 Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document 2014

6.4 Concentrations of substances present in the samples were well within the utilised soil screening criteria. Quantities of TPH and BTEX were below laboratory detection levels and no traces of asbestos were detected in the samples.

7. Discussion/Recommendations

- 7.1 The investigation has confirmed the existence of the Lower Greensand beneath the site, overlain by a 0.35m to 0.4m thick layer of made ground (Fill). A 0.4m thick layer of Head Deposits was found to overlie the Lower Greensand at the location of TP3.
- 7.2 No significant groundwater table was evident within 2m of the site surface, though the hydrogeology of the site may be subject to seasonal variations and groundwater levels could rise during wetter, winter months.

Foundations

- 7.3 An acceptable bearing pressure of 120 kN/m² is generally applicable within the Lower Greensand at a depth of 1m, increasing to 150 kN/m² at 2m. Due to the presence of trees around the site reference should however be made to NHBC publication 4.2 with regard to the depth and design of foundations. The precise depth of the foundations will therefore be dictated by the proximity of trees to the proposed dwelling. NHBC Classification: Medium Volume Change Potential (i.e. plasticity index less than 40%).
- 7.4 The results of the sulphate determinations have categorised the subsoil as Class DS-1, therefore special precautions would not be necessary within sub-surface concrete placed on the site (see BS 8500-1:2015+A2:2019).

Revised Risk Assessment

- 7.5 Contaminant concentrations detected within the soil samples are well within currently available soil screening criteria. No pollutant linkages have been identified, therefore the site is considered to pose a low risk to human health, groundwater and plant life.
- 7.6 The risk posed by the development to the adjacent surface water feature could be reduced by appropriate mitigation in order to prevent leakages and spillages.
- 7.7 In the absence of TPH and BTEX contamination and low PAH levels, a low risk to

subterranean plastic services is also considered applicable. Polyethylene supply pipes could therefore be utilised within the development.

7.8 The following ground gas risk assessment has been undertaken in compliance with the methodology proposed by CL:AIRE research bulletin RB17 (2012):

1. No credible sources of gas migration were identified to the site by the desk study.
2. No radon protection measures are required within the development.
3. The average depth of made ground beneath the site does not exceed 0.4m.
4. The Fill material comprises re-worked natural soils which do not produce methane and can only produce carbon dioxide.
5. The total organic carbon content of the Fill material is less than 2.5%.
6. No evidence of TPH which could produce vapours was detected within the soil samples.

It is therefore considered that the risk to the site posed by emissions of ground gas is low.

Remediation Method Statement

7.9 As excessive contamination has not been discovered beneath the site no remediation is considered necessary other than the removal and appropriate disposal of demolition materials and site surfacing. **Haulage transfer notes should be retained as evidence that material removed from the site has been disposed of at an appropriately licensed waste facility and for inclusion within a Closure Report for the site.**

7.10 Any topsoil imported onto the site for use in garden areas should be tested in order to ensure that it is free from contamination and suitable for its proposed use.

7.11 If asbestos-containing material is discovered within the fabric of the existing buildings it should be dismantled by an experienced contractor and removed from the site to an appropriately licensed depository.

7.12 Potable water supply pipes should be laid in trenches and surrounded with clean material. The advice of the local water authority should be sought in the event that

doubt arises over the suitability of materials.

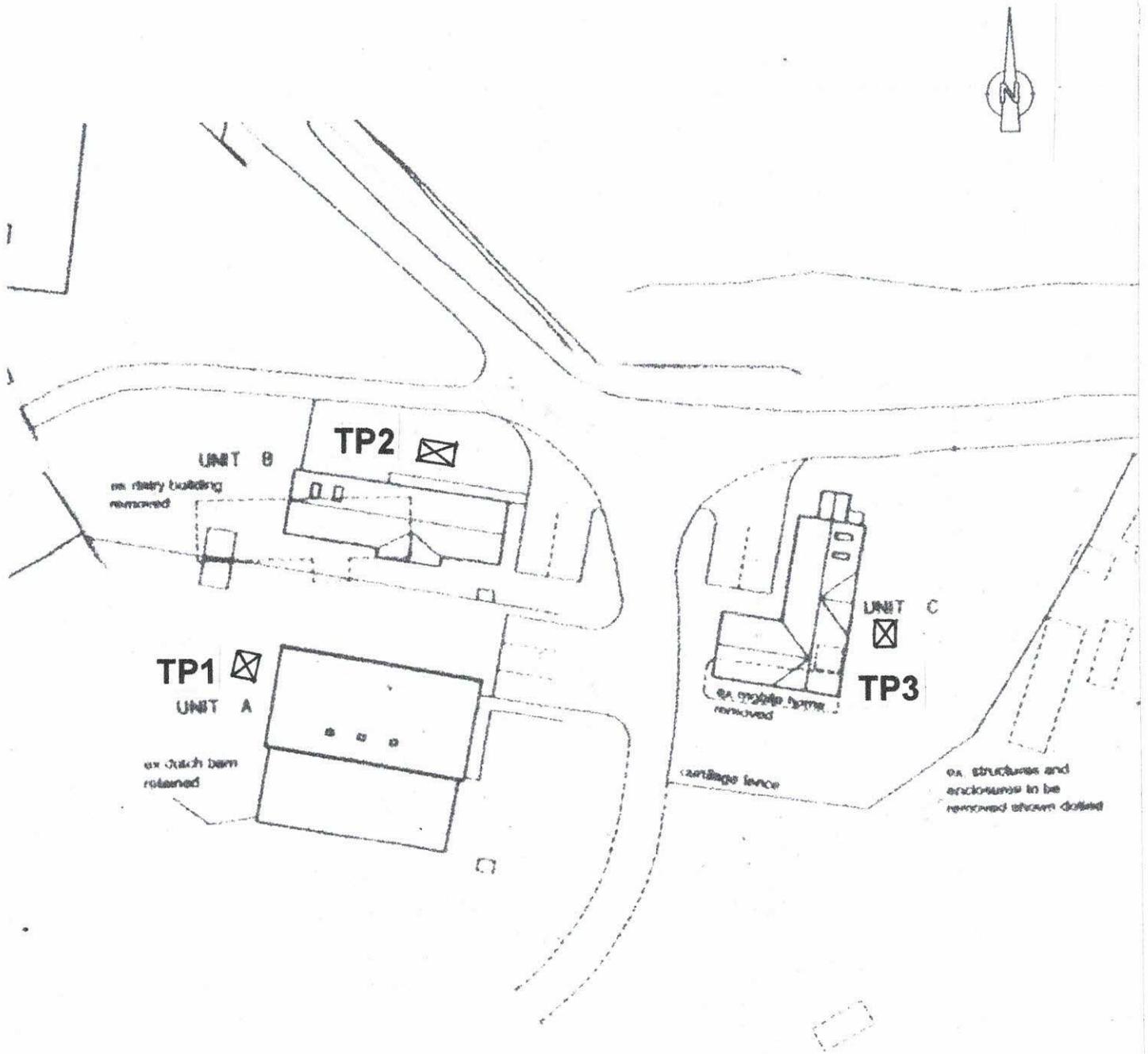
- 7.13 A low risk from ground gases and contaminant vapours has been identified to the site therefore gas protection measures are not considered necessary within the design of the development.
- 7.14 Site workers should be provided with appropriate protective clothing and washing facilities. Dust emissions should be minimised as far as possible in order to safeguard both site workers and the occupants of adjacent houses.
- 7.15 A sensitive receptor in the form of a large pond is located on adjacent land to the west of the site. It is therefore recommended that in order to prevent the escape and subsequent migration of pollutants into the nearby surface water feature fuel and/or lubricants utilised by contractors' plant should be stored in a secure, preferably bunded area of the site remote from the waterbody.
- 7.16 In the event that contamination not detected by the intrusive investigations is encountered during the course of the development, the nature of the contamination must be adequately assessed and dealt with in an appropriate manner. Evidence of contamination may include discoloured or malodorous soil and/or the presence of ash, clinker or asbestos fragments.
- 7.17 The findings and recommendations contained within this report should be made available to the Contaminated Land Officer of the Local Planning Authority prior to the commencement of the development.
- 7.18 This report has been prepared from information obtained at representative locations of the site. Although significant variations in ground conditions are considered unlikely, no responsibility can be accepted for any such variations that may exist beneath the site in hitherto uninvestigated areas.



R. Carr BA (Hons) FGS

October 2021

Appendix A
Subsoil Investigations



**Little Park Farm, Marchants Close, Hurstpierpoint.
Plan showing locations of trial pits.**

R. CARR GEOTECHNICAL SERVICES

STRATA LOG

Job: LITTLE PARK FARM, HURSTPIERPOINT

No. TP1

Method of excavation: **360° Excavator**

Date: 04.10.21

| SAMPLE | DEPTH m. | G.L. | DESCRIPTION OF SOIL |
|--------|----------|--------------|--|
| ● | 0.25 | 0.10 | Topsoil with abundant roots up to 20mm diameter |
| ● | 0.50 | 0.40 0.50 | Grey-brown silty clay with scattered fine to coarse chalk gravel, scarce fine brick gravel and roots up to 5mm diameter (FILL) |
| ● | 1.00 | 1.00 | Stiff orange-mottled buff, silty slightly sandy CLAY with abundant roots up to 5mm present to around 0.9m and fine rootlets evident to 1.3m (? LOWER GREENSAND) |
| ● | 1.50 | 1.50 | |
| ● | 2.00 | 2.00 | |
| | | End | 50mm water present in base of pit ● = Disturbed sample |
| | | 2.50 | |
| | | 3.00 | |
| | | 3.50 | |
| | | 4.00 | |
| | | 4.50 | |

R. CARR GEOTECHNICAL SERVICES

STRATA LOG

Job: LITTLE PARK FARM, HURSTPIERPOINT

No. TP2

Method of excavation: **360° Excavator**

Date: 04.10.21

| SAMPLE | DEPTH m. | G.L. | DESCRIPTION OF SOIL |
|--------|----------|--------------|---|
| ● | 0.25 | 0.15 | Topsoil with abundant roots up to 20mm diameter |
| ● | 0.50 | 0.35 0.50 | Grey-brown silty clay with occasional fine to coarse flint gravel, scarce fine brick gravel and roots up to 5mm diameter (FILL) |
| ● | 1.00 | 1.00 | Stiff orange-mottled buff, silty slightly sandy CLAY with abundant roots up to 15mm diameter present to 0.7m, scarce fine rootlets evident to 1.1m (? LOWER GREENSAND) |
| ● | 1.50 | 1.50 | |
| ● | 2.00 | 2.00 2.10 | |
| | | End | 50mm water present in base of pit ● = Disturbed sample |
| | | 2.50 | |
| | | 3.00 | |
| | | 3.50 | |
| | | 4.00 | |
| | | 4.50 | |

R. CARR GEOTECHNICAL SERVICES

STRATA LOG

Job: LITTLE PARK FARM, HURSTPIERPOINT

No. TP3

Method of excavation: **360° Excavator**

Date: 04.10.21

| SAMPLE | DEPTH m. | G.L. | DESCRIPTION OF SOIL |
|--------|----------|------|---|
| | | 0.14 | Compact granular surfacing |
| ● | 0.25 | 0.30 | Grey-brown silty clay with scattered fine to coarse flint gravel and abundant roots up to 5mm diameter (FILL) |
| ● | 0.50 | 0.50 | Firm brown silty slightly sandy CLAY with occasional fine to coarse subangular flint gravel (HEAD DEPOSITS) |
| ● | 1.00 | 1.00 | Stiff orange-mottled buff, silty slightly sandy CLAY with occasional fine rootlets evident to 1.8m |
| ● | 1.50 | 1.50 | (? LOWER GREENSAND) |
| ● | 2.00 | 2.00 | End |
| | | 2.50 | 50mm water present in base of pit |
| | | 3.00 | |
| | | 3.50 | |
| | | 4.00 | |
| | | 4.50 | |

● = Disturbed sample

Appendix B
Laboratory Test Results



Peter Baxter Associates Laboratories
 A subsidiary of Peter Baxter Associates
 Kestner Works
 Bredgar Road
 Gillingham
 Kent
 ME8 6PL

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 E info@peterbaxterassociates.co.uk
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Summary of Geotechnical Chemical Test Results

| Project No. 1370/54 | | Project Name Little Park Farm, Hurstpierpoint | | | | | | | | | | | | | | | |
|---|--------|--|------|------|---|----------|----------|-----|-----------------------------|----------------------------|---------------------|----------------------|----------------|---------------------------|-------------|-------------------------|---------|
| Client Ref N/A | | Client Ron Carr Geotechnical Services | | | | | | | | | | Sampled by Client | | Date received 05-10-21 | | Date tested 07-10-21 | |
| Hole No. | Sample | | | | Soil Description | Org % | LOI % | pH | Sulphate as SO ₄ | | | Chloride, Cl | | CO ₂ % | TDS mg/l | <2mm % | Remarks |
| | Ref | Top | Base | Type | | | | | Total acid sol. % | 2:1 water :soil g/l | ground water g/l | water sol. % | acid sol. % | | | | |
| TP1 | 2 | 1.50 | | D | Orange brown CLAY with rootlets and occasional gravel | | | 7.5 | | 0.07 | | | | | | 82 | |
| TP2 | 5 | 2.00 | | D | Orange brown CLAY with occasional gravel | | | 7.3 | | 0.13 | | | | | | 89 | |
| TP3 | 7 | 1.50 | | D | Orange brown CLAY with rootlets | | | 6.8 | | 0.03 | | | | | | 100 | |
| Remarks The results relate only to the items tested | | | | | | | | | | | | | | | | | |
| Key Tests performed in accordance with BS 1377-3:2018 unless annotated otherwise Org Organic matter content LOI Mass loss on ignition at 440°C Cl Chloride content CO ₂ Carbonate content (rapid titration) TDS Total Dissolved Solids | | | | | | | | | | Date Printed 08/10/2021 | | Approved By kb | | Table sheet | | | |



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R Carr Geotechnical Services
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Maidstone
Kent
ME14 2PX

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 21-11980

Site Reference: Little Park Farm, Hurstpierpoint
Project / Job Ref: 3903
Order No: 3903
Sample Receipt Date: 05/10/2021
Sample Scheduled Date: 05/10/2021
Report Issue Number: 1
Reporting Date: 13/10/2021

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



| Soil Analysis Certificate | | | | | | |
|---|------------------------|---------------|---------------|---------------|---------------|---------------|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 |
| R Carr Geotechnical Services | Time Sampled | None Supplied |
| Site Reference: Little Park Farm, Hurstpierpoint | TP / BH No | TP1 | TP2 | TP3 | TP1 | TP2 |
| Project / Job Ref: 3903 | Additional Refs | None Supplied |
| Order No: 3903 | Depth (m) | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 |
| Reporting Date: 13/10/2021 | DETS Sample No | 567271 | 567272 | 567273 | 567274 | 567275 |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|-----------------------------------|-------------|-----------|----------------------|--------------|--------------|--------------|--------------|--------------|
| Asbestos Screen ^(S) | N/a | N/a | ISO17025 | Not Detected |
| pH | pH Units | N/a | MCERTS | 7.8 | 6.0 | 7.0 | 7.2 | 6.0 |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| Total Sulphate as SO ₄ | mg/kg | < 200 | MCERTS | 506 | 245 | 307 | < 200 | < 200 |
| Total Sulphate as SO ₄ | % | < 0.02 | MCERTS | 0.05 | 0.02 | 0.03 | < 0.02 | < 0.02 |
| Sulphide | mg/kg | < 5 | NONE | < 5 | < 5 | < 5 | < 5 | < 5 |
| Organic Matter (SOM) | % | < 0.1 | NONE | 4.2 | 1.9 | 2 | 0.9 | 2 |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | 2.4 | 1.1 | 1.2 | 0.5 | 1.2 |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 13 | 13 | 9 | 14 | 20 |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | < 1 | < 1 | < 1 | < 1 |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | 0.3 | < 0.2 | 0.3 | < 0.2 | < 0.2 |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 10 | 9 | 9 | 10 | 12 |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 24 | 10 | 12 | 15 | 15 |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 51 | 24 | 31 | 13 | 9 |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 16 | 13 | 7 | 24 | 30 |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 78 | 54 | 95 | 326 | 55 |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | < 2 | < 2 | < 2 | < 2 |
| EPH (C10 - C40) | mg/kg | < 6 | MCERTS | 8 | 34 | < 6 | < 6 | < 6 |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion.
 Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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Tel : 01622 850410



| Soil Analysis Certificate | | | | | |
|---|------------------------|---------------|--|--|--|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | | | |
| R Carr Geotechnical Services | Time Sampled | None Supplied | | | |
| Site Reference: Little Park Farm, Hurstpierpoint | TP / BH No | TP3 | | | |
| Project / Job Ref: 3903 | Additional Refs | None Supplied | | | |
| Order No: 3903 | Depth (m) | 0.50 | | | |
| Reporting Date: 13/10/2021 | DETS Sample No | 567276 | | | |

| Determinand | Unit | RL | Accreditation | | | | |
|-----------------------------------|----------|--------|---------------|--------------|--|--|--|
| Asbestos Screen ^(S) | N/a | N/a | ISO17025 | Not Detected | | | |
| pH | pH Units | N/a | MCERTS | 6.9 | | | |
| Total Cyanide | mg/kg | < 2 | NONE | < 2 | | | |
| Total Sulphate as SO ₄ | mg/kg | < 200 | MCERTS | < 200 | | | |
| Total Sulphate as SO ₄ | % | < 0.02 | MCERTS | < 0.02 | | | |
| Sulphide | mg/kg | < 5 | NONE | < 5 | | | |
| Organic Matter (SOM) | % | < 0.1 | NONE | 0.8 | | | |
| TOC (Total Organic Carbon) | % | < 0.1 | NONE | 0.5 | | | |
| Arsenic (As) | mg/kg | < 2 | MCERTS | 8 | | | |
| W/S Boron | mg/kg | < 1 | NONE | < 1 | | | |
| Cadmium (Cd) | mg/kg | < 0.2 | MCERTS | < 0.2 | | | |
| Chromium (Cr) | mg/kg | < 2 | MCERTS | 10 | | | |
| Copper (Cu) | mg/kg | < 4 | MCERTS | 9 | | | |
| Lead (Pb) | mg/kg | < 3 | MCERTS | 11 | | | |
| Mercury (Hg) | mg/kg | < 1 | MCERTS | < 1 | | | |
| Nickel (Ni) | mg/kg | < 3 | MCERTS | 12 | | | |
| Selenium (Se) | mg/kg | < 2 | MCERTS | < 3 | | | |
| Zinc (Zn) | mg/kg | < 3 | MCERTS | 45 | | | |
| Total Phenols (monohydric) | mg/kg | < 2 | NONE | < 2 | | | |
| EPH (C10 - C40) | mg/kg | < 6 | MCERTS | < 6 | | | |

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Subcontracted analysis (S)



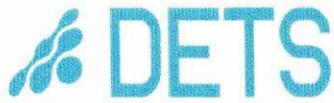
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 Rose Lane
 Lenham Heath
 Maidstone
 Kent ME17 2JN
 Tel : 01622 850410



| Soil Analysis Certificate - Speciated PAHs | | | | | | |
|--|-----------------|---------------|---------------|---------------|---------------|---------------|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 |
| R Carr Geotechnical Services | Time Sampled | None Supplied |
| Site Reference: Little Park Farm, Hurstpierpoint | TP / BH No | TP1 | TP2 | TP3 | TP1 | TP2 |
| Project / Job Ref: 3903 | Additional Refs | None Supplied |
| Order No: 3903 | Depth (m) | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 |
| Reporting Date: 13/10/2021 | DETS Sample No | 567271 | 567272 | 567273 | 567274 | 567275 |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|------------------------|-------|-------|---------------|-------|-------|-------|-------|-------|
| Naphthalene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Acenaphthylene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Acenaphthene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Fluorene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Phenanthrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.60 | < 0.1 | < 0.1 | < 0.1 |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | 0.18 | 1.06 | 0.16 | < 0.1 | < 0.1 |
| Pyrene | mg/kg | < 0.1 | MCERTS | 0.20 | 0.91 | 0.19 | < 0.1 | < 0.1 |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.29 | < 0.1 | < 0.1 | < 0.1 |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.39 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.40 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.13 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.24 | < 0.1 | < 0.1 | < 0.1 |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.16 | < 0.1 | < 0.1 | < 0.1 |
| Dibenz(a,h)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Benzo(ghi)perylene | mg/kg | < 0.1 | MCERTS | < 0.1 | 0.15 | < 0.1 | < 0.1 | < 0.1 |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | 4.3 | < 1.6 | < 1.6 | < 1.6 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



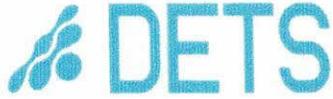
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Soil Analysis Certificate - Speciated PAHs

| | | | | | |
|---|------------------------|---------------|--|--|--|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | | | |
| R Carr Geotechnical Services | Time Sampled | None Supplied | | | |
| Site Reference: Little Park Farm, Hurstlerspoint | TP / BH No | TP3 | | | |
| Project / Job Ref: 3903 | Additional Refs | None Supplied | | | |
| Order No: 3903 | Depth (m) | 0.50 | | | |
| Reporting Date: 13/10/2021 | DETS Sample No | 567276 | | | |

| Determinand | Unit | RL | Accreditation | | | | |
|------------------------|-------|-------|---------------|-------|--|--|--|
| Naphthalene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Acenaphthylene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Acenaphthene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Fluorene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Phenanthrene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Benzo(a)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Chrysene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Benzo(b)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Benzo(k)fluoranthene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Benzo(a)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Dibenz(a,h)anthracene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Benzo(ghi)perylene | mg/kg | < 0.1 | MCERTS | < 0.1 | | | |
| Total EPA-16 PAHs | mg/kg | < 1.6 | MCERTS | < 1.6 | | | |



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Kent ME17 2JN
Tel : 01622 850410



| Soil Analysis Certificate - TPH CWG Banded | | | | | | |
|---|------------------------|---------------|---------------|---------------|---------------|---------------|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 |
| R Carr Geotechnical Services | Time Sampled | None Supplied |
| Site Reference: Little Park Farm, Hurstjerspoint | TP / BH No | TP1 | TP2 | TP3 | TP1 | TP2 |
| Project / Job Ref: 3903 | Additional Refs | None Supplied |
| Order No: 3903 | Depth (m) | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 |
| Reporting Date: 13/10/2021 | DETS Sample No | 567271 | 567272 | 567273 | 567274 | 567275 |

| Determinand | Unit | RL | Accreditation | (n) | | | | |
|----------------------|-------|--------|---------------|--------|--------|--------|--------|--------|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Aliphatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aliphatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aliphatic >C12 - C16 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aliphatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | < 3 | < 3 | < 3 | < 3 |
| Aliphatic >C21 - C34 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | < 10 |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | < 21 | < 21 |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Aromatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | < 2 | < 2 | < 2 | < 2 |
| Aromatic >C12 - C16 | mg/kg | < 2 | MCERTS | < 2 | 4 | < 2 | < 2 | < 2 |
| Aromatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | 4 | < 3 | < 3 | < 3 |
| Aromatic >C21 - C35 | mg/kg | < 10 | MCERTS | < 10 | < 10 | < 10 | < 10 | < 10 |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | < 21 | < 21 | < 21 | < 21 | < 21 |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | < 42 | < 42 | < 42 | < 42 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and day and any other matrix is outside our scope of accreditation



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 Maidstone
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 Tel : 01622 850410



| Soil Analysis Certificate - TPH CWG Banded | | | | | |
|---|-----------------|---------------|--|--|--|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | | | |
| R Carr Geotechnical Services | Time Sampled | None Supplied | | | |
| Site Reference: Little Park Farm, Hurstleirpoint | TP / BH No | TP3 | | | |
| Project / Job Ref: 3903 | Additional Refs | None Supplied | | | |
| Order No: 3903 | Depth (m) | 0.50 | | | |
| Reporting Date: 13/10/2021 | DETS Sample No | 567276 | | | |

| Determinand | Unit | RL | Accreditation | | | | |
|----------------------|-------|--------|---------------|--------|--|--|--|
| Aliphatic >C5 - C6 | mg/kg | < 0.01 | NONE | < 0.01 | | | |
| Aliphatic >C6 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | | | |
| Aliphatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | | | |
| Aliphatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | | | |
| Aliphatic >C12 - C16 | mg/kg | < 3 | MCERTS | < 3 | | | |
| Aliphatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | | | |
| Aliphatic >C21 - C34 | mg/kg | < 10 | MCERTS | < 10 | | | |
| Aliphatic (C5 - C34) | mg/kg | < 21 | NONE | < 21 | | | |
| Aromatic >C5 - C7 | mg/kg | < 0.01 | NONE | < 0.01 | | | |
| Aromatic >C7 - C8 | mg/kg | < 0.05 | NONE | < 0.05 | | | |
| Aromatic >C8 - C10 | mg/kg | < 2 | MCERTS | < 2 | | | |
| Aromatic >C10 - C12 | mg/kg | < 2 | MCERTS | < 2 | | | |
| Aromatic >C12 - C16 | mg/kg | < 2 | MCERTS | < 2 | | | |
| Aromatic >C16 - C21 | mg/kg | < 3 | MCERTS | < 3 | | | |
| Aromatic >C21 - C35 | mg/kg | < 10 | MCERTS | < 10 | | | |
| Aromatic (C5 - C35) | mg/kg | < 21 | NONE | < 21 | | | |
| Total >C5 - C35 | mg/kg | < 42 | NONE | < 42 | | | |



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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



| Soil Analysis Certificate - BTEX / MTBE | | | | | | |
|---|------------------------|---------------|---------------|---------------|---------------|---------------|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 | 04/10/21 |
| R Carr Geotechnical Services | Time Sampled | None Supplied |
| Site Reference: Little Park Farm, Hurstpierpoint | TP / BH No | TP1 | TP2 | TP3 | TP1 | TP2 |
| Project / Job Ref: 3903 | Additional Refs | None Supplied |
| Order No: 3903 | Depth (m) | 0.25 | 0.25 | 0.25 | 0.50 | 0.50 |
| Reporting Date: 13/10/2021 | DETS Sample No | 567271 | 567272 | 567273 | 567274 | 567275 |

| Determinand | Unit | RL | Accreditation | (n) | | |
|--------------|-------|-----|---------------|-----|-----|-----|
| Benzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 |
| Ethylbenzene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 |
| p & m-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 |
| o-xylene | ug/kg | < 2 | MCERTS | < 2 | < 2 | < 2 |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | < 5 | < 5 |

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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| Soil Analysis Certificate - BTEX / MTBE | | | | | |
|---|-----------------|---------------|--|--|--|
| DETS Report No: 21-11980 | Date Sampled | 04/10/21 | | | |
| R Carr Geotechnical Services | Time Sampled | None Supplied | | | |
| Site Reference: Little Park Farm, Hurstpierpoint | TP / BH No | TP3 | | | |
| Project / Job Ref: 3903 | Additional Refs | None Supplied | | | |
| Order No: 3903 | Depth (m) | 0.50 | | | |
| Reporting Date: 13/10/2021 | DETS Sample No | 567276 | | | |

| Determinand | Unit | RL | Accreditation | | | | |
|--------------|-------|-----|---------------|-----|--|--|--|
| Benzene | ug/kg | < 2 | MCERTS | < 2 | | | |
| Toluene | ug/kg | < 5 | MCERTS | < 5 | | | |
| Ethylbenzene | ug/kg | < 2 | MCERTS | < 2 | | | |
| p & m-xylene | ug/kg | < 2 | MCERTS | < 2 | | | |
| o-xylene | ug/kg | < 2 | MCERTS | < 2 | | | |
| MTBE | ug/kg | < 5 | MCERTS | < 5 | | | |



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Soil Analysis Certificate - Sample Descriptions

| | |
|--|--|
| DETS Report No: 21-11980 | |
| R Carr Geotechnical Services | |
| Site Reference: Little Park Farm, Hurstpierpoint | |
| Project / Job Ref: 3903 | |
| Order No: 3903 | |
| Reporting Date: 13/10/2021 | |

| DETS Sample No | TP / BH No | Additional Refs | Depth (m) | Moisture Content (%) | Sample Matrix Description |
|----------------|------------|-----------------|-----------|----------------------|--|
| 567271 | TP1 | None Supplied | 0.25 | 21.8 | Brown sandy clay with stones and brick |
| 567272 | TP2 | None Supplied | 0.25 | 17.9 | Light brown clay with stones |
| 567273 | TP3 | None Supplied | 0.25 | 19.5 | Brown sandy clay |
| 567274 | TP1 | None Supplied | 0.50 | 18.4 | Light brown sandy clay |
| 567275 | TP2 | None Supplied | 0.50 | 19.9 | Light brown sandy clay |
| 567276 | TP3 | None Supplied | 0.50 | 18.3 | Brown sandy clay |

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{U/S}

Unsuitable Sample ^{U/S}



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| | |
|--|--|
| Soil Analysis Certificate - Methodology & Miscellaneous Information | |
| DETS Report No: 21-11980 | |
| R Carr Geotechnical Services | |
| Site Reference: Little Park Farm, Hurstpierpoint | |
| Project / Job Ref: 3903 | |
| Order No: 3903 | |
| Reporting Date: 13/10/2021 | |

| Matrix | Analysed On | Determinand | Brief Method Description | Method No |
|--------|-------------|---|--|-----------|
| Soil | D | Boron - Water Soluble | Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES | E012 |
| Soil | AR | BTEX | Determination of BTEX by headspace GC-MS | E001 |
| Soil | D | Cations | Determination of cations in soil by aqua-regia digestion followed by ICP-OES | E002 |
| Soil | D | Chloride - Water Soluble (2:1) | Determination of chloride by extraction with water & analysed by ion chromatography | E009 |
| Soil | AR | Chromium - Hexavalent | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry | E016 |
| Soil | AR | Cyanide - Complex | Determination of complex cyanide by distillation followed by colorimetry | E015 |
| Soil | AR | Cyanide - Free | Determination of free cyanide by distillation followed by colorimetry | E015 |
| Soil | AR | Cyanide - Total | Determination of total cyanide by distillation followed by colorimetry | E015 |
| Soil | D | Cyclohexane Extractable Matter (CEM) | Gravimetrically determined through extraction with cyclohexane | E011 |
| Soil | AR | Diesel Range Organics (C10 - C24) | Determination of hexane/acetone extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | Electrical Conductivity | Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement | E022 |
| Soil | AR | Electrical Conductivity | Determination of electrical conductivity by addition of water followed by electrometric measurement | E023 |
| Soil | D | Elemental Sulphur | Determination of elemental sulphur by solvent extraction followed by GC-MS | E020 |
| Soil | AR | EPH (C10 - C40) | Determination of acetone/hexane extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | EPH Product ID | Determination of acetone/hexane extractable hydrocarbons by GC-FID | E004 |
| Soil | AR | EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40) | Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS | E004 |
| Soil | D | Fluoride - Water Soluble | Determination of Fluoride by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Fraction Organic Carbon (FOC) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | Organic Matter (SOM) | Determination of TOC by combustion analyser. | E027 |
| Soil | D | TOC (Total Organic Carbon) | Determination of TOC by combustion analyser. | E027 |
| Soil | AR | Exchangeable Ammonium | Determination of ammonium by discrete analyser. | E029 |
| Soil | D | FOC (Fraction Organic Carbon) | Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | D | Loss on Ignition @ 450oC | Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace | E019 |
| Soil | D | Magnesium - Water Soluble | Determination of water soluble magnesium by extraction with water followed by ICP-OES | E025 |
| Soil | D | Metals | Determination of metals by aqua-regia digestion followed by ICP-OES | E002 |
| Soil | AR | Mineral Oil (C10 - C40) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge | E004 |
| Soil | AR | Moisture Content | Moisture content; determined gravimetrically | E003 |
| Soil | D | Nitrate - Water Soluble (2:1) | Determination of nitrate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Organic Matter | Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | AR | PAH - Speciated (EPA 16) | Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards | E005 |
| Soil | AR | PCB - 7 Congeners | Determination of PCB by extraction with acetone and hexane followed by GC-MS | E008 |
| Soil | D | Petroleum Ether Extract (PEE) | Gravimetrically determined through extraction with petroleum ether | E011 |
| Soil | AR | pH | Determination of pH by addition of water followed by electrometric measurement | E007 |
| Soil | AR | Phenols - Total (monohydric) | Determination of phenols by distillation followed by colorimetry | E021 |
| Soil | D | Phosphate - Water Soluble (2:1) | Determination of phosphate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Sulphate (as SO4) - Total | Determination of total sulphate by extraction with 10% HCl followed by ICP-OES | E013 |
| Soil | D | Sulphate (as SO4) - Water Soluble (2:1) | Determination of sulphate by extraction with water & analysed by ion chromatography | E009 |
| Soil | D | Sulphate (as SO4) - Water Soluble (2:1) | Determination of water soluble sulphate by extraction with water followed by ICP-OES | E014 |
| Soil | AR | Sulphide | Determination of sulphide by distillation followed by colorimetry | E018 |
| Soil | D | Sulphur - Total | Determination of total sulphur by extraction with aqua-regia followed by ICP-OES | E024 |
| Soil | AR | SVOC | Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS | E006 |
| Soil | AR | Thiocyanate (as SCN) | Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry | E017 |
| Soil | D | Toluene Extractable Matter (TEM) | Gravimetrically determined through extraction with toluene | E011 |
| Soil | D | Total Organic Carbon (TOC) | Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate | E010 |
| Soil | AR | TPH CWG (all: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS | E004 |
| Soil | AR | TPH LQM (all: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44) | Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS | E004 |
| Soil | AR | VOCs | Determination of volatile organic compounds by headspace GC-MS | E001 |
| Soil | AR | VPH (C6-C8 & C8-C10) | Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID | E001 |

D Dried
AR As Received

7.4 **Appendix D – Proposed Drainage Strategy & Exceedance Flow Routes, Greenfield Runoff and Hydraulic Calculations**

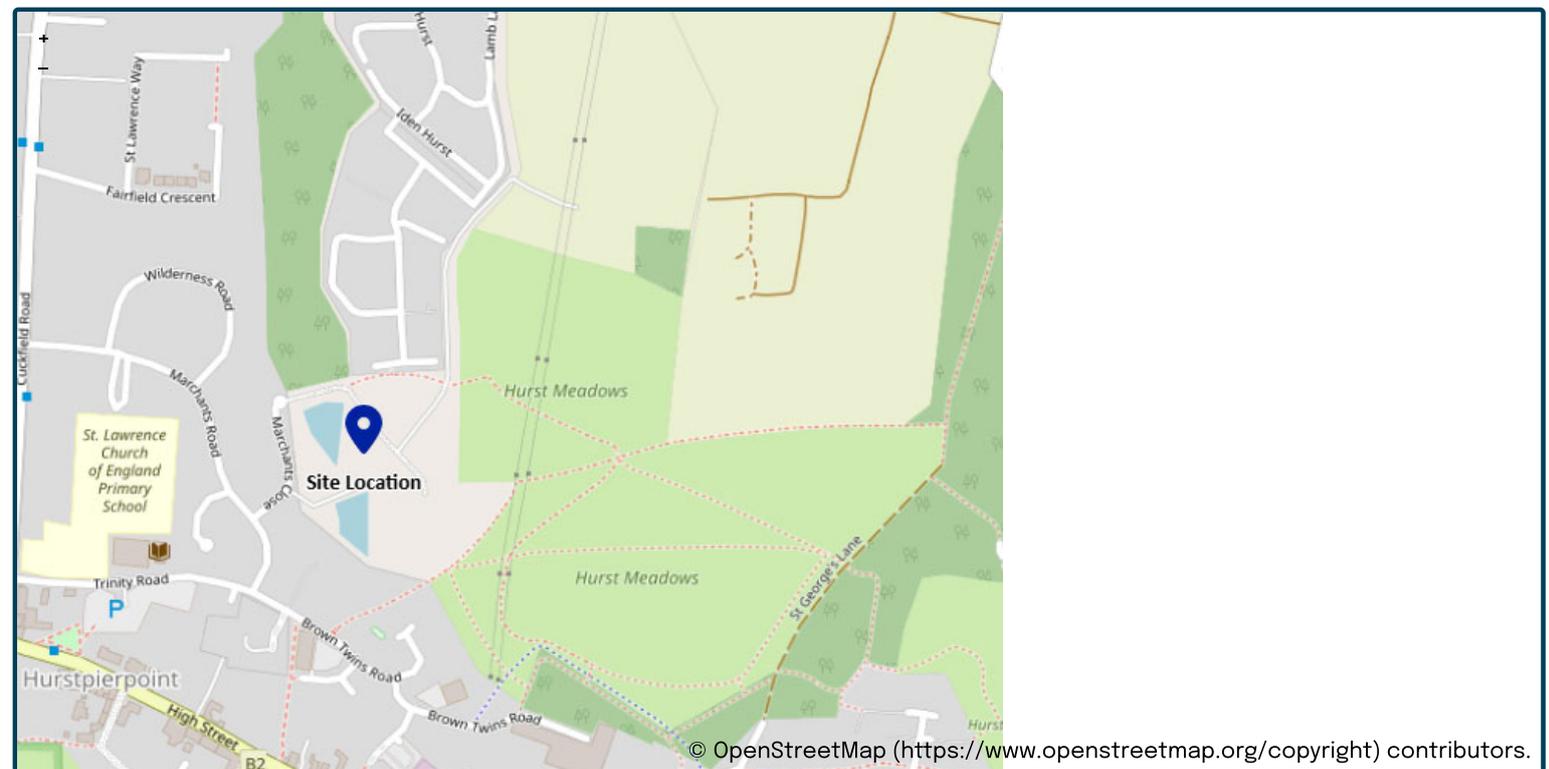
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

| | |
|---------------|---|
| Date | <input type="text" value="10/10/2025"/> |
| Calculated by | <input type="text"/> |
| Reference | <input type="text"/> |
| Model version | <input type="text" value="2.2.1"/> |

Location

| | |
|---------------|----------------------|
| Site name | <input type="text"/> |
| Site location | <input type="text"/> |



| | |
|---------------------------------------|-------------------------------------|
| Site easting (British National Grid) | <input type="text" value="528376"/> |
| Site northing (British National Grid) | <input type="text" value="116680"/> |

Site details

| | | |
|----------------------|------------------------------------|----|
| Total site area (ha) | <input type="text" value="0.208"/> | ha |
|----------------------|------------------------------------|----|

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OK, I AGREE

MORE INFO

Greenfield runoff

Method

Method

FEH statistical (2025)

| | <u>My value</u> | <u>Map value</u> |
|-----------------------------------|------------------------------------|------------------------------------|
| SAAR9120 (mm) | <input type="text" value="912"/> | <input type="text" value="mm"/> |
| BFIHOST19scaled | <input type="text" value="0.36"/> | |
| QMed-QBar conversion | <input type="text" value="1.136"/> | <input type="text" value="1.136"/> |
| QMed (l/s) | <input type="text" value="1.5"/> | <input type="text" value="l/s"/> |
| QBar (FEH statistical 2025) (l/s) | <input type="text" value="1.7"/> | <input type="text" value="l/s"/> |

Growth curve factors

| | <u>My value</u> | <u>Map value</u> |
|------------------------|-----------------------------------|--------------------------------|
| Hydrological region | <input type="text" value="7"/> | <input type="text" value="7"/> |
| 1 year growth factor | <input type="text" value="0.85"/> | |
| 2 year growth factor | <input type="text" value="0.88"/> | |
| 10 year growth factor | <input type="text" value="1.62"/> | |
| 30 year growth factor | <input type="text" value="2.3"/> | |
| 100 year growth factor | <input type="text" value="3.19"/> | |
| 200 year growth factor | <input type="text" value="3.74"/> | |

Results

| | | |
|---------------------------|---|----------------------------------|
| Method | <input type="text" value="FEH statistical (2025)"/> | |
| Flow rate 1 year (l/s) | <input type="text" value="1.5"/> | <input type="text" value="l/s"/> |
| Flow rate 2 year (l/s) | <input type="text" value="1.5"/> | <input type="text" value="l/s"/> |
| Flow rate 10 years (l/s) | <input type="text" value="2.8"/> | <input type="text" value="l/s"/> |
| Flow rate 30 years (l/s) | <input type="text" value="4.0"/> | <input type="text" value="l/s"/> |
| Flow rate 100 years (l/s) | <input type="text" value="5.5"/> | <input type="text" value="l/s"/> |
| Flow rate 200 years (l/s) | <input type="text" value="6.5"/> | <input type="text" value="l/s"/> |

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

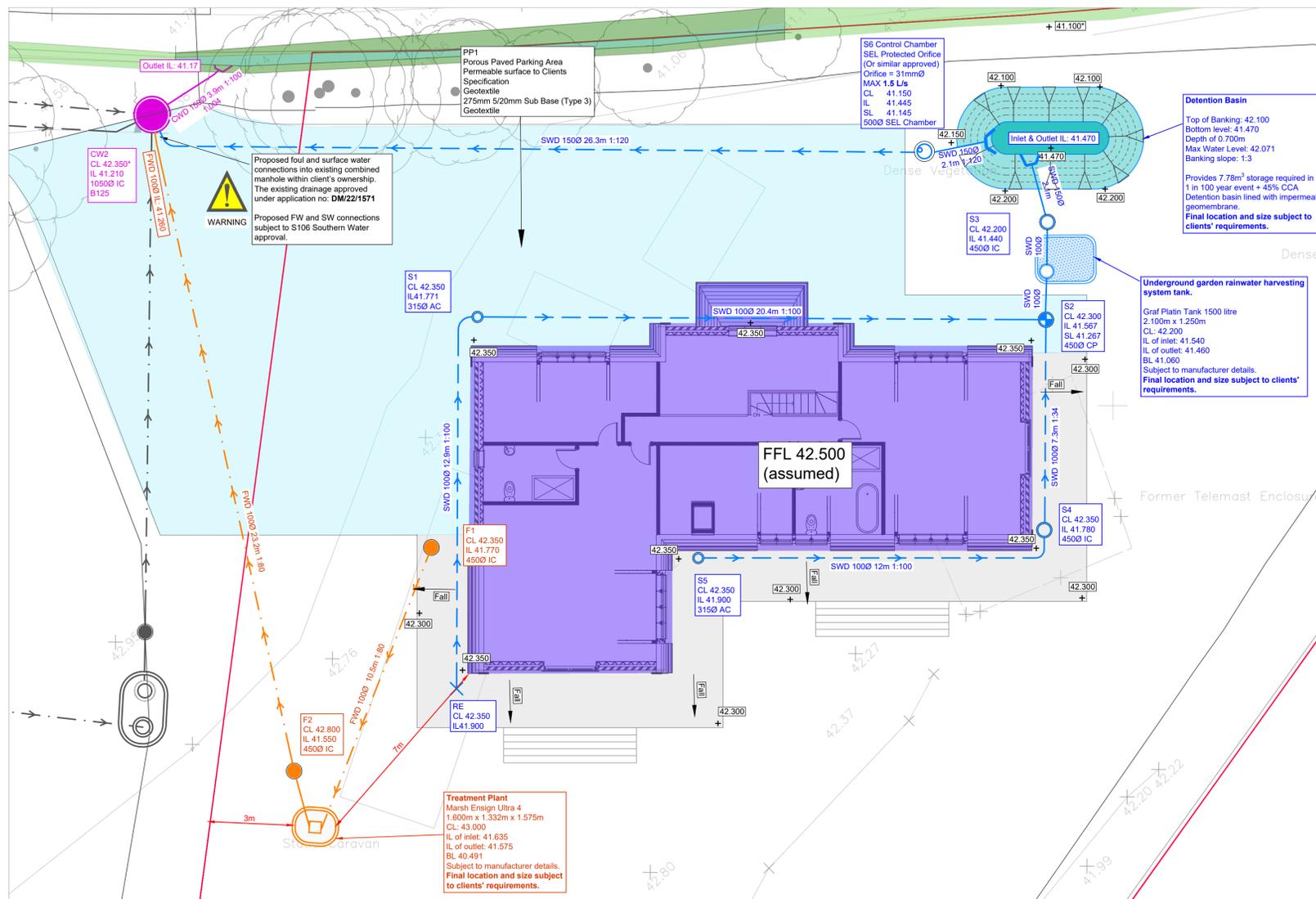
Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.1) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com/) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of the data in the design or operational characteristics of any drainage scheme.

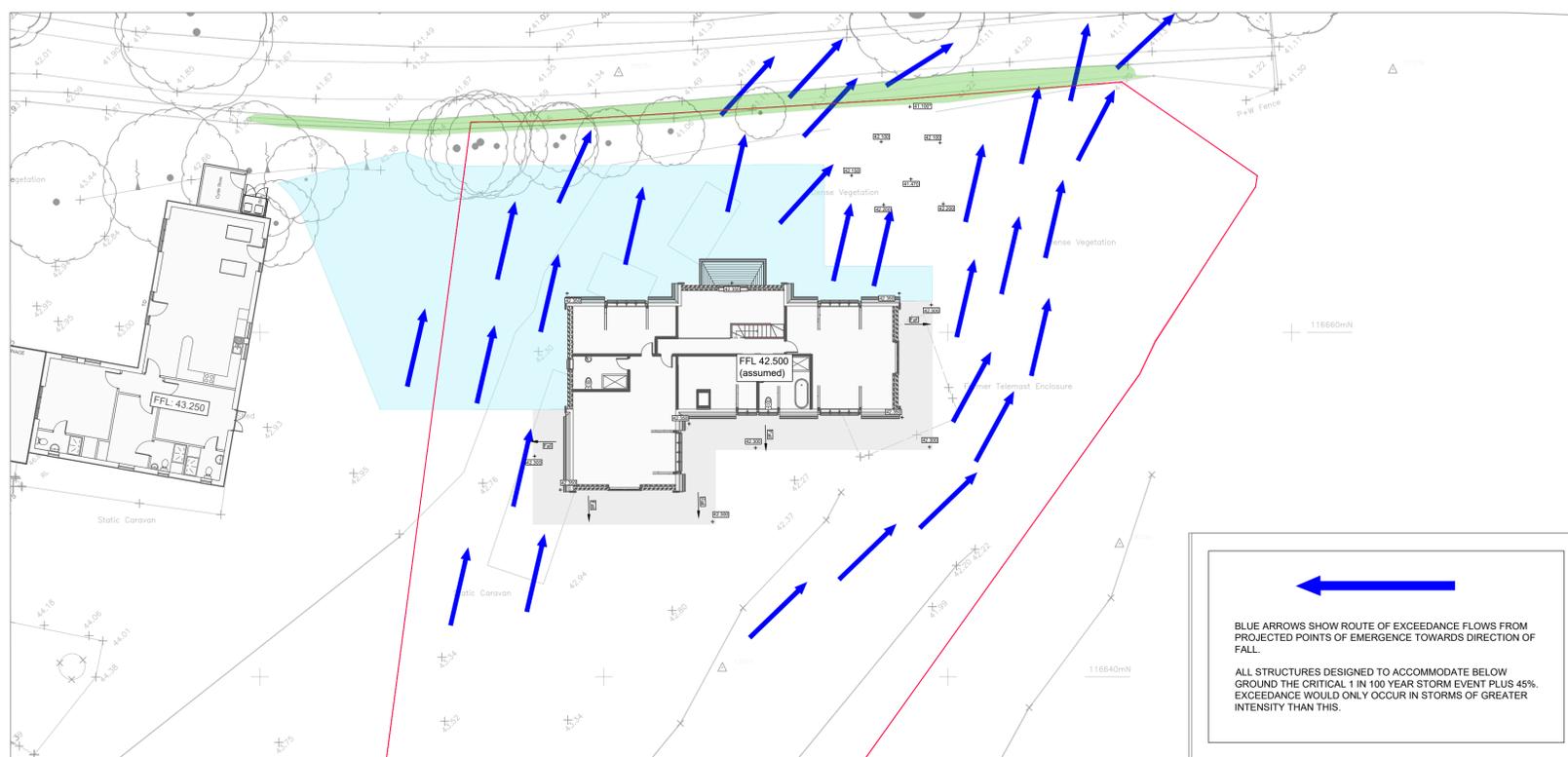
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7.4 **Appendix D – Proposed Drainage Strategy & Exceedance Flow Routes, Greenfield Runoff and Hydraulic Calculations**



PROPOSED DRAINAGE STRATEGY (scale 1:100)



EXCEEDANCE FLOW ROUTES (scale 1:200)

DRAINAGE LEGEND

EXISTING FEATURES

- Existing foul/storm water 'as built' drainage from neighboring site
- Existing combined water manhole from neighboring site

PROPOSED FEATURES

- SWD - Surface Water Drainage
- Storm water access chamber (3000)
- Storm water inspection chamber (4500)
- Storm water catchpit chamber (4500)
- Storm water rodding eye
- Storm water orifice flow control chamber (5000)
- Proposed surface level (shown indicatively only for drainage purposes)
- Assumed surface level of the ditch-tbc (shown indicatively only for drainage purposes)
- Finished floor level - assumed, tbc by the Architect
- Pipe info - diameter, length, gradient, bedding type

ABBREVIATIONS

- MH - MANHOLE
- IC - INSPECTION CHAMBER
- AC - ACCESS CHAMBER
- CP - CATCHPIT
- BC - BRAKE CHAMBER
- RE - RODDING EYE
- IL - INVERT LEVEL
- SL - SUMP LEVEL
- RA - RESTRICTED ACCESS COVER
- CL - COVER LEVEL
- TL - TOP OF CELLULAR SA
- BL - BASE OF CELLULAR SA
- FL - FORMATION LEVEL

Site Boundary (as taken from M.J. Humphrey Ltd Site Plan February 2025 draw no: 2025/20)

- Proposed roof area 0.018 ha
- Extent of permeable paving with porous sub-base
- Proposed Footpath

- STANDARD DRAINAGE NOTES**
- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
 - ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
 - ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
 - BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SEWERS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
 - ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT. THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
 - COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
 - ALL UN-REFERENCED PIPES ARE TO BE 100mm DIA
 - ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS65 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911:PART 1.
 - ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA, WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
 - IF ADOPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
 - ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT PART-H, AND TO THE SATISFACTION OF THE BUILDING CONTROL INSPECTOR.
 - THE CONTRACTOR IS TO KEEP A RECORD OF ANY VARIATIONS MADE ON SITE, INCLUDING THE RELOCATION OF SEWERS OR DRAINS, SO THAT AN AS CONSTRUCTED DRAWING CAN BE PREPARED UPON COMPLETION OF THE PROJECT.
 - STUB CONNECTIONS TO ADOPTABLE MANHOLES SHALL BE MADE FROM VITRIFIED CLAY AND CONSIST OF TWO ROCKER PIPES LAID AT THE SAME GRADIENT AS THE UP OR DOWNSTREAM PIPE.
 - IF ANY SUB SOIL DRAINAGE SYSTEMS ARE UNCOVERED DURING THE WORKS CONTACT THE ENGINEER FOR INSTRUCTIONS. SUB SOIL DRAINS ARE TO BE DIVERTED AROUND NEW WORKS AND CONNECTED INTO THE SURFACE WATER.
 - NO PRIVATE AREAS ARE TO DRAIN ONTO ADOPTABLE AREAS AND VICE VERSA.
 - ALL EXISTING MANHOLE COVER'S, GULLIES, ETC. ARE TO BE RAISED/LOWERED TO SUIT NEW LEVELS.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE LOCATION AND DEPTH OF ALL EXISTING SERVICES AND UTILITIES THAT MAY BE PRESENT
 - UPON COMPLETION BUT PRIOR TO HANDOVER, CONTRACTOR TO CARRY OUT FULL COVY SURVEY OF DRAINAGE SYSTEM WHICH IS TO BE REVIEWED BY ENGINEER TO ENSURE SATISFACTORY INSTALLATION
 - PROPRIETARY PRODUCTS TO BE INSTALLED IN FULL ACCORDANCE WITH MANUFACTURER'S GUIDANCE.
 - MANHOLE AND CHAMBER COVER GRADES:
 - 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
 - 'B125' IN ALL DRIVEWAYS
 - 'C250' IN PRIVATE PARKING AREAS
 - 'D400' IN CARRIAGEWAY/ACCESS ROAD

- Site Specific Notes**
- Proposed surface and foul water drainage strategy has been designed based on available data from the BGS Map Viewer and the existing drainage design approved under application reference: DM/22/1571.
 - Proposed detention basin storage volume and flow control are designed to the critical 1 in 100 year storm event plus an allowance of 45% for the predicted effects of climate change.
 - Surface water flow discharge rate from the new development area has been restricted to 1.5 l/s, reflecting the greenfield runoff rate for the site for the 1-in-1-year rainfall event.
 - Proposed surface water runoff is to be collected and discharged into the existing combined sewer. The existing combined sewer approved under application reference: DM/22/1571).
 - Proposed foul and storm water connections is to be agreed under S106 application with Southern Water.

Prefixed to drawing numbers shall signify the following:-

| | |
|------------------|--|
| PL = PLANNING | Shall not be used for contract or construction purposes |
| P = PRELIMINARY | Shall not be used for contract or construction purposes |
| T = TENDER | Shall not be used for construction purposes |
| C = CONSTRUCTION | These are the only drawings that shall be used for construction purposes |
| R = RECORD | Record of actual completed work |

| | | | | | |
|-----|----------|--------------------------|-----|-----|-----|
| PL2 | 02.02.26 | UPDATED TO LLFA COMMENTS | KCK | CS | CS |
| PL1 | 10.12.25 | UPDATED TO NEW SITE PLAN | KCK | CS | CS |
| P | 24.10.25 | PRELIMINARY ISSUE | MR | CS | CS |
| REV | DATE | DESCRIPTION | BY | CHK | APP |

FOR PLANNING ONLY

cgs civils
Consulting Civil Engineers

CLIENT: HEATHLAND HURSTPIERPOINT LTD

ARCHITECT: M.J. HUMPHREY LTD

JOB TITLE: LAND ADJACENT TO THE MEADOW LITTLE PARK LANE, HURSTPIERPOINT

DRAWING TITLE: PROPOSED DRAINAGE STRATEGY & EXCEEDANCE FLOW ROUTES

| | | | |
|--------------------|-----------------|-----------------|--------------|
| DRAWN: MR | ENGINEER: CS | CHECKED: CS | APPROVED: CS |
| DATE: OCTOBER 2025 | SCALE: AS SHOWN | | |
| JOB No: C1900A | STATUS: PL | DRAWING No: 101 | REV: PL2 |

DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL
WATER AUTHORITY

DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
GROUNDWATER DEPTH
ORDINARY WATERCOURSE APPROVAL
LOCATION AND DEPTH OF EXISTING UTILITIES
ROOT PROTECTION AREAS

Design Settings

| | | | |
|--------------------------------------|--------|------------------------------------|---------------|
| Rainfall Methodology | FEH-22 | Minimum Velocity (m/s) | 1.00 |
| Return Period (years) | 2 | Connection Type | Level Soffits |
| Additional Flow (%) | 0 | Minimum Backdrop Height (m) | 0.200 |
| CV | 1.000 | Preferred Cover Depth (m) | 1.200 |
| Time of Entry (mins) | 4.00 | Include Intermediate Ground | ✓ |
| Maximum Time of Concentration (mins) | 30.00 | Enforce best practice design rules | ✓ |
| Maximum Rainfall (mm/hr) | 75.0 | | |

Nodes

| Name | Area (ha) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|-----------------|-----------|-----------------|---------------|-------------|--------------|-----------|
| Detention Basin | 0.018 | 42.100 | 450 | 528479.103 | 116663.534 | 0.600 |

Simulation Settings

| | | | | | |
|----------------------|----------|---|--------|-------------------------|---|
| Rainfall Methodology | FEH-22 | Analysis Speed | Normal | Starting Level (m) | |
| Rainfall Events | Singular | Skip Steady State | x | Check Discharge Rate(s) | x |
| Summer CV | 1.000 | Drain Down Time (mins) | 240 | Check Discharge Volume | x |
| Winter CV | 1.000 | Additional Storage (m ³ /ha) | 0.0 | | |

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 1 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 |
| 30 | 45 | 0 | 0 |
| 100 | 0 | 0 | 0 |
| 100 | 45 | 0 | 0 |

Node Detention Basin Online Orifice Control

| | | | | | |
|--------------------------|--------|-------------------|-------|-----------------------|-------|
| Flap Valve | x | Design Depth (m) | 0.550 | Discharge Coefficient | 0.600 |
| Replaces Downstream Link | x | Design Flow (l/s) | 1.5 | | |
| Invert Level (m) | 41.500 | Diameter (m) | 0.031 | | |

Node Detention Basin Depth/Area Storage Structure

| | | | | | |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0 | Invert Level (m) | 41.500 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity | 1.00 | Time to half empty (mins) | 96 |

| Depth (m) | Area (m ²) | Inf Area (m ²) | Depth (m) | Area (m ²) | Inf Area (m ²) | Depth (m) | Area (m ²) | Inf Area (m ²) | Depth (m) | Area (m ²) | Inf Area (m ²) |
|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|
| 0.000 | 4.0 | 0.0 | 0.200 | 9.4 | 0.0 | 0.400 | 17.0 | 0.0 | 0.600 | 26.9 | 0.0 |
| 0.100 | 6.4 | 0.0 | 0.300 | 12.9 | 0.0 | 0.500 | 21.7 | 0.0 | | | |

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|-------------------|-----------------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|--------|
| 120 minute summer | Detention Basin | 72 | 41.629 | 0.129 | 1.3 | 0.7381 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | Outflow (l/s) | Discharge Vol (m ³) |
|-----------------------------|-----------------|---------|---------------|---------------------------------|
| 120 minute summer | Detention Basin | Orifice | 0.7 | 2.5 |

Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|-----------------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|--------|
| 60 minute summer | Detention Basin | 42 | 41.807 | 0.307 | 4.5 | 2.5608 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | Outflow (l/s) | Discharge Vol (m ³) |
|-----------------------------|-----------------|---------|---------------|---------------------------------|
| 60 minute summer | Detention Basin | Orifice | 1.1 | 4.6 |

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|-----------------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|--------|
| 60 minute summer | Detention Basin | 44 | 41.877 | 0.377 | 6.0 | 3.5932 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | Outflow (l/s) | Discharge Vol (m ³) |
|-----------------------------|-----------------|---------|---------------|---------------------------------|
| 60 minute summer | Detention Basin | Orifice | 1.2 | 6.1 |

Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|-----------------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|--------|
| 60 minute summer | Detention Basin | 46 | 41.987 | 0.487 | 8.7 | 5.6554 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | Outflow (l/s) | Discharge Vol (m ³) |
|-----------------------------|-----------------|---------|---------------|---------------------------------|
| 60 minute summer | Detention Basin | Orifice | 1.4 | 8.8 |

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|-----------------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|--------|
| 60 minute summer | Detention Basin | 45 | 41.947 | 0.447 | 7.6 | 4.8422 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | Outflow (l/s) | Discharge Vol (m ³) |
|-----------------------------|-----------------|---------|---------------|---------------------------------|
| 60 minute summer | Detention Basin | Orifice | 1.3 | 7.8 |

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|-----------------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|--------|
| 60 minute winter | Detention Basin | 51 | 42.071 | 0.571 | 7.8 | 7.6172 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | Outflow (l/s) | Discharge Vol (m ³) |
|-----------------------------|-----------------|---------|---------------|---------------------------------|
| 60 minute winter | Detention Basin | Orifice | 1.5 | 11.3 |

7.5 **Appendix E – Maintenance Schedule**

SuDS Maintenance Schedule

Land Adjacent to the Meadow Little Park Farm, Hurstpierpoint

Planning Ref: DM/25/1549

For

Heathland Hurstpierpoint Ltd

Rev – P-

Reference C3917

Date 24th October 2025

| Revision | Date of Issue | Comments | Prepared By | Checked By |
|----------|---------------|---------------|-------------|------------|
| P- | 24/10/2025 | Initial Issue | MR | CS |
| | | | | |
| | | | | |

1 Maintenance

1.1 Introduction

- 1.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.
- 1.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

1.2 SuDS at Land Adjacent to the Meadows Little Park Farm, Hurstpierpoint

- 1.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **Rainwater Harvesting Tank, Detention Basin, Permeable Paving (awaiting confirmation of driveway location)**
- 1.2.2 The SuDS features have been designed for easy maintenance and comprise:
 - Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
 - Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
 - Remedial work – repairing damage where necessary

1.3 SuDS Drainage Maintenance Specification

1.3.1 Rainwater Harvesting Tank

In order to maintain the functioning of the rainwater harvesting tanks, the following maintenance requirements should be adhered to:

| Operation and maintenance requirements for rainwater harvesting tanks | | |
|---|---|------------------------------|
| Maintenance Schedule | Required Action | Typical Frequency |
| Regular Maintenance | Ensure that all inlets and outlets are clear of debris and blockage | Weekly |
| | Remove debris inlets and outlets | Weekly |
| | Inspect first flush diverter to ensure it is working correctly and not clogged | Weekly – Clean if necessary |
| | Clean Filter screens | Monthly – Replace if damaged |
| | Inspect the tank for sediment build-up and any signs of algae | Monthly |
| | Inspect roof and gutters and clear of all debris | Every 3 months |
| | Inspect pump for any signs of wear or damage and test to ensure it is functioning correctly | Every 3 months |
| | Check bottom of the tank for sediment build-up and clear if necessary | Every 6 months |
| | Ensure all downpipes are clear and functioning correctly and clear if necessary | Every 6 months |
| | Test water | Every 6 months |
| | Thorough tank cleaning – drain tank, scrub interior and rinse | Annually or as required |
| | Service the pump and filtration system and replace any worn parts | Annually |
| | Inspect overflow to ensure it is working correctly and clear any obstructions | Annually |
| Monitoring | Monitor Water levels | Annually |
| | Inspect for pests e.g mosquitoes and take measures to prevent | As required |

1.3.2 Permeable Paving

In order to maintain the functioning of the permeable paving, the following maintenance requirements should be adhered to:

| Table 21.3 Operation and maintenance requirements for permeable paving | | |
|---|--|--|
| Maintenance Schedule | Required Action | Typical Frequency |
| Regular Maintenance | Brushing and vacuuming (standard cosmetic sweep over whole surface) | Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment |
| Occasional maintenance | Stabilise and mow contributing and adjacent areas | As required |
| | Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying | As required – once per year on less frequently used pavements |
| Remedial Actions | Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of level of the paving | As required |
| | Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material | As required |
| | Rehabilitation of surface and upper substructure by remedial sweeping | Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging) |
| Monitoring | Initial inspection | Monthly for three months after installation |
| | Inspect for evidence of poor operation and/or weed growth – if required take remedial action | Three-monthly, 48h after large storms in first six months |
| | Inspect silt accumulation rate and establish appropriate brushing frequencies | Annually |
| | Monitor inspection chambers | Annually |

1.3.3 Detention Basin

In order to maintain the functioning of the Detention Basin, the following maintenance requirements should be adhered to:

| Table 21.3 Operation and maintenance requirements for Infiltration Basins | | |
|--|--|---|
| Maintenance Schedule | Required Action | Typical Frequency |
| Regular Maintenance | Remove litter, debris, and trash | Monthly |
| | Cut the grass – for landscaped areas | Monthly (during growing season) or as required |
| | Cut the meadow grass in and around basin | Half yearly (spring, before nesting season, and autumn) |
| | Inspect marginal and bankside vegetations and remove nuisance plants (for the first 3 years) | Monthly (at start, then as required) |
| Occasional maintenance | Reseed areas of poor vegetation growth | Annually, or as required |
| | Prune and trim trees and remove cuttings | As required |
| | Remove sediment from pre-treatment system when 50% full | As required |
| Remedial actions | Repair erosion or other damage by reseeding or re-turfing | As required |
| | Realign the rip-rap | As required |
| | Repair / rehabilitate inlets, outlets and overflows | As required |
| | Rehabilitate infiltration surface using scarifying and spiking techniques if performance deteriorates | As required |
| Monitoring | Relevel uneven surface and reinstate design levels | As required |
| | Inspect inlets, outlets and overflows for blockages and clean if required | Monthly |
| | Inspect banksides, structure, pipework etc for evidence of physical damage | Monthly |
| | Inspect inlets and pre-treatment systems for silt accumulation; establish appropriate silt removal frequencies | Half Yearly |
| | Inspect infiltration surface for compaction and ponding | Monthly |

1.4 General Drainage Maintenance Specification

1.4.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to allow free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

| Inlet Structures and Inspection Chambers | |
|---|--------------|
| Regular Maintenance | Frequency |
| Inlet Structures Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage. Strim vegetation 1m min surround to structures and keep area free from silt and debris | Monthly |
| Inspection Chambers and below ground control chambers. Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn | Annually |
| Occasional Maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage. | As necessary |
| Remedial Work Repair physical damage if necessary | As required |

1.4.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

| Below Ground Drainage Pipes | |
|--|------------------------------------|
| Regular Maintenance | Frequency |
| Inspect and identify any areas that are not operating correctly. If required, take remedial action. | Monthly for 3 months then annually |
| Remove debris from the catchment surface (where it may cause risks to performance) | Monthly |
| Remove sediment from pre-treatment inlet structures and inspection chambers. | Annually or as required |
| Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks. | Monthly or as required |
| Remedial Work | |
| Repair physical damage if necessary | As required |
| Monitoring | |
| Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed. | Annually |
| Survey inside of pipe runs for sediment build up and remove if necessary. | Every 5 years or as required |