CONSULTING CIVIL AND STRUCTURAL ENGINEERS

NEW COURTWICK LANE, WICK, LITTLEHAMPTON

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

JUNE 2026

Ref: 16785/02/HOP/RPT/02

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Client : Rokeby Developments Ltd. On behalf of Morgan Management Ltd

Prepared by	Checked by	Approved by	Revision
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1.0 INTRODUCTION

1.1 HOP Consulting Ltd. (HOP) has prepared this updated Flood Risk Assessment and Drainage Strategy (FRADS) report to support the hybrid planning application in regard to development of the site west of New Courtwick Lane in Littlehampton (ref: LU/72/25/OUT), comprising the following:

1) Outline application with all matters reserved (except access) for Phase 2 (West of Site) comprising development of approximately 8,800sqm GIA Light Industrial/ Storage and Distribution (Use Class E(g)(iii) / B8); and

2) Full Application for Phase 1 (East of the Site) for a food store (Use Class E(a)), 2 No. Drive-Thru food/beverage units (Sui Generis) with revised vehicular access, associated parking and landscaping.

1.2 This report expands on the baseline site information as discussed in the FRADS originally issued by HOP (ref: 16785/02/HOP/RPT/01 P2 11.03.2025). Since the original FRADS report was submitted there has been additional correspondence between HOP, West Sussex County Council (WSCC), acting as the Lead Local Flood Authority (LLFA), and the Arun District Council (ADC) engineer regarding the surface water drainage strategy.

1.3 These further submissions to the statutory consultees have included results of extensive site investigation works that have been undertaken in regard to infiltration testing and groundwater monitoring. Additional clarifications have also been required to address standards set out in updated government guidance for the design of sustainable drainage systems (SuDS) in England, introduced by the Department for Environment, Food & Rural Affairs (DEFRA) as the National Standards for SuDS (NSfS) in June 2025, during the consultation phase.

1.4 This report aims to collate the additional information gathered from the site and incorporates responses to correspondence with the statutory consultees in a stand-alone document.

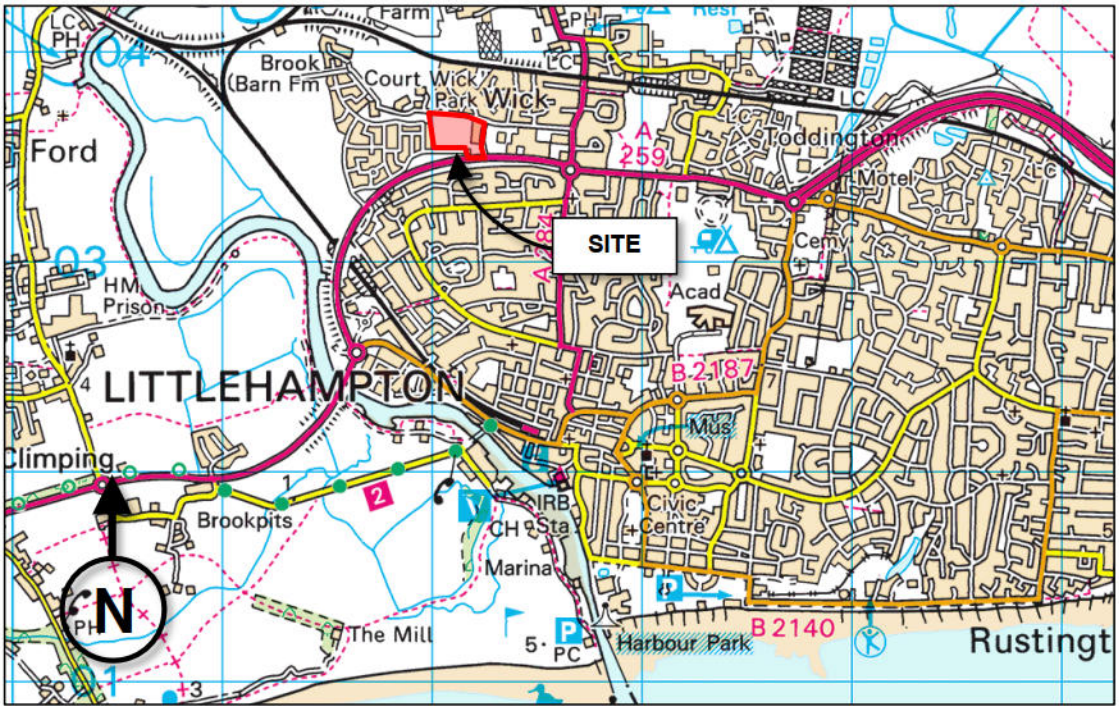


Figure 1.1 Site Location Plan

2.0 EXECUTIVE SUMMARY

2.1 This FRADS report has been prepared to support the hybrid planning application for the redevelopment of land west of New Courtwick Lane, Wick, Littlehampton. The proposals comprise a full application for Phase 1 and an outline application for Phase 2.

2.2 The site is located wholly within Flood Zone 1 and is therefore at low risk of fluvial and tidal flooding. Other potential flood sources, including surface water, groundwater, sewer and reservoir flooding have been reviewed and are considered to present low or manageable risks, subject to the mitigation measures set out in this report.

2.3 The preferred surface water drainage strategy is infiltration-led, using shallow infiltration blanket systems, permeable construction and associated SuDS features to manage rainfall at source. This approach follows the SuDS hierarchy, replicates natural drainage processes, reduces runoff volumes and avoids placing additional burden on off-site drainage infrastructure or downstream watercourses.

2.4 Extensive groundwater monitoring and infiltration testing have informed the drainage design. The peak seasonal groundwater level has been assessed at +2.383mAOD, recorded during an exceptional winter rainfall period and winter infiltration testing has confirmed that infiltration is viable within the shallow River Terrace Deposits across Phase 1 and continuing under Phase 2. A conservative infiltration rate and safety factor have been adopted, with further post-demolition testing proposed to verify final detailed design assumptions.

2.5 For Phase 1, the infiltration blanket arrangement has been developed to maintain an appropriate unsaturated zone between the base of the infiltration system and the recorded peak groundwater level through an increase in finished levels. This allows the drainage strategy to remain compliant with the ADC engineer's comments while remaining compatible with the proposed site layout and building levels.

2.6 For Phase 2, the application is submitted in outline and the detailed drainage design will be developed through reserved matters. However, available ground investigation evidence and the Phase 1 testing support the principle that an infiltration-led SuDS strategy is likely to be feasible, subject to further targeted testing and design coordination.

2.7 Hydraulic modelling demonstrates that the proposed surface water drainage system can manage the design storm events, including climate change allowance, without increasing flood risk to buildings, site users or neighbouring land. Where temporary surcharging occurs within the shallow pipe network during the 10% AEP event, it remains contained within the drainage infrastructure and is considered acceptable in the context of the infiltration-led design with suitable inspection and maintenance measures allowed for in the design.

2.8 Runoff quality will be managed through the SuDS treatment train, including permeable surfacing, infiltration media, silt management, catchpits and proprietary treatment where required. The Simple Index Approach confirms that the proposed treatment measures are appropriate for the catchments. The site lies outside a groundwater Source Protection Zone.

2.9 Localised constraints, including the supermarket delivery ramp, have been addressed through site-specific engineering measures. A pumped drainage system with duty and standby pumps, alarm provision and management oversight is proposed for this discrete catchment where gravity drainage and direct infiltration are not feasible.

2.10 An alternative attenuation-led drainage strategy has been developed as a contingency if future verification testing demonstrates that infiltration is not feasible. However, based on the current evidence, the infiltration-led strategy remains the preferred and most sustainable approach.

2.11 Foul water from the development is proposed to discharge by gravity to the Southern Water public sewer network, subject to detailed design confirmation and the necessary approvals. Indicative flow rates have been calculated and no trade effluent discharge has been assumed.

2.12 Overall, the report demonstrates that the proposed redevelopment can be delivered without increasing flood risk on or off site. The SuDS strategy is considered robust, maintainable and capable of satisfying the NSfS, subject to the recommended post-demolition verification testing and detailed design development.

2.13 For further context in terms of the Planning process and correspondence to date, the LLFA had maintained a stance of approval and accepted the principle of infiltration SuDS as presented for the surface water drainage solution across both Phases of the development – subject to Conditions. Although the LLFA have raised an objection in their latest correspondence, this is based on the concerns around groundwater levels and monitoring procedure, with these issues being addressed in detail within this report.

2.14 The ADC engineer has also maintained an objection on the basis of groundwater data issues in addition to requesting enhanced details and calculations pertaining to hydraulic modelling, an alternative discharge method and Phase 2 site conditions. However, it is considered that these points are comprehensively addressed within this report and can be dealt with via suitably worded Conditions.

3.0 SITE DESCRIPTION & SETTING

Site Location

3.1 As shown on Figure 1.1, the site is located within the Littlehampton suburb of Wick, approximately 1.5km northwest of the town centre and approximately 2.0km north of the English Channel coastline. It lies between the A259 to the south, and Courtwick Lane to the north. The surrounding land is predominantly occupied by residential properties to the north, west and south, with industrial units present to the east along Courtwick Lane.

Existing Site Layout & Land Use

3.2 The site can be viewed as two distinct parcels; the Phase 1 development site in the eastern third of the site which comprises brownfield development with a site area of 1.53ha; and the larger western section which comprises the Phase 2 development over former nursery land comprising a total area of 3.17ha. Figure 3.1 shows an annotated aerial view of the site.

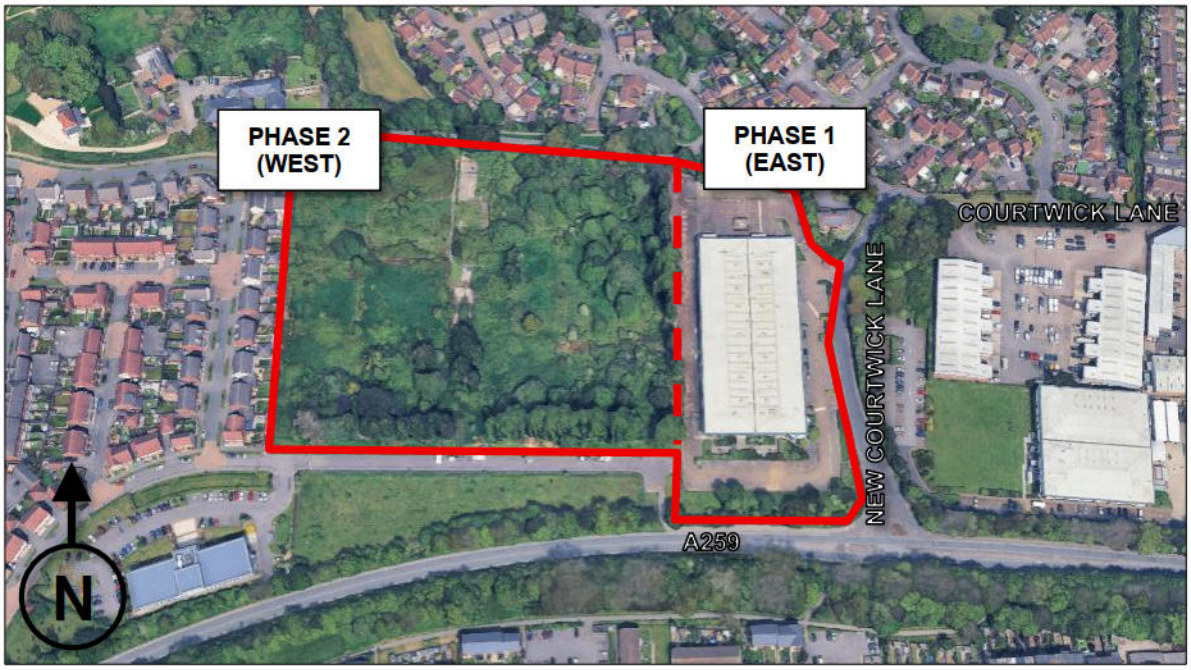


Figure 3.1 Annotated aerial view of site (Google 2026)

3.3 The Phase 1 site is occupied by a large warehouse building, known as the Parker Building, with surrounding hard paved car parking and access. The building is currently vacant and vehicular access off New Courtwick Lane is restricted by Jersey barriers and a gate with security fencing around the Phase 1 site perimeter. The existing impermeable area of the Phase 1 site is calculated at 13,125m^2 representing 87% of the total Phase 1 site area.

3.4 The Phase 2 site comprises open ground that has become overgrown with self-seeded trees and undergrowth. Access is limited to informal paths formed through the vegetation. There are no buildings on the Phase 2 site. There are some areas within Phase 2 observed as having originally been paved, with concreted areas assumed to be the bases of former greenhouses and associated buildings, however, there is no positive drainage infrastructure in place to manage surface water runoff. For the purposes of tis report, the Phase 2 area is assumed to be 100% natural permeable surfacing.

Topography

3.5 A topographic survey is included in Appendix A. This shows that ground levels around the existing building on the Phase 1 land are broadly level at around +4.00m above Ordnance Datum (AOD), with the undeveloped land on Phase 2 sloping broadly downwards from the southwest corner to towards the northeast from +7.29mAOD to +4.20mAOD.

3.6 Survey data indicates that the Phase 1 site has been historically graded to provide a level site to accommodate the Parker Building, which was constructed in the early 1990s. The natural slope of the land generates a fall from south to north and the Phase 1 site has been cut into the southern section of the site, evidenced by the embankment sloping down from the A259 highway. Consequently, the Phase 1 site is located at a lower level than the natural ground level of the Phase 2 land. A retaining wall on the boundary of the two land parcels is present with a maximum retained height of approximately 1.20m.

Geology

3.7 The British Geological Survey (BGS) online geology maps indicate that the whole site is underlain by bedrock of the New Pit Chalk Formation with the site straddling superficial deposits of Raised Beach Deposits (sand and gravel) in the north; and River Terrace Deposits (sand, silt and clay) in the south. Superficial deposits are typically encountered below made ground at depths from around 0.80m below ground level (+3.20mAOD) on the Phase 1 land, with corresponding depths encountered on the Phase 2 par of the site.

3.8 The River Terrace Deposits are encountered as more sandy and gravelly in the upper strata, with Chalk present at greater depth, generally below 4 m. This is borne out through the site investigation boreholes and trial pit data, recorded across the site,

Aquifer and Source Protection Zone Classification

3.9 Details from the DEFRA Magic Map online application show the site is located outside of any designated groundwater Source Protection Zone (SPZ), which is a classification given to aquifers to protect the quality of water at potable water abstraction points. The site overlies a superficial Secondary A aquifer, comprising permeable layers that can support local water supplies and may form an important source of base flow to rivers.

Surface Water Hydrology

3.10 There are no natural or artificial watercourses present within the site or on the site boundary. The nearest open watercourse is located approximately 200m to the east, along Courtwick Lane, where a Southern Water culvert discharges from under the road into an open channel. This watercourse is known as the Eels Springs Ditch which is classified as a main river falling under the responsibility of the Environment Agency.

3.11 The Eel Springs Ditch flows to the north and is a tributary of the Black Ditch which, in turn, flows in a westerly direction to the confluence with the River Arun around 1km to the northwest of the development site.

Hydrogeology - Groundwater

3.12 Groundwater levels have been the subject of detailed monitoring and investigation across the site, undertaken by Land Science between the periods of 26.02.2025 - 24.04.2025 and 20.10.2025 – 17.04.2026. The Land Science reports (ref: LS8074 and LS8937 V6) are included in Appendix B.

3.13 During the second period of monitoring (winter 2025/2026), the monitoring equipment malfunctioned and did not record data between 17.02.2026 and 16.03.2026, however, the data received indicates that the peak level was reached on 06.02.2026 following a period of prolonged rainfall during January 2026, after which rainfall amounts reduced significantly through the subsequent months.

3.14 Met Office rainfall data for the South East and Central South area of England (available at https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-and-regional-series) indicates the monthly rainfall amounts during the monitoring period as follows;

October 2025	**94.4mm**
November 2025	**86.5mm**
December 2025	**95.7mm**
January 2026	**159.0mm***
February 2026	**114.4mm**

March 2026 **30.4mm**

**January 2026 rainfall is the second highest value recorded for the month since records began in 1836*

3.15 When these rainfall amounts are related to the groundwater monitoring levels, as shown on the annotated graph in Figure 3.2, it can be seen that there is a direct correlation between the groundwater levels and the preceding period of rainfall intensity. With these observations, it is considered that groundwater levels would not have risen beyond the level recorded in February, when rainfall amounts tapered off significantly from the end of January 2026.

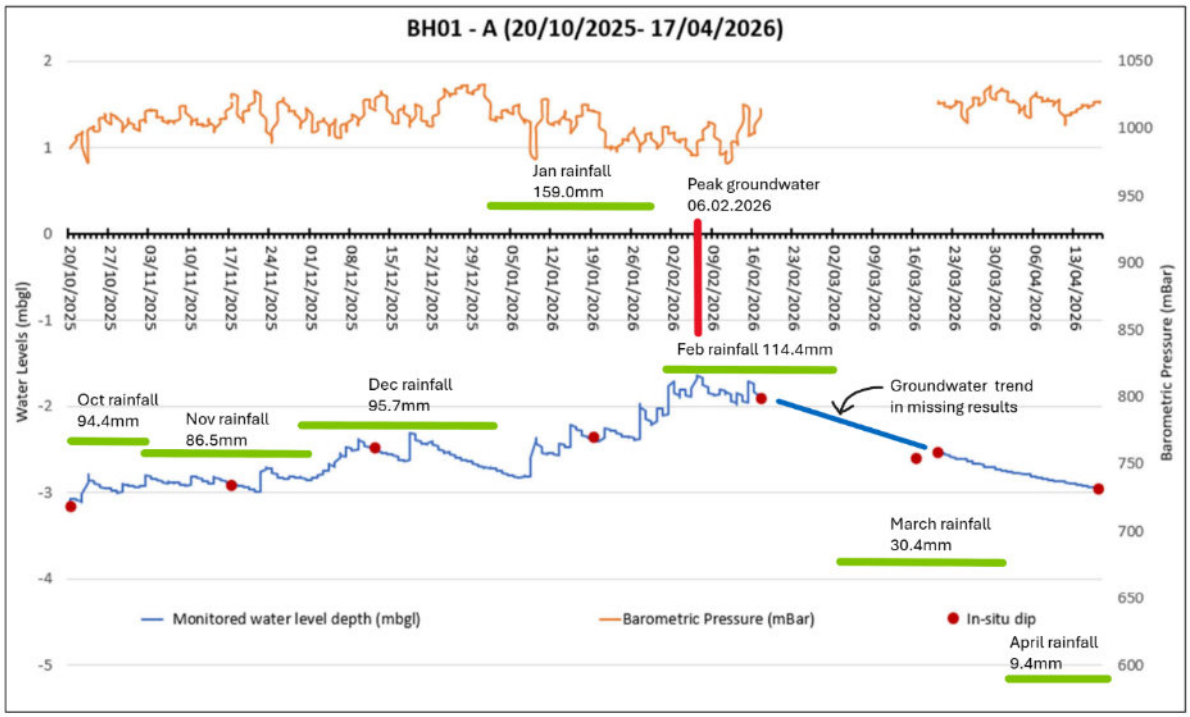


Figure 3.2 Groundwater monitoring results from Land Science report ref: LS8937 - Parker Building Winter Groundwater Monitoring v6 – Final. Added annotations for rainfall not to scale.

3.16 For comparison, HOP groundwater monitoring data from a site in Lewes, 32km to the east of Littlehampton, taken over the period 13.01.2026 to 31.03.2026 inclusive, which indicates the peak level also occurring on 06.02.2026 and trending downwards from that peak throughout February, as indicated on the annotated extract of Ashdown Site Investigation report ref: P17584 in Figure 3.3.

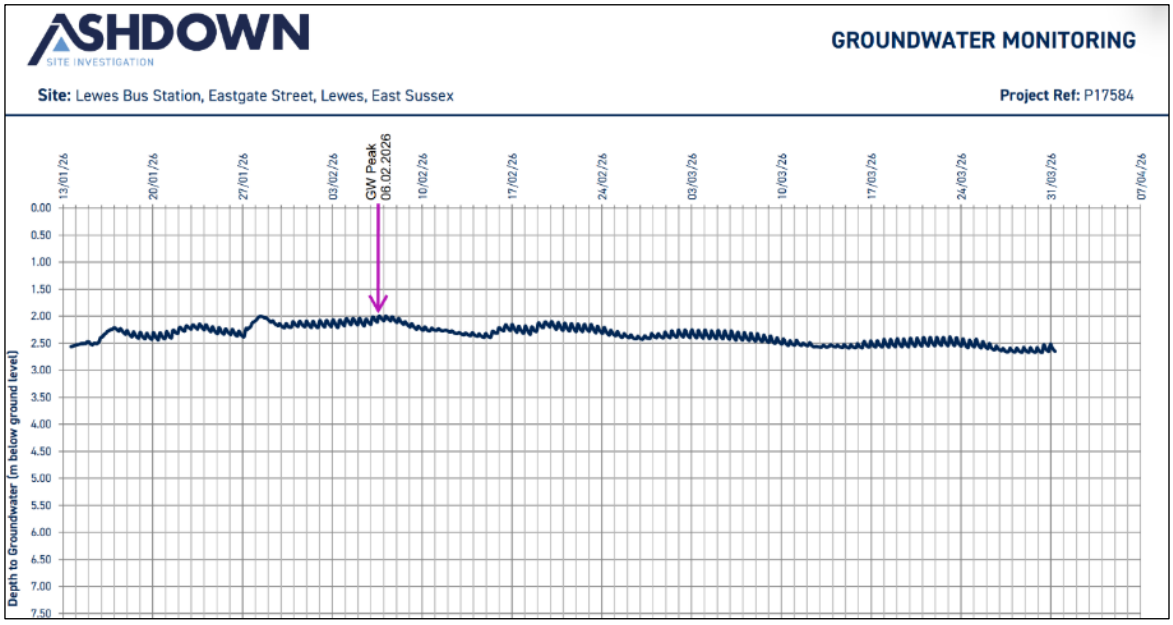


Figure 3.3 Extract from Ashdown Site Investigation, Lewes Bus Station ref: P17584

3.17 For context, and to further evidence the exceptionally high groundwater level recorded in February 2026, when this winter's peak groundwater level is compared with data that was recorded at the New Courtwick Lane site at the end of winter 2024/2025 (Land Science report ref: LS8074) in the period 26.02.2025 to 24.04.2025 inclusive. This showed groundwater levels peaking at 2.63mbgl in BH02-B on 04.03.2025, which is 0.93m lower than the peak recorded in the winter of 2025/2026.

3.18 Furthermore, a graph of data shown in Figure 3.4, taken from the *Shoothill GaugeMap* online platform, (accessed at https://www.gaugemap.co.uk), which collates groundwater level data from EA sources, indicates that groundwater levels peaked on 07.02.2026 at the Beeding Hill monitoring point, 20km to the east of Littlehampton. Groundwater levels can be seen to fall from this date falling throughout the rest of February and March of this year.

3.19 It is considered that, through the application of engineering judgment to the various empirical data sources available, it is clearly demonstrated that the groundwater level recorded on 06.02.2026 represents an exceptional seasonal peak which can be used as a reference datum, without the need for a further precautionary buffer to be implemented.

3.20 The Land Science groundwater monitoring data is recorded in metres below ground level (bgl). A further level survey was undertaken by HOP to reconcile the data to Ordnance Datum levels. This indicated that the ground level and corresponding peak groundwater level for the two monitoring boreholes as follows;

BH01-A

ground level = +**4.025mAOD**

highest recorded GW level 1.642m bgl = **+2.383mAOD**

BH02-B

ground level = +**3.900mAOD**

highest recorded GW level 1.700 bgl = **+2.200mAOD**

3.21 The peak seasonal groundwater level is therefore calculated at **+2.383mAOD**, as recorded in BH01-A. This level is taken forward when considering the SuDS strategy for the site, as discussed in following Sections of this report.



Figure 3.4 Extract of groundwater monitoring data from the Shoothill GaugeMap website

Hydrogeology – Infiltration

3.22 The underlying soils have been subject to site investigation works to determine the infiltration characteristics of the virgin ground beneath the development site.

3.23 The testing regime was undertaken to the requirements of the ADC engineer comments, namely trial pits to depth of proposed infiltration features, 850mm initial depth of water in trial pits and logging of material encountered to demonstrate that the base level lies within virgin ground. Furthermore, the comments from the ADC engineer advised that,

"… testing should be completed every 25m along an infiltration feature to generate a design infiltration rate. For a feature of this size that would equate to approximately 7 tests spread evenly over the area, these tests must be at the depth and head of water to correspond with the design and completed in worst case conditions, which the guidance stipulates is in winter or spring. "

3.24 It can be seen in the attached Land Science report (ref: LS8963 *Additional Soakage Testing*) (Appendix C), that these requirements have been met through the infiltration testing undertaken in the week of 08.12.2025. In response to this information, in comments to Emma Shephard of 22.01.2026, the ADC engineer confirmed that;

"04. The latest submission of additional information includes infiltration testing on Phase 1 (Full application) which confirms infiltration is viable during winter in the shallow river terrace deposits at depths of approximately 1.2m bgl. This is acceptable to demonstrate that infiltration is viable for Phase 1 at the approximate depth and location of the proposed infiltration devices. The design and calculations will need to be revised based upon a new design infiltration rate based upon the recent winter testing."

09. The proposed scope of the infiltration testing is limited by the existing building that is not yet demolished. The spread of testing is sufficient to overcome an objection to the principle of infiltration viability (for this full application). However, it is not sufficient for detailed design purposes."

3.25 Infiltration rates have been calculated and are presented by Land Science in the appended report, in addition to the records of the trial pit logs describing the material strata encountered. It can be seen that all trial pits had their bases within the natural virgin ground strata across the site which ranged from a mix of clay, sand and gravel material as to be expected from the underlying superficial deposits of River Terrace Deposits.

3.26 Infiltration rates varied across the 7No. pits with the more favourable infiltration rates recorded within the central and southern zone of testing (TP502 to TP506). In accordance with the BRE 365 testing methodology each pit is subjected to three consecutive tests, with the final test result used as the infiltration rate. This provided a minimum infiltration rate of **5.96×10^{-6} metres/second** and a maximum of **3.29×10^{-4} metres/second**.

3.27 As confirmed by the ADC engineer, further infiltration testing will be required once the Parker Building is demolished to determine the infiltration rate for detailed design purposes. When considering the SuDS design in this report, infiltration is proposed in the more favourable northern section of the Phase 1 site, using an infiltration rate of **6.00×10^{-6} metres/second**. In the SuDS design, a safety factor of 5 has been applied.

3.28 These results relate directly to the targeted infiltration testing carried out across the Phase 1 development site area. For Phase 2, the BGS mapping data and previous site investigation works undertaken on the Phase 2 area, indicate that the River Terrace Deposits are also encountered here, as would be expected.

3.29 Infiltration testing was undertaken in 4No. trial pits on the Phase 2 site, in April 2023, as documented in the Geo-Environmental Services Ltd (GESL) Soakage Letter Report (ref: GE21625/TU01/230413) included in Appendix D.

3.30 The GESL report indicates that the River Terrace Deposits are close to ground level across the undeveloped area of Phase 2. Furthermore, the infiltration testing that was carried out was undertaken in 3.0m deep pits, which is known from the additional testing across Phase 1 not a desired depth for setting the base of any infiltration SuDS feature. Notably, the BRE 365 testing that was undertaken for Phase 2 indicated an initially rapid drop in water levels before settling to minimal reduction in depth in the deeper soils.

3.31 This would indicate that the infiltration potential is more favourable in the upper levels of the River Terrace Deposits stratum, at a level suitable for the infiltration SuDS proposals across the Phase 2 development to be feasible – indicated from Phase 1 testing to be at around 3.4mAOD (approximately 1.8m bgl for the lowest part of Phase 2) . This assumption is borne out through the targeted infiltration testing in Phase 1 which demonstrates that the principle of infiltration SuDS to manage surface water runoff across the application site is a viable proposal.

3.32 Additional targeted infiltration testing across the Phase 2 area will be undertaken in due course, once designs are developed beyond the Outline stage and the testing regime will match that as required for the Phase 1 works.

3.33 Additional comments provided by the ADC drainage engineer include the requirement for further infiltration testing to be undertaken once the building is demolished in Phase 1, so that further ground investigation work can be undertaken to inform the final SuDS design. With this stipulation in mind, the detailed SuDS design presented in this report is based on the December 2025 winter infiltration testing, with the understanding that further infiltration testing will be requested through Condition to inform the final detailed SuDS design.

Existing Drainage Infrastructure

3.34 A historic external works and drainage plan for the construction of the original early 1990s Parker Building development on the Phase 1 parcel of the site is included in Appendix E.

3.35 This plan shows surface water runoff from the roof area connecting directly via below ground pipework to two arrays of 4No. deep PC ring soakaways located to the north and south of the warehouse building respectively.

3.36 Surface water runoff from the car park area is shown as being collected in gullies that then discharge through a system of interconnected PC ring soakaways with the termination of the system shown as being to a single PC ring soakaway, via an oil interceptor unit, located to the north of the building.

3.37 The below ground drainage system serving the car park is indicated as being connected using perforated pipework, with intermediate PC ring soakaway chambers. This would suggest that the original strategy for surface water drainage at the site was to utilise both shallow and deep infiltration methods to manage surface water at source without the need for an offsite connection.

3.38 A CCTV drainage survey was undertaken by Aquatech Drain Services Ltd. (ADS) on 20.11.2024, as included in Appendix F. In addition to the CCTV survey and observations from site walkovers undertaken by HOP Engineers, the PC ring soakaways were recorded at depths of 3.00m bgl and 3.40m bgl (estimated at +1.00mAOD and +0.60m AOD, respectively). The current site owners have managed the property for more than twenty years and have confirmed that in that period they have not been aware of any flooding affecting the building or the rest of the site.

3.39 Foul water drainage is shown on the historic plan as discharging to the sewer in New Courtwick Lane to the northwest of the site. This is confirmed through site observations and the CCTV drainage survey findings.

4.0 DEVELOPMENT PROPOSALS

Phase 1 (Full Application)

4.1 The Phase 1 proposals are to demolish the existing building and to clear the site to facilitate the construction of a supermarket and 2No. drive-through food outlets with associated parking and access. An extract of the proposed Phase 1 site plan is shown in Figure 4.1 with the full drawing included in Appendix G.

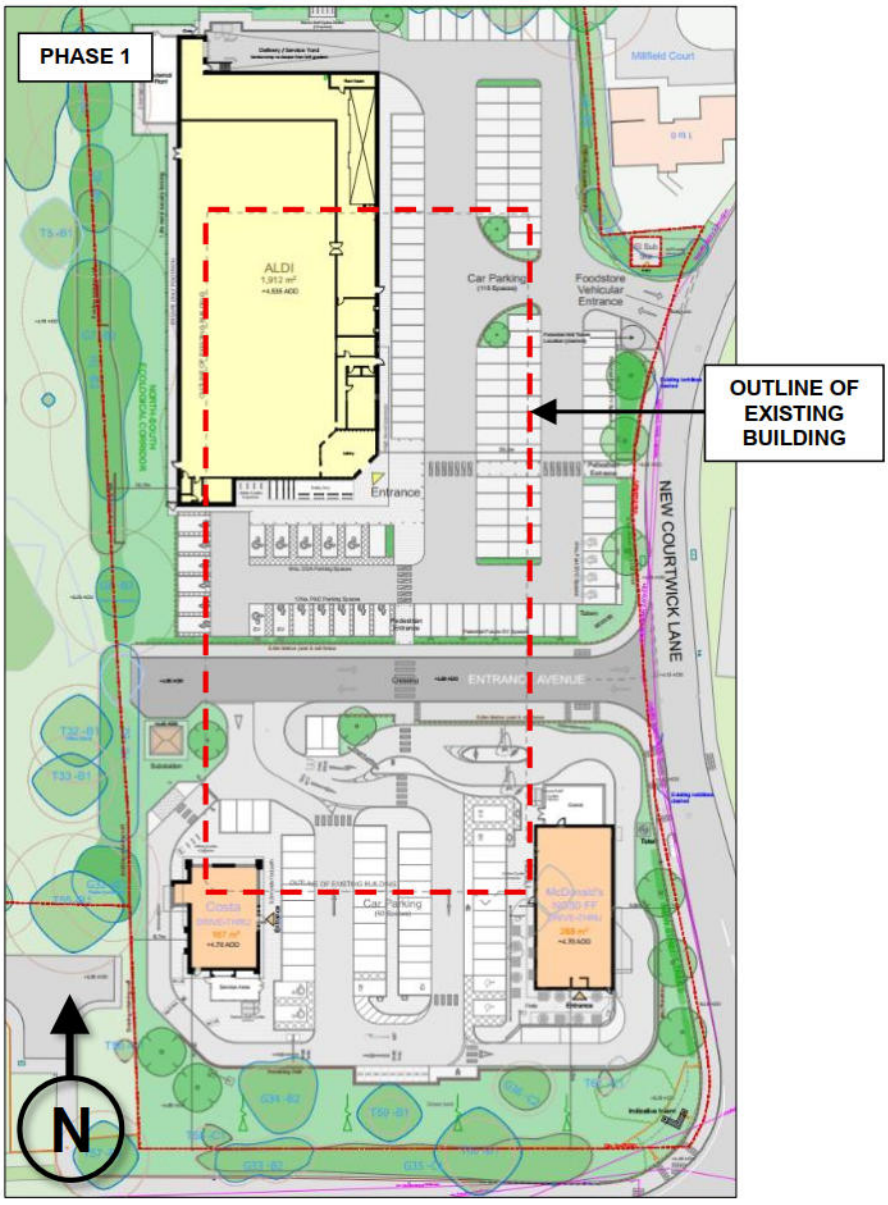


Figure 4.1 Extract of proposed Phase 1 (full application) site plan (MCA)

4.2 Vehicular access to the supermarket is proposed to be from the existing bellmouth entrance to the east, with suitable modifications, off New Courtwick lane. Additionally, a separate pedestrian access point is proposed off the New Courtwick Lane footpath, south of the vehicular entrance.

4.3 Vehicular access to the restaurant and drive-thru will be via a new access road, annotated as 'Entrance Avenue' on the plans, entering the site perpendicularly from New Courtwick Lane, separate to eh supermarket entrance. A central pedestrian crossing point is proposed on this route, linking the supermarket site in the north with the drive-through facilities in the south.

4.4 Existing trees and soft landscaping are proposed to be retained on the northern and western boundaries of Phase 1 creating a landscape buffer between the two Phases of development. Additionally, new planting is proposed on the eastern boundary adjacent the car parking, as well as in areas centrally within the site.

4.5 The Phase 1 site has a total area of 15,300m^2 with the development proposals comprising impermeable areas of roofs and paving totalling 11,360m^2.

Phase 2 (Outline Application)

4.6 As shown on the indicative site plan extract in Figure 4.2, the Phase 2 proposals comprise the construction of 27No. light industrial units arranged over 6No. blocks with a looped estate road joining off the Phase 1 Entrance Avenue.



Figure 4.2 Site plan drawing extract with indicative Phase 2 (outline application) proposals (MCA)

4.7 The Phase 2 site has a total area of 31,700m^2 with the development proposals comprising impermeable areas of roofs and paving totalling 19,600m^2. Existing tree groups and soft landscaping are to be retained across the site, particularly in the northeast and on the site boundaries. New soft landscaping is proposed on either side of the looped estate road. This forms part of the wider landscaping, ecological and biodiversity considerations which have been submitted by others as part of the Planning Submission.

4.8 Reference should be made to the full set of architectural proposals produced by Morgan Carn Architects (MCA) for a comprehensive overview of the scheme.

5.0 DRAINAGE STRATEGY

Phase 1 - Surface Water

5.1 The guiding principle of the proposed SuDS strategy for the development is to utilise the favourable infiltration characteristics observed and recorded in the underlying near-surface geology to replicate natural processes of discharging water to ground. This management of surface water runoff at source is currently employed to serve the roof and hardstanding drainage from the developed Phase 1 area of the site, through an existing system of soakaways and interconnecting perforated pipes.

5.2 With the site-specific constraints of natural infiltration strata and the proximity of the peak groundwater level, it is proposed that an infiltration blanket system is utilised to comply with SuDS standards for managing runoff in accordance with the preferred disposal hierarchy while meeting the additional requirements of the NSfS.

5.3 Infiltration testing indicates that discharge to the underlying River Terrace Deposits provides sufficient permeability with the infiltration blanket depth set at **+3.05mAOD** (approximately 1.0m below the existing ground level across the site. This is sufficiently shallow to be located within the virgin ground beneath the paving sub-base build-up.

5.4 The NSfS requires a minimum 1.0m unsaturated zone between the base of infiltration SuDS features and the highest seasonal groundwater level. As discussed in paragraph 2.19, the peak groundwater level, reconciled to Ordnance Datum, has been assessed to be at **+2.383mAOD**. This results in an unsaturated soil depth of 667mm, if the base if the infiltration system is set at **+3.05mAOD**.

5.5 To mitigate this, the proposed solution is to lift the infiltration blanket sufficiently to maintain the 1.0m unsaturated zone beneath the base level. By increasing finished ground levels, the base of the infiltration blanket is correspondingly elevated, thereby re-establishing the required 1.0 m vertical separation to the highest recorded groundwater level.

5.6 The sectional arrangement shown on Figure 5.1 indicates that a level increase of 333mm is sufficient to achieve compliance, ensuring that infiltration processes can occur within an adequately unsaturated zone. This approach would maintain both hydraulic performance and water quality treatment, with flow through the unsaturated zone.

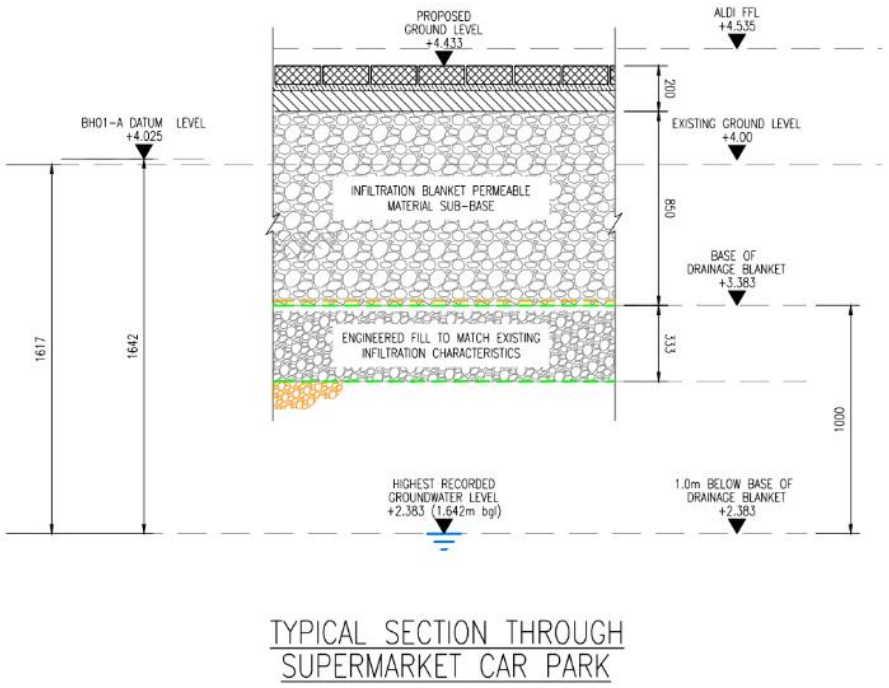


Figure 5.1 Sectional comparison of groundwater levels relative to infiltration blanket build up (levels shown to Ordnance Datum)

5.7 The increase in ground levels would necessitate a corresponding adjustment to the finished floor level (FFL) of the proposed supermarket building. However, as shown in the MCA architectural section, with the revised FFL (e.g. +4.535mAOD) the building remains comfortably below the ridge height of the existing warehouse building on site. As such, the proposed level changes are not considered to give rise to any adverse impacts in terms of massing or visual amenity and are considered to remain compatible with the established site context.

5.8 To facilitate the raised profile while maintaining the infiltration performance, the additional build-up beneath the infiltration blanket is proposed to comprise engineered fill designed to replicate the hydraulic characteristics of the underlying virgin ground identified as River Terrace Deposits. The extent of this fill is considered to be limited with some fill required in any event to replace hard spots (e.g. existing foundation pads, redundant drainage infrastructure). The extent of fill cannot be known until a full survey of the post-demolished site is undertaken.

5.9 Fill material is anticipated to consist of well-graded granular fill, such as clean, angular crushed stone or gravel with a low fines content, providing sufficient permeability and structural stability. The engineered layer should allow effective conveyance of runoff to the underlying soils, ensuring that water continues to infiltrate into the natural strata at the depth corresponding to the original infiltration blanket base level (shown at 333mm below the revised infiltration blanket formation level).

5.10 Furthermore, the use of such engineered fill contributes to water quality treatment by facilitating filtration and initial pollutant attenuation prior to infiltration into the native ground and to the groundwater established at a further depth. This layered approach - comprising permeable surfacing, infiltration blanket storage and engineered infiltration media - is considered to provide a robust and compliant SuDS solution that both mitigates groundwater constraints and maintains the proposed drainage principles of the site.

5.11 An engineering fill below the infiltration blanket medium will require materials that match existing ground characteristics (i.e. permeability and shear strength) to prevent differential settlement and to mimic natural hydraulic processes. Standards and guidance for fill materials and construction methods are governed by the Specification for Highway Works (SHW) Series 600. A specialist Geo-technical Engineer should approve the methods involved and verify the installation process.

5.12 A detailed drainage layout plan for the Phase 1 development indicating the arrangement of the SuDS infiltration blanket system is included in Appendix I. Accompanying hydraulic calculation output for a range of storms is included in Appendix J.

5.13 The broad design concept is for the impermeable areas in the south of the Phase 1 site (drive-through buildings and access/parking) to discharge towards the north where infiltration characteristics of the underlying ground have been proven to be more favourable. The drive through area is served by attenuation features before discharging to ground through the main infiltration blanket located under the supermarket car park.

5.14 Roof areas from the new supermarket building are proposed to be piped to infiltration trenches that are located within the main infiltration blanket. These perforated pipes and surrounding granular material dissipate the roof runoff evenly through the blanket medium. Catchpit chambers are proposed on the main below ground drainage routes to mitigate the build up of silt in the pipework and to facilitate inspection and maintenance of the below ground system.

Phase 2 - Surface Water

5.15 The Phase 2 site is subject to an Outline application with the detailed drainage design in abeyance pending developed architectural proposals. To that end, the proposals for the Phase 2 surface water drainage arrangement shown in Appendix I are currently indicative.

5.16 The SuDS strategy for Phase 2 is broadly similar to the Phase 1 proposal in that infiltration to ground via a series of infiltration blankets are the preferred method of surface water management for runoff from roofs and hardstanding areas.

5.17 The underlying near-surface geology of River Terrace Deposits have been shown to yield favourable infiltration rates from extensive testing on the Phase 1 parcel of the site, and additional testing to the requirements of ADC and the LLFA will be undertaken in due course across the Phase 2 site to target the locations of proposed infiltration SuDS features. Preliminary designs are presented in Appendix I with accompanying hydraulic calculations included in Appendix K.

5.18 The ADC engineer has requested a detailed drainage design for Phase 2, however, this needs to be coordinated with the remainder of the design which is yet to be developed, as this is an outline application. It is considered that the detail drainage design for Phase 2 can be dealt with by reserved matters, with the principle agreed and informed by the additional site investigation testing and results from Phase 1.

Surface Water Runoff Quality

5.19 The preferred solution for managing surface water runoff is to utilise infiltration SuDS techniques, as described in the above sections. Consideration must therefore be given to water quality treatment measures, to ensure the adequate measures are in place to protect the receiving environment.

5.20 The development proposals for both Phases of the development are considered to present a low risk of runoff contamination from roofs and non-trafficked areas, and a medium risk from the car park area and vehicular access routes. Therefore, the Simple Index Approach, as outlined in the SuDS Manual, is proposed as the approach to quantify and mitigate contamination risk at the site. Table 26.1 of the SuDS Manual shows that for discharge to groundwater it is necessary to use Tables 26.2 and 26.4 to quantify risk and pollution control methods.

Table 5.1 Extract of Table 26.1 from the SuDS manual

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 (eg Table 26.2 or equivalent)	Simple SuDS hazard mitigation indices (eg Table 26.3 or equivalent)	Simple SuDS hazard mitigation indices (eg Table 26.4 or equivalent)

5.21 The notes to Table 26.2 state that extra measures may be required for discharges to protected resources, the guidance clarifies that in England and Wales, protected groundwater resources are represented by the catchment of an SPZ 1 classification. The site is not within an SPZ, therefore no additional pollution control measures are required in this regard.

5.22 The simple index approach is outlined in the SuDS Manual and provides pollution hazard indices for different land use classifications. An extract applicable to the development site is provided in Table 5.2 with the applicable values highlighted.

Table 5.2 Extract of Table 26.2 from the SuDS manual

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 (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7

Table 5.3 Extract of Table 26.4 from the SuDS manual

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[1]	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.6[4]	0.5	0.6
A soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer 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[2] of at least 300 mm in depth[3]	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.8[4]	0.8	0.8
Proprietary treatment systems[5, 6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

5.23 For discharges to groundwater, Table 26.4 of the SuDS Manual indicates the mitigation indices for each form of treatment. For the proposed SuDS scheme for Phase 1 & 2, discharge to ground from roofs is directed to infiltration trenches within the infiltration blanket zone. Discharge to ground from access routes, yards and parking are treated via discharge through the enhanced depth of the sub-base in the constructed permeable paving system.

5.24 The total Pollution Hazard Indices and corresponding Mitigation Indices are therefore anticipated to be as presented in Tables 5.4 and 5.5. The Simple Index Approach is passed if the Mitigation Index for each contaminant type is greater than or equal to the Pollution Hazard Index for the corresponding contaminant type.

Table 5.4 Simple Index Approach for roof runoff

Roofs	*Pollution Hazard Index*	*Mitigation Index*	
TSS	0.3	0.4	**Pass**
Metals	0.2	0.4	**Pass**
Hydrocarbons	0.05	0.4	**Pass**

Table 5.4 Simple Index Approach for access routes and parking runoff

Access & Parking	*Pollution Hazard Index*	*Mitigation Index*	
TSS	0.7	0.7	**Pass**
Metals	0.6	0.6	**Pass**
Hydrocarbons	0.7	0.7	**Pass**

5.25 Furthermore, as shown on the construction detail for the permeable paving above the infiltration Blanket, the installation of a proprietary Inbitex membrane is proposed to provide additional treatment to runoff prior to discharging to ground. The Simple Index Approach allows for proprietary systems to be utilised to provided mitigation to potential contamination and the use of the Inbitex membrane is considered to provide an additional level of treatment supported by the hydrocarbon capture specifications as included in the data sheet in Appendix P.

5.26 It can be seen that the use of the SuDS systems as proposed with the addition of the proprietary membrane, the Pollution Hazard Indices are exceeded by the inclusion of enhanced mitigation proposals.

SuDS Maintenance

5.27 Details of SuDS operation and maintenance activities are provided within Chapter 32 of the SuDS Manual. A summary of typical key SuDS components is given in Table 32.1. As can be seen, all SuDS components require regular inspection and for the first year the guidance states that monthly inspections are carried out and documented to inform the ongoing maintenance regime of the site drainage. SuDS components at the site are not to be adopted and will be maintained for their lifetime by the managing company of the development.

5.28 The key maintenance procedure for SuDS is the management of sediment. The risk of sedimentation to these features can be mitigated using silt traps prior to gullies and downpipes discharging to the system and regular sediment removal.

Table 5.51 – Extract of Table 32.1 from the SuDS manual

TABLE 32.1 Typical key SuDS components operation and maintenance activities (for full specifications, see Chapters 11–23)

Operation and maintenance activity	SuDS component												
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter drain	Modular storage	Pervious pavement	Swale/bioretention/ trees	Filter strip	Green roofs	Proprietary treatment systems
Regular maintenance													
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■	■	□	■	■	■		□
Grass cutting	■	■	■	■	□	■	■	□	□	■	■		
Weed and invasive plant control	□	□	□	□		□	□		□		□	■	
Shrub management (including pruning)	□	□	□	□					□	□	□		
Shoreline vegetation management	■	■	□										
Aquatic vegetation management	■	■	□										
Occasional maintenance													
Sediment management[1]	■	■	■	■	■	■	■	■	■	■	■		■
Vegetation replacement	□	□	□	□						□	□	■	
Vacuum sweeping and brushing									■				
Remedial maintenance													
Structure rehabilitation /repair	□	□	□	□	□	□	□	□	□	□	□	□	
Infiltration surface reconditioning				□	□	□	□		□	□	□		

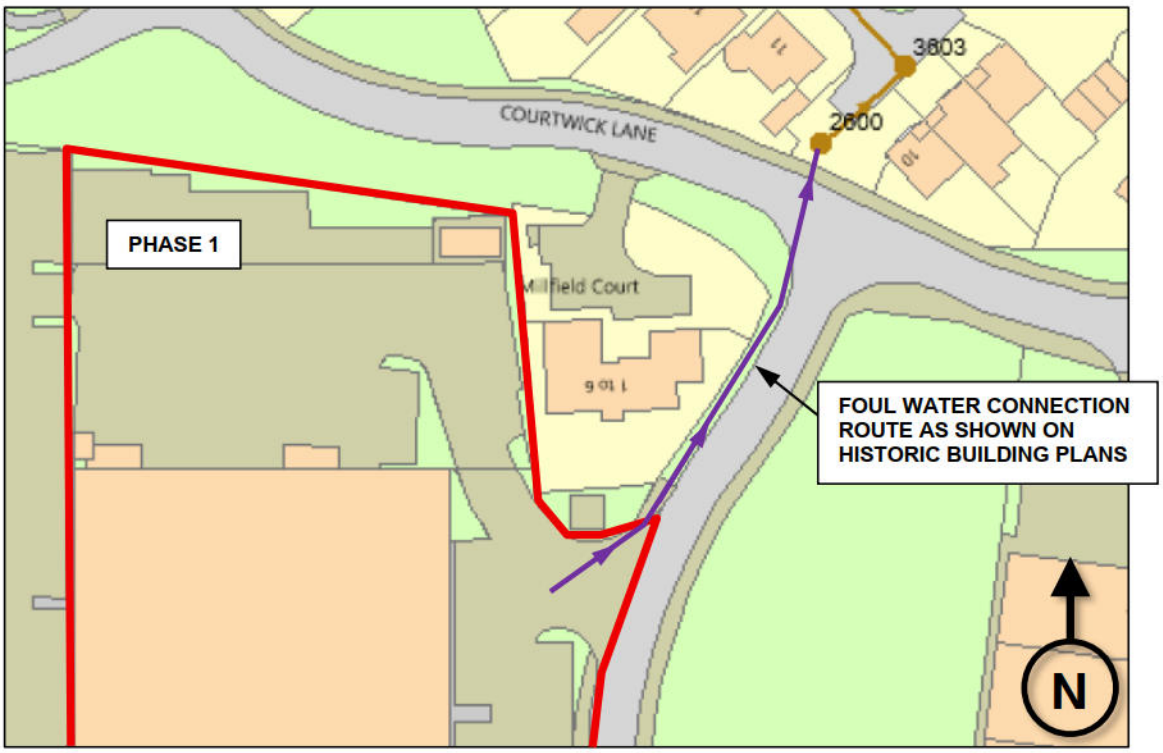
5.29 Further operational activities for the SuDS components described for the site include regular litter and debris removal to reduce the risk of the drainage systems becoming blocked.

5.30 Contractors should protect SuDS components from adverse sediment runoff during the construction phase and an initial pre-handover inspection as required to ensure that the drainage system has been constructed as designed.

5.31 A SuDS Maintenance and Management Schedule is provided in Appendix O.

Phase 1 – Foul Water

5.32 Southern Water sewer records have been obtained, showing public foul water sewers located to the north-east of site (manhole ref: 2600). Southern Water sewer records are attached in Appendix H, with an extract shown in Figure 5.2



5.33 **Figure 5.2 Extract from Southern Water sewer records to the east of the development site. Annotated sewer from historic construction drawing for the Parker Building.**

5.34 A CCTV drainage survey has been undertaken which identified that all foul water from the site currently drains eastwards into an existing sewer flowing northeast along New Courtwick Lane. It was found that the existing pipe connection was compromised by tree root ingress and the point of connection could not be confirmed through a camera survey. However, historic building plans (Appendix E) and site observations conclude that there is an off-site gravity connection to the public foul water sewer system. The full CCTV Survey report is included in Appendix F.

5.35 Drainage layout plans included in Appendix I show how the proposed foul water network is arranged. Foul water is generated by domestic waste from WCs and kitchen areas of the new retail units. No allowance for trade effluent discharge has been included in the foul water drainage design.

5.36 It is proposed to install a new gravity connection to discharge the foul water into the existing public sewer network. Using Southern Water's guidance for the calculation of peak foul water flow rates, the discharge from the site is anticipated to be **6.877 litres/second** as indicated in Table 5.6.

Table 5.6 - Extract from Southern Water design guidance

No.	Type	Litres/ day	Unit	No.	DWF (l/s)	3xDWF (l/s)	6xDWF+10% (l/s)
17	Drive -thru units	380	Per seat	200 [1]	0.880	2.639	5.366
24	Commercial premises (West Site) [2]	300	Per 100m^2	5,142	0.179	0.536	1.089
24	Commercial premises (supermarket)	300	Per 100m^2	1,992	0.069	0.208	0.422
				Total	1.128	3.383	6.877

[1] Data to be confirmed
[2] Future connection for west site premises draining eastwards

5.37 It should be noted that this calculated peak foul water flow rate is indicative and should be considered further at the detailed design phase to assist with discussions and applications with Southern Water.

5.38 Infrastructure Charges, applicable for new development, provide a mechanism through which any off-site network upgrades to the public sewer network to accommodate additional foul water flows are provisioned by the sewerage undertaker.

Phase 2 – Foul Water

5.39 Southern Water sewer records indicate public foul water sewers to the north-west of site (manhole ref: 9602). Southern Water sewer records are included in Appendix H, see extract in Figure 5.3.

5.40 Drainage layout plans included in Appendix I show how the proposed foul water network is arranged. Foul water is generated by domestic waste from WCs and kitchen areas of the new industrial units. No allowance for trade effluent discharge has been included in the foul water drainage design.

5.41 It is proposed to install a new gravity connection to discharge the foul water into the existing public sewer network. Part of the Phase 2 development is proposed to discharge to the northwest via manhole ref: 9602; with the rest of the development proposed to connect to the Phase 1 site to discharge to the public foul sewer to the northeast (manhole ref: 2600).

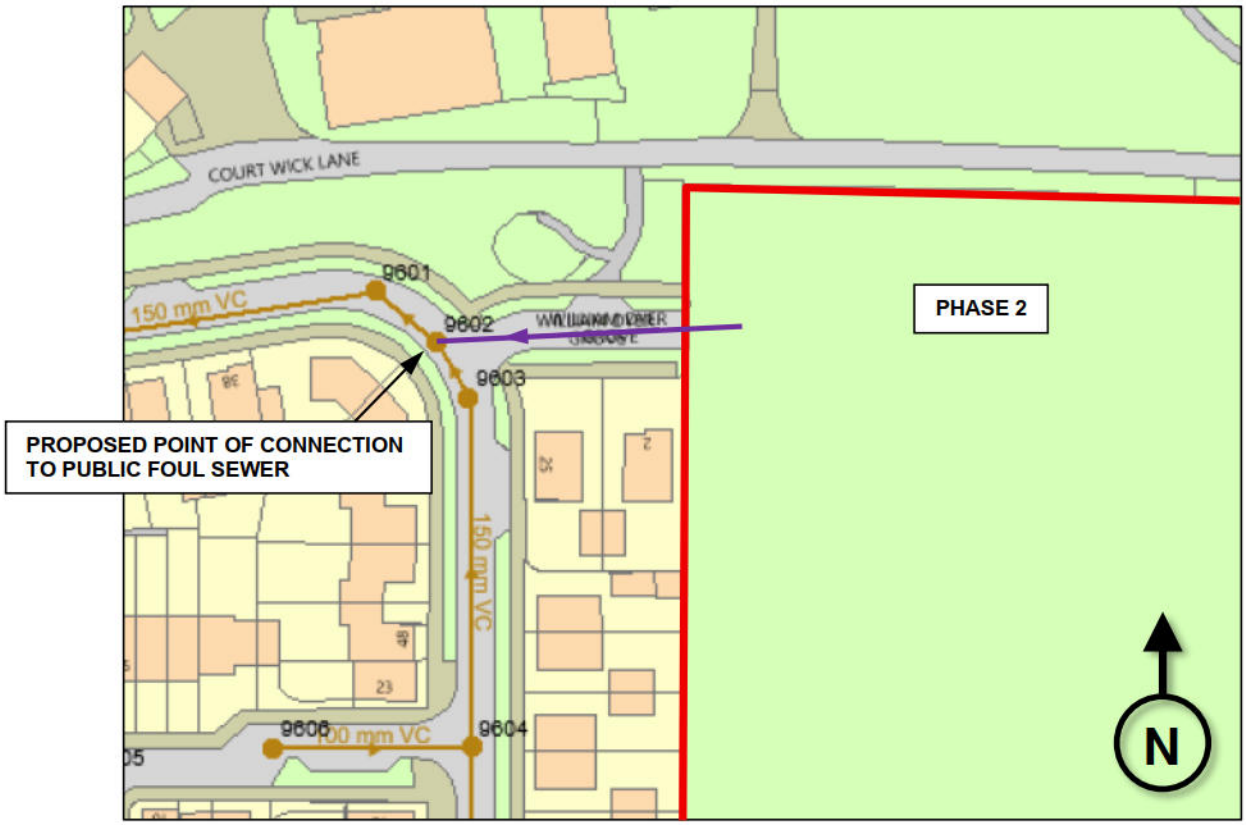


Figure 5.3 Extract from Southern Water sewer records, to the west of the development site. Proposed point of connection for part of Phase 2 development shown.

5.42 Using Southern Water's guidance for the calculation of foul water flow rates for Commercial premises of 4,158m^2 the peak foul water flow rate discharge to the north-west connection is anticipated to be **0.881 litres/second** as shown in Table 5.7.

Table 5.7 - Extract from Southern Water design guidance

No.	Type	Litres/ day	Unit	No.	DWF (l/s)	3*DWF (l/s)	6*DWF+10% (l/s)
24	Commercial premises	300	Per 100m^2	4,158	0.144	0.433	0.881
				Total	0.144	0.433	0.881

5.43 It should be noted that this calculated peak foul water flow rate is indicative and should be considered further at the detailed design phase to assist with discussions and applications with Southern Water.

5.44 Infrastructure Charges, applicable for new development, provide a mechanism through which any off-site network upgrades to the public sewer network to accommodate additional foul water flows are provisioned by the sewerage undertaker.

6.0 SuDS PRINCIPLES AND DEVELOPMENT PROPOSALS

Principle 1 – Natural approach to managing water

The proposed development adopts a natural approach to surface water management through the management of rainfall at source with infiltration to ground. Surface water is retained and treated within the site through shallow, near-surface SuDS features rather than being rapidly conveyed off site via traditional piped drainage.

This approach mimics the site's natural drainage characteristics and also the brownfield drainage arrangement, where all surface water runoff from the existing roof and external hardstanding areas is currently directed to soakaways.

The SuDS proposals minimise runoff volumes and peak flows and avoids placing additional load on the surrounding drainage networks or downstream watercourse receptors.

Principle 2 – Use of SuDS management trains

The drainage strategy incorporates a SuDS management train, with runoff intercepted at source, conveyed through permeable surfaces, attenuated where necessary and ultimately infiltrated to ground. The use of a permeable sub-base within infiltration blanket systems beneath hardstanding areas allows for the staged control of runoff volumes and flow rates while also delivering water quality benefits through filtration.

Principle 3 – The SuDS Approach

The overall drainage design reflects the SuDS approach as defined in the NSfS. It manages surface water flooding for the lifetime of the development, incorporates the higher end allowances for climate change, it is considered to improve runoff quality and integrates drainage infrastructure within the site layout. The system prioritises near surface-based systems where practicable and is designed to be maintainable over the lifetime of the development. The proposed infiltration SuDS scheme is also considered to provide wider environmental benefits by managing runoff sustainably at source.

Principle 4 – Early and integrated design

Surface water management has informed the site design from an early stage and has been developed alongside the site layout, proposed finished levels and the phasing strategy. The drainage proposals take into account the site's topography, geology and hydrology which has been established through detailed infiltration testing and groundwater monitoring. The strategy has been coordinated with the proposed building layout, access, landscaping and climate resilience considerations.

Principle 5 – Informing site layout and multifunctional land use

The layout of the development integrates with the drainage infrastructure to ensure that all areas of the site are effectively served by SuDS. Hardstanding and car parking areas have been used to accommodate permeable surfaces and infiltration features, allowing land to serve multiple functions including drainage, access and parking. This approach is considered holistically across the commercial nature of the development's environment while maintaining runoff treatment prior to infiltration.

Principle 6 – Natural conveyance and exceedance routing

Surface water conveyance follows the topography of the developed site, with exceedance flows directed along overland pathways away from buildings and vulnerable areas. Finished ground levels and external surfacing are designed to safely route flows to landscaped or infiltration areas during extreme events, reducing risk to people and property. The drainage

design has been developed in coordination with engineering, landscape and urban design considerations.

Principle 7 – Consistency with flood risk policy and strategy

The drainage strategy has been prepared with regard to the NPPF, the local development plan, the local SFRA and the relevant SuDS guidance. The design also reflects Environment Agency mapping, groundwater vulnerability data and the requirements of the LLFA and ADC.

Principle 8 – Early engagement with the LLFA and the Arun Drainage Officer

Early and ongoing engagement has been undertaken with the LLFA and the Arun Drainage Officer. Consultation responses have directly informed the evolution of the drainage strategy, including further ground investigation, revised calculations and refinement of the SuDS Approach.

Principle 9 – Demonstrating compliance from the conceptual stage

Compliance with the National SuDS Standards has been demonstrated from the conceptual stage of the planning process. This FRADS report and additional technical responses provided to date show how the SuDS approach is embedded throughout the development and forms a fundamental component of the site's infrastructure.

Principle 10 – Demonstration of standards within site design

The details in this report demonstrate how the seven Standards of the NSfS are met with the proposed drainage strategy. More detail in regard to the separate Standards is provided in Section 7.0.

Principle 11 – Phased development

The development is proposed to be delivered in phases and the surface water drainage strategy ensures that each phase will operate independently and in compliance with the NSfS. The effects of each phase on surface water runoff have been considered to ensure that flood risk is mitigated at all stages of build-out and anticipated occupation of the site in its entirety as well as considering the benefits of a phased SuDS strategy in the development's initial form.

7.0 ADDITIONAL CONSIDERATIONS

7.1 Due to the complexity of the site constraints in the context of meeting the NSfS, it has been necessary to adopt a site-specific approach to some of the bespoke elements incorporated into the wider drainage strategy for the New Courtwick Lane development. These matters have been explicitly requested by the ADC engineer during the consultation process and are addressed in the following sub-sections.

Surface Water Modelling including 10% AEP

7.2 Calculation output is provided in Appendix K to include demonstration of the 10% AEP storm scenario and the impact on the surface water piped network. The hydraulic modelling of the proposed surface water drainage network indicates that, during the 10% Annual Exceedance Probability (AEP) rainfall event (including an allowance for climate change), sections of the network will operate under surcharged conditions.

7.3 As demonstrated in the appended hydraulic modelling outputs, a number of nodes and links exceed pipe soffit levels during peak storm durations, indicating a temporary surcharged state within the system. These conditions would be anticipated and are considered to be a direct consequence of the site-specific design constraints rather than a deficiency in the drainage strategy.

7.4 The drainage network has been deliberately designed with relatively shallow gradients and limited cover depths to facilitate the integration of the below-ground infiltration blanket system, which is the key component of the site's surface water management strategy. This approach prioritises infiltration in accordance with SuDS principles, requiring the pipework to discharge into permeable material at appropriate levels. As such, the system does not function as a conventional deep-piped network designed for rapid conveyance, but rather as part of a managed storage and infiltration system where short-term surcharging is considered acceptable and is controlled.

7.5 Notably, the modelling confirms that while surcharging occurs within the pipe network, there is no associated above-ground flooding or exceedance of critical levels. The system continues to convey flows to the infiltration blanket, where attenuation and infiltration processes facilitate controlled discharge to ground. The surcharging is therefore transient and contained within the infrastructure, with no adverse impact on site operation or flood risk to buildings and surrounding areas.

7.6 To mitigate the risk of siltation and ensure long-term performance of the system, a series of silt traps and catchpit manholes will be incorporated at key locations within the network. These features will intercept sediments and debris prior to entering downstream pipework and infiltration structures, thereby maintaining hydraulic efficiency and the functionality of the infiltration blanket. In addition, the system will be supported by a detailed management and maintenance plan, which will include the requirement for regular inspection, cleaning of silt traps, jetting of pipework where necessary and monitoring of performance.

7.7 In summary, the occurrence of surcharging within the 10% AEP event is an anticipated and considered to be an acceptable aspect of the drainage design, driven by the requirement to adopt a shallow, infiltration-led solution. The combination of controlled storage, infiltration, sediment management measures and ongoing maintenance ensures that the system performs effectively, with residual risks appropriately managed and mitigated.

Surface Water Management of Supermarket Delivery Service Ramp

7.8 The base of the supermarket delivery ramp cannot drain by infiltration as a soakaway serving it would have its base well within the required 1m unsaturated zone dictated by the groundwater levels. It cannot drain by gravity to the shallow infiltration system proposed to serve the development and it is therefore proposed to utilise a pump to manage surface water runoff in this area.

7.9 The proposed use of a surface water sump pump at the base of the supermarket delivery ramp is a necessary and appropriate solution in the absence of a viable gravity outfall or alternative drainage connection. Due to the ramp's geometric constraints and its position below the surrounding ground level, surface water runoff will naturally accumulate at the low point. Without intervention, this would present a risk of localized flooding, operational disruption and potential safety hazards.

7.10 The installation of a pumped drainage system ensures that collected runoff is actively managed and discharged to a suitable and outfall location within the surface water drainage network (into the infiltration blanket medium), thereby maintaining the functionality and resilience of the delivery area.

7.11 The system is to be designed with a twin pump arrangement to provide both operational reliability and redundancy. Under normal conditions, the duty pump will manage anticipated flows based on design rainfall events. In the event of increased inflow or duty pump failure, the standby pump will automatically engage, ensuring continuity of operation.

7.12 This dual-pump configuration significantly reduces the probability of system failure and addresses concerns regarding single-point vulnerability. The pumps will be sized in accordance with peak runoff calculations, with additional allowance to accommodate potential blockage or reduced efficiency over time.

7.13 To further mitigate residual flood risk, the system should incorporate a high-level alarm linked directly to the Building Management System (BMS). This would provide real-time monitoring and immediate notification to site management in the event of abnormal water levels or pump malfunction.

7.14 The integration with the BMS ensures that management personnel can respond promptly to any issues, enabling intervention before critical conditions are reached. A proactive monitoring strategy would represent a robust operational control measure beyond passive drainage solutions.

7.15 Regular maintenance and inspection regimes will also be implemented to ensure long-term performance, including debris clearance, pump servicing and alarm testing. The delivery ramp is an essential operational asset of the supermarket and will be afforded significant oversight from the maintenance and operations team.

7.16 Overall, the proposed pumped drainage solution represents a manageable engineering solution to the site-specific challenge of draining the delivery ramp area. Through the combination of redundancy and active monitoring, the residual risk of flooding is reduced to a level that is considered acceptable in line with standard drainage and flood risk management practices.

7.17 The catchment area will be minimised and is relatively small in comparison to the rest of the development. Maintenance of monitoring of the pump set will be frequent and documented and will be included in the maintenance and management schedule as required.

Alternative Drainage Strategy – Attenuated System

7.18 Based on the information gathered from extensive investigations at the site to date (including trial pits, boreholes, infiltration testing and groundwater monitoring) it is considered that the principles of utilising an infiltration-led approach to surface water management are suitable and appropriate for the proposed development. However, in the event of unforeseen issues coming to light that would lead to an infiltration SuDS solution becoming unfeasible, an alternative surface water drainage strategy has been developed for both Phase 1 and Phase 2 of the proposed development.

7.19 Proposed drainage plan layouts and hydraulic calculation output for the alternative attenuation SuDS arrangement are included in Appendices L and M, respectively.

7.20 This alternative approach is based on an attenuation-led SuDS approach with discharge via gravity to the adjacent watercourse located approximately 200 m to the north-east of the site. As illustrated on the attached drainage strategy layout, the system comprises a network of surface water drains conveying runoff to a series of on-site attenuation features, before discharging at a controlled rate to the receiving watercourse. The site topography allows for a viable gravity connection, removing the need for pumped off-site discharge and ensuring a robust and maintainable solution.

7.21 An annotated extract of the Southern Water sewer record is shown in Figure 7.1. This indicates the proposed connection point to the Eel Springs Ditch main river for an attenuated off-site discharge strategy in relation to the development site.

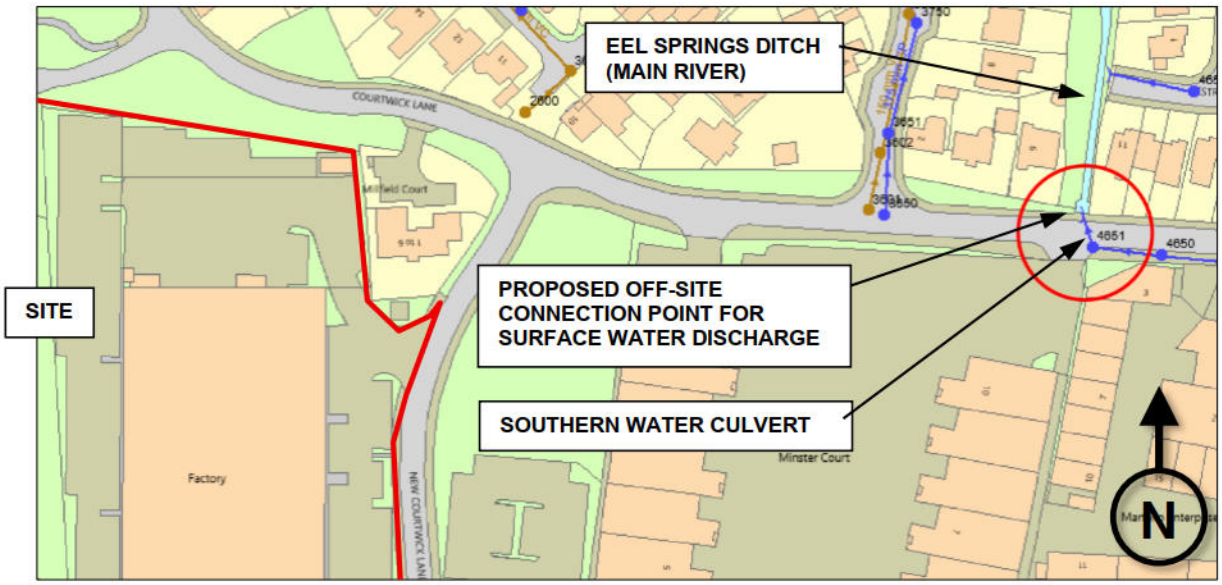


Figure 7.1 Annotated extract of Southern Water sewer records indicating off-site connection point

7.22 The attenuation system has been designed in accordance with the SuDS Manual (CIRIA C753) and the NSfS, with runoff rates restricted to the equivalent greenfield runoff rate for the 50% AEP event. This is achieved through the use of flow control devices located at the downstream end of the attenuation features, ensuring that post-development discharge does not exceed pre-development conditions. The attenuation volumes have been sized to accommodate critical storm events, including an allowance for climate change, thereby providing sufficient storage to prevent uncontrolled discharge to the watercourse.

7.23 Whilst this alternative strategy is technically deliverable and is considered to provide a compliant means of managing surface water runoff from both phases of the development, it is not considered to be the preferred solution. In accordance with the SuDS hierarchy, priority should be given to managing runoff at source through infiltration, where site conditions allow. The primary drainage strategy — utilising a infiltration blanket to promote infiltration to ground — achieves this objective by mimicking natural hydrological processes, reducing runoff volumes and providing water quality benefits through filtration and percolation.

7.24 By contrast, the attenuation and discharge approach, although controlled, represents a downstream solution that conveys runoff off-site and introduces flows to the receiving watercourse. This has the potential to contribute to cumulative flood risk, particularly during higher return period events or where the receiving system is already constrained. As such, this option should be viewed as a contingency position only, to be progressed in the event that infiltration is demonstrably unfeasible due to groundwater constraints, as determined by the ADC engineer and the LLFA.

7.25 In summary, the attenuation-based SuDS scheme provides a robust and policy-compliant fallback solution; however, the infiltration-led strategy remains the preferred approach from both a sustainability and flood risk management perspective. It is therefore considered that the drainage officer should support the infiltration solution as the primary method of surface water disposal, ensuring that runoff is managed at source in line with best practice SuDS principles.

7.26 As discussed previously, the soakage testing undertaken in Phase 1 is considered to demonstrate that similar infiltration potential is likely to be encountered at the top of the River Terrace Deposit strata that has been identified through site investigation works as being present at similar datum levels beneath Phase 2 development area. Therefore, an infiltration SuDS scheme is considered to be feasible in principle to serve the surface water runoff from the Phase 2 development catchment

8.0 NATIONAL STANDARDS FOR SUSTAINABLE DRAINAGE

8.1 This section demonstrates how the proposed drainage strategy for New Courtwick Lane meets each of the seven National Standards for SuDS, incorporating site evidence, design measures, and the consultee correspondence and responses.

Standard 1 - Runoff Destinations

8.2 The preferred disposal route is infiltration to ground via infiltration blankets located within the near-surface River Terrace Deposits. This approach follows the SuDS hierarchy by managing water as close to source as practicable and is supported by targeted winter infiltration testing and historic soakaway records.

8.3 Rainwater collection for re-use has been considered and appraised for the roof catchments. As set out in the email from ECE Planning to Emma Sheppard of **06.10.2025**:

> *We acknowledge the consultee's reference to water reuse / rainwater harvesting as a potential runoff destination. However, in this case we consider this approach not to be a practical or appropriate surface water management solution for the following reasons:*
>
> *1. The scheme comprises a supermarket and two drive-thru food outlets. These are commercial units with very limited internal water demands beyond general domestic supply (toilets, basins, staff areas) and process water typical of retail/food service. Unlike residential schemes, there is no significant or continuous household-type consumption pattern that could realistically make use of rainwater harvesting systems on a meaningful scale.*
>
> *2. The development has very limited areas of soft landscaping, with no material requirement for irrigation. This removes one of the principal beneficial uses for a harvested rainwater supply that might otherwise justify such an installation.*
>
> *3. The catchment area (roof and hardstanding) would generate a substantial runoff volume. However, the on-site demand for reuse would be minimal. This leads to both inefficiency and excess water storage requirements, adding system complexity without proportional benefit. Much of the collected runoff would, in practice, bypass reuse tanks and ultimately still require discharge.*
>
> *4. Installing and maintaining large-scale rainwater harvesting systems for a site type where actual reuse would be negligible is not cost-effective. It also introduces additional power demands for pumping and recirculation, which is contrary to the intent of sustainable design.*
>
> *5. We further note the drainage officer's own acknowledgement (para 1.2 of their comments) that rainwater harvesting is unlikely to provide a comprehensive surface water solution in this case and that progression to infiltration, as proposed, is a supported strategy.*
>
> *In light of the above, we consider that rainwater harvesting is not an appropriate or proportionate solution for a development of this type. The proposed infiltration-based approach represents the most pragmatic, sustainable and effective method for managing runoff from the site in accordance with relevant guidance.*

8.4 An alternative attenuated discharge to the Eel Springs Ditch main river is included as a contingency strategy to be implemented if post-demolition verification testing proves unfavourable. A restricted piped discharge off-site to the nearby main river is considered viable with the relevant licensing and application processes to be resolved through the usual statutory mechanisms (i.e. Highway's licences, S106 sewer connection application and/or EA Permitting)

Standard 2 Management of Everyday Rainfall (Interception)

8.5 Runoff will be managed through a staged management train utilising permeable surfacing over an engineered infiltration blanket sub-base to discharge to ground in the underlying River Terrace Deposits. This provides management at source for everyday rainfall events.

8.6 Hydraulic calculations use a conservative winter infiltration rate of 6.00 x 10^{-6} metres/second with a safety factor of 5. Further targeted post-demolition infiltration testing will be undertaken to verify the design infiltration rate, as requested by the ADC engineer.

Standard 3 Management of Extreme Rainfall and Flooding

8.7 External levels and surfacing are arranged to convey exceedance flows away from buildings into landscaped and hard-paved external areas. An Exceedance Flow Path Plan is provided in Appendix N. Hydraulic modelling outputs for a range of storms, including climate change allowances and the 10% AEP scenario, are provided in Appendices K and M.

8.8 Where local constraints exist for the supermarket delivery bay ramp, a pumped solution is specified only by exception as a gravity-fed discharge is not considered feasible for this small catchment zone. This will comprise a dual pump system with alarmed monitoring and BMS integration to manage residual flood risk.

Standard 4 Water Quality

8.9 The Simple Index Approach from the SuDS Manual will be applied to each catchment: roofs and non-trafficked areas are low risk; car parks and access routes are medium risk. A formal Simple Index assessment will be appended to the detailed FRA/Drainage Statement.

8.10 Staged treatment is provided by permeable surfacing, engineered infiltration media (including a pollutant-retentive layer where engineered fill is used), the unsaturated zone beneath the infiltration blanket, and proprietary systems where required.

8.11 The site lies outside a groundwater Source Protection Zone; nevertheless, conservative design and treatment measures are applied to protect the underlying Secondary A aquifer.

Standard 5 Amenity & Standard 6 Biodiversity

8.12 Comments regarding these standards have been previously responded to and involve input from separate design disciplines. The comments are copied below, as emails from ECE Planning to Emma Sheppard of 06.10.2025 and 23.12.2025, for reference;

Standard 5 Amenity

Email 06.10.2025

While the officer is requesting open SuDS features such as swales or basins or amenity reasons, they are not suitable for this development. The development is designed for efficient, short-stay customer visits to a supermarket and drive-thru units, where encouraging people to dwell around open water features would conflict with the operational nature of the site and raise potential safety and management concerns.

Instead, SuDS principles are fully embedded through permeable paving, sub-base storage, infiltration to ground (as supported by testing), and additional treatment layers (Inbitex geotextile). Soft landscaping and tree planting are also included to deliver biodiversity and visual benefits. This approach achieves the SuDS objectives of water quantity, quality, amenity and biodiversity in a way that is proportionate and compatible with the site's function.

Email 23.12.2025

The Arun Drainage Engineer request for open SuDS features such as swales or basins is noted. However, as we have previously detailed, such features are not appropriate within the context of this development, which is designed to accommodate short-stay customer visits associated with a foodstore and drive-thru uses. Introducing open water features would conflict with the operational nature of the site and raise avoidable safety and management concerns.

Notwithstanding this, SuDS principles are fully embedded within the scheme through permeable paving, sub-base storage, infiltration to ground, and enhanced treatment layers, alongside soft landscaping and tree planting. This approach delivers effective water quantity control, water quality treatment, visual mitigation, and biodiversity benefits in a manner proportionate to the function of the site

Standard 6 Biodiversity

Email 06.10.2025

We note the consultee's comments on biodiversity. However, the biodiversity net gain "trading rules" must be correctly applied: removal of existing habitats in order to introduce engineered SuDS features would not represent an ecological enhancement. In practice, this would reduce biodiversity value, as semi-natural habitats typically carry a higher score than artificial drainage features.

As with amenity, open SuDS features are not appropriate in this commercial setting. The site is designed for short-stay supermarket and drive-thru use where areas encouraging lingering are neither practical nor desirable.

Instead, biodiversity benefits are being secured through targeted and proportionate measures such as tree planting and soft landscaping. This ensures that biodiversity net gain can be achieved without compromising the functionality or safe operation of the site.

Email 23.12.2025

As previously iterated in rebuttals to the Arun Drainage Engineer, in considering biodiversity, it is important that biodiversity net gain trading rules are correctly applied. The removal of existing habitats to introduce engineered drainage features would not constitute an ecological enhancement and would, in practice, risk reducing biodiversity value.

Given the commercial nature of the development and its short-stay operational characteristics, open SuDS features are neither practical nor desirable. Instead, biodiversity enhancements are secured through targeted tree planting and soft landscaping, ensuring biodiversity net gain is achieved without compromising the safe and efficient operation of the site.

Standard 7 Design for Construction, Operation, Maintenance, Decommissioning and Structural Integrity

8.13 The scheme is proposed to use standard construction components with defined installation requirements. Engineered fill specifications will be confirmed once post-demolition testing is completed. The designs submitted with this report are founded on site-specific evidence for groundwater monitoring and infiltration testing, the principles of which have been agreed with the ADC engineer and the LLFA.

8.14 A SuDS Maintenance and Management Schedule is provided in Appendix O. This schedule details inspection requirements, frequencies and responsibilities. Inspection protocols are specified to identify any deterioration in materials or performance of the SuDS features and enable planned replacement or decommissioning of components without adverse environmental impact.

9.0 FLOOD HAZARD PROBABILITY

9.1 Flood risk data has been obtained from the online EA Flood Map, an extract of which is shown in Figure 9.1. The mapping shows the site to be located entirely within Flood Zone 1. The PPG to the NPPF defines Flood Zone 1 as having less than 1:1000 annual probability of river or sea flooding (less than 0.1%).

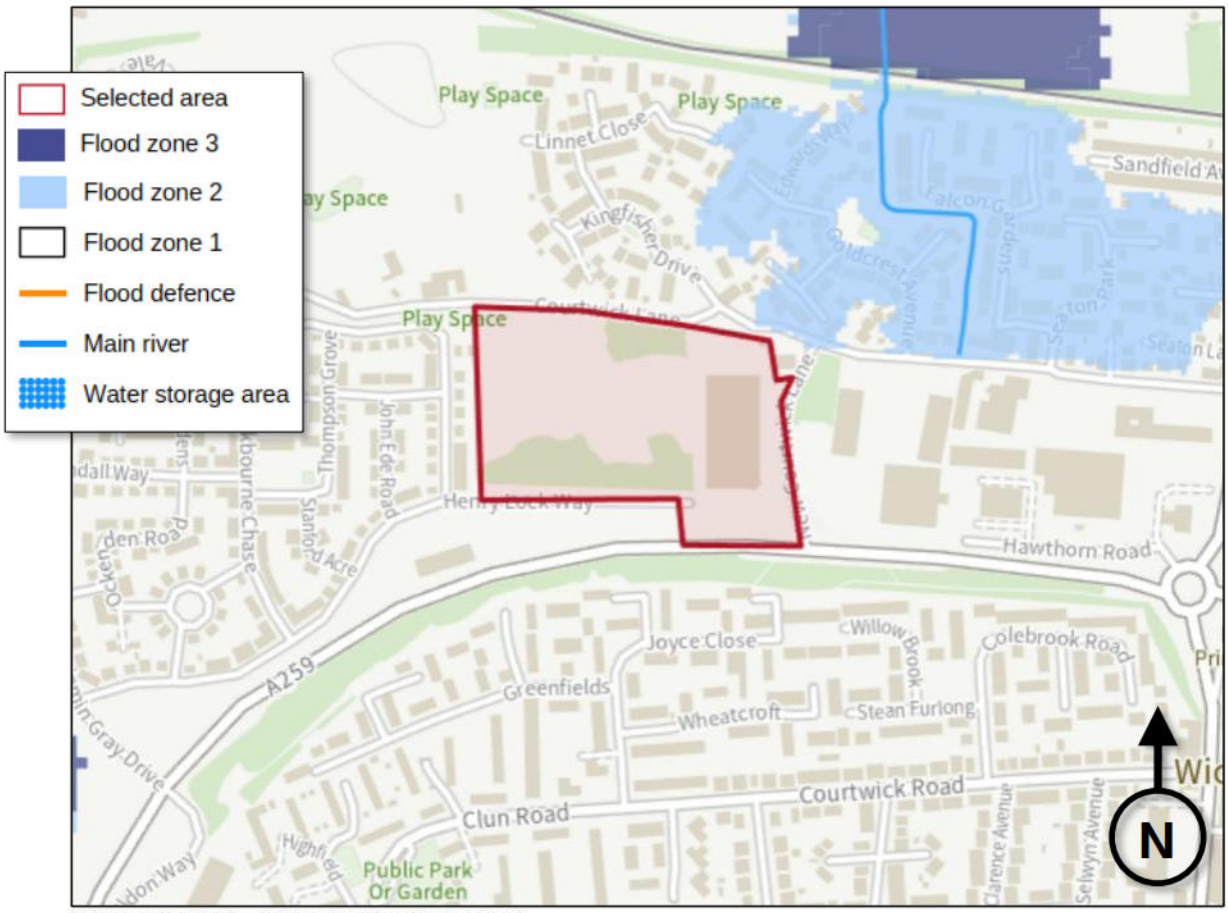


Figure 9.1 EA Flood Map for Planning extract

Surface Water Flooding

9.2 The EA has produced surface water flood maps which shows the development site to be at a low to very low risk of surface water flooding. An extract of the surface water flood risk map is shown in Figure 9.2 and indicates isolated low-risk flood areas within the developed part of the site. The area identified as low risk is to remain undeveloped and given over to ecological enhancements. Therefore, the existing surface water flood risk will remain in this area and is not adversely affected by the development proposals.



Figure 9.2 EA online surface water flood map extract

9.3 Surface water flood risk across the developed part of the site will be mitigated by the inclusion of a new SuDS system, as described in Section 4.0, which will actively manage surface water at source ensuring there is no increase in risk to site users and neighbouring or downstream properties. Exceedance event conveyance routes will be engineered into the final levels scheme for the external surfacing areas, with runoff conveyed away from the buildings towards the surrounding landscaped features. An exceedance flow path plan is included in Appendix N.

9.4 Through the management of surface water run through positive below ground drainage, SuDS features and dedicated exceedance flow paths, it is considered that any residual surface water flood risk is mitigated to a reduced level over the existing arrangement for the developed part of the site.

Sewer Flooding

9.5 No incidents of historic sewer flooding are known to have been recorded at the site or affecting the site.

9.6 Local topography shows that New Courtwick Lane and Courtwick Lane are at a lower ground level than the proposed ground levels of the site and therefore any overland flows from sewer flooding would be expected to be restricted to the highway corridor with flow directed away from the site towards the northeast.

Reservoir Flooding

9.7 The online EA maps show the site to be outside any flood risk area associated with reservoir flooding, therefore the risk from this source is considered to be very low.

Groundwater Flooding

9.8 As discussed in detail in Section 3.0, groundwater has been the subject of extensive monitoring across the site. Peak groundwater levels in the winter of 2025/2026 have been recorded at +2.383mAOD, which is 1.642m bgl.

9.9 Given the depth below ground to groundwater encountered following exceptional rainfall during January 2026, the groundwater flood risk is considered to be low, as ground levels are well above recorded groundwater levels across both Phase 1 & 2 areas.

Climate Change

9.10 Increased rainfall intensity, longer storm durations and rising sea levels are all attributed to global climate change. The PPG to the NPPF states that an allowance for an increase in rainfall intensity over the design life of the development should be taken into account when designing surface water drainage systems. Current guidance dictates this to be 45%, for the Arun and Western Streams Management Catchment area, when considering the site's location and its anticipated design life.

Residual Risk & Off Site Impacts

9.11 Residual risks are considered to be limited to exceedance events above the design criteria and/or a blockage failure of the drainage network. Should flooding occur due to excess rainfall or through infrastructure blockage or failure, the surcharged flows would flow to unpaved landscaped areas where runoff would naturally drain to ground and, eventually, the local watercourse network, away from buildings and vulnerable areas of the development. An exceedance flow path plan is included in Appendix N.

Sequential & Exception Tests

9.12 Table 2 of the NPPF classifies all forms of development to be appropriate for Flood Zone 1 without the need for the Sequential Test or Exception Test to be applied.

10.0 CONCLUSIONS

10.1 This updated Flood Risk Assessment and Drainage Strategy has been prepared to support the hybrid planning application for the phased redevelopment of land west of New Courtwick Lane, Littlehampton. The report has reviewed the site setting, proposed development, flood risk sources, groundwater conditions, infiltration characteristics, existing drainage infrastructure and the proposed surface water and foul water drainage strategy for both phases of development.

10.2 The site is shown by Environment Agency mapping to be located wholly within Flood Zone 1, where the probability of fluvial or tidal flooding is low. The development is therefore considered appropriate in flood risk terms and there is no requirement for the Sequential Test or Exception Test to be applied. Other sources of flooding, including surface water, sewer, reservoir and groundwater flooding, have been reviewed and are assessed as presenting a low or manageable risk to the proposed development.

10.3 Surface water flood risk across the developed areas of the site will be managed through a new SuDS-based drainage strategy. The preferred approach is infiltration-led, using shallow infiltration blanket systems and permeable construction to manage rainfall at source, replicate natural drainage processes and avoid placing additional burden on off-site drainage networks or downstream watercourses. This approach is consistent with the SuDS hierarchy and the principles set out in the National Standards for Sustainable Drainage.

10.4 Groundwater monitoring has identified a peak seasonal groundwater level of +2.383mAOD, recorded during an exceptional winter rainfall period. The proposed Phase 1 infiltration blanket arrangement has therefore been developed to maintain the required separation between the base of the infiltration system and the recorded peak groundwater level through a modest increase in finished levels. This provides an appropriate unsaturated zone for infiltration and water quality treatment while maintaining compatibility with the proposed site layout and building levels.

10.5 Winter infiltration testing undertaken across the Phase 1 site has demonstrated that infiltration is viable within the shallow River Terrace Deposits. The drainage design has adopted a conservative infiltration rate and safety factor, with further post-demolition testing to be undertaken to inform the detailed design. The available site investigation evidence also supports the principle that infiltration SuDS are likely to be feasible for Phase 2, subject to further targeted testing as the outline proposals are developed.

10.6 Hydraulic modelling indicates that the proposed surface water system can manage the design storm events, including climate change allowance, without causing flooding to buildings or increasing flood risk elsewhere. Where temporary surcharging occurs within the shallow pipe network during the 10% AEP event, this is contained within the drainage infrastructure and is considered acceptable in the context of the infiltration-led design. Exceedance routes will be incorporated into the final levels design to direct flows away from buildings and vulnerable areas.

10.7 The supermarket delivery ramp represents a localised drainage constraint due to its low-level geometry and lack of a viable gravity or infiltration outfall. The proposed pumped drainage solution, incorporating duty and standby pumps, high-level alarm provision and integration with site management systems, provides a robust and maintainable means of managing this specific residual risk.

10.8 The proposed drainage strategy demonstrably meets the seven National Standards for Sustainable Drainage. Runoff destinations are prioritised to on-site infiltration with an appraisal of the effectiveness of rainwater reuse.

10.9 An alternative attenuation-led drainage strategy has also been considered as a contingency option in the event that infiltration is later demonstrated to be unfeasible. However, based on the current investigation data and consultee engagement, the infiltration-led strategy remains the preferred and most sustainable approach, as it manages runoff at source, reduces runoff volumes and limits potential off-site impacts.

10.10 Everyday rainfall is managed by a staged management train as shown in detailed modelling pending further post-demolition testing. Extreme rainfall is addressed through exceedance routing, hydraulic modelling and a pumped contingency only where gravity drainage is not feasible.

10.11 Water quality and treatment of runoff is addressed through the Simple Index Approach, with staged treatment and proprietary systems.

10.12 Amenity and biodiversity have been considered in a manner proportionate to the site's operational context.

10.13 Collectively these measures ensure the development will manage surface water sustainably, protect groundwater and provide a maintainable, resilient SuDS solution in line with the SuDS hierarchy and in response to the consultee concerns raised by the ADC engineer.

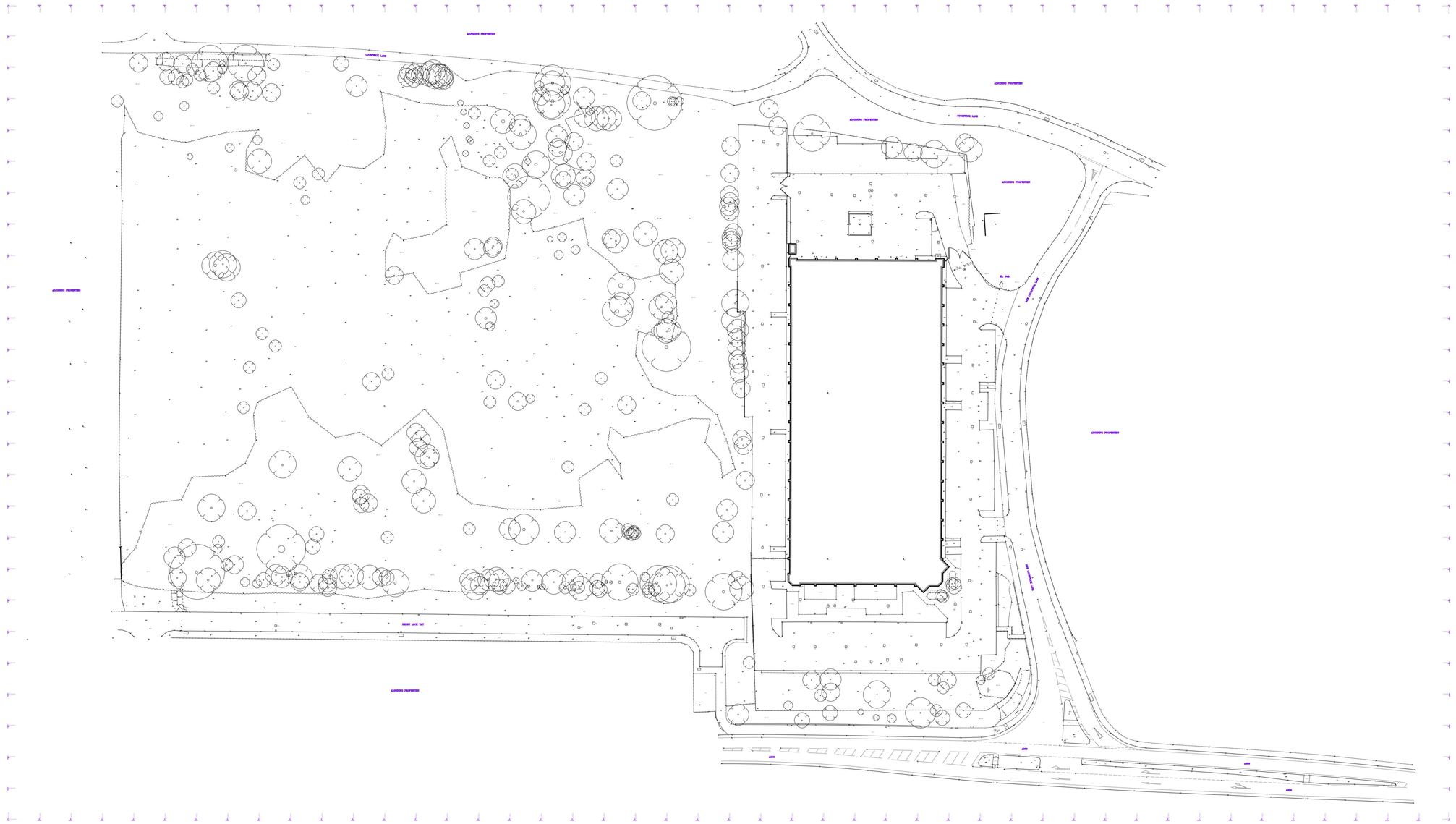
10.14 Foul water drainage from the development is proposed to discharge by gravity to the existing Southern Water public sewer network, subject to the necessary approvals and detailed design confirmation. The calculated foul water flow rates are indicative at this stage and should be reviewed further as part of the detailed design and sewer connection application process. No trade effluent discharge has been assumed within the foul drainage strategy.

10.15 This report has identified measures that reduce the level of residual risk to the site with the construction of new SuDS infrastructure utilising infiltration. It has been demonstrated that the proposals for the redevelopment of the Wick site can be successfully implemented and managed and that there should be no increase in risk to users and neighbouring properties from flooding over the expected design life of the development. The proposed SuDS approach is therefore considered acceptable in flood risk and drainage terms and suitable to support the planning application.

10.16 The proposed drainage strategy has been developed in accordance with the SuDS hierarchy, with infiltration to ground identified as the preferred means of managing surface water runoff. The evidence presented in this report, including groundwater monitoring, winter infiltration testing and site investigation data, demonstrates that the principle of an infiltration-led SuDS scheme is achievable for Phase 1 and can be taken forward to detailed design following demolition of the existing buildings and completion of further verification testing.

10.17 The same principles are also considered applicable to Phase 2, where the final drainage design can be coordinated with the reserved matters proposals and supported by targeted testing. On this basis, there is sufficient technical evidence to demonstrate that the proposed SuDS strategy is fundamentally deliverable and that any planning condition or reserved matter requirement relating to drainage can be discharged without introducing an unacceptable risk of the scheme proving unachievable.

APPENDIX A – TOPOGRAPHIC SURVEY



APPROXIMATE DIRECTION OF NORTH

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Drawing Naming Convention:

Job No/Code/Dwg type/Location/Ref

Code: 02 = Existing

Dwg Type: B = Building; S = Section; E = Elevation; T = Topographical

Location: B = Basement; E = External; G = Ground; I = First; R = Roof; M = Mezzanine; C = Ceiling Plan; F = Front; S = Side; R = Rear; GA = General Layout; AA = Section AxA

Ref: Ref to individual dwg (LG, (e.g., Revision)

Standard Abbreviations (where applicable):

Building Survey		Land Survey	
AB	ABR BRICK	B	BOLLARD
ACU	AIR CONDITIONING UNIT	BB	BELISHA BEACON
AH	ACCESS HATCH	BT	B.T. COVER
AP	ACCESS PANEL	CAM	CAMERA
AV	AIR VALVE	CATV	CABLE TV COVER
B	BOILER	CL	CONTROL
BR	BOILER	ELEC	ELECTRIC COVER
BSL	BEAM SOFFIT LEVEL	EP	ELECTRIC POLE
CB	CUPBOARD	ER	EARTH ROD
CC	CEILING CHANGE	FH	FIRE HYDRANT
CH	CLEAR INTERNAL HT	FP	FLAG POLE
CvA	CILL TO APEX HT	FW	FOUL WATER
CvF	CILL TO FLOOR HT	GV	GAS VALVE
CvS	CILL TO SPRING HT	GV	GAS VALVE
DB	DOOR BASE HT	IC	INSPECTION COVER
DH	DOOR HEIGHT	IL	INVERT LEVEL
DR	DRAIN	LP	LAMP POST
EXT	EXTRACTOR FAN	MH	MANHOLE
FA	FIRE ALARM	MKR	MARKER POST
FA	FLOOR TO APEX HT	P	PIPE
FC	FLOOR TO CILL HT	PM	PARKING METER
FH	FLOOR TO HEAD HT	PR	PIPE
FS	FLOOR TO SPRING HT	RO	RODDING EYE
GEA	GROSS EXTERNAL AREA	RS	ROAD SIGN
GIA	GROSS INTERNAL AREA	RTW	RETAINING WALL
GU	GULLY	RWP	RAIN WATER PIPE
HT	HEIGHT	SA	SERVICE AREA
HW	HOT WATER TANK	SB	SIGN
NIA	NET INTERNAL AREA	SL	SOFFIT LEVEL
NTS	NOT TO SCALE	SV	STOP VALVE
RAD	RADIATOR	SVP	SOIL VENT PIPE
RE	RECESS HEAD HEIGHT	SW	STORM WATER
RV	RAISED FLOOR VOID	TOF	TOP OF FENCE
RL	RIDGE LEVEL	TOW	TOP OF WALL
RSH	ROLLER SHUTTER	TP	TELEGRAPH POLE
RWP	RAIN WATER PIPE	UTL	UNABLE TO LIFT
SVP	SOIL VENT PIPE	VP	VENT PIPE
V	VENT	WM	WATER METER
WA	WARDROBE	WT	WATER TAP

Symbols (where applicable):

Direction of sloping ceiling

2.65 FLOOR TO STRUCTURAL CEILING HT

2.65 FLOOR TO SUSPENDED CEILING HT

10.00 FLOOR LEVEL RELATIVE TO DATUM

Notes:

The Survey has been computed to ordinance survey 'Active Network'

All levels are in metres and relate to ordinance survey 'Active Network'

All direction arrows indicate UP unless otherwise stated.

Drainage pipe sizes (where shown) have been gauged from the surface (for safety reasons) and should be regarded as approximate only.

Visible features in the vicinity of any boundaries, as shown on this survey, may not represent the extent of legally conveyed ownership.

Whilst every effort has been made to determine wall materials, no guarantee is given. Materials should be regarded as assumed unless verified by a qualified third party.

Tree spread and height are approximate. Species should be regarded as assumed unless verified by a qualified third party.

Rev	Date	By	Description

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Client: MORGANS PROPERTY CONSULTANTS

Project: NEW COURTWICK LANE, WICK, LITTLEHAMPTON

Drawing Title: EXISTING TOPOGRAPHICAL SURVEY

Date:	Scale:	Surveyor:	Drawn:	Checked:
MARCH 23	1:500@A0	KR	KR	HB

Job No:	Drawing No:	Sheet No:	Rev:
23029	23029-02-T-E	1 of 1	

APPENDIX B – LAND SCIENCE GROUNDWATER REPORT

Land Science

PARKER BUILDING, NEW COURTWICK LANE, LITTLEHAMPTON, BN17 7RZ

WINTER GROUNDWATER MONITORING

NCL ESTATES LIMITED

22ND APRIL 2026

LS8937 V6

Site:	**PARKER BUILDING, NEW COUTWICK LANE, LITTLEHAMPTON, BN17 7RZ**
Title:	**WINTER GROUNDWATER MONITORING (ADDITIONAL)**
Project:	**COMMERCIAL REDEVELOPMENT**
Client:	**NCL ESTATES LIMITED**
Contact:	**HOP CONSULTING**
Date:	**22nd APRIL 2026**
Reference:	**LS8937**
Version:	**V6 – FINAL**

Prepared By:	[redacted]	**JAKE TRANGMAR B.Sc. (Hons)** **Senior Environmental Scientist**
Review & Authorised By:	[redacted]	**MICHAEL ROSE M.Sc., B.Sc., FGS, AIEMA** **Principal Geo-Environmental Consultant**

Land Science are Geotechnical Engineering and Contaminated Land specialists for construction, regulation, property ownership, and due diligence. By understanding our client's needs and appreciating the role that ground issues play within a wider context, we provide a reliable service and first-class expertise tailored to specific requirements. For more information on how we can benefit your project, please visit www.landscience.co.uk

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REPORT CONDITIONS 11
GLOSSARY OF TERMS 12

FIGURES

FIGURE 1: Site Location Plan (LS8074)
FIGURE 2: Existing Layout (LS8074)

APPENDICES

APPENDIX A: Monitoring

1.0 INTRODUCTION

1.1 General

Land Science was instructed to undertake a winter groundwater monitoring in relation to the proposed redevelopment at Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ. The location is shown on Figure 1, which is centred at grid reference TQ 0222 0359.

1.2 Client

The Client for this appointment was NCL Estates Limited, as represented by HOP Consulting. This report may only be used by this named client and their project team for the purposes set out and subject to the report conditions. It was understood that the Client already owned the property, and that this investigation was not a pre-purchase appraisal.

1.3 Area Under Investigation

The area under investigation comprised a large vacant and derelict commercial unit with extensive hardstanding for car parking and access for large transportation vehicles. The layout is indicated on Figure 2. The area was approximately 1.4 hectares.

1.4 Proposed Development

The proposed development was understood to comprise a commercial redevelopment comprising a larger retail area with associated parking bays to the north, and a drive-thru fast food and beverage units with associated parking pays to the south. Figure 3 illustrates the layout of the proposed redevelopment. The findings of this report may be not valid if the proposed development is altered.

1.5 Previous Investigations

The following previous investigations relevant to the site were made available:

- Groundwater Assessment, Land Science, Ref. LS8074, dated 7th April 2025

The additional winter groundwater monitoring investigation has been carried out in accordance with the recommendations of the previous report, and all reports must be read in conjunction with each other.

1.6 Scope of Work

The work carried out is described in detail in the following sections but in summary included:

- Installation of automatic water level loggers in 2no. existing boreholes with return monitoring visits.

The automatic water loggers were installed for a monitoring period between 20th October 2025 to 17th February 2026, with return visits for manual readings. An additional month's monitoring was requested between 17th February and 16th March 2026. Following an equipment fault, a further supplementary monitoring period was implemented between 20th March and 17th April 2026 to ensure continuity and completeness of the dataset.

1.7 Objectives

A factual ground investigation report (GIR) investigation report was required. The following sections provide a full record of the works carried out.

1.8 Standards

Where practicable, the investigation was undertaken in accordance with the following primary standards and guidance:

- BS 5930:2015+A1:2020 Code of Practice for Site Investigations.
- BS 1377-1:2016 Methods of test for soils for civil engineering purposes - General requirements and sample preparation.
- BS 1377-2:2022 Methods of test for soils for Civil Engineering Purposes-Classification tests and determination of geotechnical properties.
- BS 8004:2015+A1:2020 Code of Practice for Foundations.
- BS EN 1997-2:2024. Eurocode 7: Geotechnical Design –Ground Properties

Other technical sources have been cited in respect of specific aspects of the investigation, as referenced throughout the text.

2.0 GROUND CONDITIONS

2.1 General

The ground conditions were representative of the previous ground investigation. A summary of the encountered conditions is presented below.

Strata	Base Depth range	Summary
Hardstanding	0.06 to 0.10mbgl	Brick Paving, and GRAVEL in BH02-B
Subbase	0.30 to 0.70mbgl	sandy, GRAVEL or gravelly SAND
Made Ground	0.45mbgl	Concrete in TP101 only
River Terrace Deposits	2.70 to 4.00mbgl	Brown, gravelly, sandy CLAY with flint gravels. An organic layer black silty, clayey SAND was noted in BH02-B.
New Pit Chalk Formation	4.00+ to 10.00mbgl+	Beige and grey to off-white structureless CHALK recovered as a slightly sandy, gravelly, silty, CLAY with low density chalk fragments.

The naming of geological strata is tentative and should be used as a guide. Interpolation between or below investigation points should be treated with caution.

2.2 Groundwater

A summary of the previous findings (LS8074) is summarised below:

Position	Round	Date	During drilling	Return monitoring
BH01-A	1	4th March 2025	6.00mbgl (fast flow)	2.70mbgl
	2	13th March 2025		2.85mbgl
	3	18th March 2025		2.95mbgl
	4	31st March 2025		2.95mbgl
	5	4th April 2025		3.12mbgl
	6	14th April 2025		3.20mbgl
	7	24th April 2025		3.16mbgl
	8	2nd May 2025		3.23mbgl
BH02-B	1	4th March 2025	3.00mbgl (slow flow), and 6.20mbgl (fast flow)	2.63mbgl
	2	13th March 2025		2.75mbgl
	3	18th March 2025		2.80mbgl
	4	31st March 2025		2.85mbgl
	5	4th April 2025		2.98mbgl
	6	14th April 2025		3.08mbgl
	7	24th April 2025		3.04mbgl
	8	2nd May 2025		3.12mbgl

The previous level loggers were installed and monitored between the 26th March 2025 to 24th April 2025. Groundwater levels were recorded at a peak of 2.65mbgl and a low of 3.26mbgl and was noted to generally decline at a slow rate and likely coincide with the summer period.

3.0 MONITORING DATA

3.1 Groundwater Monitoring

Manual water readings were taken on the return monitoring visits, and standing water levels were recorded as follows:

Date	Monitoring Round	BH01-A	BH02-B
20/10/26	R0 (Install)	3.15mbgl	3.00mbgl
17/11/25	R1	2.91mbgl	2.79mbgl
12/12/25	R2	2.49mbgl	2.42mbgl
19/01/26	R3	2.37mbgl	2.23mbgl
17/02/26	R4	1.91mbgl	1.98mbgl
Additional Monitoring			
16/03/26*	R5 (collection)	2.60mbgl	2.50mbgl
20/03/26	R6 (reinstall)	2.54mbgl	2.45mbgl
17/04/26	R7 (collection)	2.95mbgl	2.85mbgl

*Logger Fault. Additional months monitoring conducted

An additional month of monitoring was requested by the client between 17th February to 16th March 2026. However, following a fault in the monitoring equipment, a further month of monitoring was undertaken, including reinstallation of the loggers, between 20th March and 17th April 2026.

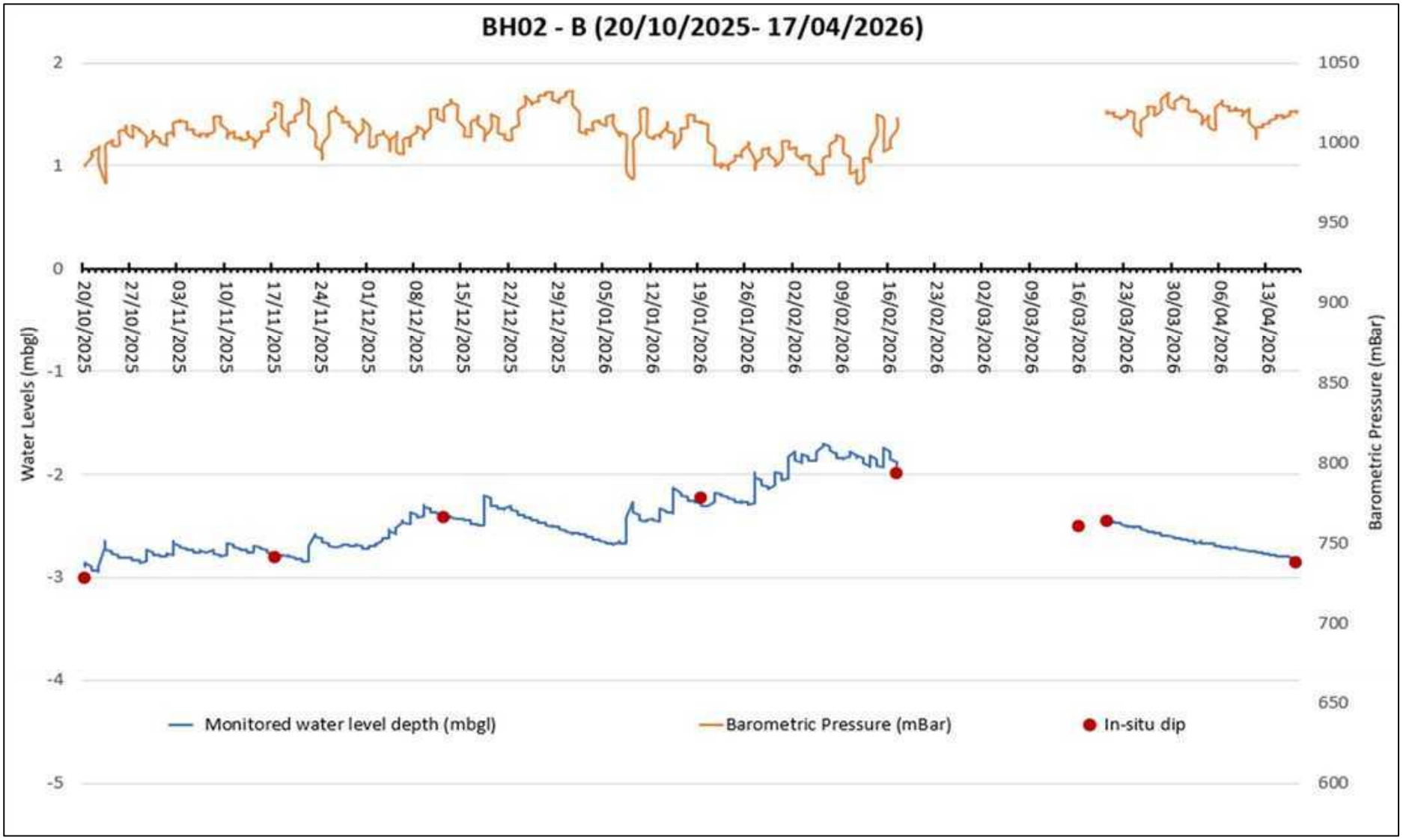
3.2 Water Loggers

2no. Rugged Trolls were installed on 20th October 2025 in BH01-A and BH02-B. An accompanying Baro Troll was placed inside the headspace of BH01-A, which were secured with a lockable cover. The Trolls were set to monitor on a 6-hour interval.

3.3 Automated Monitoring Data

The calculated water depths for the monitoring period between 20th October 2025 and 17th April 2026 are shown on the following graph. The additional manual reading is included. Due to a fault in the loggers, no data was recorded between 17th February to 16th March 2026.


BH01 - A (20/10/2025- 17/04/2026)
Water Levels (mbgl)
Barometric Pressure (mBar)
2
1
0
-1
-2
-3
-4
-5
1050
1000
950
900
850
800
750
700
650
600
20/10/2025
27/10/2025
03/11/2025
10/11/2025
17/11/2025
24/11/2025
01/12/2025
08/12/2025
15/12/2025
22/12/2025
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12/01/2026
19/01/2026
26/01/2026
02/02/2026
09/02/2026
16/02/2026
23/02/2026
02/03/2026
09/03/2026
16/03/2026
23/03/2026
30/03/2026
06/04/2026
13/04/2026
Monitored water level depth (mbgl)
Barometric Pressure (mBar)
In-situ dip


BH02 - B (20/10/2025- 17/04/2026)
Water Levels (mbgl)
Barometric Pressure (mBar)
2
1
0
-1
-2
-3
-4
-5
1050
1000
950
900
850
800
750
700
650
600
20/10/2025
27/10/2025
03/11/2025
10/11/2025
17/11/2025
24/11/2025
01/12/2025
08/12/2025
15/12/2025
22/12/2025
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05/01/2026
12/01/2026
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26/01/2026
02/02/2026
09/02/2026
16/02/2026
23/02/2026
02/03/2026
09/03/2026
16/03/2026
23/03/2026
30/03/2026
06/04/2026
13/04/2026
Monitored water level depth (mbgl)
Barometric Pressure (mBar)
In-situ dip

REFERENCES

A number of technical references have been referred to in the preparation of this document, including:

- Smith, I. (2014) Smith's Elements of Soil Mechanics. Chichester. Wiley Blackwell. 9th edition.
- Highways England 2009. Interim Advice Note 73/06 revision 1: Design Guidance for Road Pavement Foundations (draft HD25).
- BRE Design Guide 365. Soakaway design ("DG365").
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- Groundwater protection: Principles and practice (GP3) August 2013 Version 1.1.
- Revised EU Waste Framework Directive 2008 2008/98/EC [transposed into English law under The Waste (England and Wales) Regulations 2011].
- European Community (EC) Directive 1999/31/EC [transposed into English law under the Landfill (England and Wales) Regulations 2002].
- Defining Waste Recovery - Permanent Deposit of Waste on Land, EPR13 v1.0, EA 2010.
- The definition of waste: Development Industry Code of Practice, v2, CL:AIRE 2011.
- Guidance on the classification and assessment of waste Technical Guidance WM3 ("WM3") EA publication (1st edition 2015).

REPORT CONDITIONS

The Client

This report may only be used by the client named in section 1 and their appointed project team for the purpose of design, obtaining planning, building regulations approval, and in connection with finance. This report must not be used by any other persons or for other purposes without express written agreement of Land Science.

General

Land Science takes all reasonable professional care in the preparation of this report, using current standards and industry practice. However, the evaluation of ground conditions depends on an interpretation and extrapolation of the conditions revealed by a limited data set. The level of risk is related to the extent of investigation and no site is ever free of risk. The client should understand their risks and liabilities. We accept no liability whatsoever in respect of:

- The scope, extent or design of an investigation.
- Any conditions not directly revealed by the investigation.
- Published standards or methodologies used or adopted in this report.
- The opinion of any other party including any regulator, authority or stakeholder.
- Any dispute, claim or consequential loss arising from any findings of this report.
- Third party information and data.

This report relates solely to ground-related matters as set out in the objectives and makes no representation on other matters such as ecology, arboriculture, invasive plant species, the condition of buildings and structures, hazardous building materials such as insulation or asbestos, the locations of boundaries, unexploded ordnance, and or planning constraints etc. Further reports should be commissioned in this respect as appropriate.

Regulators and Approvals

This (and any other) report should be submitted to relevant authorities for their own assessments and to provide their approval or comments accordingly. This should be in good time before commencing on site in case additional work is to be carried out.

Standards, technical guidance and regulatory positions change over time and may therefore affect the findings and recommendations made in this report; this should be verified by the client prior to any critical project milestones. Where this information is used in design, the designer should verify that the information is appropriate and has been used correctly.

Variations with Time

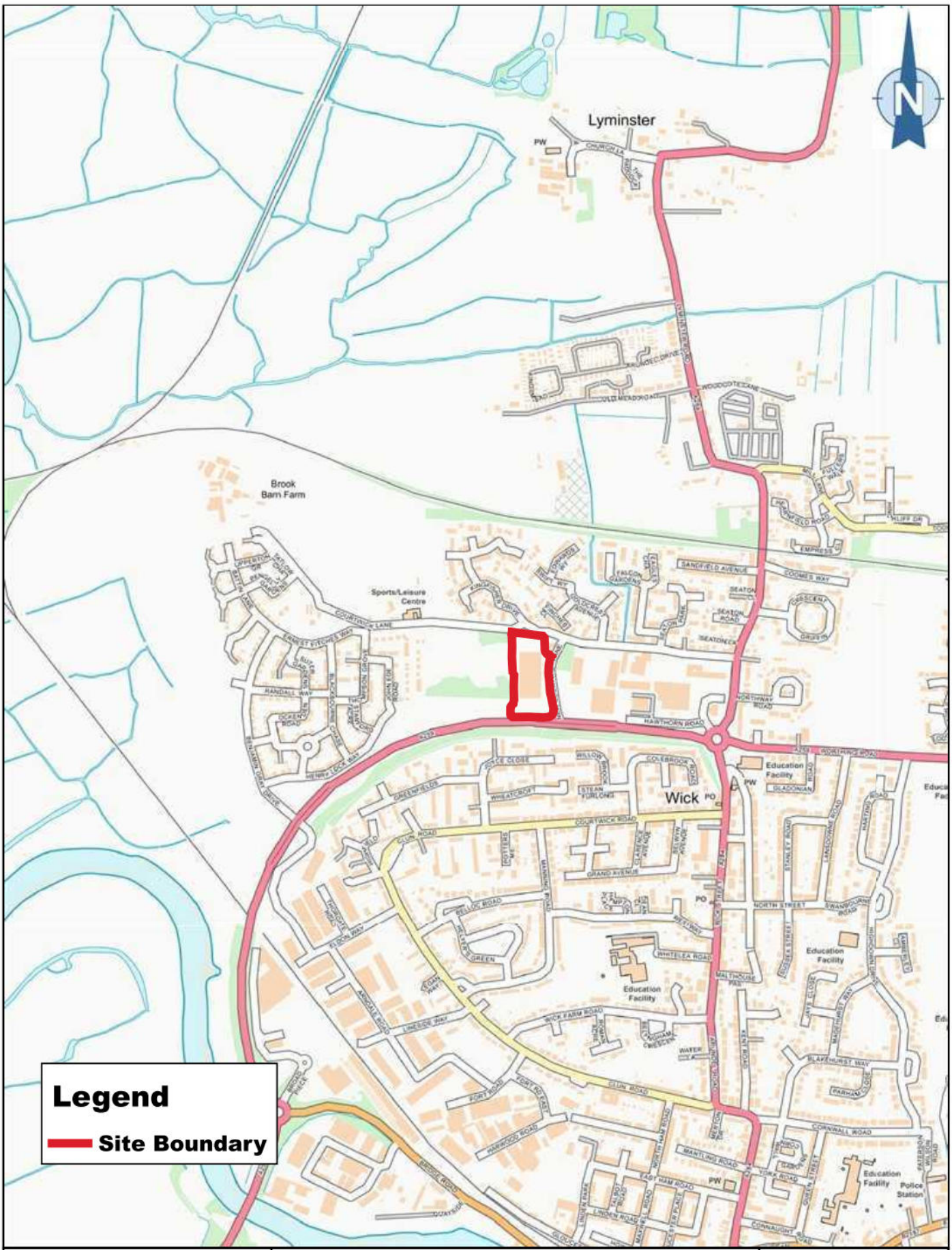
The report relates to conditions revealed at the time of the investigation and any monitoring visits. Some parameters may vary over time or seasonally; groundwater levels, ground gas compositions, or concentrations of contaminants are particularly variable in this respect. Further monitoring or verification should be considered as appropriate.

GLOSSARY OF TERMS

ACM	Asbestos Containing Material
BGS	British Geological Survey
BRE	Building Research Establishment
BS	British Standard
C4SL	Category 4 Screening Level
CBR	California Bearing Ratio
CDM	Construction Design and Management regulations
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CLEA	Contaminated Land Exposure Assessment model
CSM	Conceptual Site Model
EA	Environment Agency
EQS	Environmental Quality Standards
FOC	Fraction of Organic Carbon
GAC	Generic Assessment Criterion
GQRA	Generic Quantitative Risk Assessment
mbgl	Meters Below Ground Level
NHBC	National House Building Council
mOD	Metres above Ordnance Datum
PAH's	Polycyclic Aromatic Hydrocarbons
PHE	Public Health England
PID	Photo-Ionisation Detector
PQRA	Preliminary Quantitative Risk Assessment
PSD	Particle Size Distribution Test
RMS	Remediation Method Statement
S4UL	Suitable for Use Level
SOM	Soil Organic Matter
SPZ	Source Protection Zone
SPT	Standard Penetration Test
SSSI	Sites of Special Scientific Interest
ST-WEL	Short Term Workplace Exposure Limit
SVOC's	Semi-Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
TRRL / TRL	Transport Road Research Laboratory
TWA-WEL	Time Weighted Average Workplace Exposure Limit
UK HBF	United Kingdom House Building Federation
VOC's	Volatile Organic Compounds
WAC	Waste Acceptance Criteria

FIGURES

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Land Science	Title: Site Location		Reference: LS8074
	Project: Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ		Figure: 1
	Client: Rokeby Developments Ltd. (HOP Consulting)		Date: 18/02/2025
	Prepared by: JT	Checked by: SW	Version: 01	Sheet: 1

[redacted]

Unit 10, 19 Albert Drive, Burgess Hill, West Sussex, RH15 9TN
2nd Floor, 25-28 Field Street, London, WC1X 9DA

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Legend

- Site Boundary
- Cable Percussive Boreholes
- Existing Trial Pit
- Trial Pits

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Land Science	Title: Investigation Layout		Reference: LS8074
	Project: Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ		Figure: 2
	Client: Rokeby Developments Ltd. (HOP Consulting)		Date: 18/02/2025
	Prepared by: JT	Checked by: SW	Version: 01	Sheet: 1

[redacted]

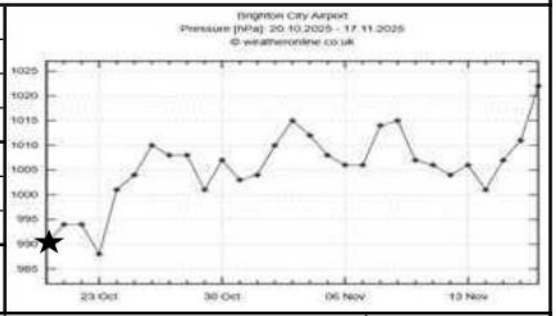
Unit 10, 19 Albert Drive, Burgess Hill, West Sussex, RH15 9TN
2nd Floor, 25-28 Field Street, London, WC1X 9DA

APPENDIX A

GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	20/10/2025	**Visit:**	Initial set up
Engineer:	CH	**Check:**	JT
Weather:	Light rain	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Fluctuating Low Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

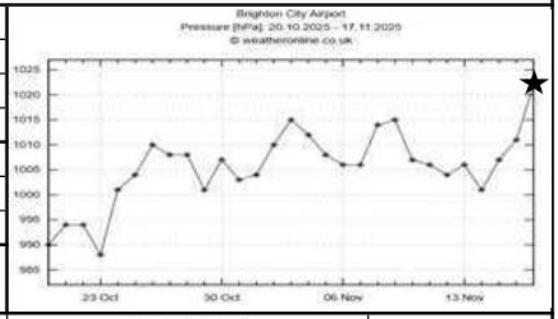


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						3.15m		9.30m	Installed Level logged and baro
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						3.00m		9.00m	Level logger installed
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
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GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	17/11/2025	**Visit:**	1
Engineer:	JT	**Check:**	JT
Weather:	Sunny	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Rising High Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

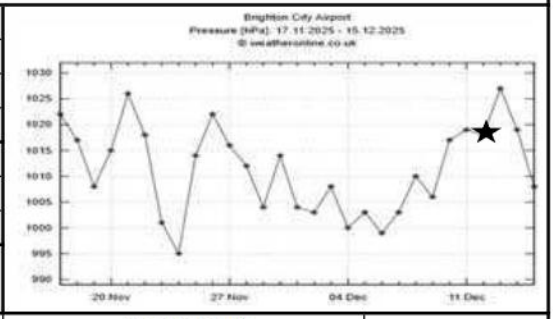


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						2.91m		9.30m	1 monitoring visit 10am
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						2.79m		9.10m	1 Monitoring visit 10.30am
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
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GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	12/12/2025	**Visit:**	2
Engineer:	JT	**Check:**	MR
Weather:	Cloudy Overcast	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Fluctuating high Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

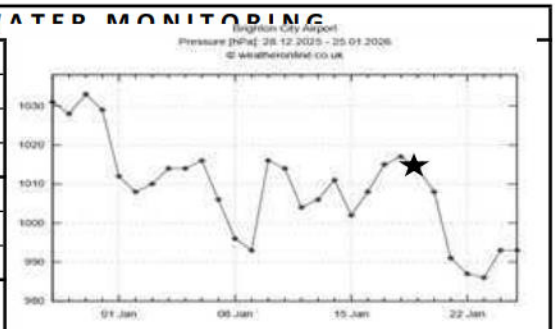


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						2.49m		9.34m	
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						2.42m		9.02m	
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
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GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	19/01/2026	**Visit:**	3
Engineer:	AL	**Check:**	JT
Weather:	Overcast	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Fluctuating High Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

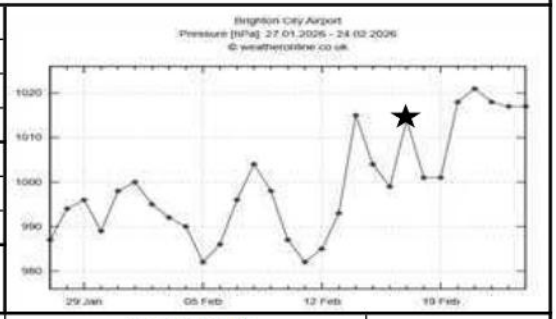


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						2.37m		9.32	1 monitoring visit 9:30am
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						2.23m		9.00	1 Monitoring visit 10.00am
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
			15s									
			30s									
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			300s									

GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	17/02/2026	**Visit:**	4
Engineer:	JW	**Check:**	JT
Weather:	Overcast light rain	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Rising High Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

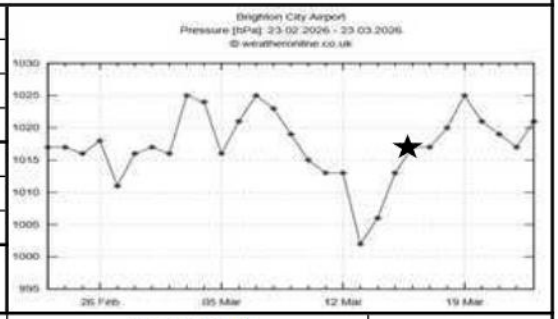


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						1.91		9.35	
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						1.98		9.07	
			30s									
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			120s									
			180s									
			240s									
			300s									
			15s									
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GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	16/03/2026	**Visit:**	5 (Additional)
Engineer:	JW	**Check:**	JT
Weather:	Overcast light rain	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Rising High Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

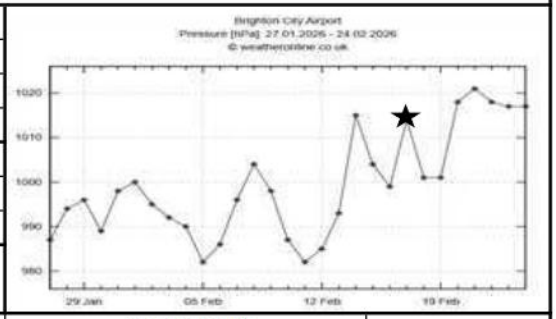


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						2.60		9.35	Logger Error
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						2.50		9.07	Logger Error
			30s									
			60s									
			120s									
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			240s									
			300s									
			15s									
			30s									
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GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	20/03/2026	**Visit:**	6
Engineer:	AL	**Check:**	JT
Weather:	Overcast light rain	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Rising High Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		

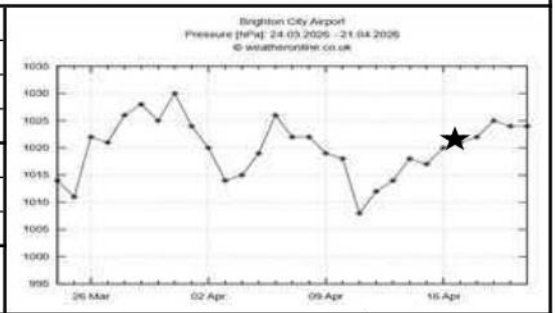


Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						2.54		9.35	Logger Reinstall
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						2.45		9.00	Logger Reinstall
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
			15s									
			30s									
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GROUND GAS AND GROUNDWATER MONITORING

Project:	Parker Building, BN17 7RZ	**Ref:**	LS8937
Date:	17/04/2026	**Visit:**	7
Engineer:	JW	**Check:**	JT
Weather:	-	**Page:**	1

Atmospheric Pressure	**before:**	mB	Time
	after:	mB	Time
Published pressure trend:	Rising High Pressure (Brighton City Airport)		
Remarks:	Equipment used: Dipmeter		



Position	Flow (l/hr)		Common Gases (%)				VOC's (ppm)	Groundwater (m)				Remarks
	High	Low	Time	CO2	CH4	O2		LNAPL	Water	DNAPL	Base	
Calibration Check								-	-	-	-	
BH01-A			15s						2.95		9.45	Logger collection
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
BH02-B			15s						2.85		9.10	Logger collection
			30s									
			60s									
			120s									
			180s									
			240s									
			300s									
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APPENDIX C – LAND SCIENCE INFILTRATION TESTING REPORT

Land Science

PARKER BUILDING,
NEW COURTWICK LANE,
LITTLEHAMPTON, BN17 7RZ
ADDITIONAL SOAKAGE TESTING
NCL ESTATES LIMITED
19TH DECMEBER 2025
LS8963

Site:	**PARKER BUILDING, NEW COURTWICK LANE, LITTLEHAMPTON, BN17 7RZ**
Title:	**ADDITIONAL SOAKAGE TESTING**
Project:	**COMMERCIAL REDEVELOPMENT**
Client:	**NCL ESTATES LIMITED**
Contact:	**HOP CONSULTING**
Date:	**19TH DECEMBER 2025**
Reference:	**LS8963**
Version:	**A – final for issue**

Prepared By:	[redacted]	**JAKE TRANGMAR B.Sc. (Hons)** **Senior Environmental Scientist**
Review & Authorised By:	[redacted]	**MICHAEL ROSE M.Sc., B.Sc., FGS, AIEMA** **Principal Geo-Environmental Consultant**

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FIGURE 1: Site Location Plan
FIGURE 2: Existing Layout
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APPENDICES

APPENDIX A: Photographs
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1.0 EXECUTIVE SUMMARY

This summary is a brief precis of the main findings and conclusions of the investigation. For detailed information, the reader is referred to the main report.

The area under investigation comprised a large vacant and derelict commercial unit with extensive hardstanding for car parking and access for large transportation vehicles. The proposed development was understood to comprise a commercial redevelopment comprising a larger retail area with associated parking bays to the north, and a drive-thru fast food and beverage units with associated parking pays to the south. The intrusive investigation included seven Trial Pits excavated to approximately 1.15mbgl to enable BRE:365 soakage testing.

Strata	Depth Range (mbgl)	Summary
Hardstanding	0.05-0.08	Block Paving / grey and brown GRAVEL
Made Ground	0.10-0.90	Sandy, gravelly, CLAY with rare layers of tarmacadam and concrete.
River Terrace Deposits	0.30-0.90 to base of trial pit	Varied between a brown silty/sandy/gravelly CLAY or brown silty/sandy/gravelly SAND/SAND and GRAVEL.

No groundwater encountered within 1.15-1.20mbgl depth.

Excavations are generally likely to be unstable in granular material.

Soakage testing identified an estimated soil infiltration rate of between 3.29×10^{-4} m/s and 1.90×10^{-6} m/s.

2.0 INTRODUCTION

2.1 General

Land Science was instructed to undertake a Soakage Testing in relation to the proposed redevelopment at Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ. The location is shown on Figure 1, which is centred at grid reference TQ 0222 0359.

2.2 Client

The Client for this appointment was NCL Estates Limited, as represented by HOP Consulting. This report may only be used by this named client and their project team for the purposes set out and subject to the report conditions. It was understood that the Client already owned the property, and that this investigation was not a pre-purchase appraisal.

2.3 Area Under Investigation

The area under investigation comprised a large vacant and derelict commercial unit with extensive hardstanding for car parking and access for large transportation vehicles. The layout is indicated on Figure 2. The area was approximately 1.4 hectares.

2.4 Proposed Development

The proposed development was understood to comprise a commercial redevelopment comprising a larger retail area with associated parking bays to the north, and a drive-thru fast food and beverage units with associated parking pays to the south. Figure 3 illustrates the layout of the proposed redevelopment. The findings of this report may not be valid if the proposed development is altered.

2.5 Previous Investigations

The following previous investigations relevant to the site were made available:

- Groundwater Assessment, Land Science, Ref. LS8074, dated 7th April 2025
- Winter Groundwater Monitoring, Land Science, Ref. LS8937 v1, 18th November 2025 (Interim Report)

The additional soakage testing investigation has been carried out in accordance with the recommendations of the previous report, and all reports must be read in conjunction with each other.

2.6 Scope of Work

The work carried out is described in detail in the following sections but in summary included:

- An intrusive investigation comprising seven shallow trial pits for BRE365 Soakage Testing.

The fieldwork was conducted on 8th-12th December 2025, under the supervision of Land Science.

2.7 Objectives

A factual ground investigation report (GIR) investigation report was required. The following sections provide a full record of the works carried out.

2.8 Standards

Where practicable, the investigation was undertaken in accordance with the following primary standards and guidance:

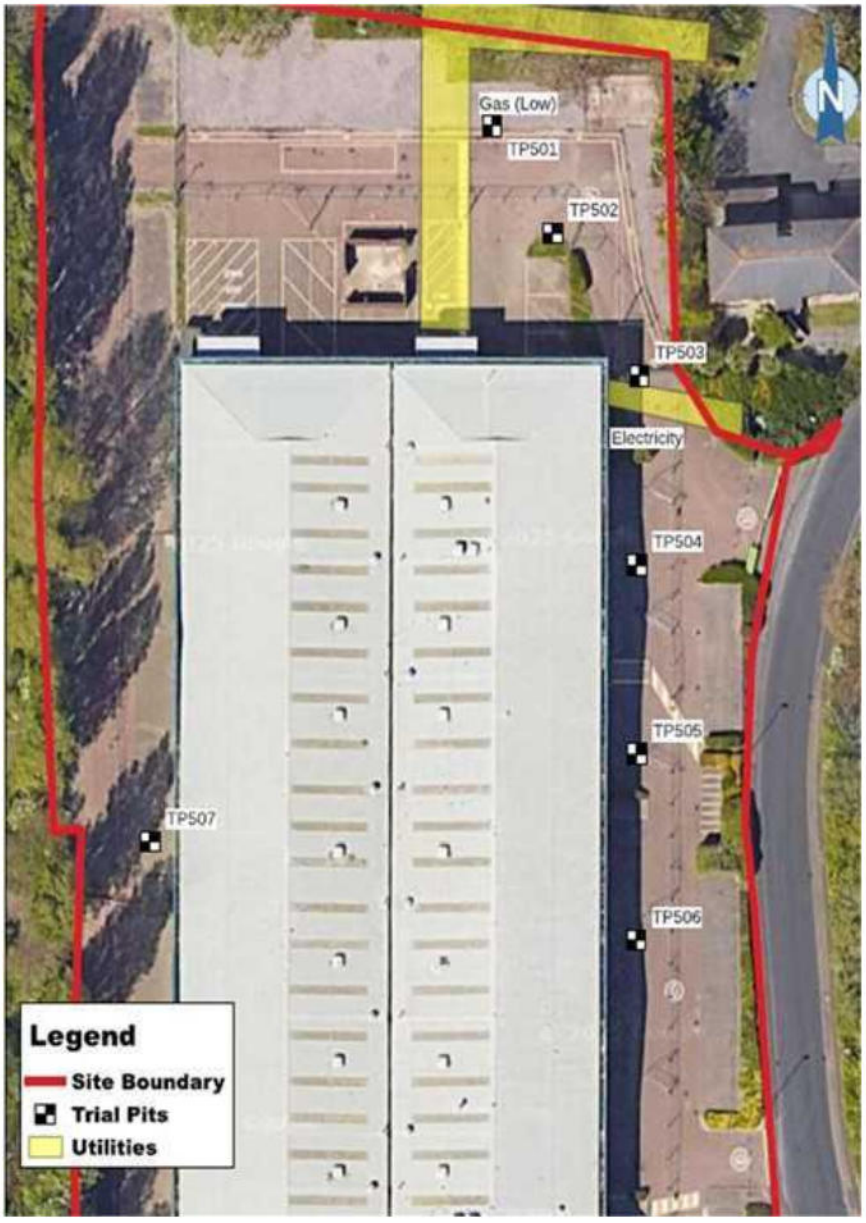
- BS 5930:2015+A1:2020 Code of Practice for Site Investigations.
- BS 1377:2018 Soils for Civil Engineering Purposes
- BS 8004:2015 Code of Practice for Foundations
- BS EN 1997-2:2007. Eurocode 7: Geotechnical Design – Part 2: Ground Investigation and testing.

Other technical sources have been cited in respect of specific aspects of the investigation, as referenced throughout the text.

3.0 INTRUSIVE INVESTIGATION

3.1 Investigation Rationale

The scope and layout of the investigation was specified by HOP Consulting. In summary this comprised seven shallow, machine excavated trial pits to a depth of 1.15mbgl to conduct BRE:365 soakage testing.



Position	Provisional Depth / Strata	Existing Location	Proposed Location	Testing, Installations etc.
TP501 and TP502	1.15mbgl	Hardstanding	North portion	BRE365
TP503 to TP506			East portion	
TP507			West portion	

3.2 Geotechnical Strategy

Geotechnical aspects were investigated based on the following strategy:

Area of Concern	Investigation	Position(s)
Shallow soil conditions	Shallow exploratory holes located in and around the proposed development footprint.	All
Soakage potential	A shallow exploratory hole was positioned in a possible soakaway location away from the footprint.	
Groundwater	Observations on the occurrence of water and standing levels were to be made during the fieldwork.	

3.3 Trial Pits (TP)

Trial pits are open excavations using a mechanical excavator to inspect a larger volume of soils and in turn provide a better understanding of variability water ingress, instability, etc.

3.4 Full Scale Soakage Testing (BRE365)

Full scale soakage testing was undertaken in accordance with BRE365. The testing was carried out in open holes over four days with three repeat tests undertaken in all trial pits.

4.0 GROUND CONDITIONS

4.1 General

The expected ground conditions were anticipated to comprise River Terrace Deposits to depth. The investigation confirmed the anticipated ground conditions. A thin capping of hardstanding and Made Ground was encountered at surface.

Strata	Base Depth mbgl						
	TP501	TP502	TP503	TP504	TP505	TP506	TP507
Hardstanding	0.05	0.08	0.08	0.08	0.08	0.08	0.08
Made Ground	0.90	0.14	0.30	0.10	0.40	0.40	-
River Terrace Deposits	1.20+	1.20+	1.20+	1.15+	1.15+	1.15+	1.20+

The naming of geological strata is tentative and should be used as a guide. Interpolation between or below investigation points should be treated with caution. The description of soils and rocks was in accordance with BS5930.

4.2 Hardstanding

All positions were noted to comprise Block Paving to a depth of 0.08mbgl, with the exception of TP501 which encountered a grey and brown GRAVEL to a depth of 0.05mbgl.

4.3 Made Ground

Made Ground was encountered in all positions, with the exception of TP507, and the base ranged between 0.30 and 0.40mbgl. In summary the Made Ground varied between SAND and GRAVEL. TP501 comprised an orangey brown, sandy, gravelly, CLAY with flints over Tarmacadam at depths between 0.70 and 0.90mbgl. TP502 and TP503 both encountered a thickness of concrete.

4.4 River Terrace Deposits

River Terrace Deposits were encountered in all positions, to a depth of between 1.15+ and 1.20mbgl+ In summary the River Terrace Deposits generally varied between a brown silty/sandy/gravelly CLAY. Granular layers TP502, TP503, TP504, and TP507 and generally comprised a varied between a brown silty/sandy/gravelly SAND.

4.5 Roots and Rootlets

Occurrences of roots and rootlets were noted as follows:

Position	Roots	Rootlets
TP506	Occasional root (0.08-0.40m)	Occasional rootlets (0.08-0.40m)
TP507	-	Occasional rootlets (0.63-1.20m)

4.6 Groundwater

Groundwater was not encountered during excavation of any of the investigative positions.

4.7 Stability and Casing

The excavations were noted to be generally stable throughout whilst instability was noted in granular material.

5.0 FIELD TESTING

5.1 Full Scale Soakage Testing (BRE365)

The results of the full scale BRE365 soakage tests are summarised below:

Position	Test	Test Range	Strata	Notes	Result
TP501	1	0.30-1.20m	MG/RTD	Fell 0.90m in 1259mins overnight	$3.28x10^{-6}$ m/s
	2	0.32-1.20m		Fell 0.88m in 1439mins overnight	$2.80x10^{-6}$ m/s
	3	0.30-1.20m		Fell 0.68m in 1440mins overnight	$1.90x10^{-6}$ m/s
TP502	1	0.30-1.20m	RTD	Fell 0.70m in 99mins	$3.04x10^{-5}$ m/s
	2	0.30-1.20m		Fell 0.70m in 106mins	$3.35x10^{-5}$ m/s
	3	0.30-1.20m		Fell 0.70m in 110mins	$3.12x10^{-5}$ m/s
TP503	1	0.30-1.20m	RTD	Fell 0.70m in 90mins	$3.82x10^{-5}$ m/s
	2	0.30-1.20m		Fell 0.70m in 135mins	$2.46x10^{-5}$ m/s
	3	0.30-1.20m		Fell 0.70m in 165mins	$1.96x10^{-5}$ m/s
TP504	1	0.73-1.15m	RTD	No head of retained above 0.73m (900L added). Fell 0.42m in 119mins.	$5.40x10^{-5}$ m/s
	2	0.65-1.15m		No head of retained above 0.65m (800L added). Fell 0.50m in 80mins.	$4.92x10^{-5}$ m/s
	3	0.70-1.15m		No head of retained above 0.70m (800L added). Fell 0.45m in 52mins.	$3.29x10^{-4}$ m/s
TP505	1	0.34-1.15m	MG/RTD	Fell 0.81m in 1080mins overnight	$4.52x10^{-6}$ m/s
	2	0.30-1.15m		Fell 0.85m in 1440mins overnight	$5.94x10^{-6}$ m/s
	3	0.30-1.15m		Fell 0.64m in 405mins	$5.96x10^{-6}$ m/s
TP506	1	0.30-1.15m	MG/RTD	Fell 0.85m in 70mins	$6.72x10^{-5}$ m/s
	2	0.30-1.15m		Fell 0.85m in 90mins	$5.83x10^{-5}$m/s
	3	0.30-1.15m		Fell 0.70m in 90mins	$3.89x10^{-5}$m/s
TP507	1	0.25-1.20m	RTD	Fell 0.95m in 1320mins overnight	$3.33x10^{-6}$m/s
	2	0.27-1.20m		Fell 0.93m in 1420mins overnight	$3.00x10^{-6}$m/s
	3	0.30-1.20m		Fell 0.68m in 1380mins overnight	$1.96x10^{-6}$m/s

MG = Made Ground, RTD= River Terrace Deposits

REFERENCES

A number of technical references have been referred to in the preparation of this document, including:

- Smith, I. (2014) Smith's Elements of Soil Mechanics. Chichester. Wiley Blackwell. 9th edition.
- Highways England 2009. Interim Advice Note 73/06 revision 1: Design Guidance for Road Pavement Foundations (draft HD25).
- BRE Design Guide 365. Soakaway design ("DG365").
- Radon: Guidance on protective measures for new buildings, BRE Report BR 211, 2023 6th edition.
- Groundwater protection: Principles and practice (GP3) August 2013 Version 1.1.
- Revised EU Waste Framework Directive 2008 2008/98/EC [transposed into English law under The Waste (England and Wales) Regulations 2011].
- European Community (EC) Directive 1999/31/EC [transposed into English law under the Landfill (England and Wales) Regulations 2002].
- Defining Waste Recovery - Permanent Deposit of Waste on Land, EPR13 v1.0, EA 2010.
- The definition of waste: Development Industry Code of Practice, v2, CL:AIRE 2011.
- Guidance on the classification and assessment of waste Technical Guidance WM3 ("WM3") EA publication (1st edition 2015).

REPORT CONDITIONS

The Client

This report may only be used by the client named in section 1 and their appointed project team for the purpose of design, obtaining planning, building regulations approval, and in connection with finance. This report must not be used by any other persons or for other purposes without express written agreement of Land Science.

General

Land Science takes all reasonable professional care in the preparation of this report, using current standards and industry practice. However, the evaluation of ground conditions depends on an interpretation and extrapolation of the conditions revealed by a limited data set. The level of risk is related to the extent of investigation and no site is ever free of risk. The client should understand their risks and liabilities. We accept no liability whatsoever in respect of:

- The scope, extent or design of an investigation.
- Any conditions not directly revealed by the investigation.
- Published standards or methodologies used or adopted in this report.
- The opinion of any other party including any regulator, authority or stakeholder.
- Any dispute, claim or consequential loss arising from any findings of this report.
- Third party information and data.

This report relates solely to ground-related matters as set out in the objectives and makes no representation on other matters such as ecology, arboriculture, invasive plant species, the condition of buildings and structures, hazardous building materials such as insulation or asbestos, the locations of boundaries, unexploded ordnance, and or planning constraints etc. Further reports should be commissioned in this respect as appropriate.

Regulators and Approvals

This (and any other) report should be submitted to relevant authorities for their own assessments and to provide their approval or comments accordingly. This should be in good time before commencing on site in case additional work is to be carried out.

Standards, technical guidance and regulatory positions change over time and may therefore affect the findings and recommendations made in this report; this should be verified by the client prior to any critical project milestones. Where this information is used in design, the designer should verify that the information is appropriate and has been used correctly.

Variations with Time

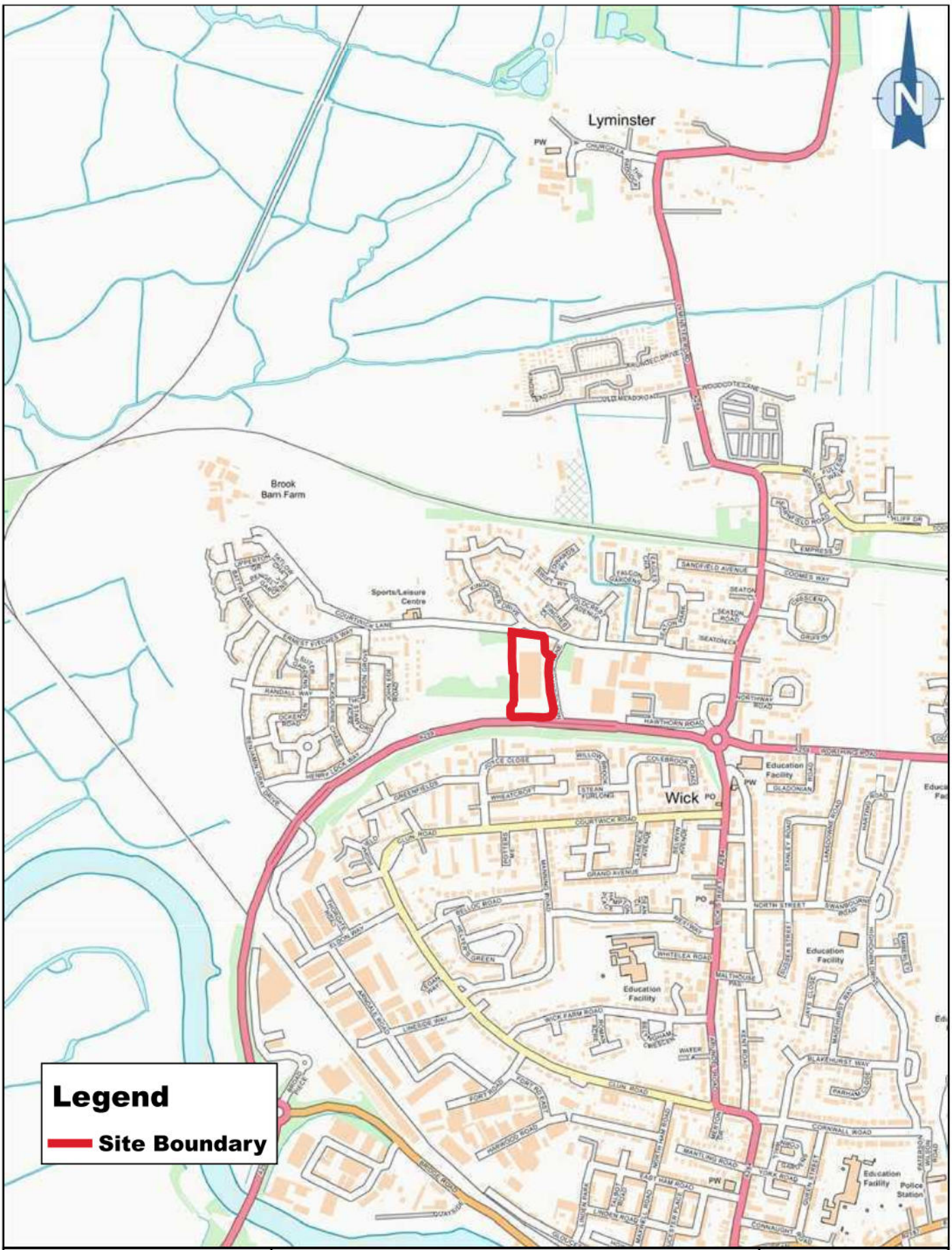
The report relates to conditions revealed at the time of the investigation and any monitoring visits. Some parameters may vary over time or seasonally; groundwater levels, ground gas compositions, or concentrations of contaminants are particularly variable in this respect. Further monitoring or verification should be considered as appropriate.

GLOSSARY OF TERMS

ACM	Asbestos Containing Material
BGS	British Geological Survey
BRE	Building Research Establishment
BS	British Standard
C4SL	Category 4 Screening Level
CBR	California Bearing Ratio
CDM	Construction Design and Management regulations
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CLEA	Contaminated Land Exposure Assessment model
CSM	Conceptual Site Model
EA	Environment Agency
EQS	Environmental Quality Standards
FOC	Fraction of Organic Carbon
GAC	Generic Assessment Criterion
GQRA	Generic Quantitative Risk Assessment
mbgl	Meters Below Ground Level
NHBC	National House Building Council
mOD	Metres above Ordnance Datum
PAH's	Polycyclic Aromatic Hydrocarbons
PHE	Public Health England
PID	Photo-Ionisation Detector
PQRA	Preliminary Quantitative Risk Assessment
PSD	Particle Size Distribution Test
RMS	Remediation Method Statement
S4UL	Suitable for Use Level
SOM	Soil Organic Matter
SPZ	Source Protection Zone
SPT	Standard Penetration Test
SSSI	Sites of Special Scientific Interest
ST-WEL	Short Term Workplace Exposure Limit
SVOC's	Semi-Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
TRRL / TRL	Transport Road Research Laboratory
TWA-WEL	Time Weighted Average Workplace Exposure Limit
UK HBF	United Kingdom House Building Federation
VOC's	Volatile Organic Compounds
WAC	Waste Acceptance Criteria

FIGURES

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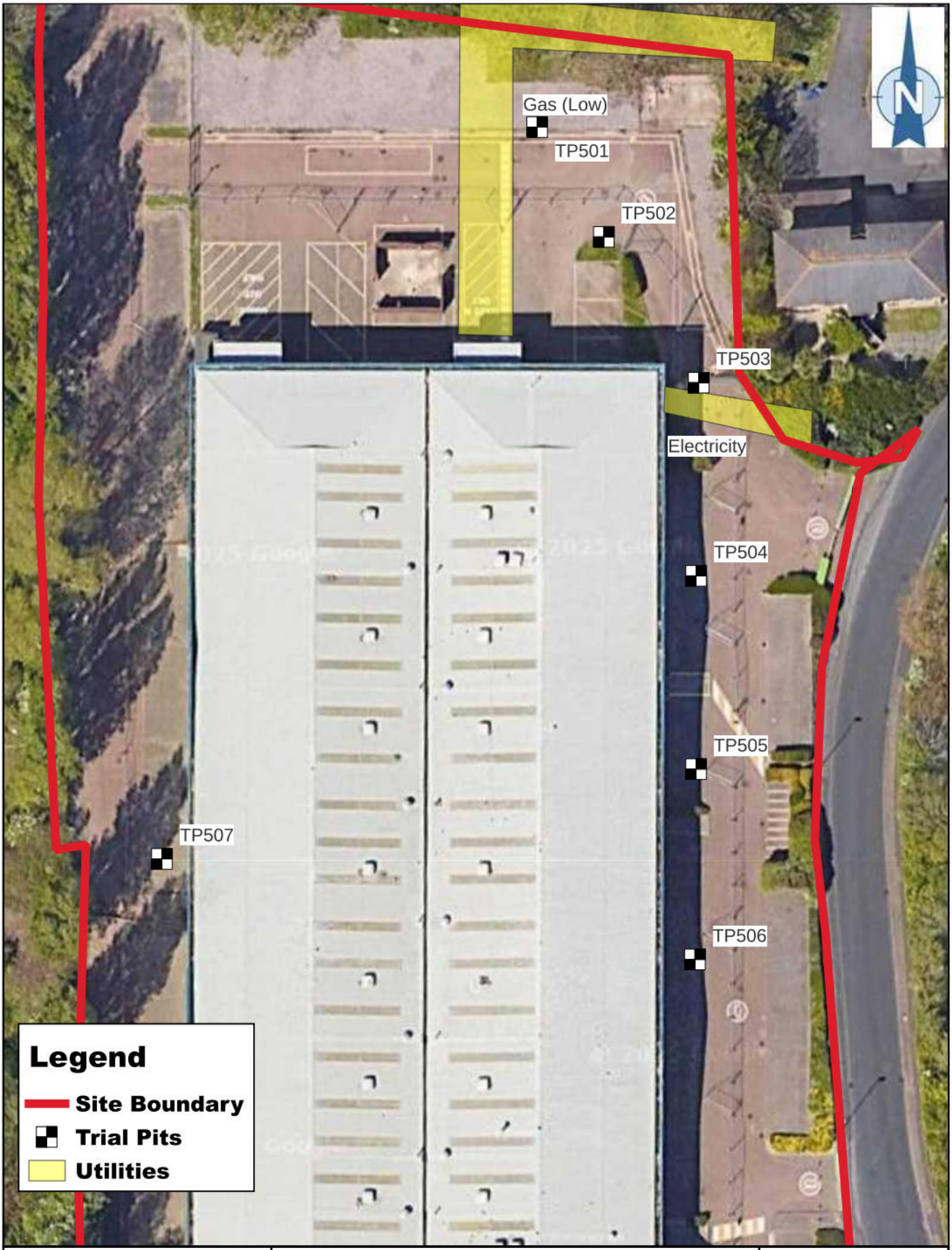
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Land Science	Title: Site Location		Reference: LS8963
	Project: Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ		Figure: 1
	Client: Rokeby Developments Ltd. (HOP Consulting)		Date: 26/11/2025
	Prepared by: JT	Checked by: SW	Version: 01	Sheet: 1

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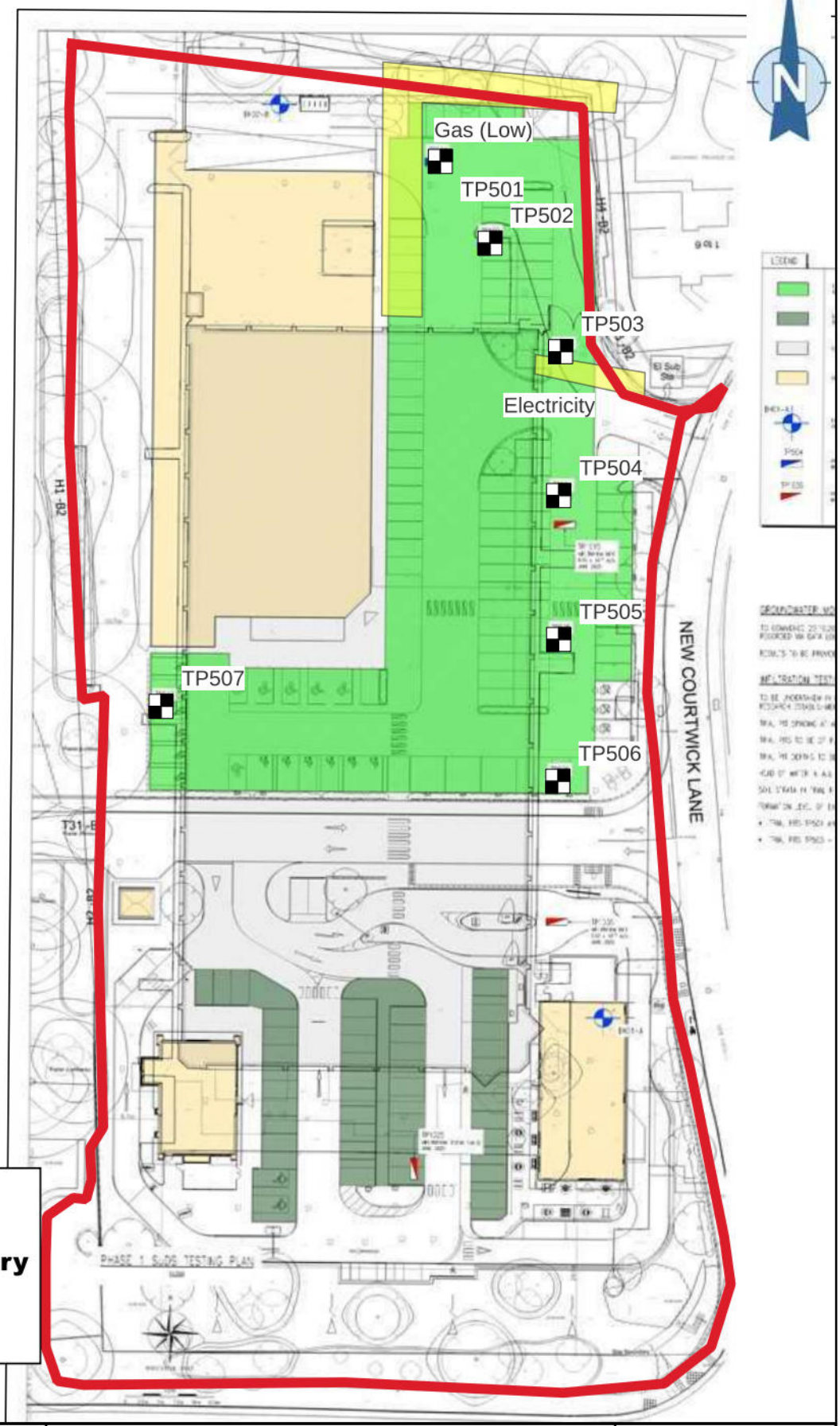
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Land Science	Title: Investigation Layout		Reference: LS8963
	Project: Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ		Figure: 2
	Client: Rokeby Developments Ltd. (HOP Consulting)		Date: 26/11/2025
	Prepared by: JT	Checked by: ET	Version: 01	Sheet: 1

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Title: Proposed Layout			Reference: LS8963
Project: Parker Building, New Courtwick Lane, Littlehampton, BN17 7RZ			Figure: 3
Client: Rokeby Developments Ltd. (HOP Consulting)			Date: 26/11/2025
Prepared by: JT	Checked by: ET	Version: 01	Sheet: 1

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APPENDIX A





TP501

Land Science	**TITLE:**	Site Photographs	**REF:** LS8963	**PREPARED:**	JT
	PROJECT:	Parker Building, BN17 7RZ - Additional Soakage Testing	**FIGURE:** 1	**CHECKED:**	MR
	CLIENT:	NCL Estates Limited	**DATE:** 19/12/2025	**VERSION**	V1

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Land Science	**TITLE:**	Site Photographs	**REF:** LS8963	**PREPARED:**	JT
	PROJECT:	Parker Building, BN17 7RZ - Additional Soakage Testing	**FIGURE:** 1	**CHECKED:**	MR
	CLIENT:	NCL Estates Limited	**DATE:** 19/12/2025	**VERSION**	V1

[redacted]

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Land Science	**TITLE:**	Site Photographs	**REF:** LS8963	**PREPARED:**	JT
	PROJECT:	Parker Building, BN17 7RZ - Additional Soakage Testing	**FIGURE:** 1	**CHECKED:**	MR
	CLIENT:	NCL Estates Limited	**DATE:** 19/12/2025	**VERSION**	V1

[redacted]

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2ND FLOOR, 25-28 FIELD STREET, **LONDON**, WC1X 9DA









Land Science	**TITLE:**	Site Photographs	**REF:** LS8963	**PREPARED:**	JT
	PROJECT:	Parker Building, BN17 7RZ - Additional Soakage Testing	**FIGURE:** 1	**CHECKED:**	MR
	CLIENT:	NCL Estates Limited	**DATE:** 19/12/2025	**VERSION**	V1

[redacted]

UNIT 10, 19 ALBERT DRIVE BURGESS HILL, **WEST SUSSEX**, RH15 9TN
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APPENDIX B

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Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP501

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.5m (l) x 0.70m (w)		HOP Consulting	LS8963
	Location	**Dates**	**Engineer**	**Sheet**
		09/12/2025-11/12/2025	Tom Mead	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.05) 0.05	Grey and brown GRAVEL. (HARDSTANDING)		
					(0.65)	Orangey brown, sandy, gravelly, CLAY. Sand if fine to medium. Gravel is subangular to subrounded flints. (MADE GROUND)		
					0.70			
					(0.20)	Tarmacadam (MADE GROUND)		
					0.90			
					(0.30)	Brown CLAY. (RIVER TERRACE DEPOSITS)		
					1.20	Complete at 1.20m		

Plan

Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.70m (w) (approx)
NOTES: Trial hole complete at 1.20m.

Scale (approx)	Logged By	Figure No.
1:10	CH	LS8963.TP501

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[redacted]

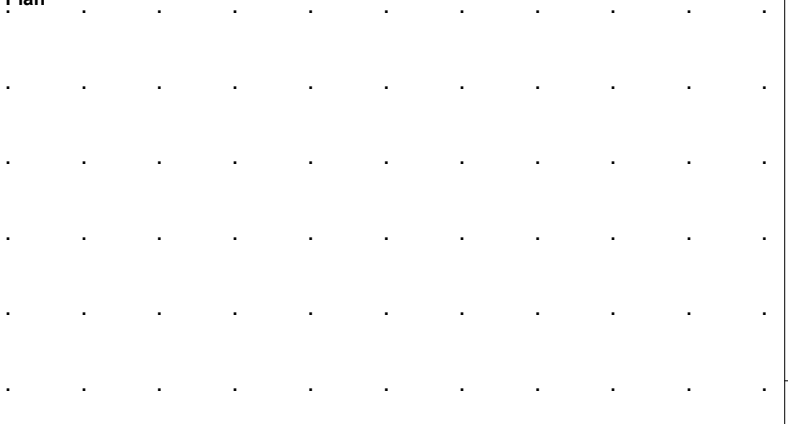
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Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP502

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.5m (l) x 0.70m (w)		HOP Consulting	LS8963
	Location	**Dates** 09/12/2025	**Engineer** Tom Mead	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08) 0.08	Block Paving (HARDSTANDING)		
					(0.06) 0.14	Concrete (MADE GROUND)		
					(0.30) 0.44	Brown slightly clayey, SAND and GRAVEL (RIVER TERRACE DEPOSITS)		
					(0.38) 0.82	Light orangey brown silty, CLAY. (RIVER TERRACE DEPOSITS)		
					(0.38) 1.20	Brown CLAY (RIVER TERRACE DEPOSITS)		
						Complete at 1.20m		

Plan



Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.70m (w) (approx)
NOTES: Trial hole complete at 1.20m.

Scale (approx)	Logged By	Figure No.
1:10	CH	LS8963.TP502

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Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP503

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.5m (l) x 0.7m (w)		HOP Consulting	LS8963
	Location	**Dates** 09/12/2025	**Engineer** Tom Mead	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08)	Block Paving (HARDSTANDING)		
					0.08			
					(0.12)	Yellow SAND. (MADE GROUND)		
					0.20			
					(0.10)	Concrete (MADE GROUND)		
					0.30			
					(0.50)	Orangey brown slightly clayey gravelly, SAND. (RIVER TERRACE DEPOSITS)		
					0.80			
					(0.40)	Orangey brown silty, gravelly, CLAY. Gravel is fine to medium, subangular to subrounded flint. (RIVER TERRACE DEPOSITS)		
					1.20			
						Complete at 1.20m		

Plan

Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.70m (w) (approx)
NOTES: Trial hole complete at 1.20m.

Scale (approx)	Logged By	Figure No.
1:10	CH	LS8963.TP503

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Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP504

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.50m x 0.75m x 1.15m		HOP Consulting	LS8963
	Location	**Dates** 08/12/2025	**Engineer** Tom Mead	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08)	Block Paving (HARDSTANDING)		
					0.08			
					0.10	Yellow SAND (MADE GROUND)		
						Loose to dense yellowish brown sandy GRAVEL. Sand is fine to coarse. Gravels are fine to cobbled, subangular to subrounded flints. (RIVER TERRACE DEPOSITS)		
0.40	D				(0.75)			
					0.85	Soft dark brown to grey silty, sandy, slightly gravelly CLAY with charocal. (RIVER TERRACE DEPOSITS)		
0.90	D				(0.15)			
					1.00	Brown firm to stiff silty, slightly sandy CLAY. (RIVER TERRACE DEPOSITS)		
					(0.15)			
1.10	D				1.15	Complete at 1.15m		

Plan

Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.60m (w) (approx)
NOTES: Trial hole complete at 1.15m.

Scale (approx)	Logged By	Figure No.
1:10	AL	LS8963.TP504

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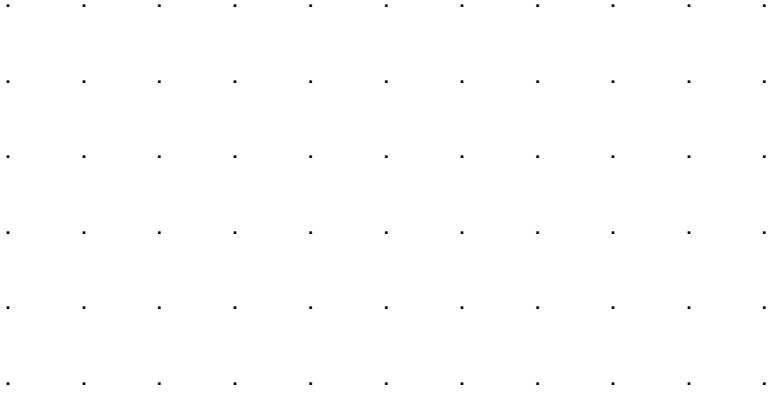
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[redacted]
www.landscience.co.uk

Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP505

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.50m x 0.60m x 1.15m		HOP Consulting	LS8963
	Location	**Dates** 08/12/2025	**Engineer** Tom Mead	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08)	Block paving (HARDSTANDING)		
					0.08 (0.06)	Yellow SAND (MADE GROUND)		
					0.14 (0.26)	Yellowish brown sandy GRAVEL. Gravel is fine to coarse concrete fragments. (MADE GROUND)		
0.80	B				0.40 (0.75)	Brown silty, sandy, gravelly CLAY with occasional iron stains. Gravels are coarse flints. (RIVER TERRACE DEPOSITS)		
					1.15	Complete at 1.15m		

Plan



Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.60m (w) (approx)
NOTES: Trial hole complete at 1.15m.

Scale (approx)	Logged By	Figure No.
1:10	AL	LS8963.TP505

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Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP506

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.50m (l) x 0.60m (w)		HOP Consulting	LS8963
	Location	**Dates** 09/12/2025	**Engineer** Tom Mead	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08)	Block Paving (HARDSTANDING)		
					0.08	Yellow brown sandy, GRAVEL with ocassion roots and rootlets. Sand is fine to medium. Gravel is fine to coarse, subangular to subrounded flint. (MADE GROUND)		
					(0.32)			
					0.40	Brown, slightly sandy, silty, CLAY. Sand is fine to medium. (RIVER TERRACE DEPOSITS)		
					(0.75)			
					1.15	Complete at 1.15m		

Plan

Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.60m (w) (approx)
NOTES: Trial hole complete at 1.15m.

Scale (approx)	Logged By	Figure No.
1:10	TM	LS8963.TP506

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Site	Trial Pit Number
Parker Building, BN17 7RZ - Additional Soaks	TP507

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	1.50m (l) x 0.65m (w)		HOP Consulting	LS8963
	Location	**Dates** 09/12/2025	**Engineer** Tom Mead	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08)	Block Paving (HARDSTANDING)		
					0.08	Yellow brown slightly clayey, sandy, GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded flint. (RIVER TERRACE DEPOSITS)		
					(0.55)			
					0.63	Brown to orangey brownb, slightly silty, sandy, CLAY with ocassional rootlets. (RIVER TERRACE DEPOSITS)		
					(0.57)			
					1.20	Complete at 1.20m		

Plan

Remarks

GROUNDWATER: None encountered.
STABILITY: No instability encountered.
BACKFILL: Trial hole backfilled with arisings
DIMENSIONS: 1.5m (l) 0.65m (w) (approx)
NOTES: Trial hole complete at 1.20m.

Scale (approx)	Logged By	Figure No.
1:10	CH	LS8963.TP507

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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

Sheet 1 / 8

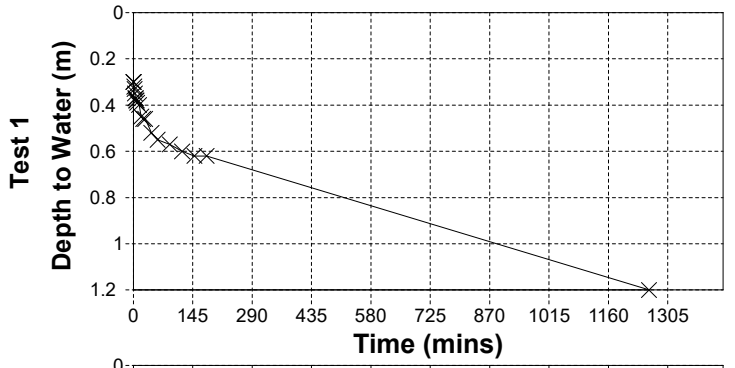
Location	Date	Level	Location
TP501	08/12/2025		

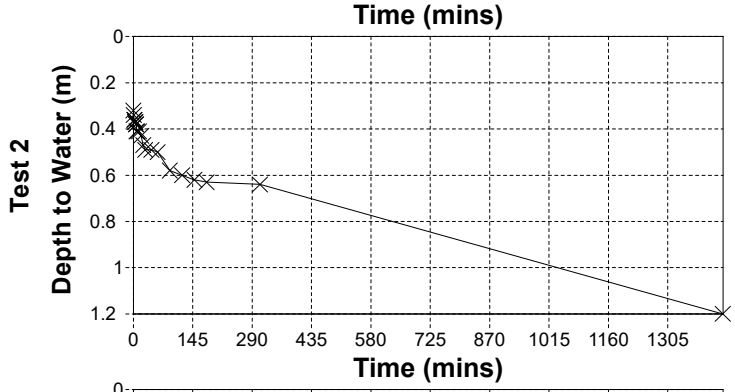
Pit Width (m)	0.70
Pit Depth (m)	1.20
Pit Length (m)	1.50

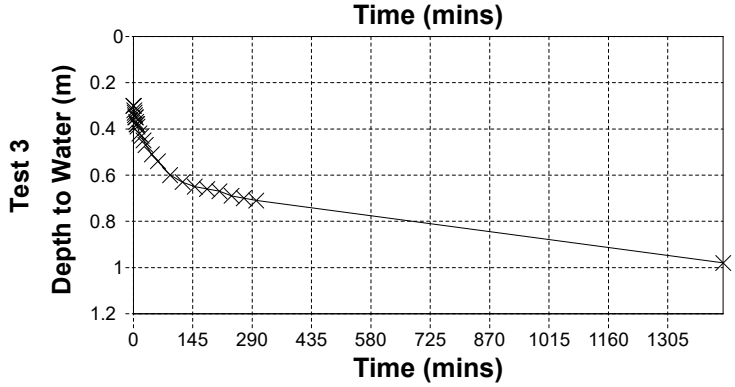
Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

	1	2	3
Effective depth (m)	0.90	0.88	0.90
Volume outflowing between 75% & 25% (m3)	0.47	0.46	0.47
Mean surface area through which outflow occurs (m2)	3.03	2.99	3.03
Time for outflow between 75% & 25% (min)	793.53	921.07	1366.39
SOIL INFILTRATION RATE (ms-1), f	3.28E-6	2.80E-6	1.90E-6

Remarks







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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

Sheet 2 / 8

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.30	0.32	0.30
1	0.30	0.34	0.30
2	0.32	0.36	0.32
3	0.33	0.36	0.33
4	0.35	0.37	0.34
5	0.37	0.37	0.35
6	0.37	0.38	0.35
7	0.38	0.38	0.37
8	0.38	0.41	0.38
9	0.39	0.41	0.38
10			0.39
14	0.40	0.41	
15			0.42
19	0.45	0.43	
20			0.43
24	0.46	0.47	
25			0.45
29	0.46	0.49	
30			0.47
44	0.52	0.49	
45			0.51
59	0.55	0.50	
60			0.54
89	0.57	0.58	
90			0.60
119	0.60	0.60	
120			0.63
149	0.62	0.62	
150			0.65
179	0.62	0.63	
180			0.66
210			0.67
240			0.69
270			0.70
300			0.71
309		0.64	
1259	1.20		
1439		1.20	
1440			0.98

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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

Sheet 3 / 8

Location	Date	Level	Location
TP502	10/12/2025		

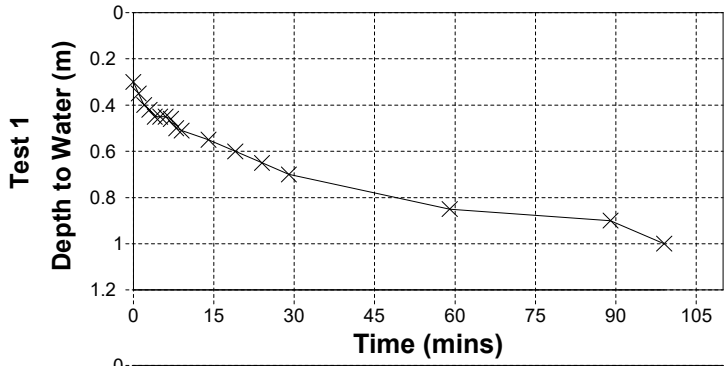
Pit Width (m)	0.70
Pit Depth (m)	1.20
Pit Length (m)	1.50

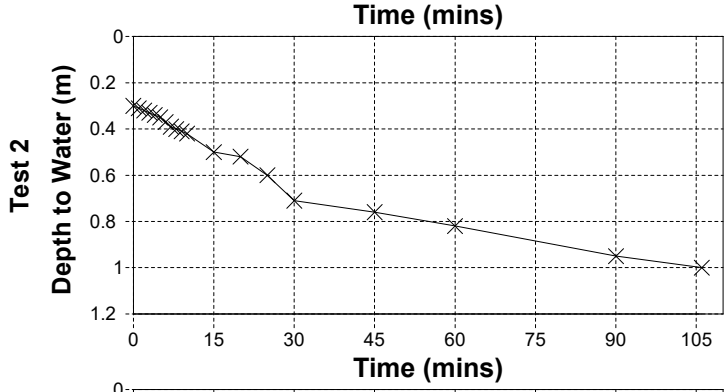
Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

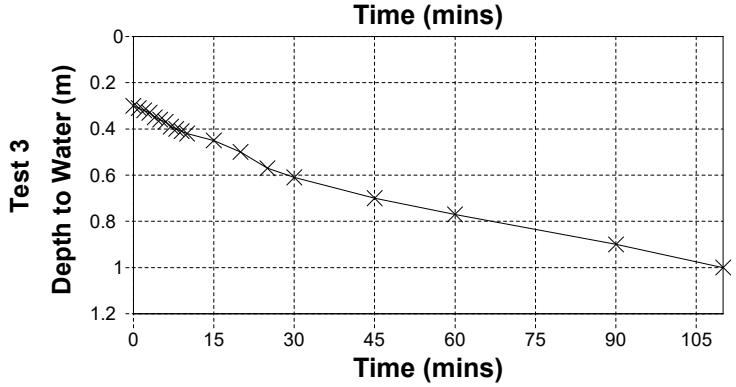
	1	2	3
Effective depth (m)	0.90	0.90	0.90
Volume outflowing between 75% & 25% (m3)	0.47	0.47	0.47
Mean surface area through which outflow occurs (m2)	3.03	3.03	3.03
Time for outflow between 75% & 25% (min)	85.62	77.69	83.21
SOIL INFILTRATION RATE (ms-1), f	3.04E-5	3.35E-5	3.12E-5

Remarks

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.30	0.30	0.30
1	0.35	0.31	0.31
2	0.40	0.32	0.32
3	0.42	0.33	0.33
4	0.45	0.34	0.35
5	0.45	0.35	0.36
6	0.45	0.37	0.37
7	0.46	0.39	0.39
8	0.50	0.40	0.40
9	0.51	0.41	0.41
10		0.42	0.42
14	0.55		
15		0.50	0.45
19	0.60		
20		0.52	0.50
24	0.65		
25		0.60	0.57
29	0.70		
30		0.71	0.61
45		0.76	0.70
59	0.85		
60		0.82	0.77
89	0.90		
90		0.95	0.90
99	1.00		
106		1.00	
110			1.00







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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

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Location	Date	Level	Location
TP503	10/12/2025		

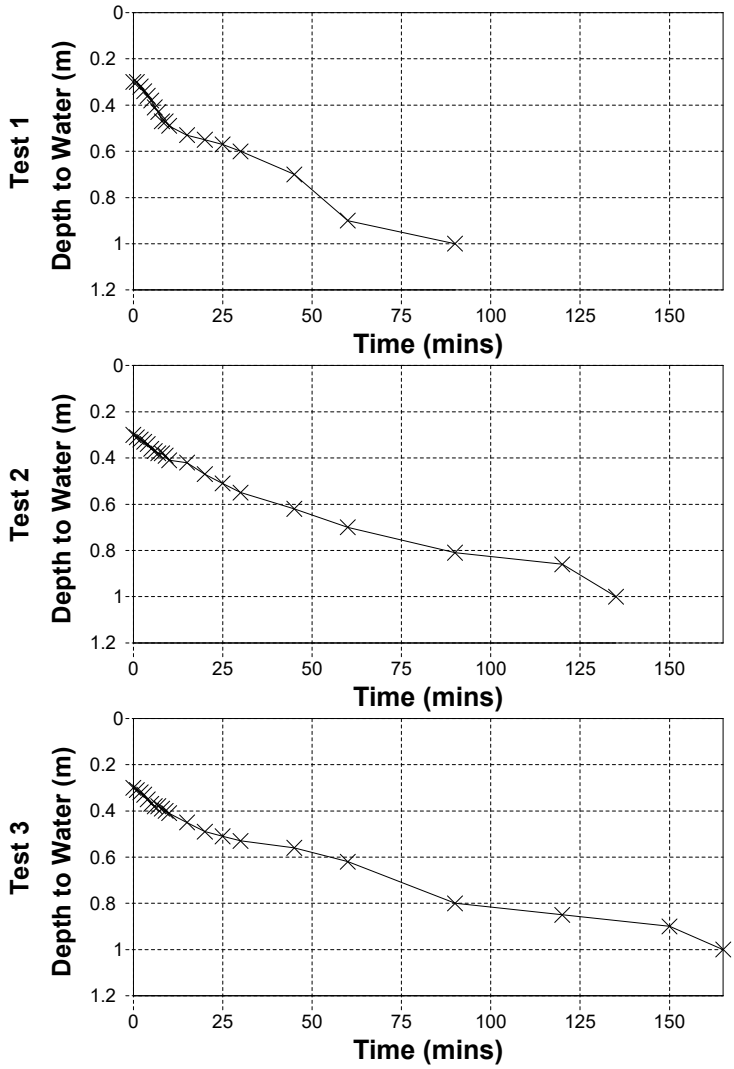
Pit Width (m)	0.70
Pit Depth (m)	1.20
Pit Length (m)	1.50

Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

	1	2	3
Effective depth (m)	0.90	0.90	0.90
Volume outflowing between 75% & 25% (m3)	0.47	0.47	0.47
Mean surface area through which outflow occurs (m2)	3.03	3.03	3.03
Time for outflow between 75% & 25% (min)	68.12	105.44	132.50
SOIL INFILTRATION RATE (ms-1), f	3.82E-5	2.46E-5	1.96E-5

Remarks

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.30	0.30	0.30
1	0.30	0.31	0.31
2	0.32	0.32	0.32
3	0.34	0.33	0.33
4	0.36	0.34	0.35
5	0.38	0.36	0.37
6	0.41	0.37	0.38
7	0.43	0.38	0.38
8	0.47	0.38	0.39
9	0.47	0.39	0.40
10	0.49	0.41	0.41
15	0.53	0.42	0.45
20	0.55	0.47	0.49
25	0.57	0.51	0.51
30	0.60	0.55	0.53
45	0.70	0.62	0.56
60	0.90	0.70	0.62
90	1.00	0.81	0.80
120		0.86	0.85
135		1.00	
150			0.90
165			1.00



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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

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Location	Date	Level	Location
TP504	08/12/2025		

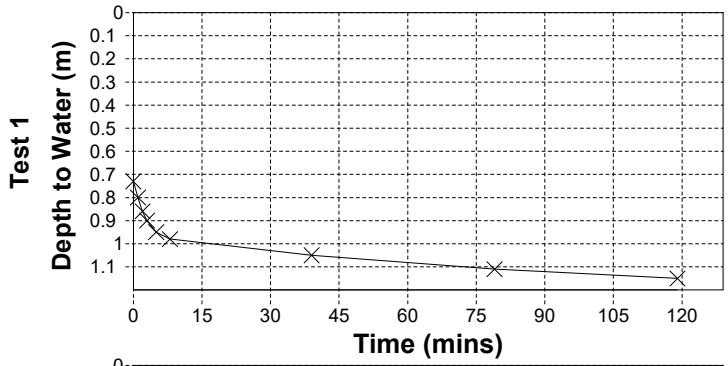
Pit Width (m)	0.75
Pit Depth (m)	1.15
Pit Length (m)	1.50

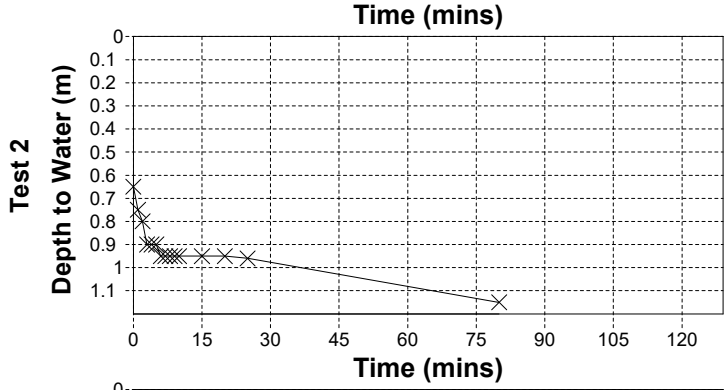
Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

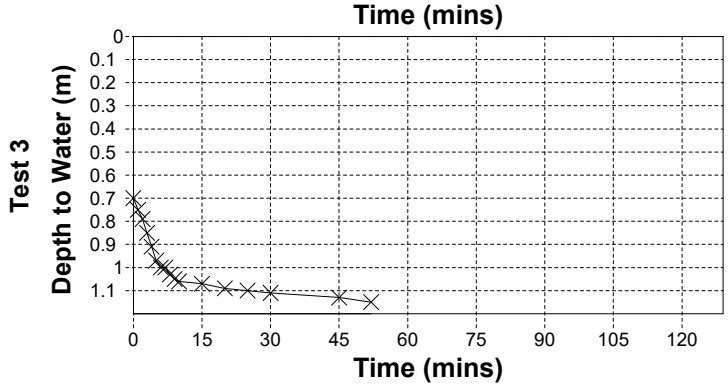
	1	2	3
Effective depth (m)	0.42	0.50	0.45
Volume outflowing between 75% & 25% (m3)	0.24	0.28	0.25
Mean surface area through which outflow occurs (m2)	2.07	2.25	2.14
Time for outflow between 75% & 25% (min)	35.21	42.32	6.00
SOIL INFILTRATION RATE (ms-1), f	5.40E-5	4.92E-5	3.29E-4

Remarks

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.73	0.65	0.70
1	0.80	0.75	0.75
2	0.86	0.80	0.79
3	0.90	0.90	0.85
4		0.90	0.91
5	0.95	0.90	0.97
6		0.95	1.00
7		0.95	1.00
8	0.98	0.95	1.03
9		0.95	1.05
10		0.95	1.06
15		0.95	1.07
20		0.95	1.09
25		0.96	1.10
30			1.11
39	1.05		
45			1.13
52			1.15
79	1.11		
80		1.15	
119	1.15		







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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

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Location	Date	Level	Location
TP505	09/12/2025		

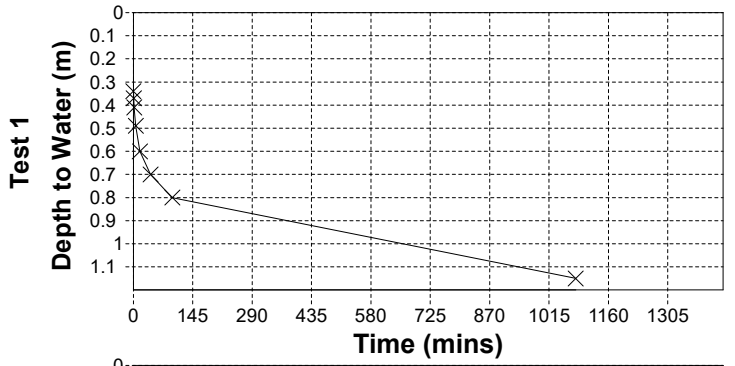
Pit Width (m)	0.56
Pit Depth (m)	1.15
Pit Length (m)	1.50

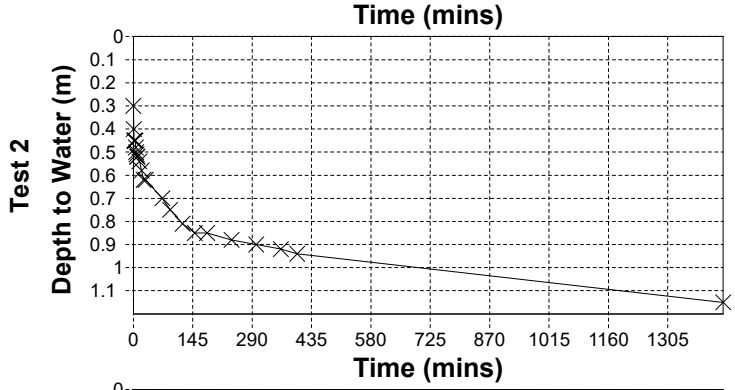
Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

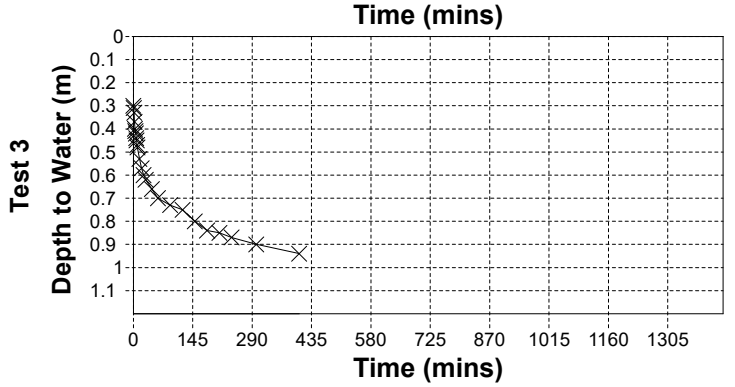
	1	2	3
Effective depth (m)	0.81	0.85	0.85
Volume outflowing between 75% & 25% (m3)	0.34	0.36	0.36
Mean surface area through which outflow occurs (m2)	2.51	2.59	2.59
Time for outflow between 75% & 25% (min)	499.34	386.75	385.19
SOIL INFILTRATION RATE (ms-1), f	4.52E-6	5.94E-6	5.96E-6

Remarks

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.34	0.30	0.30
1	0.37	0.40	0.31
2	0.41	0.45	0.33
3		0.45	0.37
4		0.45	0.40
5		0.45	0.41
6	0.49	0.48	0.42
7		0.50	0.44
8		0.51	0.45
9		0.52	0.47
10		0.52	0.48
15		0.54	0.53
16	0.60		
20		0.58	0.57
25		0.62	0.60
30		0.62	0.62
42	0.70		
45			0.66
60			0.70
71		0.70	
90		0.75	0.73
95	0.80		
120		0.81	0.75
150		0.85	0.80
180		0.85	0.84
210			0.85
240		0.88	0.87
300		0.90	0.90
360		0.92	
400		0.94	
405			0.94
1080	1.15		
1440		1.15	







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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

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Location	Date	Level	Location
TP506	09/12/2025		

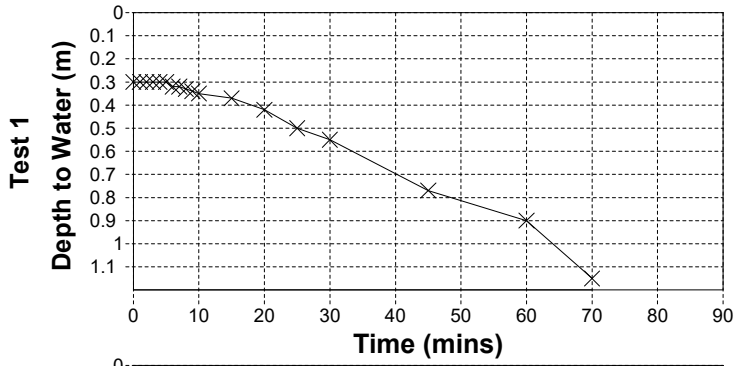
Pit Width (m)	0.60
Pit Depth (m)	1.15
Pit Length (m)	1.50

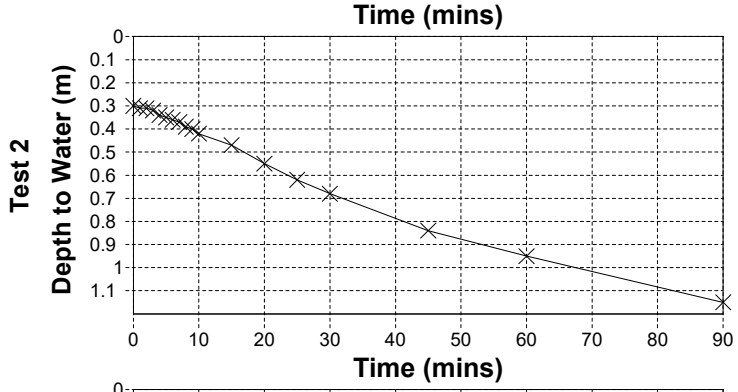
Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

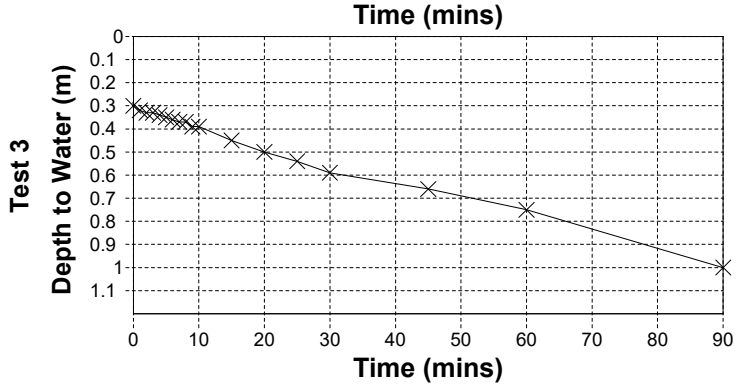
	1	2	3
Effective depth (m)	0.85	0.85	0.85
Volume outflowing between 75% & 25% (m3)	0.38	0.38	0.38
Mean surface area through which outflow occurs (m2)	2.69	2.69	2.69
Time for outflow between 75% & 25% (min)	35.25	40.64	60.94
SOIL INFILTRATION RATE (ms-1), f	6.72E-5	5.83E-5	3.89E-5

Remarks

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.30	0.30	0.30
1	0.30	0.31	0.32
2	0.30	0.31	0.33
3	0.30	0.32	0.33
4	0.30	0.34	0.34
5	0.30	0.35	0.35
6	0.32	0.36	0.36
7	0.32	0.37	0.37
8	0.33	0.39	0.37
9	0.34	0.40	0.39
10	0.35	0.42	0.39
15	0.37	0.47	0.45
20	0.42	0.55	0.50
25	0.50	0.62	0.54
30	0.55	0.68	0.59
45	0.77	0.84	0.66
60	0.90	0.95	0.75
70	1.15		
90		1.15	1.00







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Soakaway Test (BRE Digest 365)

Site : Parker Building, BN17 7RZ - Additional Soaks

Client : HOP Consulting

Engineer : Tom Mead

Job Number LS8963

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Location	Date	Level	Location
TP507	08/12/2025		

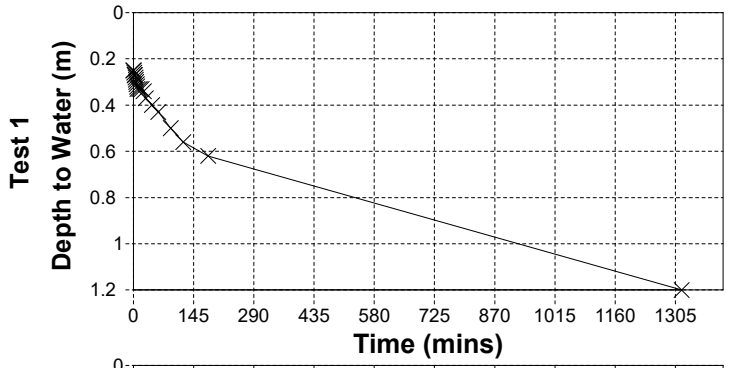
Pit Width (m)	0.65
Pit Depth (m)	1.20
Pit Length (m)	1.50

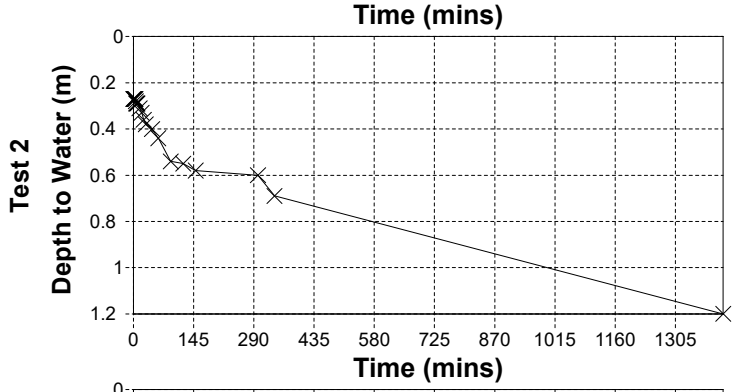
Soil type at test level	
Groundwater	
Drain discharge depth	
Sidewall stability	
Stone filled or open pit	Open pit

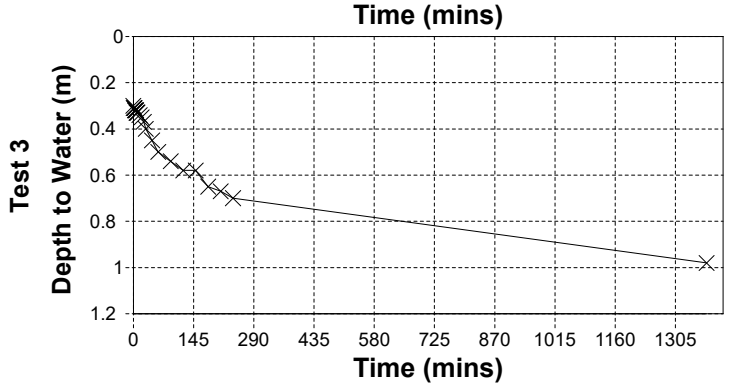
	1	2	3
Effective depth (m)	0.95	0.93	0.90
Volume outflowing between 75% & 25% (m3)	0.46	0.45	0.44
Mean surface area through which outflow occurs (m2)	3.02	2.97	2.91
Time for outflow between 75% & 25% (min)	768.55	848.90	1280.89
SOIL INFILTRATION RATE (ms-1), f	3.33E-6	3.00E-6	1.96E-6

Remarks

Elapsed time (mins)	Depth to Water Test 1	Depth to Water Test 2	Depth to Water Test 3
0	0.25	0.27	0.30
1	0.25	0.27	0.31
2	0.26	0.27	0.31
3	0.27	0.27	0.31
4	0.27	0.27	0.32
5	0.28	0.27	0.32
6	0.29	0.28	0.32
7	0.30	0.29	0.32
8	0.31	0.29	0.33
9	0.32	0.29	0.33
10	0.33	0.29	0.33
15	0.33	0.31	0.34
20	0.33	0.33	0.35
25	0.34	0.36	0.37
30	0.37	0.38	0.40
45	0.40	0.40	0.45
60	0.43	0.44	0.50
90	0.50	0.54	0.54
120	0.56	0.55	0.58
150		0.58	0.58
180	0.62		0.65
210			0.67
240			0.70
300		0.60	
340		0.69	
1320	1.20		
1380			0.98
1420		1.20	







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APPENDIX D – GESL SOAKAGE TESTING REPORT

13th April 2023

Our ref: GE21625/TU01/230413

Geo-Environmental

Toby Adair
Ardent Consulting Engineers
Third Floor
The Hallmark Building
52-56 Leadenhall Street
London
EC3M 5JE

By email only

Dear Toby,

RE: Wick, Littlehampton – Soakage Testing

Geo-Environmental Services Limited (Geo-Environmental) was instructed by Ardent Consulting Engineers (the Client) to undertake trial pit soakage testing at the above named site.

We write to present the results of the soakage testing undertaken. The soakage tests were undertaken in accordance with BRE Digest 365 'Soakaway Design', albeit that three test cycles could not be completed in any location as discussed below, due to insufficient soakage.

Scope of Works

The following scope of works was agreed with the Client:

- Commission a Phase 1 Desktop Threat Assessment for Unexploded Ordnance.
- Attendance of a specialist surveyor to undertake a buried utilities clearance survey using radiodetection and ground penetrating radar techniques. The survey included capture of co-ordinates and levels of exploratory holes using GPS surveying.
- Attendance of a Geo-Environmental Engineer to set out and supervise the intrusive investigation, undertake sampling, in-situ testing and logging of recovered soils from exploratory holes.
- The construction of 5No. machine dug trial pits to provisional depths of 3m bgl.
- Provision of heras fence to deploy at each trial pit to secure the pit during soakage testing.
- Attendance of a 4x4 water bowser to supply water for trial pit soakage tests. Undertake trial pit soakage tests in general accordance with BRE Digest 365.

The intrusive investigation works were undertaken on 12th and 13th April 2023, testing was completed over a two day period as agreed with the Client, i.e. to establish feasibility of infiltration.

In addition to the above scope of works, the investigation was undertaken with oversight from an ecologist appointed by the Client. This was necessary due to uncertainty regarding habitat and possible occupation status of the site for various protected species.

Site Description

The site comprised a roughly rectangular shaped generally flat and level parcel of land, which at the time of investigation was split into two sections. Although the site was flat and level the eastern portion was stepped down lower than the rest of site.

The easternmost area was occupied by a 2-storey large structure assumed to be used previously as office space, accessed from New Courtwick Lane, with associated surrounding hard standing for parking and storage space. The building was cordoned off by heras fencing, whilst the hardstanding area was secured by a lockable metal swing gate and concrete road blocks, with Secure Site in charge of security for the site. Areas of soft landscaping were observed around the perimeter of the eastern portion of site with maintained grass verges, mature deciduous trees and hedges. Several service covers were observed in the south area of the eastern portion, covering drainage services trending west-east.

The central and western portion of site was occupied by unmaintained grassland with a mixture of mature deciduous and coniferous trees, scrubs and various other vegetation. Potential Japanese Knotweed was identified, by the ecologist, in the central northern part of this section of site. Several areas of hardstanding, assumed concrete floor slabs from previous structures, were observed throughout this section of site. Access to this section of site was created by removing a section of the bunding on the northern border of site parallel to Courtwick Lane, this section of bunding was reinstated upon Geo-Environmental leaving site. It should be noted along the north boundary evidence of fly tipping was observed, as well, as potentially people camping on site.

The site boundary was formed mostly of mature coniferous trees, as well as fencing on the western boundary and low hedges on the eastern boundary. Henry Lock Way was located parallel to the southern border and Courtwick Lane along the northern border. The A259 was slightly further south from Henry Lock Way. New Courtwick Lane ran parallel to the eastern boundary. To the north, west and south of site were areas of residential development with associated infrastructure. Large commercial buildings with assorted trades occupying them were located to the east of the site.

Security from Secure Site was present to allow access and secure barriers and the like during the course of the investigation.

Ground Conditions

The ground conditions encountered within the exploratory holes were broadly consistent with the published sequence of strata. In summary, ground conditions typically comprised a mantle of Topsoil over soils inferred to be River Terrace Deposits. Whilst mapping indicates the White Chalk Subgroup to underlie the River Terrace Deposits, strata clearly evident as Chalk were not encountered. That said, the lowest unit of River Terrace Deposits encountered in TP03 and TP04 was notably lighter in colour (off-white and greyish brown) and included gravel sized fragments of chalk and flint. Given that the flint was described as sub-rounded to angular, some weathering and transit is likely to have occurred and thus this unit was not considered to be a highly weathered in-situ chalk, but more likely to be part of the River Terrace Deposits.

A generalised summary of encountered conditions is presented in Table 1.

Top (m bgl)	Base (m bgl)	Geology	Pits
0.00	0.20 – 0.30	**Topsoil:** Grass over dark brown silty slightly gravelly CLAY. Gravel is coarse subrounded to angular. Frequent rootlets.	TP01, TP02, TP03, TP04
0.00	0.20	**Made Ground:** Grass over dark brown silty gravelly CLAY. Gravel is fine to coarse subrounded to subangular flints. Frequent glass fragments. Frequent brick fragments. Frequent rootlets.	TP03
0.20 – 0.30	2.00 – 3.20	**River Terrace Deposits:** Soft/firm/stiff orangish brown silty CLAY; Orangish brown sandy CLAY, interbedded with clay SAND. Sand is fine to coarse.	All Positions
2.00 – 2.50	3.00	**River Terrace Deposits:** Firm/stiff off-white greyish brown slightly gravelly CLAY with chalk clasts. Gravel is coarse subrounded to angular flints.	TP03, TP04

Table 1 Summary of Ground Conditions

Figure 2 presents the trial pit locations. For more detailed description of the ground conditions, reference should be made to the exploratory hole logs enclosed in Appendix B.

Collapses within trial pits TP02-TP05 occurred during testing with trial pits infilling to depths of between 1.75m to 2.50m bgl.

Soakage Testing

The soakage testing was undertaken in general accordance with BRE Digest 365. Due to encountered ground conditions and rates of soakage, three filling and inundation cycles were not completed within any of the trial pit locations.

An infiltration rate, using the standard methodology contained in BRE Digest 365 'Soakaway Design', could only be calculated for 3No. tests undertaken. There was insufficient fall in water in the remaining test cycles to derive an infiltration test. The results of the testing undertaken are summarised in Table 2 below with the results presented in Appendix C.

Location	Test Number	Depth of Pit (m bgl)	Calculated infiltration rate (m/s)
TP01	1	3.20	Insufficient fall in head
	2	-	-
	3	-	-
TP02	1	3.00 (C to 2.39)	Insufficient fall in head
	2	-	-
	3	-	-
TP03	1	3.00 (C to 2.20)	Insufficient fall in head
	2	-	-
	3	-	-
TP04	1	3.00 (C to 2.00)	$5.2x10^{-6}$

Location	Test Number	Depth of Pit (m bgl)	Calculated infiltration rate (m/s)
	2	2.00 (C to 1.75)	Insufficient fall in head
	3	-	-
TP05	1	3.00 (C to 2.50)	$5.3x10^{-6}$
	2	2.50 (C to 2.33)	$9.4x10^{-6}$
	3	-	-

NOTE: *(C to number) depth pit collapsed to during soakage test*

Table 2 Summary of Soakage Testing Results (April 2023)

On the basis of the results from testing undertaken and the observed ground conditions to date it is considered that the discharge of storm water to the ground via soakaways at targeted depths (3m bgl) would not be effective. On the basis of the testing undertaken, it is anticipated that on-site storage and attenuation of storm water would be required, with consideration of alternative discharge options such as deeper infiltration, permeable paving, swales/basins or connection for off-site surface water discharge.

It should be noted that tests within the western areas of site (first cycle in TP04 and two cycles in TP05) were able to provide an infiltration test. Further testing would be required to explore options regarding discharge of storm water to the ground via soakaways in this region of site.

Closure

We trust we have interpreted your request correctly and provided sufficient information for your current requirements. If you have any questions or queries in relation the information provided at this stage, please do not hesitate to contact the undersigned.

Yours sincerely
For and on Behalf of Geo-Environmental

[redacted]

Travis Underdown BSc (Hons), FGS
Consulting Engineer

[redacted]

Enc Figure 1 – Site Location Plan
Figure 2 – Exploratory Hole Location Plan

Appendix A – Phase 1 Desktop Threat Assessment
Appendix B – Exploratory Hole Logs
Appendix C – Soakage Testing Results

Figures



Figure 1
Site Location Plan

Project Title:	**Wick, Littlehampton**	**Title :**	**Figure 1 - Site Location Plan**
Location :	**Littlehampton**	**Scale:**	**1:9000**
Project No. :	**GE21625**	**Engineer:**	**Travis Underdown**
Client :	**Ardent Consulting**		

Geo-Environmental

Legend Key

Sections - Site boundary



Figure 2
Exploratory Hole location
Plan

Project Title:	**Wick, Littlehampton**	**Title :**	**Figure 2 - Exploratory Hole Location Plan**
Location :	**Littlehampton**	**Scale:**	**1:2000**
Project No. :	**GE21625**	**Engineer:**	**Travis Underdown**
Client :	**Ardent Consulting**		

Geo-Environmental

Legend Key

- Locations By Type - Empty
- Locations By Type - TP



Appendices



Geo-Environmental

Appendix A
Phase 1 Desktop Threat Assessment



1st Line Defence Limited
Unit 3, Maple Park, Essex Road, Hoddesdon, Herts, EN11 0EX
[redacted]
www.1stlinedefence.co.uk

Preliminary UXO Risk Assessment

Client	Geo-Environmental Services Ltd
Project	10 New Courtwick Lane, Wick
Site Address	10 New Courtwick Lane, Wick, Littlehampton, BN17 7RZ
Report Reference	PA17683-00
Date	31/03/23
Authored by	HJ
Quality Assurance	PB

Assessment Objective

This preliminary risk assessment is a qualitative screening exercise to assess the likely potential of encountering unexploded ordnance (UXO) at the 10 New Courtwick Lane site, Wick. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced. It should be noted that the only way to entirely negate risk from UXO to a project would be to support the works proposed with appropriate UXO risk mitigation measures. It is rarely possible to state that there is absolutely 'no' risk from UXO to a project.

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Risk Assessment Considerations	
Site location and description/current use	The site is located in the north of Littlehampton, West Sussex. According to recent aerial photography, the east of the site is currently occupied by a large structure, whilst the west of the site is occupied by undeveloped land. To the north and west of the site are a number of residential structures and bordering the east and the south of the site are New Courtwick Lane and Henry Lock Way/A259. The site is approximately centred on the OS grid reference: **TQ 02123 03606**. 
Are there any indicators of current/historical military activity on/close to the site?	Whilst available records indicate Allied military activity in the wider Littlehampton area, no evidence available at this preliminary stage indicates any current or historic military activity within the site area. The closest recorded Heavy Anti-Aircraft (HAA) battery was situated approximately 1.2km to the east of the site. The conditions in which unexploded anti-aircraft ordnance may have fallen unrecorded within the proposed site are generally analogous to that of German aerial delivered ordnance - see below for further information.
What was the pre- and post-WWII history of the site?	Pre-WWII OS mapping of the site from 1938 indicates that the site was occupied by undeveloped land. This mapping shows Court Wick Lane bordering the north of the site. To the east of the site were Millfield Cottages and Millfield Barn with the south and west of the site were areas of undeveloped land. Post-WWI OS mapping from 1961 shows significant redevelopment had taken place across the site, with Elmlea's Nursery and the Norman's Nursery occupying the site. The area encompassing the site is shown on this mapping to have undergone no substantial changes post-war.
Was the area subject to bombing during WWII?	During WWII the site was located within the Urban District of Littlehampton, which sustained a low-moderate bombing density with an average of 34.3 items of ordnance per 1,000 acres. This was comprised of 83 high explosive (HE) bombs, 1 parachute mine and 4 phosphorous bombs, totalling 88 bombs across 1,038 acres. No available evidence displays any bombing incidents within the site boundary. The closest recorded bombing incident is a HE bomb strike, recorded on the 16th June 1942, located approximately 0.26km east of the site.
Is there any evidence of bomb damage on/close to the site?	Low-quality post-WWII aerial imagery from October 1947 and oblique aerial photography of the site from November 1947 show no obvious indications of damage within the site boundary or within close proximity to the site, such as cratering, clearance or damaged structures.
To what degree would the site have been subject to access?	As the site was occupied by undeveloped land during the war, it is believed that the site would not have been subject to frequent access and observation.

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To what degree has the site been developed post-WWII?	The site has undergone significant redevelopment post-WWII, including the construction of the Nurseries shown on site in post-WWII OS mapping from 1961, their demolition and the construction of the structure which now occupied the eastern portion of the site.
What is the nature and extent of the intrusive works proposed?	The nature and extent of works proposed was not available at the time of writing.

Summary and Conclusions

During WWII the site was located within the Urban District of Littlehampton, which sustained a low-moderate bombing density with an average of 34.3 items of ordnance per 1,000 acres.

All evidence available at this preliminary stage, does not indicate any bombing incidents within the site boundary. The closest recorded bombing incident is plotted approximately 0.26km east of the site. Low quality post-WWII aerial photography and oblique areal imagery from 1947 show no indications of bomb damage on site or within close proximity to the site, such as cratering, clearance or damaged structures. As the site was occupied by undeveloped land during the war, it is believed that the site would not have been subject to frequent access and observation. There has been significant redevelopment on site post-WWII.

Recommendations

Given the findings of this preliminary report, the risk from UXO is not considered to be significantly elevated above the generally low 'background risk' of finding UXO in this part of the UK. Whilst it would be possible to conduct a Detailed UXO Risk Assessment for this site, it is not anticipated that any further findings would significantly alter the risk of encountering unexploded ordnance within the site. It is therefore recommended that **no further research** is undertaken.

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.

It should be noted that although the risk from unexploded ordnance on this site has been assessed as low/minimal, this does not mean there is 'no' risk of encountering UXO. This preliminary report has been undertaken with due diligence, and all reasonable care has been taken to access and analyse relevant historical information. By necessity, when dealing with historical evidence, and when making assessments of UXO risk, various assumptions have to be made which we have discussed and justified within this report. Our reports take a common-sense and practical approach to the assessment of UXO risk, and we strive to be reasonable and pragmatic in our conclusions. As referenced, it would be possible to undertake further research into this site, but based on the evidence to hand, this is not deemed strictly necessary, and no reasonably justifiable requirement for proactive on-site mitigation has been identified.

It should however be stressed that if any suspect items are encountered during the proposed works, 1st Line Defence should be contacted for advice/assistance, and to re-assess the risk as necessary. Furthermore, we would recommend that ground personnel are always made aware of the potential for encountering UXO, what to look out for and what to do in the unlikely event that a suspect item is encountered, and that a UXO Risk Management Plan is put together for the proposed works. We would be happy to provide a template and guidance for this – contact us on 01992 245020. Should the scope of works change or additional works be proposed, 1st Line Defence should be contacted to re-evaluate the risk.

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Appendix B
Preliminary Exploratory Hole Logs



Geo-Environmental

Contract Name:		Client:			Trial Pit ID:
Wick, Littlehampton		Ardent Consulting			TP01
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
GE21625	05/04/2023	TU		PRELIM	
Trial Pit Log	Easting: 502224.5	Northing: 103503.6	Ground Level: 5.19mOD	Plant Used: 8 Tn	Date Printed: 13/04/2023	Scale: 1:25

Weather: Cloudy and dry | Hole Termination: | Stability: Sides stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
				(0.30)		Grass over silty slightly gravelly CLAY. Gravel is coarse subrounded to angular. Frequent rootlets. TOPSOIL		
			4.89	0.30		Soft to firm orangish brown mottled brown silty CLAY. Rare rootlets. RIVER TERRACE DEPOSITS		
		PP=0.5kg/cm2		(0.80)				
			4.09	1.10		Orangish brown slightly clayey SAND interbedded with soft to firm sandy CLAY. Sand is fine to coarse. RIVER TERRACE DEPOSITS		
		PP=1.0kg/cm2						
		PP=1.5kg/cm2						
		PP=1.5kg/cm2		(2.10)				
		PP=1kg/cm2						
		PP=1.5kg/cm2						
			1.99	3.20		End of Trial Pit at 3.20m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5

Dimensions:

Final Depth:	3.20m
Final Width:	0.50m
Final Length:	1.50m

Remarks

Water Strikes (mbgl)

Depth Strike	Rose to	Time Elapsed (mins)

Photo:



Photo of Pit


Photo of Spoil

Geo-Environmental

Contract Name: Wick, Littlehampton		Client: Ardent Consulting			Trial Pit ID: TP02
Contract Number: GE21625	Date Started: 05/04/2023	Logged By: TU	Checked By:	Status: PRELIM	Sheet 1 of 1
Trial Pit Log	Easting: 502121.4	Northing: 103571.9	Ground Level: 5.32mOD	Plant Used: 8Tn	Date Printed: 13/04/2023	Scale: 1:25
Weather: Sunny	Hole Termination:		Stability: Sides stable		

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
			5.08	0.25		Grass over dark brown slightly silty slightly gravelly CLAY. Gravel is coarse subrounded to subangular flints. Frequent rootlets. TOPSOIL		
		PP=1.0kg/cm2				Soft to firm orangish brown slightly silty CLAY. Rare shallow rootlets. RIVER TERRACE DEPOSITS		
		PP=1.0kg/cm2		(1.75)				
		PP=1.5kg/cm2						
			3.32	2.00		Orangish brown slightly sandy CLAY. Sand is fine to coarse. RIVER TERRACE DEPOSITS		
				(1.00)				
			2.33	3.00		End of Trial Pit at 3.00m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5

Dimensions:

Final Depth:	3.00m
Final Width:	0.50m
Final Length:	2.00m

Remarks

Water Strikes (mbgl)		
Depth Strike	Rose to	Time Elapsed (mins)

Photo:



Photo of Pit


Photo of Spoil

Geo-Environmental

Contract Name: Wick, Littlehampton			Client: Ardent Consulting		Trial Pit ID: TP03
Contract Number: GE21625	Date Started: 05/04/2023	Logged By: TU	Checked By:	Status: PRELIM	Sheet 1 of 1
Trial Pit Log	Easting: 502126.5	Northing: 103634.1	Ground Level: 5.34mOD	Plant Used: 8Tn	Date Printed: 13/04/2023	Scale: 1:25
Weather: Cloudy	Hole Termination:		Stability: Sides stable		

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
			5.14	0.20		Grass over dark brown silty gravelly CLAY. Gravel is fine to coarse subrounded to subangular flints. Frequent glass fragments. Frequent brick fragments. Frequent rootlets. MADE GROUND		
		PP=1.5kg/cm2				Firm to stiff orangish brown silty CLAY. RIVER TERRACE DEPOSITS		
				(1.70)				
		PP=1.5kg/cm2						
		PP=2.5kg/cm2						
			3.44	1.90		Orangish brown slightly sandy CLAY. Sand is coarse.		
			3.34	2.00		RIVER TERRACE DEPOSITS		
		PP=3.5kg/cm2				Very stiff brownish off white slightly gravelly CLAY with chalk clasts. Gravel is fine to coarse subrounded to angular flints. RIVER TERRACE DEPOSITS		
				(1.00)				
		PP=3.0kg/cm2						
			2.34	3.00		End of Trial Pit at 3.00m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5

Dimensions:

Final Depth:	3.00m
Final Width:	0.50m
Final Length:	2.00m

Remarks

Water Strikes (mbgl)

Depth Strike	Rose to	Time Elapsed (mins)

Photo:



Photo of Pit


Photo of Spoil

Geo-Environmental

Trial Pit Log

Contract Name:			Client:		Trial Pit ID:
Wick, Littlehampton			Ardent Consulting		TP04
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
GE21625	05/04/2023	TU		PRELIM	
Easting:	Northing:	Ground Level:	Plant Used:	Date Printed:	Scale:
502009.5	103660.2	7.16mOD	8Tn	13/04/2023	1:25

Weather: Cloudy | Hole Termination: | Stability: Sides stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
			6.96	0.20		Grass over brown with ferruginous staining slightly silty CLAY. Occasional rootlets. TOPSOIL		
		PP=1.5kg/cm2		(1.10)		Firm orangish brown slightly silty slightly gravelly CLAY. Gravel is medium to coarse subrounded to subangular flints. RIVER TERRACE DEPOSITS		
		PP=1.5kg/cm2	5.86	1.30		Orangish brown clayey SAND interbedded with sandy CLAY. Sand is fine to coarse. RIVER TERRACE DEPOSITS		
				(1.20)				
			4.66	2.50		Stiff off-white greyish brown slightly gravelly CLAY with chalk clasts. Gravel is coarse subrounded to angular flints. RIVER TERRACE DEPOSITS		
		PP=2.0kg/cm2		(0.50)				
			4.16	3.00		End of Trial Pit at 3.00m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5

Dimensions:

Final Depth:	3.00m
Final Width:	0.50m
Final Length:	2.00m

Remarks

Water Strikes (mbgl)

Depth Strike	Rose to	Time Elapsed (mins)

Photo:



Photo of Pit


Photo of Spoil

Geo-Environmental

Contract Name:		Client:			Trial Pit ID:
Wick, Littlehampton		Ardent Consulting			TP05
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
GE21625	05/04/2023	TU		PRELIM	
Trial Pit Log	Easting: 502011.9	Northing: 103604.4	Ground Level: 6.65mOD	Plant Used: 8Tn	Date Printed: 13/04/2023	Scale: 1:25

Weather: Cloudy | Hole Termination: | Stability: Sides stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depths	Sample ID	Test Result	Reduced Level	Depth (m) (Thickness)	Legend	Strata Description		
			6.35	(0.30) 0.30		Grass over brown to dark brown silty slightly gravelly CLAY. Gravel is fine to coarse subrounded to angular flints. Frequent rootlets. TOPSOIL		
		PP=1.5kg/cm2				Form orangish brown slightly silty CLAY. RIVER TERRACE DEPOSITS		
		PP=1.5kg/cm2		(1.30)				
		PP=1.5kg/cm2	5.05	1.60		Orangish brown sandy CLAY, interbedded with clay SAND. Sand is fine to coarse. RIVER TERRACE DEPOSITS		
		PP=1.5kg/cm2		(0.80)				
			4.25	2.40		Orangish brown gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subrounded to subangular flints. RIVER TERRACE DEPOSITS		
				(0.60)				
			3.65	3.00		End of Trial Pit at 3.00m		

0.5 1.0 1.5 2.0 2.5 3.0 3.5

Dimensions:

Final Depth:	3.00m
Final Width:	0.50m
Final Length:	2.00m

Remarks

Water Strikes (mbgl)

Depth Strike	Rose to	Time Elapsed (mins)

Photo:



Photo of Pit



Photo of Spoil

Geo-Environmental

Appendix C
Soakage Testing
Results



Geo-Environmental	Soakaway Test Results (after BRE Digest 365)	Geo-Environmental Services Limited Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL [redacted] www.gesl.net

Project Name :	Wick Littlehampton	Job No. :	GE21625
Client :	Ardent Consulting Engineers	Date :	13/04/2023

Pit reference	TP01
Pit depth (m)	3.20
Pit width (m)	0.50
Pit length (m)	2.00
Depth to standing water (m)	

Test 1

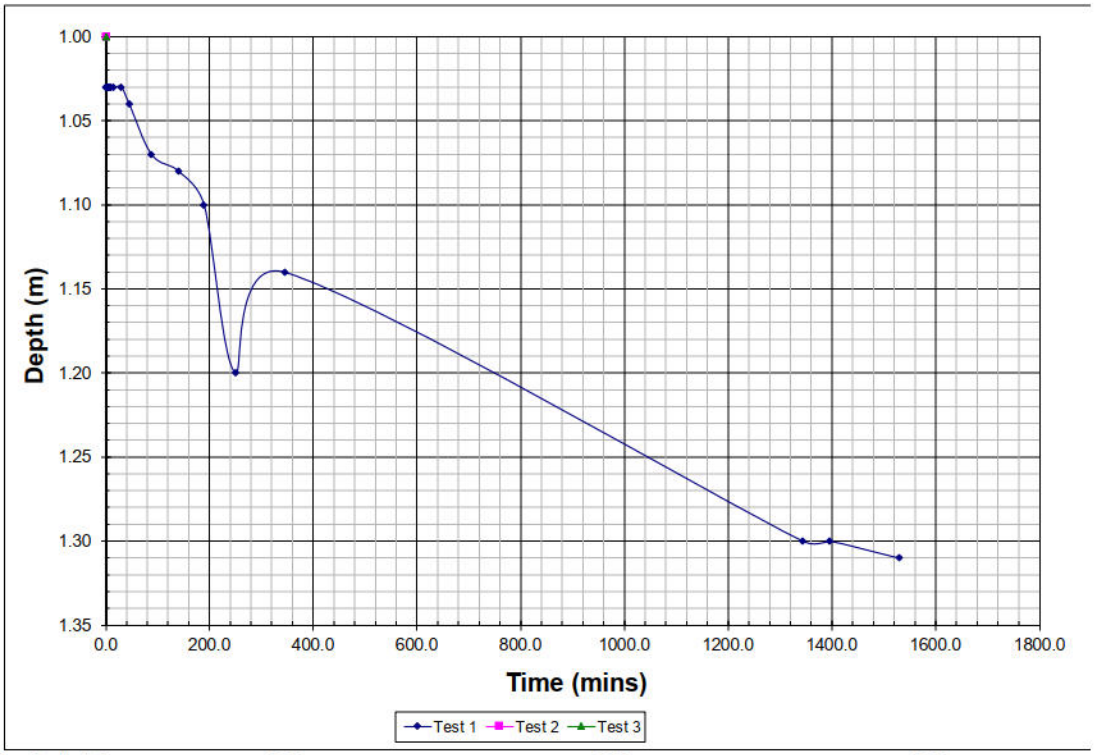
Time (min)	Depth (m)
0.0	1.03
1.0	1.03
2.0	1.03
3.0	1.03
4.0	1.03
5.0	1.03
7.0	1.03
10.0	1.03
15.0	1.03
30.0	1.03
45.0	1.04
88.0	1.07
140.0	1.08
189.0	1.10
250.0	1.20
345.0	1.14
1343.0	1.30
1395.0	1.30
1530.0	1.31
1650.0	1.31

Test 2

Time (min)	Depth (m)

Test 3

Time (min)	Depth (m)



Max. depth (m)	3.20	3.20	3.20
Effective depth (m)	2.17	3.20	3.20
75% effective depth (m)	1.57	0.80	0.80
50% effective depth (m)	2.12	1.60	1.60
25% effective depth (m)	2.66	2.40	2.40
t75 (min)			
t50 (min)			
t25 (min)			
Vp 75-25	1.09	1.60	1.60
ap 50	6.425	9	9
tp 75-25	0.00	0.00	0.00

Soil infiltration rate (m/s)	Insufficient fall in head
Soil infiltration rate (mm/hr)	Insufficient fall in head

Geo-Environmental	Soakaway Test Results (after BRE Digest 365)	Geo-Environmental Services Limited Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL [redacted] www.gesl.net

Project Name : Wick Littlehampton	Job No. : GE21625
Client : Ardent Consulting Engineers	Date : 13/04/2023

Pit reference	TP02
Pit depth (m)	2.39
Pit width (m)	0.50
Pit length (m)	2.00
Depth to standing water (m)	

Test 1

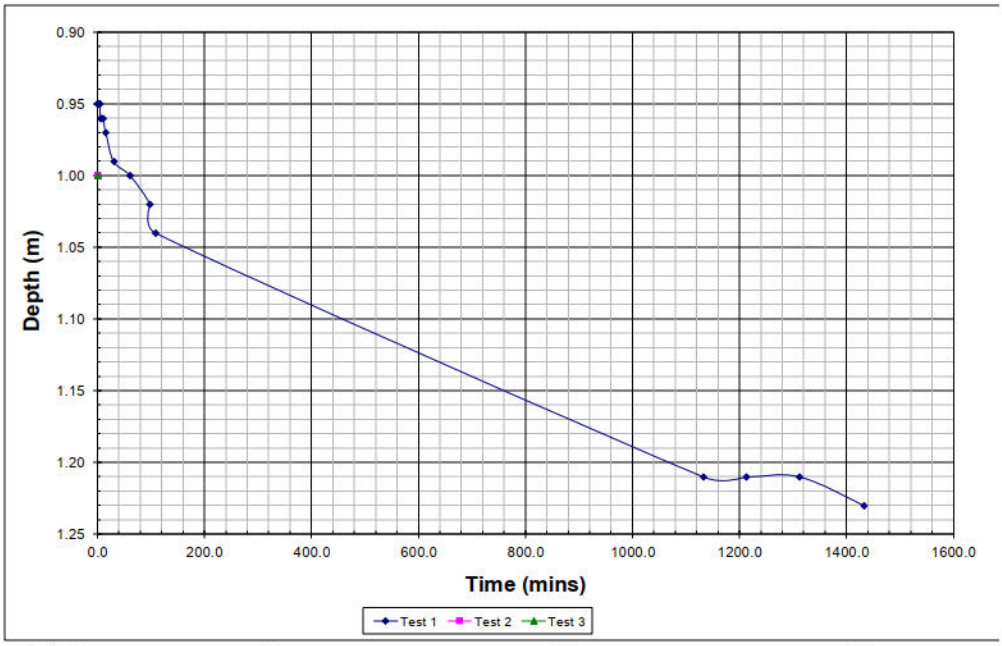
Time (min)	Depth (m)
0.0	0.95
1.0	0.95
2.0	0.95
3.0	0.95
4.0	0.95
5.0	0.96
7.0	0.96
10.0	0.96
15.0	0.97
30.0	0.99
60.0	1.00
97.0	1.02
108.0	1.04
1132.0	1.21
1212.0	1.21
1312.0	1.21
1432.0	1.23

Test 2

Time (min)	Depth (m)

Test 3

Time (min)	Depth (m)



Max. depth (m)	2.39	2.39	2.39
Effective depth (m)	0.98	2.39	2.39
75% effective depth (m)	1.31	0.60	0.60
50% effective depth (m)	1.67	1.20	1.20
25% effective depth (m)	2.03	1.79	1.79
t75 (min)			
t50 (min)			
t25 (min)			
Vp 75-25	0.72	1.20	1.20
ap 50	3.45	6.975	6.975
tp 75-25	0.00	0.00	0.00

Soil infiltration rate (m/s)	Insufficient fall in head
Soil infiltration rate (mm/hr)	Insufficient fall in head

Geo-Environmental	Soakaway Test Results (after BRE Digest 365)	Geo-Environmental Services Limited Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL [redacted] www.gesl.net

Project Name : Wick Littlehampton	Job No. : GE21625
Client : Ardent Consulting Engineers	Date : 13/04/2023

Pit reference	TP03
Pit depth (m)	2.20
Pit width (m)	0.50
Pit length (m)	2.00
Depth to standing water (m)	

Test 1

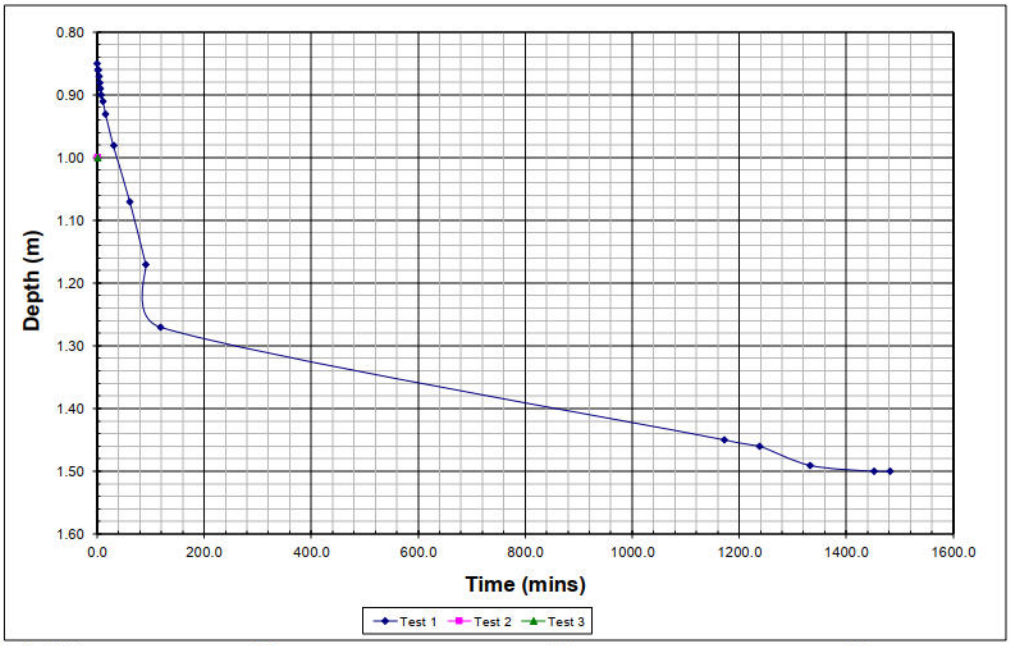
Time (min)	Depth (m)
0.0	0.85
1.0	0.86
2.0	0.86
3.0	0.87
4.0	0.88
5.0	0.89
7.0	0.90
10.0	0.91
15.0	0.93
30.0	0.98
60.0	1.07
90.0	1.17
118.0	1.27
1172.0	1.45
1237.0	1.46
1332.0	1.49
1452.0	1.50
1482.0	1.50

Test 2

Time (min)	Depth (m)

Test 3

Time (min)	Depth (m)



Max. depth (m)	2.20	2.20	2.20
Effective depth (m)	1.35	2.20	2.20
75% effective depth (m)	1.19	0.55	0.55
50% effective depth (m)	1.53	1.10	1.10
25% effective depth (m)	1.86	1.65	1.65
t75 (min)			
t50 (min)			
t25 (min)			
Vp 75-25	0.68	1.10	1.10
ap 50	4.375	6.5	6.5
tp 75-25	0.00	0.00	0.00

Soil infiltration rate (m/s)	Insufficient fall in head
Soil infiltration rate (mm/hr)	Insufficient fall in head

Geo-Environmental	**Soakaway Test Results (after BRE Digest 365)**	**Geo-Environmental Services Limited** Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL [redacted] www.gesl.net

Project Name :	Wick Littlehampton	**Job No. :**	GE21625
Client :	Ardent Consulting Engineers	**Date :**	13/04/2023

Pit reference	**TP04**	
Test	**1**	**2**
Pit depth (m)	2.00	1.75
Pit width (m)	0.50	0.50
Pit length (m)	2.00	2.00
Depth to standing water (m)		

Test 1

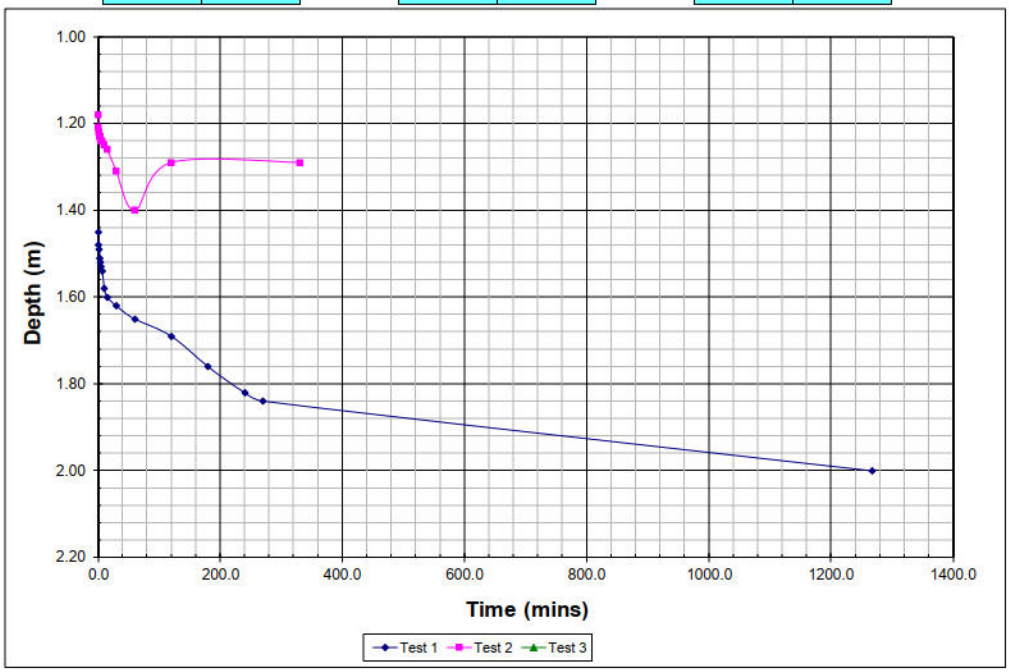
Time (min)	Depth (m)
0.0	1.45
1.0	1.48
2.0	1.49
3.0	1.51
4.0	1.52
5.0	1.53
7.0	1.54
10.0	1.58
15.0	1.60
30.0	1.62
60.0	1.65
120.0	1.69
180.0	1.76
240.0	1.82
270.0	1.84
1267.0	2.00

Test 2

Time (min)	Depth (m)
0.0	1.18
1.0	1.21
2.0	1.22
3.0	1.23
4.0	1.23
5.0	1.24
7.0	1.24
10.0	1.25
15.0	1.26
30.0	1.31
60.0	1.40
120.0	1.29
330.0	1.29

Test 3

Time (min)	Depth (m)



Max. depth (m)	2.00	1.75	2.00
Effective depth (m)	0.55	0.57	2.00
75% effective depth (m)	1.59	1.32	0.50
50% effective depth (m)	1.73	1.47	1.00
25% effective depth (m)	1.86	1.61	1.50
t75 (min)	12.00		
t50 (min)	160.00		
t25 (min)	380.00		
Vp 75-25	0.28	0.29	1.00
ap 50	2.375	2.425	6
tp 75-25	368.00	0.00	0.00

Soil infiltration rate (m/s)	**5.2E-06**	**Insufficient fall in head**
Soil infiltration rate (mm/hr)	**1.89E+01**	**Insufficient fall in head**

Notes:

Geo-Environmental	**Soakaway Test Results (after BRE Digest 365)**	**Geo-Environmental Services Limited** Unit 7 Danworth Farm, Cuckfield Road, Hurstpierpoint, West Sussex BN6 9GL [redacted] www.gesl.net

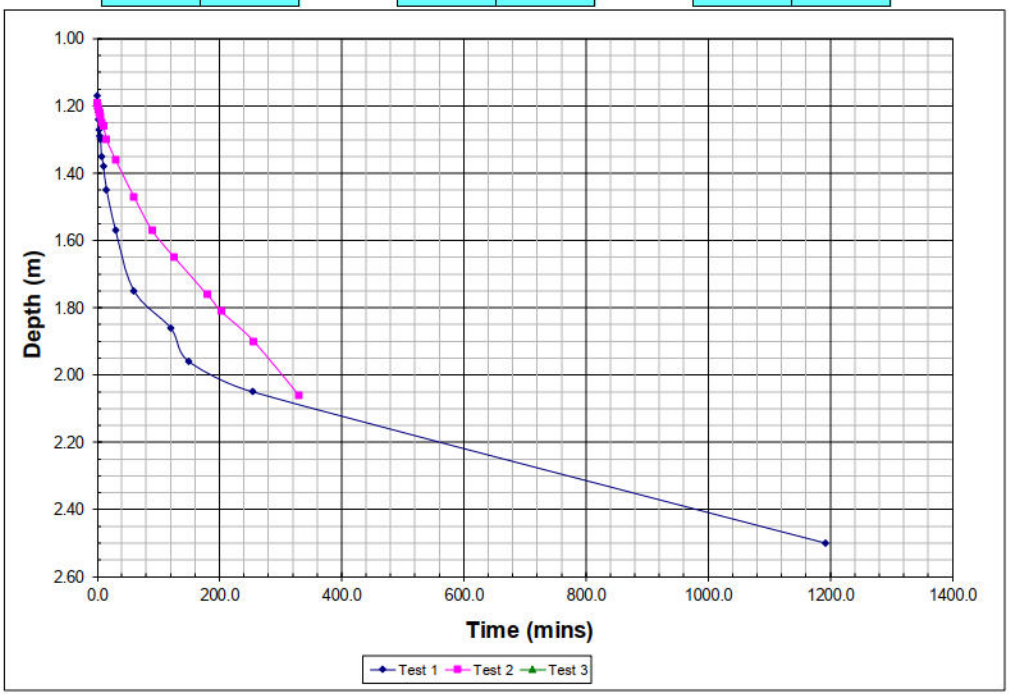
Project Name : Wick Littlehampton		**Job No. :**	GE21625
Client : Ardent Consulting Engineers		**Date :**	13/04/2023

Pit reference	**TP05**	
Test	**1**	**2**
Pit depth (m)	2.50	2.33
Pit width (m)	0.50	0.50
Pit length (m)	2.00	2.00
Depth to standing water (m)		

Test 1	
Time (min)	**Depth (m)**
0.0	1.17
1.0	1.21
2.0	1.24
3.0	1.27
4.0	1.29
5.0	1.30
7.0	1.35
10.0	1.38
15.0	1.45
30.0	1.57
60.0	1.75
120.0	1.86
150.0	1.96
255.0	2.05
1192.0	2.50

Test 2	
Time (min)	**Depth (m)**
0.0	1.19
1.0	1.20
2.0	1.21
3.0	1.22
4.0	1.22
5.0	1.23
7.0	1.25
10.0	1.26
15.0	1.30
30.0	1.36
60.0	1.47
90.0	1.57
126.0	1.65
180.0	1.76
203.0	1.81
256.0	1.90
330.0	2.06

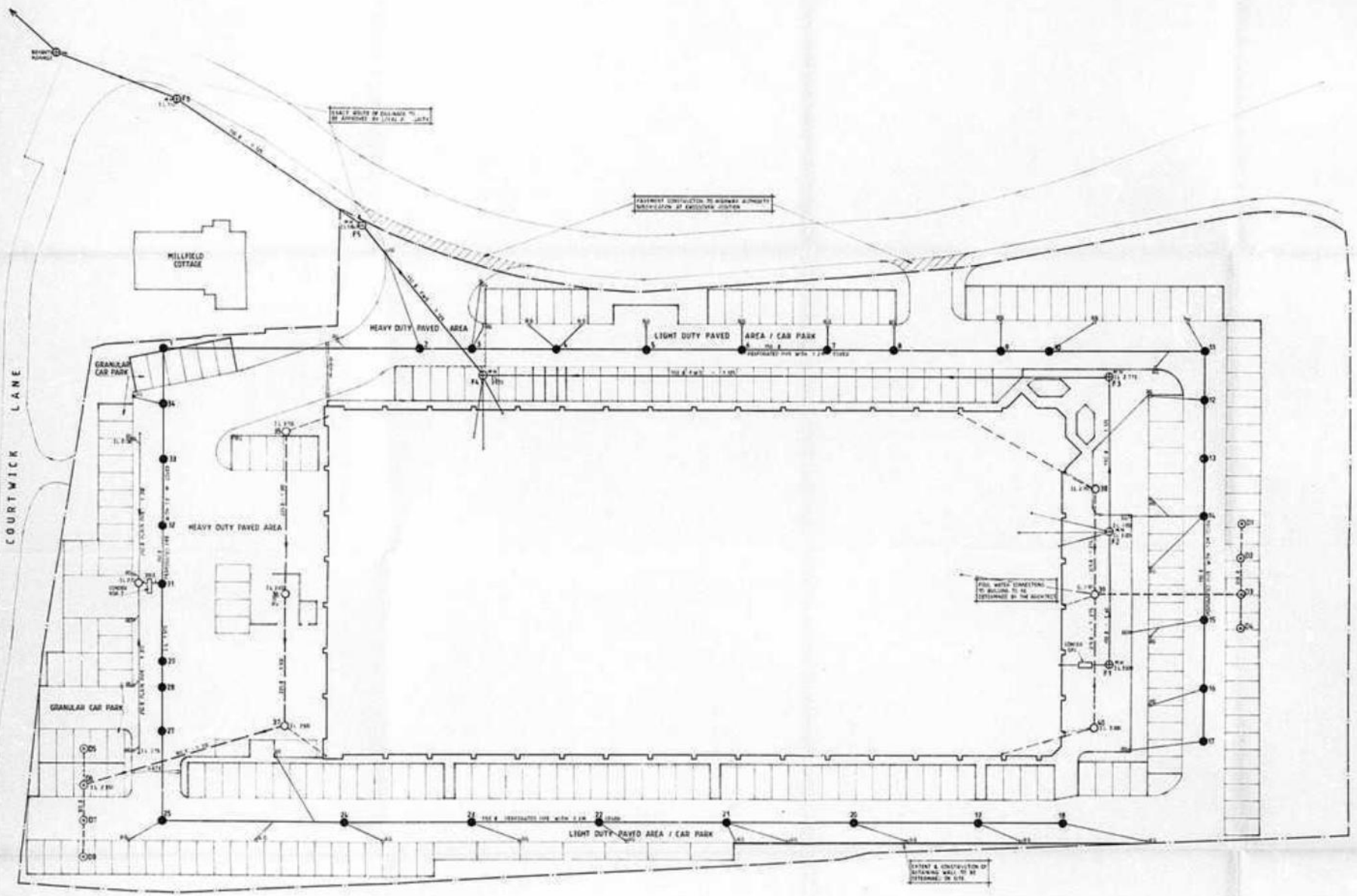
Test 3	
Time (min)	**Depth (m)**



Max. depth (m)	2.50	2.33	2.50
Effective depth (m)	1.33	1.14	2.50
75% effective depth (m)	1.50	1.48	0.63
50% effective depth (m)	1.84	1.76	1.25
25% effective depth (m)	2.17	2.05	1.88
t75 (min)	20.00	63.00	
t50 (min)	110.00	180.00	
t25 (min)	505.00	325.00	
Vp 75-25	0.67	0.57	1.25
ap 50	4.325	3.85	7.25
tp 75-25	485.00	262.00	0.00

Soil infiltration rate (m/s)	**5.3E-06**	**9.4E-06**
Soil infiltration rate (mm/hr)	**1.90E+01**	**3.39E+01**

APPENDIX E – HISTORIC BUILDING DRAINAGE PLAN



NOTES

1. ALL DRAINAGE TO BE CARRIED OUT IN ACCORDANCE WITH BS8301, BS8005 AND THE CLIENTS SPECIFICATION.
2. EXACT POSITIONS OF POOL AND RAINWATER OUTLETS TO BE DETERMINED FROM THE ARCHITECT'S DRAWINGS.
3. ALL PIPES TO BE LAID WITH GRANULAR BED AND SURROUND EXCEPT WHERE STATED.
4. PIPES WITH LESS THAN 1.2M COVER TO BE LAID WITH CONCRETE BED AND SURROUND (UNDER VEHICULAR AREAS).
5. ALL R.W.P. AND POOL CONNECTIONS TO BE 150MM D.
6. ROAD GULLY CONNECTIONS TO BE 150MM D.
7. EXCESS FILL AREA TO BE MADE UP WITH M.O.T. TYPE 2 GRANULAR MATERIAL WELL COMPACTED TO ERA SPEC.
8. REFER TO ARCHITECTS DRAWINGS FOR LEVEL INFORMATION

LEGEND:

- FOUL SEWER
- S.W. SEWER (RAINWATER)
- S.W. SEWER (CAR PARK SYS. PERFORATED PIPES)
- 100mm Ø CONNECTION TO STACK
- 150mm Ø CONNECTION TO RWP
- 150mm Ø CONNECTION TO ROAD GULLY (SYS. INTERCEPTOR TYPE)
- RODDING EYE
- SHALLOW SOAKAWAY
- DEEP SOAKAWAY

PAVEMENT DESIGN

The design of the pavement thickness assumes a CBR of 3% and a traffic flow of approximately 10 c.v.d.

HEAVY DUTY:			
Capping Layer	150mm	Granular Material (min CBR 10%)	
Sub-base	275mm	M.O.T. Type 1 granular material	
Laying Course	50mm	Sand	
Wearing Course	65mm	Concrete Block Pavers	
LIGHT DUTY/CAR PARK:			
Capping Layer	150mm		Materials as above
Sub-base	150mm		
Laying Course	50mm		
Wearing Course	65mm		

GRANULAR CAR PARK:		
Capping	150mm	Materials as above
Sub-base	175mm	
Blinding		Granular material (fine to dust)
PATIO/PAVEMENT:		
Sub-base	150mm	M.O.T. Type 1 granular material
Laying Course	50mm	Sand/cement or Cement mortar
Wearing Course	65mm	P.C. Flags to Architect's details

ARUN DISTRICT COUNCIL
No. LU 92. 92. 36
RECEIVED 12-5-92.

D	11.3.92	AP	GENERAL AMENDMENTS AS INDICATED BY R.S.H. LETTER OF 5.3.92
C	20.2.92	AP	SOAKAWAY 33 & 34 AMENDED

Birse

Design and Build

F	14.2.92	AP	S.W. AMENDED
E	12.12.91	AP	R.S. + SOAKAWAY POSITION AMENDED
D	4.12.91	AP	REDRAWN

EXTERNAL WORKS LAYOUT
DRAINAGE & HARDSTANDING

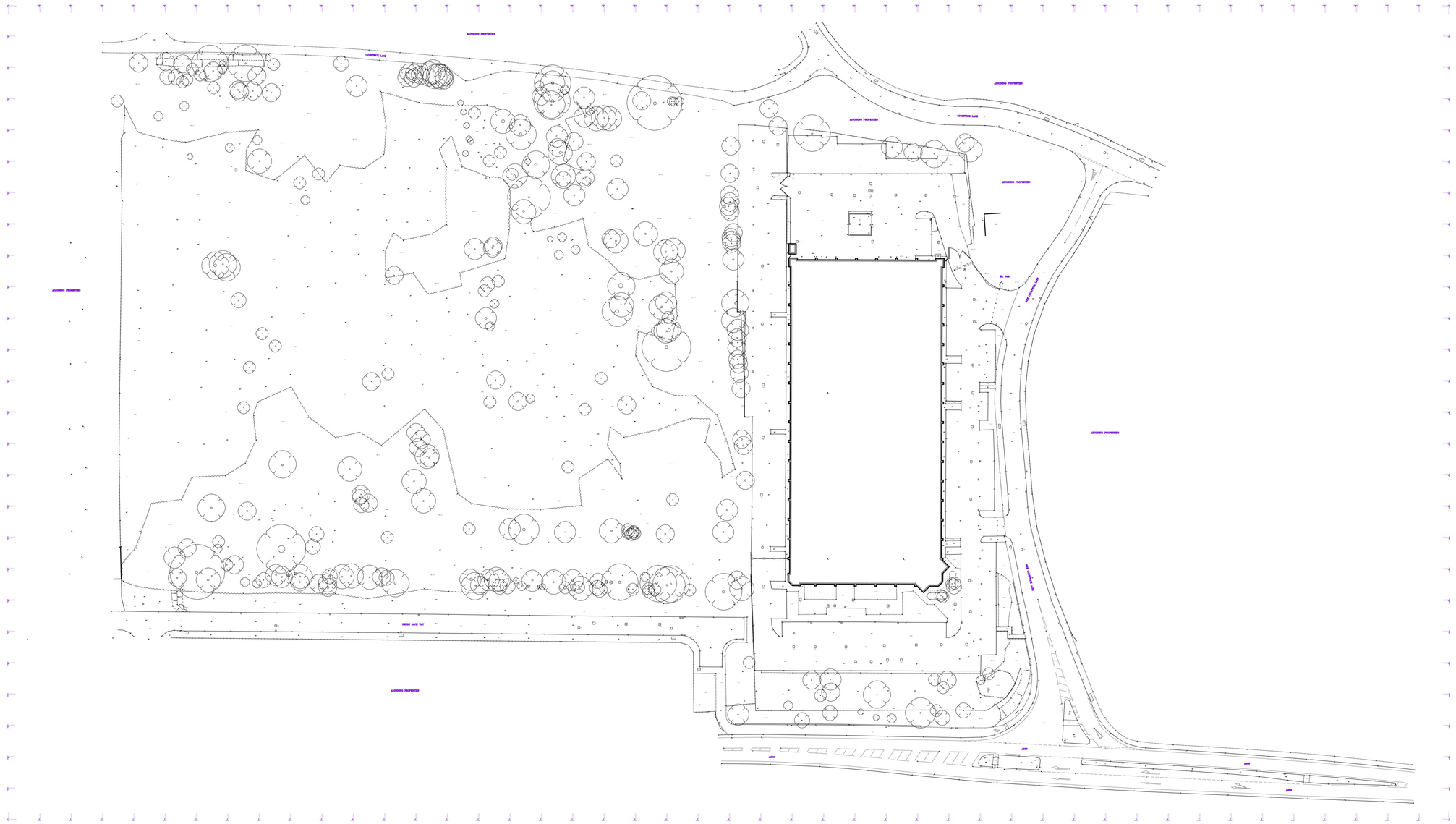
EDWARD ROSCOE ASSOCIATES
Consulting Civil & Structural Engineers
Watford Tele No. 0923 47227 Telex No. 923814 ROSCOE G
Manchester Tele No. 061-848 9661 Telex No. 668943 ROSCOE G
Leeds Tele No. 0532 459222 Telex No. 557294 ROSCOE G

DESIGNED BY WATFORD DRAWN BY
SCALE 1:200 DATE DEC '91 CHECKED

DRAWING No. L 826 REVISION 07 H

COURTWICK PARK, LITTLEHAMPTON, WEST SUSSEX.

APPENDIX F – ADS CCTV DRAINAGE SURVEY REPORT



APPROXIMATE DIRECTION OF NORTH

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Drawing Naming Convention:

Job No/Code/Dwg type/Location/Ref

Code: 02 = Existing

Dwg Type: B = Building; S = Section; E = Elevation; T = Topographical

Location: B = Basement; E = External; G = Ground; I = First; R = Roof; M = Mezzanine; C = Ceiling Plan; F = Front; S = Side; R = Rear; GA = General Layout; AA = Section AxA

Ref: Ref to individual dwg (LG, (e.g., Revision)

Standard Abbreviations (where applicable):

Building Survey		Land Survey	
AB	ABR BRICK	B	BOLLARD
ACU	AIR CONDITIONING UNIT	BB	BELISHA BEACON
AH	ACCESS HATCH	BT	B.T. COVER
AP	ACCESS PANEL	CAM	CAMERA
AV	AIR VALVE	CATV	CABLE TV COVER
B	BOILER	CL	CONTROL
BR	BOILER	ELEC	ELECTRIC COVER
BSL	BEAM SOFFIT LEVEL	EP	ELECTRIC POLE
CB	CUPBOARD	ER	EARTH ROD
CC	CEILING CHANGE	FH	FIRE HYDRANT
CH	CLEAR INTERNAL HT	FP	FLAG POLE
CvA	CILL TO APEX HT	FW	FOUL WATER
CvF	CILL TO FLOOR HT	GV	GAS VALVE
CvS	CILL TO SPRING HT	GV	GAS VALVE
DB	DOOR BASE HT	IC	INSPECTION COVER
DH	DOOR HEIGHT	IL	INVERT LEVEL
DR	DRAIN	LP	LAMP POST
EXT	EXTRACTOR FAN	MH	MANHOLE
FA	FIRE ALARM	MKR	MARKER POST
FA	FLOOR TO APEX HT	P	PIPE
FC	FLOOR TO CILL HT	PM	PARKING METER
FH	FLOOR TO HEAD HT	PR	PIPE
FS	FLOOR TO SPRING HT	RO	RODDING EYE
GEA	GROSS EXTERNAL AREA	RS	ROAD SIGN
GIA	GROSS INTERNAL AREA	RTW	RETAINING WALL
GU	GULLY	RWP	RAIN WATER PIPE
HT	HEIGHT	SA	SERVICE AREA
HW	HOT WATER TANK	SB	SIGN
NIA	NET INTERNAL AREA	SL	SOFFIT LEVEL
NTS	NOT TO SCALE	SV	STOP VALVE
RAD	RADIATOR	SVP	SOIL VENT PIPE
RE	RECESS HEAD HEIGHT	SW	STORM WATER
RV	RAISED FLOOR VOID	TOF	TOP OF FENCE
RL	RIDGE LEVEL	TOW	TOP OF WALL
RSH	ROLLER SHUTTER	TP	TELEGRAPH POLE
RWP	RAIN WATER PIPE	UTL	UNABLE TO LIFT
SVP	SOIL VENT PIPE	VP	VENT PIPE
V	VENT	WM	WATER METER
WA	WARDROBE	WT	WATER TAP

Symbols (where applicable):

Direction of sloping ceiling

2.65 FLOOR TO STRUCTURAL CEILING HT

2.65 FLOOR TO SUSPENDED CEILING HT

10.00 FLOOR LEVEL RELATIVE TO DATUM

Notes:

The Survey has been computed to ordinance survey 'Active Network'

All levels are in metres and relate to ordinance survey 'Active Network'

All direction arrows indicate UP unless otherwise stated.

Drainage pipe sizes (where shown) have been gauged from the surface (for safety reasons) and should be regarded as approximate only.

Visible features in the vicinity of any boundaries, as shown on this survey, may not represent the extent of legally conveyed ownership.

Whilst every effort has been made to determine wall materials, no guarantee is given. Materials should be regarded as assumed unless verified by a qualified third party.

Tree spread and height are approximate. Species should be regarded as assumed unless verified by a qualified third party.

Rev	Date	By	Description

HB Surveys Ltd
Land & Measured Building Surveyors
Spring House, 60 Poplar Way, Midhurst, West Sussex GU29 9TA
t. 01730 816884 f. 01730 816884 info@hbsurveys.com

Client: MORGANS PROPERTY CONSULTANTS

Project: NEW COURTWICK LANE, WICK, LITTLEHAMPTON

Drawing Title: EXISTING TOPOGRAPHICAL SURVEY

Date:	Scale:	Surveyor:	Drawn:	Checked:
MARCH 23	1:500@A0	KR	KR	HB

Job No:	Drawing No:	Sheet No:	Rev:
23029	23029-02-T-E	1 of 1	

Project

Project Name:	Parker Building
Project Description:	CCTV Survey, Trace & Map
Project Status:	Complete
Project Date:	11/20/2024
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

AQUATECH DRAIN SERVICES

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

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Section Item 9: SK6 > SK7 (SK6X) 23
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Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Project Information

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Site

Department: Parker Building
Street: New Courtwick Lane
Town or City: Littlehampton
County: West Sussex
Post Code: BN17 7RZ



Contractor

Company: Aquatech Drain Services Ltd
Description: Drainage Contracor
Contact: Connor
Street: Holmbush Lane
Town or City: Woodmancote
County: East Sussex
Post Code: BN5 9TL
Phone: 01273 933705
Email: contact@aquatechdrains.co.uk

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Project Information

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Project Summary

The survey was undertaken to establish the layout and general condition of the surface water carrier sections and the soakaway dimensions along with the foul water discharge point. A discharge point for the foul system was undetermined due to a buried IC FW1 on the report.

Soakawaydimensions

SK1-SK323400mm deep by 2100mm diameter
SK33-SK40 3000mm deep by 2100mm diameter
SK41-SK433400mm deep by 2100mm diameter

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Scoring Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
3	SK1X	3	Multiple defects
6	SK3X	3	Fracture, circumferential from 2 o'clock to 9 o'clock
10	SK7X	3	Fracture, circumferential from 3 o'clock to 10 o'clock
14	SK10X	3	Fracture, circumferential from 1 o'clock to 10 o'clock
15	SK11X	3	Fracture, circumferential from 2 o'clock to 10 o'clock
21	SK19X	3	Fracture, circumferential from 12 o'clock to 12 o'clock
25	SK23X	3	Multiple defects
28	SK25X	5	Collapsed drain or sewer, 50% cross-sectional area loss
29	SK26X	3	Fracture, circumferential from 12 o'clock to 12 o'clock
31	SK28X	3	Fracture, circumferential from 2 o'clock to 10 o'clock
40	SW4X	3	Fracture, circumferential from 2 o'clock to 9 o'clock

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
7	SK4X	3	Settled deposits, fine, 10% cross-sectional area loss, finish
10	SK7X	3	Joint displaced, medium
14	SK10X	3	Joint displaced, medium
15	SK11X	3	Joint displaced, medium
19	SK15X	4	Joint displaced, large
20	SK16X	3	Joint displaced, medium
21	SK19X	3	Settled deposits, fine, 5% cross-sectional area loss, finish
23	SK21X	3	Multiple defects
24	SK22X	3	Multiple defects
25	SK23X	3	Multiple defects
27	RGX	3	Roots, mass at joint, 15% cross-sectional area loss
28	SK25X	3	Multiple defects
29	SK26X	3	Joint displaced, medium
30	SK27X	3	Settled deposits, coarse, 10% cross-sectional area loss, finish
34	RE1X	5	Settled deposits, other, 90% cross-sectional area loss

Scoring Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Section	PLR	Grade	Description
35	RE2X	3	Settled deposits, coarse, 10% cross-sectional area loss, finish
36	SW1X	4	Settled deposits, fine, 20% cross-sectional area loss, finish
39	SW3X	3	Settled deposits, fine, 10% cross-sectional area loss, finish
40	SW4X	3	Settled deposits, fine, 10% cross-sectional area loss, finish
41	SW5X	5	Roots, mass at joint, 20% cross-sectional area loss
42	SW7X	4	Settled deposits, coarse, 20% cross-sectional area loss, finish
43	SW6X	5	Roots, mass, 60% cross-sectional area loss

Abandoned Surveys

Section	PLR	Description
34	RE1X	Survey abandoned
40	SW4X	Survey abandoned
41	SW5X	Survey abandoned
43	SW6X	Survey abandoned

Information

These scoring summaries are based on the SRM grading from the WRc.

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Project Pictures

Project Name	Project Number	Project Date
Parker Building		11/20/2024








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Project Pictures

Project Name	Project Number	Project Date
Parker Building		11/20/2024








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Project Pictures

Project Name	Project Number	Project Date
Parker Building		11/20/2024








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Project Pictures

Project Name	Project Number	Project Date
Parker Building		11/20/2024



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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Pipe Summary

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
1	SEC	FW2X	FW2	FW1	New Courtwick Lane	Littlehampton	F	VC	Circular 150mm	23.40 m
2	SEC	SK1X	SK1	SK2	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	4.70 m
3	SEC	SK2X	SK2	SK3	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.00 m
4	SEC	SK3X	SK3	SK4	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	9.70 m
5	SEC	SK4X	SK4	SK5	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	9.60 m
6	SEC	SK5X	SK5	SK6	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	5.90 m
7	SEC	SK6X	SK6	SK7	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	6.00 m
8	SEC	SK7X	SK7	SK8	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.80 m
10	SEC	RGX	RG	SK9	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	7.10 m
11	SEC	RGX	RG	SK10	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	3.70 m
12	SEC	SK10X	SK10	SK11	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	10.50 m
13	SEC	SK11X	SK11	SK12	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	9.70 m
14	SEC	SK12X	SK12	SK13	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.60 m
15	SEC	SK13X	SK13	SK14	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	7.10 m
17	SEC	SK15X	SK15	SK16	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	5.20 m
18	SEC	SK16X	SK16	SK17	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.20 m
19	SEC	SK19X	SK19	SK20	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	15.20 m

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
20	SEC	SK20X	SK20	SK21	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	16.20 m
21	SEC	SK21X	SK21	SK22	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	15.30 m
22	SEC	SK22X	SK22	SK23	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	17.90 m
23	SEC	SK23X	SK23	SK24	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	16.00 m
25	SEC	RGX	RG	SK25	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	6.20 m
26	SEC	SK25X	SK25	SK26	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	12.00 m
27	SEC	SK26X	SK26	SK27	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.30 m
28	SEC	SK27X	SK27	SK28	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	5.80 m
29	SEC	SK28X	SK28	SK29	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	3.20 m
30	SEC	SK29X	SK29	SK30	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	6.20 m
32	SEC	RE1X	RE1	SW1	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	24.00 m
33	SEC	RE2X	RE2	SW1	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	21.60 m
34	SEC	SW1X	SW1	0/S	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	1.20 m
35	SEC	0/SX	0/S	SK29	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	0.70 m
36	SEC	SW2X	SW2	SW3	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	20.60 m
37	SEC	SW3X	SW3	SW4	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	23.00 m
38	SEC	SW4X	SW4	SK35	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	21.90 m
39	SEC	SW5X	SW5	SW6	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	7.90 m

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Holmbush Lane, Woodmancote
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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
40	SEC	SW7X	SW7	SW6	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	17.20 m
41	SEC	SW6X	SW6	SK38	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	6.50 m
									Total:	**403.10 m**

Pipe Levels

No.	PLR	Upstream Node	Upstream C.L.	Upstream I.L.	Upstream I.D.	Downstream Node	Downstream C.L.	Downstream I.L.	Downstream I.D.
1	FW2X	FW2			1,880.000 m	FW1			0.000 m
2	SK1X	SK1			0.000 m	SK2			0.000 m
3	SK2X	SK2			0.000 m	SK3			0.000 m
4	SK3X	SK3			0.000 m	SK4			0.000 m
5	SK4X	SK4			0.000 m	SK5			0.000 m
6	SK5X	SK5			0.000 m	SK6			0.000 m
7	SK6X	SK6			0.000 m	SK7			0.000 m
8	SK7X	SK7			0.000 m	SK8			0.000 m
10	RGX	RG			0.000 m	SK9			0.000 m
11	RGX	RG			0.000 m	SK10			0.000 m
12	SK10X	SK10			0.000 m	SK11			0.000 m
13	SK11X	SK11			0.000 m	SK12			0.000 m
14	SK12X	SK12			0.000 m	SK13			0.000 m
15	SK13X	SK13			0.000 m	SK14			0.000 m
17	SK15X	SK15			0.000 m	SK16			0.000 m
18	SK16X	SK16			0.000 m	SK17			0.000 m
19	SK19X	SK19			0.000 m	SK20			0.000 m
20	SK20X	SK20			0.000 m	SK21			0.000 m
21	SK21X	SK21			0.000 m	SK22			0.000 m
22	SK22X	SK22			0.000 m	SK23			0.000 m
23	SK23X	SK23			0.000 m	SK24			0.000 m
25	RGX	RG			0.000 m	SK25			0.000 m

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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

No.	PLR	Upstream Node	Upstream C.L.	Upstream I.L.	Upstream I.D.	Downstream Node	Downstream C.L.	Downstream I.L.	Downstream I.D.
26	SK25X	SK25			0.000 m	SK26			0.000 m
27	SK26X	SK26			0.000 m	SK27			0.000 m
28	SK27X	SK27			0.000 m	SK28			0.000 m
29	SK28X	SK28			0.000 m	SK29			0.000 m
30	SK29X	SK29			0.000 m	SK30			0.000 m
32	RE1X	RE1			0.000 m	SW1			1,980.000 m
33	RE2X	RE2			0.000 m	SW1			1,980.000 m
34	SW1X	SW1			1,980.000 m	0/S			0.000 m
35	0/SX	0/S			0.000 m	SK29			0.000 m
36	SW2X	SW2			0.000 m	SW3			1,450.000 m
37	SW3X	SW3			1,450.000 m	SW4			1,710.000 m
38	SW4X	SW4			1,710.000 m	SK35			0.000 m
39	SW5X	SW5			760.000 m	SW6			1,050.000 m
40	SW7X	SW7			0.000 m	SW6			1,050.000 m
41	SW6X	SW6			1,050.000 m	SK38			0.000 m

Pipe Summary by Profile

Profile	Total Length	No. Pipes
Circular 150mm	23.40 m	
Circular 150mm	4.70 m	
Circular 150mm	8.00 m	
Circular 150mm	9.70 m	
Circular 150mm	9.60 m	
Circular 150mm	5.90 m	
Circular 150mm	6.00 m	
Circular 150mm	8.80 m	
Circular 150mm	7.10 m	
Circular 150mm	3.70 m	
Circular 150mm	10.50 m	
Circular 150mm	9.70 m	
Circular 150mm	8.60 m	
Circular 150mm	7.10 m	
Circular 150mm	5.20 m	
Circular 150mm	8.20 m	
Circular 150mm	15.20 m	
Circular 150mm	16.20 m	

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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Profile		Total Length	No. Pipes
Circular 150mm		15.30 m	
Circular 150mm		17.90 m	
Circular 150mm		16.00 m	
Circular 150mm		6.20 m	
Circular 150mm		12.00 m	
Circular 150mm		8.30 m	
Circular 150mm		5.80 m	
Circular 150mm		3.20 m	
Circular 150mm		6.20 m	
Circular 150mm	=	258.50 m	27
Circular 225mm		24.00 m	
Circular 225mm		21.60 m	
Circular 225mm		20.60 m	
Circular 225mm		23.00 m	
Circular 225mm		7.90 m	
Circular 225mm		17.20 m	
Circular 225mm	=	114.30 m	6
Circular 300mm		1.20 m	
Circular 300mm		0.70 m	
Circular 300mm		21.90 m	
Circular 300mm		6.50 m	
Circular 300mm	=	30.30 m	4
Total	**=**	**403.10 m**	**37**

Inspection Summary

Pipe No.	Insp. No.	Upstream Node	Downstream Node	Dir.	Operator	Insp. Date	Insp. Time	Str	Ser	Final Observation	Length
1	1	FW2	FW1	DS	Gg	20/11/2024	14:05	1	1	ICF, Buried, overgrown.	23.40 m
2	1	SK1	SK2	DS	Gg	20/11/2024	14:11	3	2	SKF	4.70 m
3	1	SK2	SK3	DS	Gg	20/11/2024	14:17	1	1	SKF	8.00 m
4	1	SK3	SK4	DS	Gg	20/11/2024	14:20	3	2	SKF	9.70 m
5	1	SK4	SK5	DS	Gg	20/11/2024	14:22	1	3	SKF	9.60 m
6	1	SK5	SK6	DS	Gg	20/11/2024	14:24	1	1	SKF	5.90 m
7	1	SK6	SK7	DS	Gg	20/11/2024	14:26	1	1	SKF	6.00 m
8	1	SK7	SK8	DS	Gg	20/11/2024	14:29	3	3	SKF	8.80 m
10	1	RG	SK9	US	Gg	20/11/2024	14:33	1	1	GYF	7.10 m

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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Pipe No.	Insp. No.	Upstream Node	Downstream Node	Dir.	Operator	Insp. Date	Insp. Time	Str	Ser	Final Observation	Length
11	1	RG	SK10	US	Gg	20/11/2024	14:35	1	1	GYF	3.70 m
12	1	SK10	SK11	DS	Gg	20/11/2024	14:37	3	3	SKF	10.50 m
13	1	SK11	SK12	DS	Gg	20/11/2024	14:41	3	3	SKF	9.70 m
14	1	SK12	SK13	DS	Gg	20/11/2024	14:44	1	1	SKF	8.60 m
15	1	SK13	SK14	DS	Gg	20/11/2024	14:46	1	1	SKF	7.10 m
17	1	SK15	SK16	DS	Gg	20/11/2024	14:51	1	4	SKF	5.20 m
18	1	SK16	SK17	DS	Gg	20/11/2024	14:53	1	3	SKF, Unable to raise	8.20 m
19	1	SK19	SK20	US	Gg	20/11/2024	15:01	3	3	SKF, Unable to raise	15.20 m
20	1	SK20	SK21	DS	Gg	20/11/2024	15:06	1	1	SKF	16.20 m
21	1	SK21	SK22	DS	Gg	20/11/2024	15:10	1	3	SKF	15.30 m
22	1	SK22	SK23	DS	Gg	20/11/2024	15:14	1	4	SKF	17.90 m
23	1	SK23	SK24	DS	Gg	20/11/2024	15:18	3	3	SKF	16.00 m
25	1	RG	SK25	US	Gg	20/11/2024	15:24	1	3	GYF	6.20 m
26	1	SK25	SK26	DS	Gg	20/11/2024	15:32	5	3	SKF	12.00 m
27	1	SK26	SK27	DS	Gg	20/11/2024	15:36	3	3	SKF	8.30 m
28	1	SK27	SK28	DS	Gg	20/11/2024	15:38	1	3	SKF	5.80 m
29	1	SK28	SK29	DS	Gg	20/11/2024	15:40	3	2	SKF	3.20 m
30	1	SK29	SK30	DS	Gg	20/11/2024	15:43	1	1	SKF	6.20 m
32	**1**	**RE1**	**SW1**	**US**	**Gg**	**20/11/2024**	**16:05**	**1**	**5**	**SA, Unable to proceed.**	**24.00 m**
33	1	RE2	SW1	US	Gg	20/11/2024	16:13	1	3	REF	21.60 m
34	1	SW1	0/S	DS	Gg	20/11/2024	16:17	1	4	OSF	1.20 m
35	1	0/S	SK29	US	Gg	20/11/2024	16:19	1	1	OSF	0.70 m
36	1	SW2	SW3	US	Gg	20/11/2024	16:22	1	1	ICF, Unable to raise	20.60 m
37	1	SW3	SW4	DS	Gg	20/11/2024	16:27	1	3	ICF	23.00 m
38	**1**	**SW4**	**SK35**	**DS**	**Gg**	**20/11/2024**	**16:32**	**3**	**3**	**SA, Unable to push rod further**	**21.90 m**
39	**1**	**SW5**	**SW6**	**US**	**Gg**	**20/11/2024**	**16:37**	**1**	**5**	**SA, Unable to proceed.**	**7.90 m**
40	1	SW7	SW6	US	Gg	20/11/2024	16:42	1	4	ICF, Buried	17.20 m
41	**1**	**SW6**	**SK38**	**DS**	**Gg**	**20/11/2024**	**16:48**	**1**	**5**	**SA, Unable to proceed**	**6.50 m**
										Total:	**403.10 m**

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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Inspection Summary by Profile

Profile		Total Length	No. Inspections
Circular 150mm		23.40 m	
Circular 150mm		4.70 m	
Circular 150mm		8.00 m	
Circular 150mm		9.70 m	
Circular 150mm		9.60 m	
Circular 150mm		5.90 m	
Circular 150mm		6.00 m	
Circular 150mm		8.80 m	
Circular 150mm		7.10 m	
Circular 150mm		3.70 m	
Circular 150mm		10.50 m	
Circular 150mm		9.70 m	
Circular 150mm		8.60 m	
Circular 150mm		7.10 m	
Circular 150mm		5.20 m	
Circular 150mm		8.20 m	
Circular 150mm		15.20 m	
Circular 150mm		16.20 m	
Circular 150mm		15.30 m	
Circular 150mm		17.90 m	
Circular 150mm		16.00 m	
Circular 150mm		6.20 m	
Circular 150mm		12.00 m	
Circular 150mm		8.30 m	
Circular 150mm		5.80 m	
Circular 150mm		3.20 m	
Circular 150mm		6.20 m	
Circular 150mm	=	258.50 m	27
Circular 225mm		24.00 m	
Circular 225mm		21.60 m	
Circular 225mm		20.60 m	
Circular 225mm		23.00 m	
Circular 225mm		7.90 m	
Circular 225mm		17.20 m	
Circular 225mm	=	114.30 m	6
Circular 300mm		1.20 m	
Circular 300mm		0.70 m	
Circular 300mm		21.90 m	
Circular 300mm		6.50 m	
Circular 300mm	=	30.30 m	4

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Holmbush Lane, Woodmancote
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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Profile		Total Length	No. Inspections
Total	**=**	**403.10 m**	**37**

Defect Summary

				CCTV Drainage Survey Observation Count																			
				General				Structural Condition									Service Condition						Misc	
Sect. No.	Insp. No.	Upstream Node	Downstream Node	Insp. Length (m)	No. Grade 4/5 Obs.	Survey Abandoned	Camera Under Water	Cracks	Fractures	Broken	Deformed	Collapsed	Holes	Surface Damage	Displaced Joints	Open Joints	Roots	Infiltration	Encrustation	Silt	Grease	Obstruction	Water Level	Line Deviates
1	1	FW2	FW1	23.4			2																4	
2	1	SK1	SK2	4.7					2														1	
3	1	SK2	SK3	8.0																			1	
4	1	SK3	SK4	9.7					1														1	
5	1	SK4	SK5	9.6																2			1	
6	1	SK5	SK6	5.9																			1	
7	1	SK6	SK7	6.0																			1	
8	1	SK7	SK8	8.8					1						1								1	
10	1	RG	SK9	7.1																			1	1
11	1	RG	SK10	3.7																			1	1
12	1	SK10	SK11	10.5					1						1								1	
13	1	SK11	SK12	9.7					1						1								1	
14	1	SK12	SK13	8.6																			1	
15	1	SK13	SK14	7.1																			1	
17	1	SK15	SK16	5.2	1										1								1	
18	1	SK16	SK17	8.2											1								1	1
19	1	SK19	SK20	15.2					1											2			1	
20	1	SK20	SK21	16.2																			1	
21	1	SK21	SK22	15.3													3			2				
22	1	SK22	SK23	17.9											1		2						1	
23	1	SK23	SK24	16.0					3						1					2			1	
25	1	RG	SK25	6.2													1						1	1

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Project Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Sect. No.	Insp. No.	Upstream Node	Downstream Node	Insp. Length (m)	No. Grade 4/5 Obs.	Survey Abandoned	Camera Under Water	Cracks	Fractures	Broken	Deformed	Collapsed	Holes	Surface Damage	Displaced Joints	Open Joints	Roots	Infiltration	Encrustation	Silt	Grease	Obstruction	Water Level	Line Deviates
26	1	SK25	SK26	12.0	1							1			3								1	1
27	1	SK26	SK27	8.3					1						1								1	
28	1	SK27	SK28	5.8																			1	
29	1	SK28	SK29	3.2					1														1	
30	1	SK29	SK30	6.2																			1	
32	**1**	**RE1**	**SW1**	**24.0**	**1**	**1**																	**1**	
33	1	RE2	SW1	21.6																			1	1
34	1	SW1	0/S	1.2	1															2			1	
35	1	0/S	SK29	0.7																			1	
36	1	SW2	SW3	20.6																			1	
37	1	SW3	SW4	23.0																2			5	
38	**1**	**SW4**	**SK35**	**21.9**		**1**			**1**											**2**			**1**	
39	**1**	**SW5**	**SW6**	**7.9**	**1**	**1**											**5**						**1**	
40	1	SW7	SW6	17.2	1		2																5	
41	**1**	**SW6**	**SK38**	**6.5**	**1**	**1**											**1**			**2**			**3**	
			Total:	**403.1**	**7**	**4**	**4**		**13**			**1**			**11**		**12**			**16**			**49**	**6**

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Cleaning Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Pipe Summary

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
1	SEC	FW2X	FW2	FW1	New Courtwick Lane	Littlehampton	F	VC	Circular 150mm	23.40 m
2	SEC	SK1X	SK1	SK2	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	4.70 m
3	SEC	SK2X	SK2	SK3	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.00 m
4	SEC	SK3X	SK3	SK4	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	9.70 m
5	SEC	SK4X	SK4	SK5	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	9.60 m
6	SEC	SK5X	SK5	SK6	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	5.90 m
7	SEC	SK6X	SK6	SK7	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	6.00 m
8	SEC	SK7X	SK7	SK8	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.80 m
10	SEC	RGX	RG	SK9	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	7.10 m
11	SEC	RGX	RG	SK10	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	3.70 m
12	SEC	SK10X	SK10	SK11	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	10.50 m
13	SEC	SK11X	SK11	SK12	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	9.70 m
14	SEC	SK12X	SK12	SK13	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.60 m
15	SEC	SK13X	SK13	SK14	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	7.10 m
17	SEC	SK15X	SK15	SK16	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	5.20 m
18	SEC	SK16X	SK16	SK17	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.20 m
19	SEC	SK19X	SK19	SK20	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	15.20 m

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Cleaning Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
20	SEC	SK20X	SK20	SK21	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	16.20 m
21	SEC	SK21X	SK21	SK22	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	15.30 m
22	SEC	SK22X	SK22	SK23	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	17.90 m
23	SEC	SK23X	SK23	SK24	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	16.00 m
25	SEC	RGX	RG	SK25	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	6.20 m
26	SEC	SK25X	SK25	SK26	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	12.00 m
27	SEC	SK26X	SK26	SK27	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	8.30 m
28	SEC	SK27X	SK27	SK28	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	5.80 m
29	SEC	SK28X	SK28	SK29	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	3.20 m
30	SEC	SK29X	SK29	SK30	New Courtwick Lane	Littlehampton	S	VC	Circular 150mm	6.20 m
32	SEC	RE1X	RE1	SW1	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	24.00 m
33	SEC	RE2X	RE2	SW1	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	21.60 m
34	SEC	SW1X	SW1	0/S	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	1.20 m
35	SEC	0/SX	0/S	SK29	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	0.70 m
36	SEC	SW2X	SW2	SW3	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	20.60 m
37	SEC	SW3X	SW3	SW4	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	23.00 m
38	SEC	SW4X	SW4	SK35	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	21.90 m
39	SEC	SW5X	SW5	SW6	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	7.90 m

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
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Cleaning Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

No.	Type	PLR	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
40	SEC	SW7X	SW7	SW6	New Courtwick Lane	Littlehampton	S	VC	Circular 225mm	17.20 m
41	SEC	SW6X	SW6	SK38	New Courtwick Lane	Littlehampton	S	VC	Circular 300mm	6.50 m
									Total:	**403.10 m**

Pipe Summary by Profile

Profile		Total Length	No. Pipes
Circular 150mm		23.40 m	
Circular 150mm		4.70 m	
Circular 150mm		8.00 m	
Circular 150mm		9.70 m	
Circular 150mm		9.60 m	
Circular 150mm		5.90 m	
Circular 150mm		6.00 m	
Circular 150mm		8.80 m	
Circular 150mm		7.10 m	
Circular 150mm		3.70 m	
Circular 150mm		10.50 m	
Circular 150mm		9.70 m	
Circular 150mm		8.60 m	
Circular 150mm		7.10 m	
Circular 150mm		5.20 m	
Circular 150mm		8.20 m	
Circular 150mm		15.20 m	
Circular 150mm		16.20 m	
Circular 150mm		15.30 m	
Circular 150mm		17.90 m	
Circular 150mm		16.00 m	
Circular 150mm		6.20 m	
Circular 150mm		12.00 m	
Circular 150mm		8.30 m	
Circular 150mm		5.80 m	
Circular 150mm		3.20 m	
Circular 150mm		6.20 m	
Circular 150mm	=	258.50 m	27
Circular 225mm		24.00 m	
Circular 225mm		21.60 m	

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Cleaning Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Profile		Total Length	No. Pipes
Circular 225mm		20.60 m	
Circular 225mm		23.00 m	
Circular 225mm		7.90 m	
Circular 225mm		17.20 m	
Circular 225mm	=	114.30 m	6
Circular 300mm		1.20 m	
Circular 300mm		0.70 m	
Circular 300mm		21.90 m	
Circular 300mm		6.50 m	
Circular 300mm	=	30.30 m	4
Total	**=**	**403.10 m**	**37**

Cleaning Summary

Pipe No.	Cln. No.	Dir.	Operator	Cln. Date	Cln. Time	Method	Contamination	Scale	No. Clns	Complete	Comments	Cln. Length
1	1	DS	Gg	20/11/2024	14:05	N				Yes		23.40 m
2	1	DS	Gg	20/11/2024	14:11	N				Yes		4.70 m
3	1	DS	Gg	20/11/2024	14:17	N				Yes		8.00 m
4	1	DS	Gg	20/11/2024	14:20	N				Yes		9.70 m
5	1	DS	Gg	20/11/2024	14:22	N				Yes		9.60 m
6	1	DS	Gg	20/11/2024	14:24	N				Yes		5.90 m
7	1	DS	Gg	20/11/2024	14:26	N				Yes		6.00 m
8	1	DS	Gg	20/11/2024	14:29	N				Yes		8.80 m
10	1	US	Gg	20/11/2024	14:33	N				Yes		7.10 m
11	1	US	Gg	20/11/2024	14:35	N				Yes		3.70 m
12	1	DS	Gg	20/11/2024	14:37	N				Yes		10.50 m
13	1	DS	Gg	20/11/2024	14:41	N				Yes		9.70 m
14	1	DS	Gg	20/11/2024	14:44	N				Yes		8.60 m
15	1	DS	Gg	20/11/2024	14:46	N				Yes		7.10 m
17	1	DS	Gg	20/11/2024	14:51	N				Yes		5.20 m
18	1	DS	Gg	20/11/2024	14:53	N				Yes		8.20 m
19	1	US	Gg	20/11/2024	15:01	N				Yes		15.20 m
20	1	DS	Gg	20/11/2024	15:06	N				Yes		16.20 m

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Cleaning Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Pipe No.	Cln. No.	Dir.	Operator	Cln. Date	Cln. Time	Method	Contamination	Scale	No. Clns	Complete	Comments	Cln. Length
21	1	DS	Gg	20/11/2024	15:10	N				Yes		15.30 m
22	1	DS	Gg	20/11/2024	15:14	N				Yes		17.90 m
23	1	DS	Gg	20/11/2024	15:18	N				Yes		16.00 m
25	1	US	Gg	20/11/2024	15:24	N				Yes		6.20 m
26	1	DS	Gg	20/11/2024	15:32	N				Yes		12.00 m
27	1	DS	Gg	20/11/2024	15:36	N				Yes		8.30 m
28	1	DS	Gg	20/11/2024	15:38	N				Yes		5.80 m
29	1	DS	Gg	20/11/2024	15:40	N				Yes		3.20 m
30	1	DS	Gg	20/11/2024	15:43	N				Yes		6.20 m
32	**1**	**US**	**Gg**	**20/11/2024**	**16:05**	**N**				**No**		**24.00 m**
33	1	US	Gg	20/11/2024	16:13	N				Yes		21.60 m
34	1	DS	Gg	20/11/2024	16:17	N				Yes		1.20 m
35	1	US	Gg	20/11/2024	16:19	N				Yes		0.70 m
36	1	US	Gg	20/11/2024	16:22	N				Yes		20.60 m
37	1	DS	Gg	20/11/2024	16:27	N				Yes		23.00 m
38	**1**	**DS**	**Gg**	**20/11/2024**	**16:32**	**N**				**No**		**21.90 m**
39	**1**	**US**	**Gg**	**20/11/2024**	**16:37**	**N**				**No**		**7.90 m**
40	1	US	Gg	20/11/2024	16:42	N				Yes		17.20 m
41	**1**	**DS**	**Gg**	**20/11/2024**	**16:48**	**N**				**No**		**6.50 m**
											Total:	**403.10 m**

Cleaning Summary by Profile

Profile	Total Length	No. Cleans
Circular 150mm	23.40 m	
Circular 150mm	4.70 m	
Circular 150mm	8.00 m	
Circular 150mm	9.70 m	
Circular 150mm	9.60 m	
Circular 150mm	5.90 m	
Circular 150mm	6.00 m	
Circular 150mm	8.80 m	
Circular 150mm	7.10 m	
Circular 150mm	3.70 m	

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Cleaning Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Profile		Total Length	No. Cleans
Circular 150mm		10.50 m	
Circular 150mm		9.70 m	
Circular 150mm		8.60 m	
Circular 150mm		7.10 m	
Circular 150mm		5.20 m	
Circular 150mm		8.20 m	
Circular 150mm		15.20 m	
Circular 150mm		16.20 m	
Circular 150mm		15.30 m	
Circular 150mm		17.90 m	
Circular 150mm		16.00 m	
Circular 150mm		6.20 m	
Circular 150mm		12.00 m	
Circular 150mm		8.30 m	
Circular 150mm		5.80 m	
Circular 150mm		3.20 m	
Circular 150mm		6.20 m	
Circular 150mm	=	258.50 m	27
Circular 225mm		24.00 m	
Circular 225mm		21.60 m	
Circular 225mm		20.60 m	
Circular 225mm		23.00 m	
Circular 225mm		7.90 m	
Circular 225mm		17.20 m	
Circular 225mm	=	114.30 m	6
Circular 300mm		1.20 m	
Circular 300mm		0.70 m	
Circular 300mm		21.90 m	
Circular 300mm		6.50 m	
Circular 300mm	=	30.30 m	4
Total	**=**	**403.10 m**	**37**

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Defect Grade Description (Section)

Project Name	Project Number	Project Date
Parker Building		11/20/2024

1:	Brick: Minor structural defects. Other: Minor structural defects, i.e. open or displaced joints without additional characteristics. **Acceptable structural condition.**
2:	Brick: Circumferential cracking. Single longitudinal crack. Surface mortar loss (depth missing < 15 mm). Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness). Other: Circumferential cracking. Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness). **Minimal collapse likelihood in the short term but potential for further deterioration.**
3:	Brick: Total mortar loss (depth missing > 50 mm) without other defects. More than one longitudinal crack (at a single location). Multiple cracking. Single bricks displaced. Deformation < 5%, no fracture and only moderate mortar loss. Surface damage - spalling medium (large areas of chipped brick). Surface damage - wear medium (entire surface of brick is missing). Other: Fracture with no deformation or deformation < 5%. Longitudinal cracking or multiple cracking. Minor loss of level. Severe joint defects i.e. Surface damage - spalling medium. Surface damage - wear medium. **Collapse unlikely in the near future but further deterioration likely.**
4:	Brick: Total mortar loss (depth missing > 50mm) with deformation > 10%; deformation up to 10% and fractured; displaced or hanging brickwork; small number of missing bricks; dropped invert (drop > 20mm); moderate loss of level; surface damage - large spalling (entire surface of brick is missing); surface damage - large wear (entire surface of brick is missing). Other: Broken; deformation up to 10% and broken; fracture with deformation 5-10%; multiple fractures; serious loss of level; serious joint defects with voids or soil visible (open joint with > 50mm soil or void visible or joint displacement > 25% of diameter); surface damage - entire area of pipe surface is missing or severly worn. **Collapse likely in the foreseeable future.**
5:	Brick: Already collapsed; missing Invert; deformation > 10% and fractured; displaced or hanging brickwork and deformation < 10%; extensive areas of missing brickwork. Other: Already collapsed; deformation > 10% and broken; extensive areas of pipe fabric missing; fractures with deformation > 10% **Collapsed or collapse imminent.**

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Section Profile - 11/20/2024 - FW2X

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Circular, 150 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
1	FW2	FW1	11/20/2024	New Courtwick Lane	Vitrified clay	23.40 m	23.40 m
3	SK1	SK2	11/20/2024	New Courtwick Lane	Vitrified clay	4.70 m	4.70 m
5	SK2	SK3	11/20/2024	New Courtwick Lane	Vitrified clay	8.00 m	8.00 m
6	SK3	SK4	11/20/2024	New Courtwick Lane	Vitrified clay	9.70 m	9.70 m
7	SK4	SK5	11/20/2024	New Courtwick Lane	Vitrified clay	9.60 m	9.60 m
8	SK5	SK6	11/20/2024	New Courtwick Lane	Vitrified clay	5.90 m	5.90 m
9	SK6	SK7	11/20/2024	New Courtwick Lane	Vitrified clay	6.00 m	6.00 m
10	SK7	SK8	11/20/2024	New Courtwick Lane	Vitrified clay	8.80 m	8.80 m
11	SK8	SK9	11/20/2024	New Courtwick Lane	Vitrified clay	0.00 m	0.00 m
12	RG	SK9	11/20/2024	New Courtwick Lane	Vitrified clay	7.10 m	7.10 m
13	RG	SK10	11/20/2024	New Courtwick Lane	Vitrified clay	3.70 m	3.70 m
14	SK10	SK11	11/20/2024	New Courtwick Lane	Vitrified clay	10.50 m	10.50 m
15	SK11	SK12	11/20/2024	New Courtwick Lane	Vitrified clay	9.70 m	9.70 m
16	SK12	SK13	11/20/2024	New Courtwick Lane	Vitrified clay	8.60 m	8.60 m
17	SK13	SK14	11/20/2024	New Courtwick Lane	Vitrified clay	7.10 m	7.10 m
18	SK14	SK15	11/20/2024	New Courtwick Lane	Vitrified clay	0.00 m	0.00 m
19	SK15	SK16	11/20/2024	New Courtwick Lane	Vitrified clay	5.20 m	5.20 m
20	SK16	SK17	11/20/2024	New Courtwick Lane	Vitrified clay	8.20 m	8.20 m
21	SK19	SK20	11/20/2024	New Courtwick Lane	Vitrified clay	15.20 m	15.20 m
22	SK20	SK21	11/20/2024	New Courtwick Lane	Vitrified clay	16.20 m	16.20 m
23	SK21	SK22	11/20/2024	New Courtwick Lane	Vitrified clay	15.30 m	15.30 m
24	SK22	SK23	11/20/2024	New Courtwick Lane	Vitrified clay	17.90 m	17.90 m
25	SK23	SK24	11/20/2024	New Courtwick Lane	Vitrified clay	16.00 m	16.00 m
26	SK24	SK25	11/20/2024	New Courtwick Lane	Vitrified clay	0.00 m	0.00 m
27	RG	SK25	11/20/2024	New Courtwick Lane	Vitrified clay	6.20 m	6.20 m
28	SK25	SK26	11/20/2024	New Courtwick Lane	Vitrified clay	12.00 m	12.00 m
29	SK26	SK27	11/20/2024	New Courtwick Lane	Vitrified clay	8.30 m	8.30 m
30	SK27	SK28	11/20/2024	New Courtwick Lane	Vitrified clay	5.80 m	5.80 m
31	SK28	SK29	11/20/2024	New Courtwick Lane	Vitrified clay	3.20 m	3.20 m
32	SK29	SK30	11/20/2024	New Courtwick Lane	Vitrified clay	6.20 m	6.20 m
33	SK30	SK31	11/20/2024	New Courtwick Lane	Vitrified clay	0.00 m	0.00 m

Total: 31 Inspections x Circular 150 mm, 0 mm = 258.50 m Total Length and 258.50 m Inspected Length

Circular, 225 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
34	RE1	SW1	11/20/2024	New Courtwick Lane	Vitrified clay	24.00 m	24.00 m
35	RE2	SW1	11/20/2024	New Courtwick Lane	Vitrified clay	21.60 m	21.60 m
38	SW2	SW3	11/20/2024	New Courtwick Lane	Vitrified clay	20.60 m	20.60 m
39	SW3	SW4	11/20/2024	New Courtwick Lane	Vitrified clay	23.00 m	23.00 m
41	SW5	SW6	11/20/2024	New Courtwick Lane	Vitrified clay	7.90 m	7.90 m
42	SW7	SW6	11/20/2024	New Courtwick Lane	Vitrified clay	17.20 m	17.20 m

Total: 6 Inspections x Circular 225 mm, 0 mm = 114.30 m Total Length and 114.30 m Inspected Length

Circular, 300 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
36	SW1	0/S	11/20/2024	New Courtwick Lane	Vitrified clay	1.20 m	1.20 m
37	0/S	SK29	11/20/2024	New Courtwick Lane	Vitrified clay	0.70 m	0.70 m
40	SW4	SK35	11/20/2024	New Courtwick Lane	Vitrified clay	21.90 m	21.90 m

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Section Profile - 11/20/2024 - FW2X

Project Name	Project Number	Project Date
Parker Building		11/20/2024

43	SW6	SK38	11/20/2024	New Courtwick Lane	Vitrified clay	6.50 m	6.50 m

Total: 4 Inspections x Circular 300 mm, 0 mm = 30.30 m Total Length and 30.30 m Inspected Length

Total: 41 Inspections = 403.10 m Total Length and 403.10 m Inspected Length

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Number of sections	41
Total length of sections	403.10 m
Total length of inspected sections	403.10 m
Total length of not inspected sections	0.00 m
Number of abandoned inspections	4
Number of section inspection photos	186
Number of section inspection videos	41
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:	FW2X	**Upstream Node:**	FW2
Inspection Direction:	Downstream	**Downstream Node:**	FW1
Inspected Length:	23.40 m	**Dia/Height:**	150 mm
Total Length:	23.40 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: FW2
2	0.00	WL	Water level, 0% of the vertical dimension
3	2.80	WL	Water level, 5% of the vertical dimension
4	3.00	WL	Water level, 10% of the vertical dimension
5	3.40	WL	Water level, 20% of the vertical dimension
6	3.70	CUW	Loss of vision, camera under water, start
7	23.40	CUW	Loss of vision, camera under water, finish
8	23.40	ICF	Finish node, inspection chamber, reference: FW1

PLR:	SK1X	**Upstream Node:**	SK1
Inspection Direction:	Downstream	**Downstream Node:**	SK2
Inspected Length:	4.70 m	**Dia/Height:**	150 mm
Total Length:	4.70 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK1
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.10	FC	Fracture, circumferential from 8 o'clock to 5 o'clock
4	4.20	FC	Fracture, circumferential from 2 o'clock to 9 o'clock
5	4.70	SKF	Finish node, soakaway, reference: SK2

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SK2X	**Upstream Node:**	SK2
Inspection Direction:	Downstream	**Downstream Node:**	SK3
Inspected Length:	8.00 m	**Dia/Height:**	150 mm
Total Length:	8.00 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK2
2	0.00	WL	Water level, 0% of the vertical dimension
3	8.00	SKF	Finish node, soakaway, reference: SK3

PLR:	SK3X	**Upstream Node:**	SK3
Inspection Direction:	Downstream	**Downstream Node:**	SK4
Inspected Length:	9.70 m	**Dia/Height:**	150 mm
Total Length:	9.70 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK3
2	0.00	WL	Water level, 0% of the vertical dimension
3	9.20	FC	Fracture, circumferential from 2 o'clock to 9 o'clock
4	9.70	SKF	Finish node, soakaway, reference: SK4

PLR:	SK4X	**Upstream Node:**	SK4
Inspection Direction:	Downstream	**Downstream Node:**	SK5
Inspected Length:	9.60 m	**Dia/Height:**	150 mm
Total Length:	9.60 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK4
2	0.00	WL	Water level, 0% of the vertical dimension
3	1.00	DES	Settled deposits, fine, 10% cross-sectional area loss, start
4	9.60	DES	Settled deposits, fine, 10% cross-sectional area loss, finish
5	9.60	SKF	Finish node, soakaway, reference: SK5

PLR:	SK5X	**Upstream Node:**	SK5
Inspection Direction:	Downstream	**Downstream Node:**	SK6
Inspected Length:	5.90 m	**Dia/Height:**	150 mm
Total Length:	5.90 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK5
2	0.00	WL	Water level, 0% of the vertical dimension
3	5.90	SKF	Finish node, soakaway, reference: SK6

PLR:	SK6X	**Upstream Node:**	SK6
Inspection Direction:	Downstream	**Downstream Node:**	SK7
Inspected Length:	6.00 m	**Dia/Height:**	150 mm
Total Length:	6.00 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK6
2	0.00	WL	Water level, 0% of the vertical dimension
3	6.00	SKF	Finish node, soakaway, reference: SK7

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SK7X	**Upstream Node:**	SK7
Inspection Direction:	Downstream	**Downstream Node:**	SK8
Inspected Length:	8.80 m	**Dia/Height:**	150 mm
Total Length:	8.80 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK7
2	0.00	WL	Water level, 0% of the vertical dimension
3	7.90	JDM	Joint displaced, medium
4	8.30	FC	Fracture, circumferential from 3 o'clock to 10 o'clock
5	8.80	SKF	Finish node, soakaway, reference: SK8

PLR:	SK8X	**Upstream Node:**	SK8
Inspection Direction:	Downstream	**Downstream Node:**	SK9
Inspected Length:		**Dia/Height:**	150 mm
Total Length:		**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK8

PLR:	RGX	**Upstream Node:**	RG
Inspection Direction:	Upstream	**Downstream Node:**	SK9
Inspected Length:	7.10 m	**Dia/Height:**	150 mm
Total Length:	7.10 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK9
2	0.00	WL	Water level, 0% of the vertical dimension
3	6.20	LU	Line deviates up
4	7.10	GYF	Finish node, gully, reference: RG

PLR:	RGX	**Upstream Node:**	RG
Inspection Direction:	Upstream	**Downstream Node:**	SK10
Inspected Length:	3.70 m	**Dia/Height:**	150 mm
Total Length:	3.70 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK10
2	0.00	WL	Water level, 0% of the vertical dimension
3	3.10	LU	Line deviates up
4	3.70	GYF	Finish node, gully, reference: RG

PLR:	SK10X	**Upstream Node:**	SK10
Inspection Direction:	Downstream	**Downstream Node:**	SK11
Inspected Length:	10.50 m	**Dia/Height:**	150 mm
Total Length:	10.50 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK10
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.50	FC	Fracture, circumferential from 1 o'clock to 10 o'clock
4	9.40	JDM	Joint displaced, medium

Section Summary

Project Name	Project Number	Project Date
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No.	m+	Code	Observation
5	10.50	SKF	Finish node, soakaway, reference: SK11

PLR:	SK11X	**Upstream Node:**	SK11
Inspection Direction:	Downstream	**Downstream Node:**	SK12
Inspected Length:	9.70 m	**Dia/Height:**	150 mm
Total Length:	9.70 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK11
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.70	FC	Fracture, circumferential from 2 o'clock to 10 o'clock
4	8.30	JDM	Joint displaced, medium
5	9.70	SKF	Finish node, soakaway, reference: SK12

PLR:	SK12X	**Upstream Node:**	SK12
Inspection Direction:	Downstream	**Downstream Node:**	SK13
Inspected Length:	8.60 m	**Dia/Height:**	150 mm
Total Length:	8.60 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK12
2	0.00	WL	Water level, 0% of the vertical dimension
3	8.60	SKF	Finish node, soakaway, reference: SK13

PLR:	SK13X	**Upstream Node:**	SK13
Inspection Direction:	Downstream	**Downstream Node:**	SK14
Inspected Length:	7.10 m	**Dia/Height:**	150 mm
Total Length:	7.10 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK13
2	0.00	WL	Water level, 0% of the vertical dimension
3	7.10	SKF	Finish node, soakaway, reference: SK14

PLR:	SK14X	**Upstream Node:**	SK14
Inspection Direction:	Downstream	**Downstream Node:**	SK15
Inspected Length:		**Dia/Height:**	150 mm
Total Length:		**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK14

PLR:	SK15X	**Upstream Node:**	SK15
Inspection Direction:	Downstream	**Downstream Node:**	SK16
Inspected Length:	5.20 m	**Dia/Height:**	150 mm
Total Length:	5.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK15
2	0.00	WL	Water level, 0% of the vertical dimension
3	4.00	JDL	Joint displaced, large
4	5.20	SKF	Finish node, soakaway, reference: SK16

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SK16X	**Upstream Node:**	SK16
Inspection Direction:	Downstream	**Downstream Node:**	SK17
Inspected Length:	8.20 m	**Dia/Height:**	150 mm
Total Length:	8.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK16
2	0.00	WL	Water level, 0% of the vertical dimension
3	5.80	LL	Line deviates left
4	7.50	JDM	Joint displaced, medium
5	8.20	SKF	Finish node, soakaway, reference: SK17

PLR:	SK19X	**Upstream Node:**	SK19
Inspection Direction:	Upstream	**Downstream Node:**	SK20
Inspected Length:	15.20 m	**Dia/Height:**	150 mm
Total Length:	15.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK20
2	0.00	WL	Water level, 0% of the vertical dimension
3	2.00	FC	Fracture, circumferential from 12 o'clock to 12 o'clock
4	6.00	DES	Settled deposits, fine, 5% cross-sectional area loss, start
5	10.60	DES	Settled deposits, fine, 5% cross-sectional area loss, finish
6	15.20	SKF	Finish node, soakaway, reference: SK19

PLR:	SK20X	**Upstream Node:**	SK20
Inspection Direction:	Downstream	**Downstream Node:**	SK21
Inspected Length:	16.20 m	**Dia/Height:**	150 mm
Total Length:	16.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK20
2	0.00	WL	Water level, 0% of the vertical dimension
3	16.20	SKF	Finish node, soakaway, reference: SK21

PLR:	SK21X	**Upstream Node:**	SK21
Inspection Direction:	Downstream	**Downstream Node:**	SK22
Inspected Length:	15.30 m	**Dia/Height:**	150 mm
Total Length:	15.30 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK21
2	0.00	DES	Settled deposits, fine, 10% cross-sectional area loss, start
3	2.20	DES	Settled deposits, fine, 10% cross-sectional area loss, finish
4	3.20	RM	Roots, mass, 5% cross-sectional area loss
5	10.30	RM	Roots, mass, 10% cross-sectional area loss, start
6	11.10	RM	Roots, mass, 10% cross-sectional area loss, finish
7	15.30	SKF	Finish node, soakaway, reference: SK22

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SK22X	**Upstream Node:**	SK22
Inspection Direction:	Downstream	**Downstream Node:**	SK23
Inspected Length:	17.90 m	**Dia/Height:**	150 mm
Total Length:	17.90 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK22
2	0.00	WL	Water level, 0% of the vertical dimension
3	15.00	RM	Roots, mass, 10% cross-sectional area loss, start
4	16.40	JDM	Joint displaced, medium
5	17.90	RM	Roots, mass, 10% cross-sectional area loss, finish
6	17.90	SKF	Finish node, soakaway, reference: SK23

PLR:	SK23X	**Upstream Node:**	SK23
Inspection Direction:	Downstream	**Downstream Node:**	SK24
Inspected Length:	16.00 m	**Dia/Height:**	150 mm
Total Length:	16.00 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK23
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DES	Settled deposits, fine, 5% cross-sectional area loss, start
4	0.30	FC	Fracture, circumferential from 12 o'clock to 12 o'clock
5	3.20	FC	Fracture, circumferential from 12 o'clock to 12 o'clock
6	5.40	JDM	Joint displaced, medium
7	11.60	FC	Fracture, circumferential from 12 o'clock to 12 o'clock
8	16.00	DES	Settled deposits, fine, 5% cross-sectional area loss, finish
9	16.00	SKF	Finish node, soakaway, reference: SK24

PLR:	SK24X	**Upstream Node:**	SK24
Inspection Direction:	Downstream	**Downstream Node:**	SK25
Inspected Length:		**Dia/Height:**	150 mm
Total Length:		**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK24

PLR:	RGX	**Upstream Node:**	RG
Inspection Direction:	Upstream	**Downstream Node:**	SK25
Inspected Length:	6.20 m	**Dia/Height:**	150 mm
Total Length:	6.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK25
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.30	RMJ	Roots, mass at joint, 15% cross-sectional area loss
4	5.10	LU	Line deviates up
5	6.20	GYF	Finish node, gully, reference: RG

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SK25X	**Upstream Node:**	SK25
Inspection Direction:	Downstream	**Downstream Node:**	SK26
Inspected Length:	12.00 m	**Dia/Height:**	150 mm
Total Length:	12.00 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK25
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.20	JDM	Joint displaced, medium
4	0.20	LR	Line deviates right
5	2.50	JDM	Joint displaced, medium
6	5.30	JDM	Joint displaced, medium
7	10.90	XP	Collapsed drain or sewer, 50% cross-sectional area loss
8	12.00	SKF	Finish node, soakaway, reference: SK26

PLR:	SK26X	**Upstream Node:**	SK26
Inspection Direction:	Downstream	**Downstream Node:**	SK27
Inspected Length:	8.30 m	**Dia/Height:**	150 mm
Total Length:	8.30 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK26
2	0.00	WL	Water level, 0% of the vertical dimension
3	7.00	JDM	Joint displaced, medium
4	7.50	FC	Fracture, circumferential from 12 o'clock to 12 o'clock
5	8.30	SKF	Finish node, soakaway, reference: SK27

PLR:	SK27X	**Upstream Node:**	SK27
Inspection Direction:	Downstream	**Downstream Node:**	SK28
Inspected Length:	5.80 m	**Dia/Height:**	150 mm
Total Length:	5.80 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK27
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DER	Settled deposits, coarse, 10% cross-sectional area loss, start
4	2.00	DER	Settled deposits, coarse, 10% cross-sectional area loss, finish
5	5.80	SKF	Finish node, soakaway, reference: SK28

PLR:	SK28X	**Upstream Node:**	SK28
Inspection Direction:	Downstream	**Downstream Node:**	SK29
Inspected Length:	3.20 m	**Dia/Height:**	150 mm
Total Length:	3.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK28
2	0.00	WL	Water level, 0% of the vertical dimension
3	2.70	FC	Fracture, circumferential from 2 o'clock to 10 o'clock
4	3.20	SKF	Finish node, soakaway, reference: SK29

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SK29X	**Upstream Node:**	SK29
Inspection Direction:	Downstream	**Downstream Node:**	SK30
Inspected Length:	6.20 m	**Dia/Height:**	150 mm
Total Length:	6.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK29
2	0.00	WL	Water level, 0% of the vertical dimension
3	6.20	SKF	Finish node, soakaway, reference: SK30

PLR:	SK30X	**Upstream Node:**	SK30
Inspection Direction:	Downstream	**Downstream Node:**	SK31
Inspected Length:		**Dia/Height:**	150 mm
Total Length:		**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK30

PLR:	RE1X	**Upstream Node:**	RE1
Inspection Direction:	Upstream	**Downstream Node:**	SW1
Inspected Length:	24.00 m	**Dia/Height:**	225 mm
Total Length:	24.00 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW1
2	0.00	WL	Water level, 0% of the vertical dimension
3	5.10	JN	Junction at 2 o'clock, 150mm dia
4	15.30	JN	Junction at 2 o'clock, 150mm dia
5	22.60	JN	Junction at 3 o'clock, 150mm dia
6	24.00	DEX	Settled deposits, other, 90% cross-sectional area loss
7	24.00	SA	Survey abandoned

PLR:	RE2X	**Upstream Node:**	RE2
Inspection Direction:	Upstream	**Downstream Node:**	SW1
Inspected Length:	21.60 m	**Dia/Height:**	225 mm
Total Length:	21.60 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW1
2	0.00	WL	Water level, 0% of the vertical dimension
3	2.20	JN	Junction at 10 o'clock, 150mm dia
4	9.20	JN	Junction at 10 o'clock, 150mm dia
5	17.60	JN	Junction at 10 o'clock, 150mm dia
6	19.00	DER	Settled deposits, coarse, 10% cross-sectional area loss, start
7	19.20	SC	Pipe size changes, new size(s), 150mm high
8	19.80	LU	Line deviates up
9	19.80	DER	Settled deposits, coarse, 10% cross-sectional area loss, finish
10	21.60	REF	Finish node, rodding eye, reference: RE2

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SW1X	**Upstream Node:**	SW1
Inspection Direction:	Downstream	**Downstream Node:**	0/S
Inspected Length:	1.20 m	**Dia/Height:**	300 mm
Total Length:	1.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW1
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.50	DES	Settled deposits, fine, 20% cross-sectional area loss, start
4	1.20	DES	Settled deposits, fine, 20% cross-sectional area loss, finish
5	1.20	OSF	Finish node, oil separator, reference: 0/S

PLR:	0/SX	**Upstream Node:**	0/S
Inspection Direction:	Upstream	**Downstream Node:**	SK29
Inspected Length:	0.70 m	**Dia/Height:**	300 mm
Total Length:	0.70 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SK29
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.70	OSF	Finish node, oil separator, reference: 0/S

PLR:	SW2X	**Upstream Node:**	SW2
Inspection Direction:	Upstream	**Downstream Node:**	SW3
Inspected Length:	20.60 m	**Dia/Height:**	225 mm
Total Length:	20.60 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW3
2	0.00	WL	Water level, 0% of the vertical dimension
3	20.60	ICF	Finish node, inspection chamber, reference: SW2

PLR:	SW3X	**Upstream Node:**	SW3
Inspection Direction:	Downstream	**Downstream Node:**	SW4
Inspected Length:	23.00 m	**Dia/Height:**	225 mm
Total Length:	23.00 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW3
2	0.00	WL	Water level, 10% of the vertical dimension
3	1.70	WL	Water level, 5% of the vertical dimension
4	3.20	DES	Settled deposits, fine, 10% cross-sectional area loss, start
5	11.60	DES	Settled deposits, fine, 10% cross-sectional area loss, finish
6	18.60	WL	Water level, 10% of the vertical dimension
7	22.30	WL	Water level, 5% of the vertical dimension
8	22.60	WL	Water level, 0% of the vertical dimension
9	23.00	ICF	Finish node, inspection chamber, reference: SW4

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

PLR:	SW4X	**Upstream Node:**	SW4
Inspection Direction:	Downstream	**Downstream Node:**	SK35
Inspected Length:	21.90 m	**Dia/Height:**	300 mm
Total Length:	21.90 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW4
2	0.00	WL	Water level, 0% of the vertical dimension
3	2.10	FC	Fracture, circumferential from 2 o'clock to 9 o'clock
4	14.00	DES	Settled deposits, fine, 10% cross-sectional area loss, start
5	16.40	DES	Settled deposits, fine, 10% cross-sectional area loss, finish
6	21.90	SA	Survey abandoned

PLR:	SW5X	**Upstream Node:**	SW5
Inspection Direction:	Upstream	**Downstream Node:**	SW6
Inspected Length:	7.90 m	**Dia/Height:**	225 mm
Total Length:	7.90 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW6
2	0.00	WL	Water level, 0% of the vertical dimension
3	5.30	RMJ	Roots, mass at joint, 20% cross-sectional area loss
4	5.80	RM	Roots, mass, 10% cross-sectional area loss, start
5	7.30	RM	Roots, mass, 30% cross-sectional area loss, change
6	7.80	RM	Roots, mass, 50% cross-sectional area loss, change
7	7.90	RM	Roots, mass, 50% cross-sectional area loss, finish
8	7.90	SA	Survey abandoned

PLR:	SW7X	**Upstream Node:**	SW7
Inspection Direction:	Upstream	**Downstream Node:**	SW6
Inspected Length:	17.20 m	**Dia/Height:**	225 mm
Total Length:	17.20 m	**Material:**	Vitrified clay

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW6
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.70	WL	Water level, 5% of the vertical dimension
4	1.00	WL	Water level, 10% of the vertical dimension
5	1.90	WL	Water level, 15% of the vertical dimension
6	3.60	CUW	Loss of vision, camera under water, start
7	14.10	CUW	Loss of vision, camera under water, finish
8	14.20	WL	Water level, 0% of the vertical dimension
9	14.30	DER	Settled deposits, coarse, 20% cross-sectional area loss, start
10	17.20	DER	Settled deposits, coarse, 20% cross-sectional area loss, finish
11	17.20	ICF	Finish node, inspection chamber, reference: SW7

PLR:	SW6X	**Upstream Node:**	SW6
Inspection Direction:	Downstream	**Downstream Node:**	SK38
Inspected Length:	6.50 m	**Dia/Height:**	300 mm
Total Length:	6.50 m	**Material:**	Vitrified clay

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Section Summary

Project Name	Project Number	Project Date
Parker Building		11/20/2024

No.	m+	Code	Observation
1	0.00	IC	Start node, inspection chamber, reference: SW6
2	0.00	WL	Water level, 0% of the vertical dimension
3	1.10	WL	Water level, 10% of the vertical dimension
4	3.30	WL	Water level, 5% of the vertical dimension
5	3.30	DES	Settled deposits, fine, 15% cross-sectional area loss, start
6	6.50	RM	Roots, mass, 60% cross-sectional area loss
7	6.50	DES	Settled deposits, fine, 15% cross-sectional area loss, finish
8	6.50	SA	Survey abandoned

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Defect Grade Description (Node)

Project Name	Project Number	Project Date
Parker Building		11/20/2024

1:

Brick: No structural defects.

Other Materials: No structural defects.

Acceptable structural condition.

2:

Brick: Circumferential cracking; single longitudinal crack; surface mortar loss (depth missing < 15mm); surface damage - slight spalling (breaking away of small fragments from the surface); surface damage - slight wear (increased roughness).

Other Materials: Circumferential crack; moderate joint defects (i.e. medium open joint or medium displaced joint); surface damage - slight spalling (breaking away of small fragments from the surface) or slight wear (increased roughness).

Minimal collapse likelihood in the short term but potential for further deterioration.

3:

Brick: Medium mortar loss (depth missing 15-50mm) without other defects; more than one longitudinal crack (at a single location); multiple cracking; single bricks displaced; deformation < 5%; no fracture and only moderate mortar loss; surface damage - medium spalling (large areas of chipped brick); surface damage - medium wear (large area of brick surface is missing).

Other Materials: Fracture with no deformation or deformation < 5%; longitudinal cracking or multiple cracking; minor loss of level; severe joint defects (i.e. large open joint or large displaced joint); surface damage - partial area of pipe surface is missing or worn.

Collapse unlikely in the near future but further deterioration likely

4:

Brick: Total mortar loss (depth missing > 50mm) with deformation > 10%; deformation up to 10% and fractured; displaced or hanging brickwork; small number of missing bricks; dropped invert (drop > 20mm); moderate loss of level; surface damage - large spalling (entire surface of brick is missing); surface damage - large wear (entire surface of brick is missing).

Other Materials: Broken; deformation up to 10% and broken; fracture with deformation 5-10%; multiple fractures; serious loss of level; serious joint defects with voids or soil visible (open joint with > 50mm soil or void visible or joint displacement > 25% of diameter); surface damage - entire area of pipe surface is missing or severly worn.

Collapse likely in the foreseeable future

5:

Brick: Already collapsed; missing Invert; deformation > 10% and fractured; displaced or hanging brickwork and deformation < 10%; extensive areas of missing brickwork.

Other Materials: Already collapsed; deformation > 10% and broken; extensive areas of pipe fabric missing; fractures with deformation > 10%

Collapsed or collapse imminent

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Node Profile

Project Name	Project Number	Project Date
Parker Building		11/20/2024

Node No.	Node ID	Town or Village	Road	Node Depth	Date
1	FW2				11/20/2024
2	FW1				11/20/2024
3	SK1				11/20/2024
4	SK2				11/20/2024
5	SK3				11/20/2024
6	SK4				11/20/2024
7	SK5				11/20/2024
8	SK6				11/20/2024
9	SK7				11/20/2024
10	SK8				11/20/2024
11	SK9				11/20/2024
12	RG				11/20/2024
13	SK10				11/20/2024
14	SK11				11/20/2024
15	SK12				11/20/2024
16	SK13				11/20/2024
17	SK14				11/20/2024
18	SK15				11/20/2024
19	SK16				11/20/2024
20	SK17				11/20/2024
21	SK19				11/20/2024
22	SK20				11/20/2024
23	SK21				11/20/2024
24	SK22				11/20/2024
25	SK23				11/20/2024
26	SK24				11/20/2024
27	SK25				11/20/2024
28	SK26				11/20/2024
29	SK27				11/20/2024
30	SK28				11/20/2024
31	SK29				11/20/2024
32	SK30				11/20/2024
33	SK31				11/20/2024
34	RE1				11/20/2024
35	SW1				11/20/2024
36	RE2				11/20/2024
37	0/S				11/20/2024
38	SW3				11/20/2024
39	SW2				11/20/2024
40	SW4				11/20/2024
41	SW4				11/20/2024
42	SK35				11/20/2024
43	SW5				11/20/2024
44	SW6				11/20/2024

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Holmbush Lane, Woodmancote
[redacted]

Node Profile

Project Name	Project Number	Project Date
Parker Building		11/20/2024

45	SW7				11/20/2024
46	SK38				11/20/2024

Total: 46 Nodes

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	20/11/24	14:05	Not Specified	No Rain Or Snow	No	FW2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	FW2
Road:	New Courtwick Lane	**Inspected Length:**	23.40 m	**Upstream Pipe Depth:**	1880.000 m
Location:	Footway	**Total Length:**	23.40 m	**Downstream Node:**	FW1
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:203



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: FW2	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:00		
2.80		WL	Water level, 5% of the vertical dimension	00:00:37		
3.00		WL	Water level, 10% of the vertical dimension	00:00:40		
3.40		WL	Water level, 20% of the vertical dimension	00:00:50		
3.70	S01	CUW	Loss of vision, camera under water, start	00:00:54		
23.40	F01	CUW	Loss of vision, camera under water, finish	00:01:56		
23.40		ICF	Finish node, inspection chamber, reference: FW1: Buried, overgrown.	00:01:56		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 11/20/2024 - FW2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FW2X		



FW2.JPG, 00:00:00, 0.00 m
Start node, inspection chamber, reference: FW2



4f51de0f-9dea-4ea7-9a8e-9961fb5f6a41.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



d2adae13-b6e4-4f00-8c94-e8ac3fff9097.png, 00:00:37, 2.80 m
Water level, 5% of the vertical dimension



3d9e5eb0-cb8e-4811-897a-6dda7e28b854.png, 00:00:40, 3.00 m
Water level, 10% of the vertical dimension



50dfe23d-8a5b-40be-abb9-53e4191c3254.png, 00:00:50, 3.40 m
Water level, 20% of the vertical dimension



0af5e01d-2627-47aa-947b-aae46420db7e.png, 00:00:54, 3.70 m
Loss of vision, camera under water, start

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[redacted]

Section Pictures - 11/20/2024 - FW2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	FW2X		



6935c4df-74b3-47a5-b5f2-c90a6f23fdc6.jpg, 00:01:56, 23.40 m
Finish node, inspection chamber, reference: FW1, Buried,



FW1.JPG, 00:01:56, 23.40 m
Finish node, inspection chamber, reference: FW1, Buried, overgrown.

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	20/11/24	14:11	Not Specified	No Rain Or Snow	No	SK1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK1
Road:	New Courtwick Lane	**Inspected Length:**	4.70 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	4.70 m	**Downstream Node:**	SK2
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK1: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
0.10	FC	Fracture, circumferential from 8 o'clock to 5 o'clock	00:00:00		3 / 2
4.20	FC	Fracture, circumferential from 2 o'clock to 9 o'clock	00:00:42		3 / 2
4.70	SKF	Finish node, soakaway, reference: SK2	00:00:45		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	40.0	17.0	80.0	3.0	2	1.0	0.4	2.0	2.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	SK1X		



SK1.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK1, Perforated pipe



96e2dbed-e53b-446b-9465-c51b205c281e.png, 00:00:00, 0.10 m
Fracture, circumferential from 8 o'clock to 5 o'clock



a64bb55a-e163-4375-a810-a055a23a98a9.png, 00:00:42, 4.20 m
Fracture, circumferential from 2 o'clock to 9 o'clock



81a91e73-829a-4b68-b101-fc33c92c221d.png, 00:00:45, 4.70 m
Finish node, soakaway, reference: SK2

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	20/11/24	14:17	Not Specified	No Rain Or Snow	No	SK2X

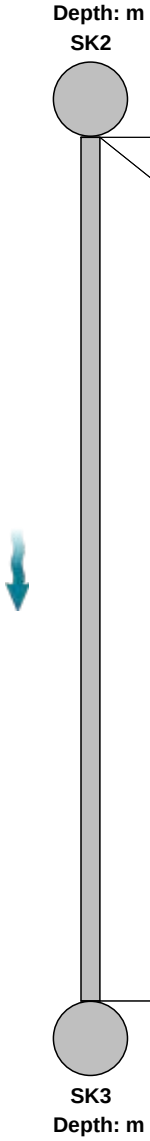
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK2
Road:	New Courtwick Lane	**Inspected Length:**	8.00 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	8.00 m	**Downstream Node:**	SK3
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:70



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK2: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
8.00	SKF	Finish node, soakaway, reference: SK3	00:00:35		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	SK2X		



SK2.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK2, Perforated pipe



524ec561-5aaf-4b95-aac7-b100ae76a0e3.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



bd94560e-9551-48ce-96eb-f0b9bce8f248.png, 00:00:35, 8.00 m
Finish node, soakaway, reference: SK3

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
6	1	20/11/24	14:20	Not Specified	No Rain Or Snow	No	SK3X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK3
Road:	New Courtwick Lane	**Inspected Length:**	9.70 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	9.70 m	**Downstream Node:**	SK4
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:84



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK3: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
9.20	FC	Fracture, circumferential from 2 o'clock to 9 o'clock	00:00:37		3 / 2
9.70	SKF	Finish node, soakaway, reference: SK4	00:00:39		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	40.0	4.1	40.0	3.0	1	1.0	0.1	1.0	2.0

Section Pictures - 11/20/2024 - SK3X

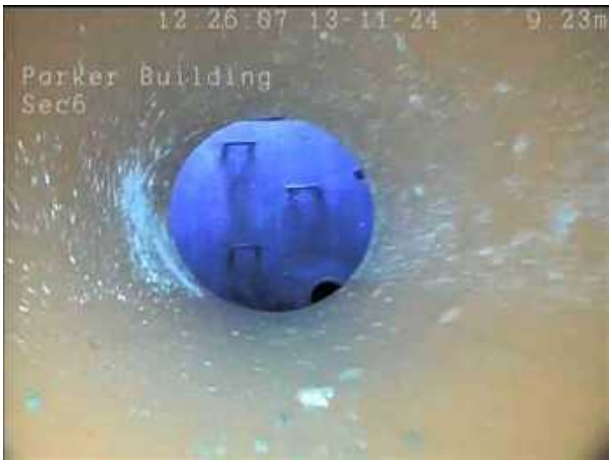
Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
6	Downstream	SK3X		



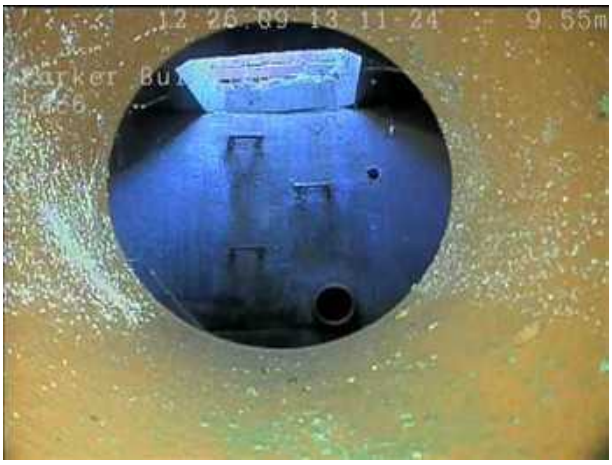
SK3.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK3, Perforated pipe



abc24980-8bdb-45a3-a7a8-fcc955bc1cf9.jpg, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



6e42e722-5325-4521-8090-a54ada5dde7e.png, 00:00:37, 9.20 m
Fracture, circumferential from 2 o'clock to 9 o'clock



37a0ccff-eb2f-40eb-a9c8-58564c7de4dc.png, 00:00:39, 9.70 m
Finish node, soakaway, reference: SK4

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
7	1	20/11/24	14:22	Not Specified	No Rain Or Snow	No	SK4X

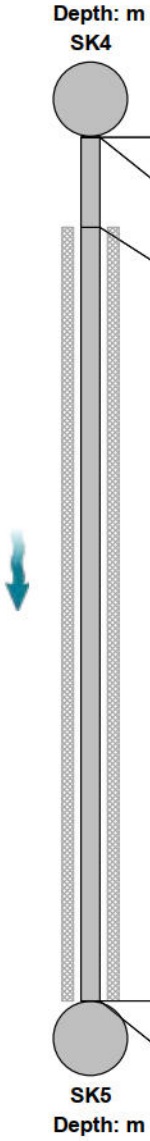
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK4
Road:	New Courtwick Lane	**Inspected Length:**	9.60 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	9.60 m	**Downstream Node:**	SK5
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:84



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		SK	Start node, soakaway, reference: SK4: Perforated pipe	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:00		
1.00	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start	00:00:10		
9.60	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	00:00:56		3
9.60		SKF	Finish node, soakaway, reference: SK5	00:00:56		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	2.0	1.9	18.0	3.0

Section Pictures - 11/20/2024 - SK4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
7	Downstream	SK4X		



SK4.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK4, Perforated pipe



5592a72d-fa10-4555-9e84-c79d72d6ab43.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



437d2e6a-d1ee-4069-8e1e-eec3e0a9efc1.png, 00:00:10, 1.00 m
Settled deposits, fine, 10% cross-sectional area loss, start



1277ab66-b90e-4429-affc-da462d1ef401.png, 00:00:56, 9.60 m
Finish node, soakaway, reference: SK5

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
8	1	20/11/24	14:24	Not Specified	No Rain Or Snow	No	SK5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK5
Road:	New Courtwick Lane	**Inspected Length:**	5.90 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	5.90 m	**Downstream Node:**	SK6
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:52



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK5: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
5.90	SKF	Finish node, soakaway, reference: SK6	00:00:30		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 11/20/2024 - SK5X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
8	Downstream	SK5X		



SK5.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK5, Perforated pipe



d55096c7-89bb-4b33-95d9-ce77e9ac3ed5.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



78d92c34-3bf2-4031-954c-b1c771450e74.png, 00:00:30, 5.90 m
Finish node, soakaway, reference: SK6

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
9	1	20/11/24	14:26	Not Specified	No Rain Or Snow	No	SK6X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK6
Road:	New Courtwick Lane	**Inspected Length:**	6.00 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	6.00 m	**Downstream Node:**	SK7
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:52



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK6: Perforated pipe	00:00:02		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
6.00	SKF	Finish node, soakaway, reference: SK7	00:00:23		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 11/20/2024 - SK6X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
9	Downstream	SK6X		



SK6.JPG, 00:00:02, 0.00 m
Start node, soakaway, reference: SK6, Perforated pipe



546e1ec5-f88b-43d9-8038-12354b43c382.png, 00:00:02, 0.00 m
Water level, 0% of the vertical dimension



5aa38dc9-e18d-4f36-8c5e-1eb54f01993f.png, 00:00:23, 6.00 m
Finish node, soakaway, reference: SK7

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
10	1	20/11/24	14:29	Not Specified	No Rain Or Snow	No	SK7X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK7
Road:	New Courtwick Lane	**Inspected Length:**	8.80 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	8.80 m	**Downstream Node:**	SK8
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:77



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK7: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
7.90	JDM	Joint displaced, medium	00:00:44		1 / 3
8.30	FC	Fracture, circumferential from 3 o'clock to 10 o'clock	00:00:51		3 / 2
8.80	SKF	Finish node, soakaway, reference: SK8	00:00:56		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	40.0	4.7	41.0	3.0	2	2.0	0.3	3.0	3.0

Section Pictures - 11/20/2024 - SK7X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
10	Downstream	SK7X		



SK7.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK7, Perforated pipe



6c3d5b40-9725-4afd-9f9d-67492deb75e0.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



90350af8-7f4b-42e4-b673-274e6aa91a4a.png, 00:00:44, 7.90 m
Joint displaced, medium



23dedb8b-ae4d-4163-b7b3-e26f55abf7cd.png, 00:00:51, 8.30 m
Fracture, circumferential from 3 o'clock to 10 o'clock



37392514-d788-4006-8281-70e58fa36a33.png, 00:00:56, 8.80 m
Finish node, soakaway, reference: SK8

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Holmbush Lane, Woodmancote
[redacted]

Section Inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
11	1	20/11/24	14:31	Not Specified	No Rain Or Snow	No	SK8X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK8
Road:	New Courtwick Lane	**Inspected Length:**		**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	0.00 m	**Downstream Node:**	SK9
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SK8						
	0.00	SK	Start node, soakaway, reference: SK8: Confined space entry required to survey	00:00:19		
SK9 Depth: m						

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 11/20/2024 - SK8X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
11	Downstream	SK8X		



SK8.JPG, 00:00:19, 0.00 m
Start node, soakaway, reference: SK8, Confined space entry required to survey



906e6eb8-b3a4-44dc-81f0-f963a017b878.png, 00:00:19, 0.00 m
Start node, soakaway, reference: SK8, Confined space entry

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
12	1	20/11/24	14:33	Not Specified	No Rain Or Snow	No	RGX

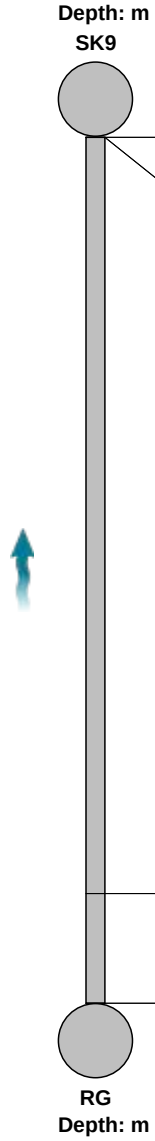
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	RG
Road:	New Courtwick Lane	**Inspected Length:**	7.10 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	7.10 m	**Downstream Node:**	SK9
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:62



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK9	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
6.20	LU	Line deviates up	00:00:42		
7.10	GYF	Finish node, gully, reference: RG	00:00:48		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 11/20/2024 - RGX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
12	Upstream	RGX		



SK9.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK9



98f2ac36-b766-4184-a1a5-6e5b23e96160.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



2bf4a9e9-2ae5-4b0f-9b7a-6f6b20a8375c.png, 00:00:42, 6.20 m
Line deviates up



03259835-14b6-44fc-8cea-159aa6ef16e1.png, 00:00:48, 7.10 m
Finish node, gully, reference: RG

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
13	1	20/11/24	14:35	Not Specified	No Rain Or Snow	No	RGX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	RG
Road:	New Courtwick Lane	**Inspected Length:**	3.70 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	3.70 m	**Downstream Node:**	SK10
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK10	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
3.10	LU	Line deviates up	00:00:18		
3.70	GYF	Finish node, gully, reference: RG	00:00:22		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

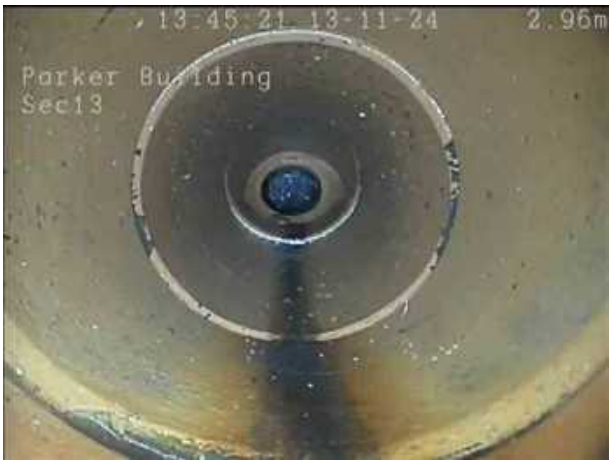
Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]
[redacted]k

Section Pictures - 11/20/2024 - RGX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
13	Upstream	RGX		



afbbc84c-abaa-45d4-b52b-6cc20298f823.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



38e8d911-beaf-4ae3-a66d-1f1c1931ed68.png, 00:00:18, 3.10 m
Line deviates up



1c4edca9-108a-4256-8db1-6f0dd2f2c5b9.png, 00:00:22, 3.70 m
Finish node, gully, reference: RG

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
14	1	20/11/24	14:37	Not Specified	No Rain Or Snow	No	SK10X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK10
Road:	New Courtwick Lane	**Inspected Length:**	10.50 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	10.50 m	**Downstream Node:**	SK11
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:91



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK10: Perforated pipe	00:00:01		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
0.50	FC	Fracture, circumferential from 1 o'clock to 10 o'clock	00:00:13		3 / 2
9.40	JDM	Joint displaced, medium	00:02:15		1 / 3
10.50	SKF	Finish node, soakaway, reference: SK11	00:02:13		

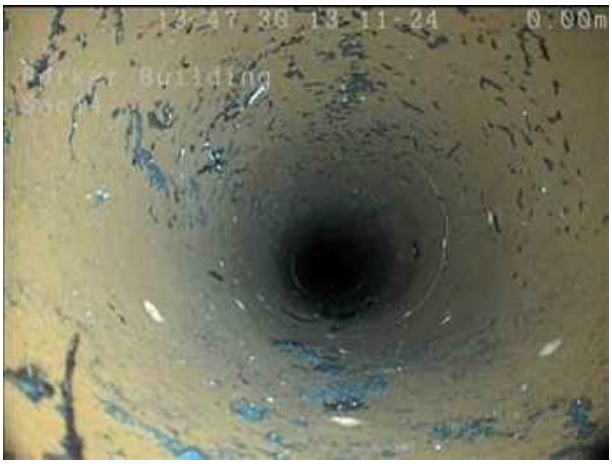
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	40.0	3.9	41.0	3.0	2	2.0	0.3	3.0	3.0

Section Pictures - 11/20/2024 - SK10X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
14	Downstream	SK10X		



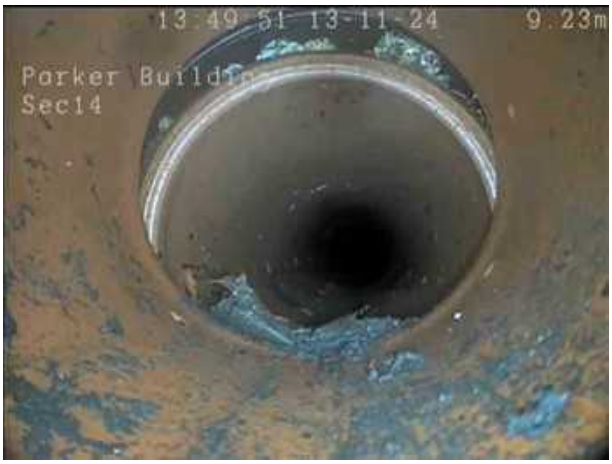
SK10.JPG, 00:00:01, 0.00 m
Start node, soakaway, reference: SK10, Perforated pipe



ae5bca1d-b814-498a-9697-f0ec0bc1d3fc.png, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension



cd2acbff-1fe6-43a9-8eb8-3ac3f9fd010c.png, 00:00:13, 0.50 m
Fracture, circumferential from 1 o'clock to 10 o'clock



d9ec5cc4-4a82-47a9-8bad-255706519939.png, 00:02:15, 9.40 m
Joint displaced, medium



76432306-681a-4209-a403-69c2b3303afc.png, 00:02:13, 10.50 m
Finish node, soakaway, reference: SK11

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Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
15	1	20/11/24	14:41	Not Specified	No Rain Or Snow	No	SK11X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK11
Road:	New Courtwick Lane	**Inspected Length:**	9.70 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	9.70 m	**Downstream Node:**	SK12
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:84



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK11: Perforated pipe	00:01:01		
0.00	WL	Water level, 0% of the vertical dimension	00:00:17		
0.70	FC	Fracture, circumferential from 2 o'clock to 10 o'clock	00:00:21		3 / 2
8.30	JDM	Joint displaced, medium	00:00:56		1 / 3
9.70	SKF	Finish node, soakaway, reference: SK12	00:00:58		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	40.0	4.2	41.0	3.0	2	2.0	0.3	3.0	3.0

Section Pictures - 11/20/2024 - SK11X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
15	Downstream	SK11X		



SK11.JPG, 00:01:01, 0.00 m
Start node, soakaway, reference: SK11, Perforated pipe



3fe3fc64-059c-4e83-ab76-0748a7c3c565.png, 00:00:17, 0.00 m
Water level, 0% of the vertical dimension



621027ce-220b-4d81-9398-2fa2f5f84527.png, 00:00:21, 0.70 m
Fracture, circumferential from 2 o'clock to 10 o'clock



9c664344-6f01-4ade-b770-b99b9492511a.png, 00:00:56, 8.30 m
Joint displaced, medium



fb854d4e-4076-4a30-856c-4bf57cd099ea.png, 00:00:58, 9.70 m
Finish node, soakaway, reference: SK12

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Holmbush Lane, Woodmancote
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Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
16	1	20/11/24	14:44	Not Specified	No Rain Or Snow	No	SK12X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK12
Road:	New Courtwick Lane	**Inspected Length:**	8.60 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	8.60 m	**Downstream Node:**	SK13
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:75



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK12: Perforated pipe	00:00:02		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
8.60	SKF	Finish node, soakaway, reference: SK13	00:00:35		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK12X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
16	Downstream	SK12X		



SK12.JPG, 00:00:02, 0.00 m
Start node, soakaway, reference: SK12, Perforated pipe



e62e387d-262d-4b1c-9b09-e5a91efe6b51.png, 00:00:02, 0.00 m
Water level, 0% of the vertical dimension



bc109923-da9b-485a-8540-e658094840a7.png, 00:00:35, 8.60 m
Finish node, soakaway, reference: SK13

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
17	1	20/11/24	14:46	Not Specified	No Rain Or Snow	No	SK13X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK13
Road:	New Courtwick Lane	**Inspected Length:**	7.10 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	7.10 m	**Downstream Node:**	SK14
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:62



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK13: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
7.10	SKF	Finish node, soakaway, reference: SK14	00:00:30		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Holmbush Lane, Woodmancote
[redacted]
[redacted]k

Section Pictures - 11/20/2024 - SK13X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
17	Downstream	SK13X		



SK13.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK13, Perforated pipe



29afa3d6-5747-491c-aa21-ea3319ff2dcc.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



ef3e0a6b-e90d-4c54-9cff-6c8b9e92817b.png, 00:00:30, 7.10 m
Finish node, soakaway, reference: SK14

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Holmbush Lane, Woodmancote
[redacted]

Section Inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
18	1	20/11/24	14:48	Not Specified	No Rain Or Snow	No	SK14X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK14
Road:	New Courtwick Lane	**Inspected Length:**		**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	0.00 m	**Downstream Node:**	SK15
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SK14						
	0.00	SK	Start node, soakaway, reference: SK14: Confined space entry required to survey	00:00:03		
SK15 Depth: m						

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK14X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
18	Downstream	SK14X		



d42c14ac-6582-4a2c-b24a-c141c6c4060e.png, 00:00:03, 0.00 m
Start node, soakaway, reference: SK14, Confined space entry



SK14.JPG, 00:00:03, 0.00 m
Start node, soakaway, reference: SK14, Confined space entry required to survey

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
19	1	20/11/24	14:51	Not Specified	No Rain Or Snow	No	SK15X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK15
Road:	New Courtwick Lane	**Inspected Length:**	5.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	5.20 m	**Downstream Node:**	SK16
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK15: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
4.00	JDL	Joint displaced, large	00:00:25		1 / 4
5.20	SKF	Finish node, soakaway, reference: SK16	00:00:32		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	2.0	0.4	2.0	1.0	1	5.0	1.0	5.0	4.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK15X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
19	Downstream	SK15X		



SK15.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK15, Perforated pipe



b1207031-6c05-4dd5-8faa-71d2a3c1102e.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



b3bd4633-b022-4b57-9dca-0df7a0a929be.png, 00:00:25, 4.00 m
Joint displacied, large



36ab7b50-17f9-4e6f-b9f2-6e31421855d8.png, 00:00:32, 5.20 m
Finish node, soakaway, reference: SK16

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
20	1	20/11/24	14:53	Not Specified	No Rain Or Snow	No	SK16X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK16
Road:	New Courtwick Lane	**Inspected Length:**	8.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	8.20 m	**Downstream Node:**	SK17
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:71



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK16: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
5.80	LL	Line deviates left	00:00:31		
7.50	JDM	Joint displaced, medium	00:00:36		1 / 3
8.20	SKF	Finish node, soakaway, reference: SK17: Unable to raise	00:00:47		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	1.0	0.1	1.0	1.0	1	2.0	0.2	2.0	3.0

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Section Pictures - 11/20/2024 - SK16X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
20	Downstream	SK16X		



SK16.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK16, Perforated pipe



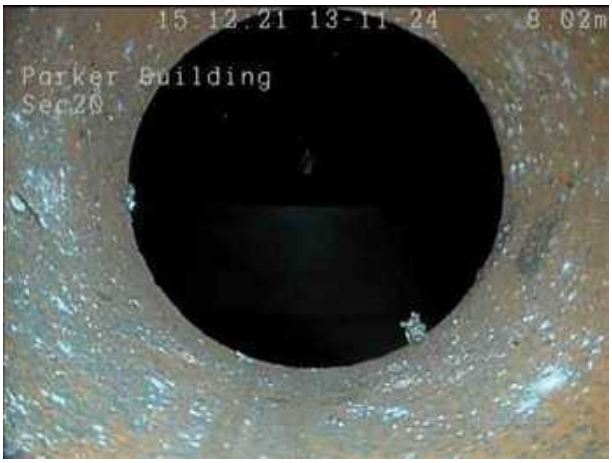
f554d387-f9b8-48cc-b5b7-f04119703a47.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



1aea331e-5166-45cf-ac81-f800eb0e4268.png, 00:00:31, 5.80 m
Line deviates left



6917ac07-8e38-4d91-8884-faaeb04eb957.png, 00:00:36, 7.50 m
Joint displaced, medium



a1b0586b-88cd-45ec-8d43-a634778eb4fc.png, 00:00:47, 8.20 m
Finish node, soakaway, reference: SK17, Unable to raise



SK17.JPG, 00:00:47, 8.20 m
Finish node, soakaway, reference: SK17, Unable to raise

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
21	1	20/11/24	15:01	Not Specified	No Rain Or Snow	No	SK19X

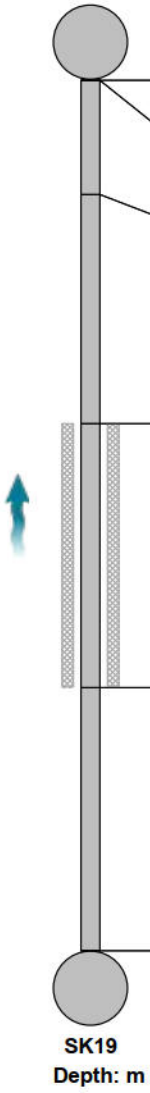
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	SK19
Road:	New Courtwick Lane	**Inspected Length:**	15.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	15.20 m	**Downstream Node:**	SK20
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:132



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		SK	Start node, soakaway, reference: SK20: Perforated pipe	00:00:01		
0.00		WL	Water level, 0% of the vertical dimension	00:00:01		
2.00		FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:00:27		3 / 2
6.00	S01	DES	Settled deposits, fine, 5% cross-sectional area loss, start	00:00:46		
10.60	F01	DES	Settled deposits, fine, 5% cross-sectional area loss, finish	00:01:07		3
15.20		SKF	Finish node, soakaway, reference: SK19: Unable to raise	00:01:36		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	40.0	2.6	40.0	3.0	2	2.0	0.7	11.0	3.0

Section Pictures - 11/20/2024 - SK19X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
21	Upstream	SK19X		



SK19.JPG, 00:00:01, 0.00 m
Start node, soakaway, reference: SK20, Perforated pipe



f61a7243-6a8b-4700-a095-27553604c076.jpg, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension



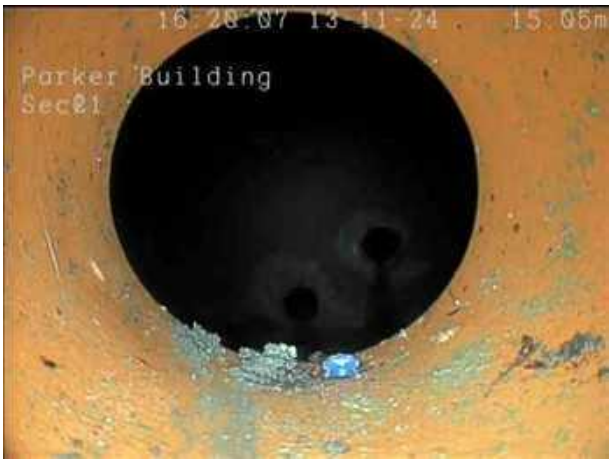
bfb7c936-4133-46d4-a8e7-0bf75e8d7391.png, 00:00:27, 2.00 m
Fracture, circumferential from 12 o'clock to 12 o'clock



65c96411-9d46-4dbc-a6fc-c49d2b50f761.png, 00:00:46, 6.00 m
Settled deposits, fine, 5% cross-sectional area loss, start



a0d2e84f-6e28-475a-b6fb-42b7369006b8.png, 00:01:07, 10.60 m
Settled deposits, fine, 5% cross-sectional area loss, finish



6dcd9521-80d6-4daa-83ad-cc362939ea2d.png, 00:01:36, 15.20 m
Finish node, soakaway, reference: SK19, Unable to raise

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
22	1	20/11/24	15:06	Not Specified	No Rain Or Snow	No	SK20X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK20
Road:	New Courtwick Lane	**Inspected Length:**	16.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	16.20 m	**Downstream Node:**	SK21
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:141



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK20: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
16.20	SKF	Finish node, soakaway, reference: SK21	00:01:43		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK20X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
22	Downstream	SK20X		



SK20.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK20, Perforated pipe



a9f41709-6c25-4643-9e14-1d458273a3f5.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



2bcffbee-abc3-405f-8bac-3b3e225d1d5b.png, 00:01:43, 16.20 m
Finish node, soakaway, reference: SK21

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
23	1	20/11/24	15:10	Not Specified	No Rain Or Snow	No	SK21X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK21
Road:	New Courtwick Lane	**Inspected Length:**	15.30 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	15.30 m	**Downstream Node:**	SK22
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:133



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		SK	Start node, soakaway, reference: SK21: Perforated pipe	00:00:01		
0.00	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start	00:00:03		
2.20	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	00:00:38		3
3.20		RM	Roots, mass, 5% cross-sectional area loss	00:00:46		3
10.30	S02	RM	Roots, mass, 10% cross-sectional area loss, start	00:01:39		
11.10	F02	RM	Roots, mass, 10% cross-sectional area loss, finish	00:01:44		3
15.30		SKF	Finish node, soakaway, reference: SK22	00:02:12		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	3	4.0	0.9	14.0	3.0

Section Pictures - 11/20/2024 - SK21X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	SK21X		



SK21.JPG, 00:00:01, 0.00 m
Start node, soakaway, reference: SK21, Perforated pipe



f83ec6d7-5421-4174-9cc5-5680154b2374.png, 00:00:03, 0.00 m
Settled deposits, fine, 10% cross-sectional area loss, start



8c8f2222-43c3-4fc5-85e3-98a05632b654.png, 00:00:38, 2.20 m
Settled deposits, fine, 10% cross-sectional area loss, finish



3ff87d4b-584f-4173-a263-d49f3a72e110.png, 00:00:46, 3.20 m
Roots, mass, 5% cross-sectional area loss



82b3877a-1d87-4bae-956f-5946fc72c0bf.png, 00:01:39, 10.30 m
Roots, mass, 10% cross-sectional area loss, start



fd815672-ae6d-45f7-ab3c-7cd871477924.png, 00:01:44, 11.10 m
Roots, mass, 10% cross-sectional area loss, finish

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK21X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
23	Downstream	SK21X		



5146259c-2427-48e9-adea-51b1efb80a64.png, 00:02:12, 15.30 m
Finish node, soakaway, reference: SK22

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
24	1	20/11/24	15:14	Not Specified	No Rain Or Snow	No	SK22X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK22
Road:	New Courtwick Lane	**Inspected Length:**	17.90 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	17.90 m	**Downstream Node:**	SK23
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:155



Position [m]		Code	Observation	MPEG	Photo	Grade
Depth: m						
SK22						
0.00		SK	Start node, soakaway, reference: SK22: Perforated pipe	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:00		
15.00	S01	RM	Roots, mass, 10% cross-sectional area loss, start	00:01:31		
16.40		JDM	Joint displaced, medium	00:01:53		1 / 3
17.90	F01	RM	Roots, mass, 10% cross-sectional area loss, finish	00:02:04		3
17.90		SKF	Finish node, soakaway, reference: SK23	00:02:04		
SK23						
Depth: m						

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	1.0	0.1	1.0	1.0	2	6.0	0.8	14.0	4.0

Section Pictures - 11/20/2024 - SK22X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
24	Downstream	SK22X		



SK22.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK22, Perforated pipe



7254fe22-0c27-43ba-8764-440a157a5837.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



0ed7cb77-b050-4f66-a637-b23fe7c42779.png, 00:01:31, 15.00 m
Roots, mass, 10% cross-sectional area loss, start



83cea2ca-5ef9-4cd5-b851-4c096bd9fa89.png, 00:01:53, 16.40 m
Joint displaced, medium



e655ae33-a65e-4cc0-82e3-a0000b2b0fbd.png, 00:02:04, 17.90 m
Finish node, soakaway, reference: SK23

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
25	1	20/11/24	15:18	Not Specified	No Rain Or Snow	No	SK23X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK23
Road:	New Courtwick Lane	**Inspected Length:**	16.00 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	16.00 m	**Downstream Node:**	SK24
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:139



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		SK	Start node, soakaway, reference: SK23: Perforated pipe	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:05		
0.00	S01	DES	Settled deposits, fine, 5% cross-sectional area loss, start	00:00:30		
0.30		FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:00:07		3 / 2
3.20		FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:00:34		3 / 2
5.40		JDM	Joint displaced, medium	00:00:46		1 / 3
11.60		FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:01:21		3 / 2
16.00	F01	DES	Settled deposits, fine, 5% cross-sectional area loss, finish	00:01:59		3
16.00		SKF	Finish node, soakaway, reference: SK24	00:01:59		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
4	40.0	7.6	121.0	3.0	5	4.0	2.3	37.0	3.0

Section Pictures - 11/20/2024 - SK23X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
25	Downstream	SK23X		



SK23.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK23, Perforated pipe



83b88761-a428-47fb-9191-16809629c9ca.png, 00:00:05, 0.00 m
Water level, 0% of the vertical dimension



4b0af10d-f7c8-49ed-9d3d-2b12aa0c8373.png, 00:00:07, 0.30 m
Fracture, circumferential from 12 o'clock to 12 o'clock



e14f0a20-fa99-4bb1-87fb-d130871b3ec0.jpg, 00:00:34, 3.20 m
Fracture, circumferential from 12 o'clock to 12 o'clock



891fbbdf-42c1-4285-8c4c-30632a31a2f8.png, 00:00:46, 5.40 m
Joint displaced, medium



73fa3fe5-7e3b-41f6-b051-f1f5f50034c0.png, 00:01:21, 11.60 m
Fracture, circumferential from 12 o'clock to 12 o'clock

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
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Section Pictures - 11/20/2024 - SK23X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
25	Downstream	SK23X		



49fd1a7d-905f-4b09-836c-f144dc83d2e1.png, 00:01:59, 16.00 m
Finish node, soakaway, reference: SK24

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Section Inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
26	1	20/11/24	15:23	Not Specified	No Rain Or Snow	No	SK24X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK24
Road:	New Courtwick Lane	**Inspected Length:**		**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	0.00 m	**Downstream Node:**	SK25
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

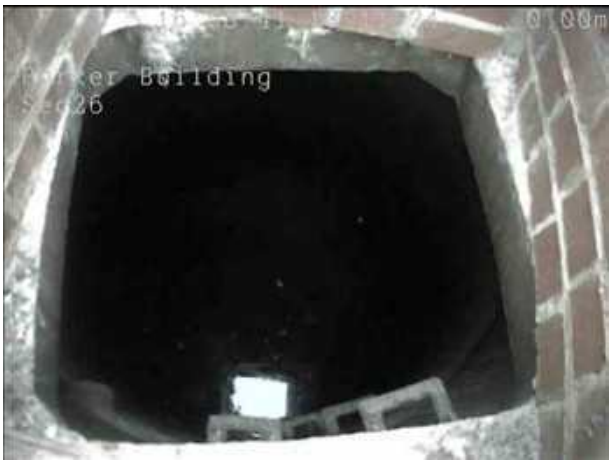
Scale: 1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SK24						
	0.00	SK	Start node, soakaway, reference: SK24: Confined entry required to survey	00:00:05		
SK25 Depth: m						

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK24X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
26	Downstream	SK24X		



461685d6-29f4-49e6-b4f2-dff3cec97402.png, 00:00:05, 0.00 m
Start node, soakaway, reference: SK24, Confined entry



SK24.JPG, 00:00:05, 0.00 m
Start node, soakaway, reference: SK24, Confined entry required to survey

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
27	1	20/11/24	15:24	Not Specified	No Rain Or Snow	No	RGX

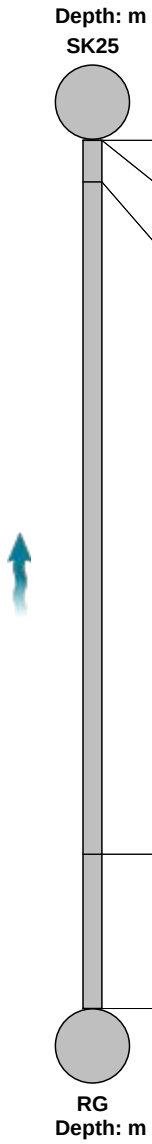
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	RG
Road:	New Courtwick Lane	**Inspected Length:**	6.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	6.20 m	**Downstream Node:**	SK25
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:54



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK25	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
0.30	RMJ	Roots, mass at joint, 15% cross-sectional area loss	00:00:16		3
5.10	LU	Line deviates up	00:00:46		
6.20	GYF	Finish node, gully, reference: RG	00:01:04		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	4.0	0.6	4.0	3.0

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - RGX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
27	Upstream	RGX		



670dca69-4fe7-474d-ab3a-c78006ac1599.jpg, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



92babdd6-bb5d-405f-ab9e-b479ec752532.png, 00:00:16, 0.30 m
Roots, mass at joint, 15% cross-sectional area loss



6c01f820-f762-4327-9850-d74bd92a1e46.png, 00:00:46, 5.10 m
Line deviates up



8f2b9f7a-1692-436d-968e-62759c333de2.png, 00:01:04, 6.20 m
Finish node, gully, reference: RG

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
28	1	20/11/24	15:32	Not Specified	No Rain Or Snow	No	SK25X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK25
Road:	New Courtwick Lane	**Inspected Length:**	12.00 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	12.00 m	**Downstream Node:**	SK26
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:104



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK25: Perforated pipe	00:01:15		
0.00	WL	Water level, 0% of the vertical dimension	00:01:15		
0.20	JDM	Joint displaced, medium	00:01:18		1 / 3
0.20	LR	Line deviates right	00:01:18		
2.50	JDM	Joint displaced, medium	00:00:53		1 / 3
5.30	JDM	Joint displaced, medium	00:00:44		1 / 3
10.90	XP	Collapsed drain or sewer, 50% cross-sectional area loss	00:00:13		5
12.00	SKF	Finish node, soakaway, reference: SK26	00:00:01		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
4	165.0	14.0	168.0	5.0	3	2.0	0.5	6.0	3.0

Section Pictures - 11/20/2024 - SK25X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
28	Downstream	SK25X		



SK25.JPG, 00:01:15, 0.00 m
Start node, soakaway, reference: SK25, Perforated pipe



a1a0c456-64c9-437f-8547-71f7f3c895b4.png, 00:01:15, 0.00 m
Water level, 0% of the vertical dimension



7b492768-8e3b-42e1-a0e3-f336a0b69e2e.png, 00:01:18, 0.20 m
Joint displaced, medium



7b814eaf-f046-4304-b418-1443873b46e4.png, 00:00:53, 2.50 m
Joint displaced, medium



4f87bd30-0bb3-41a4-ad79-a2894c02c7aa.png, 00:00:44, 5.30 m
Joint displaced, medium



d69f496f-dfee-495a-8f46-51dbdef88803.png, 00:00:13, 10.90 m
Collapsed drain or sewer, 50% cross-sectional area loss

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[redacted]
[redacted]

Section Pictures - 11/20/2024 - SK25X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
28	Downstream	SK25X		



1ee8da01-fc43-4e5a-8db8-612146d12770.png, 00:00:01, 12.00 m
Finish node, soakaway, reference: SK26

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
29	1	20/11/24	15:36	Not Specified	No Rain Or Snow	No	SK26X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK26
Road:	New Courtwick Lane	**Inspected Length:**	8.30 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	8.30 m	**Downstream Node:**	SK27
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:72



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK26: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
7.00	JDM	Joint displaced, medium	00:01:01		1 / 3
7.50	FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:00:56		3 / 2
8.30	SKF	Finish node, soakaway, reference: SK27	00:00:50		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	40.0	4.9	41.0	3.0	2	2.0	0.4	3.0	3.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK26X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
29	Downstream	SK26X		



SK26.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK26, Perforated pipe



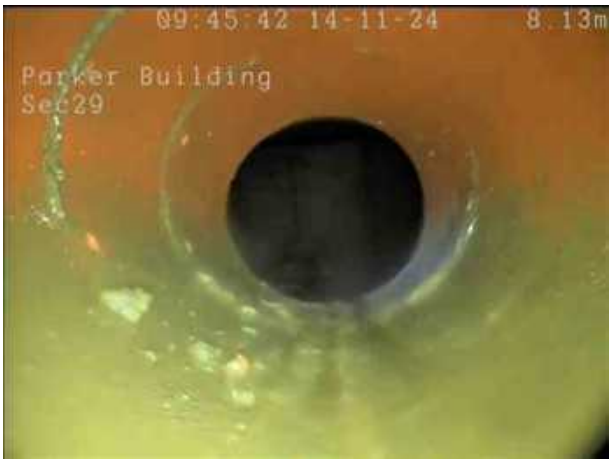
6aa5f3bd-4f6c-4f3d-87e4-100452651d39.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



48613c1c-31a4-4d8e-bba0-a785d94402e0.png, 00:01:01, 7.00 m
Joint displaced, medium



c1100ad4-1a4e-4630-9f6a-f7f787b1e06f.png, 00:00:56, 7.50 m
Fracture, circumferential from 12 o'clock to 12 o'clock



849e48b6-e866-404f-8461-011cf3b81e86.png, 00:00:50, 8.30 m
Finish node, soakaway, reference: SK27

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Holmbush Lane, Woodmancote
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Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
30	1	20/11/24	15:38	Not Specified	No Rain Or Snow	No	SK27X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK27
Road:	New Courtwick Lane	**Inspected Length:**	5.80 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	5.80 m	**Downstream Node:**	SK28
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:51



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		SK	Start node, soakaway, reference: SK27: Perforated pipe	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension	00:00:00		
0.00	S01	DER	Settled deposits, coarse, 10% cross-sectional area loss, start	00:00:00		
2.00	F01	DER	Settled deposits, coarse, 10% cross-sectional area loss, finish	00:00:15		3
5.80		SKF	Finish node, soakaway, reference: SK28	00:00:31		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	2.0	0.7	4.0	3.0

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Section Pictures - 11/20/2024 - SK27X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
30	Downstream	SK27X		



SK27.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK27, Perforated pipe



8a0694de-3337-41c0-b82c-dc05cd9f3885.png, 00:00:00, 0.00 m
Settled deposits, coarse, 10% cross-sectional area loss, start



cae6f4ee-7308-44f8-ad29-a0b373187c65.png, 00:00:15, 2.00 m
Settled deposits, coarse, 10% cross-sectional area loss, finish



33a1d000-e472-4fe3-8c5e-1c8c60240167.png, 00:00:31, 5.80 m
Finish node, soakaway, reference: SK28

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
31	1	20/11/24	15:40	Not Specified	No Rain Or Snow	No	SK28X

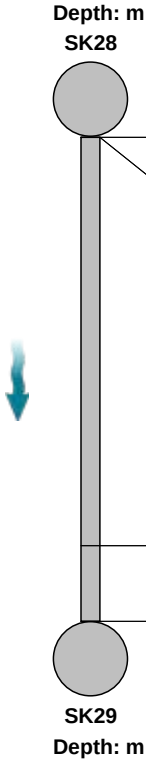
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK28
Road:	New Courtwick Lane	**Inspected Length:**	3.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	3.20 m	**Downstream Node:**	SK29
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK28: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
2.70	FC	Fracture, circumferential from 2 o'clock to 10 o'clock	00:00:17		3 / 2
3.20	SKF	Finish node, soakaway, reference: SK29	00:00:21		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	40.0	12.5	40.0	3.0	1	1.0	0.3	1.0	2.0

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Holmbush Lane, Woodmancote
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Section Pictures - 11/20/2024 - SK28X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
31	Downstream	SK28X		



SK28.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK28, Perforated pipe



d238bb62-f419-4dc7-9b1f-f6e77e853644.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



da26483c-c136-4eb0-8a27-ccf384e10080.png, 00:00:17, 2.70 m
Fracture, circumferential from 2 o'clock to 10 o'clock



4cbefe92-03df-4149-bb93-a6d71587b7e5.png, 00:00:21, 3.20 m
Finish node, soakaway, reference: SK29

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
32	1	20/11/24	15:43	Not Specified	No Rain Or Snow	No	SK29X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK29
Road:	New Courtwick Lane	**Inspected Length:**	6.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	6.20 m	**Downstream Node:**	SK30
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:54



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK29: Perforated pipe	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
6.20	SKF	Finish node, soakaway, reference: SK30	00:00:41		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Holmbush Lane, Woodmancote
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[redacted]

Section Pictures - 11/20/2024 - SK29X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
32	Downstream	SK29X		



SK29.JPG, 00:00:00, 0.00 m
Start node, soakaway, reference: SK29, Perforated pipe



f47e420b-1fbf-4677-b453-319ca3b541fe.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



9f8171ff-cda8-44d9-9fd9-550fa443e571.png, 00:00:41, 6.20 m
Finish node, soakaway, reference: SK30

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Holmbush Lane, Woodmancote
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Section Inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
33	1	20/11/24	16:02	Not Specified	No Rain Or Snow	No	SK30X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SK30
Road:	New Courtwick Lane	**Inspected Length:**		**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	0.00 m	**Downstream Node:**	SK31
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	150 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SK30						
	0.00	SK	Start node, soakaway, reference: SK30: Confined entry required to survey	00:00:02		
SK31 Depth: m						

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SK30X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
33	Downstream	SK30X		



ede20688-f54f-478c-be81-edb2ebaa141f.png, 00:00:02, 0.00 m
Start node, soakaway, reference: SK30, Confined entry



SK30.JPG, 00:00:02, 0.00 m
Start node, soakaway, reference: SK30, Confined entry required to survey

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Abandoned section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
34	1	20/11/24	16:05	Not Specified	No Rain Or Snow	No	RE1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	RE1
Road:	New Courtwick Lane	**Inspected Length:**	24.00 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	24.00 m	**Downstream Node:**	SW1
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	1980.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:208



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: SW1	00:00:01		
0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
5.10	JN	Junction at 2 o'clock, 150mm dia	00:00:24		
15.30	JN	Junction at 2 o'clock, 150mm dia	00:01:16		
22.60	JN	Junction at 3 o'clock, 150mm dia	00:01:42		
24.00	DEX	Settled deposits, other, 90% cross-sectional area loss: Leaves	00:01:54		5
24.00	SA	Survey abandoned: Unable to proceed.	00:01:54		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	10.0	0.4	10.0	5.0

Section Pictures - 11/20/2024 - RE1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
34	Upstream	RE1X		



5fffae84-7a43-4d82-b59d-e860679a5388.png, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension



fe1dab72-0c2a-4fc0-8dab-c833b104d4b7.png, 00:00:24, 5.10 m
Junction at 2 o'clock, 150mm dia



a9f90555-bd36-4fad-bda7-32f8d33cdbae.png, 00:01:16, 15.30 m
Junction at 2 o'clock, 150mm dia



431d973b-7bed-4add-b4ca-d8beb5e86595.png, 00:01:42, 22.60 m
Junction at 3 o'clock, 150mm dia



44750050-e2da-49a8-a056-b4bd7767f30f.png, 00:01:54, 24.00 m
Settled deposits, other, 90% cross-sectional area loss, Leaves

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
35	1	20/11/24	16:13	Not Specified	No Rain Or Snow	No	RE2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	RE2
Road:	New Courtwick Lane	**Inspected Length:**	21.60 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	21.60 m	**Downstream Node:**	SW1
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	1980.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:188



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW1	00:01:42		
0.00		WL	Water level, 0% of the vertical dimension	00:00:00		
2.20		JN	Junction at 10 o'clock, 150mm dia	00:00:18		
9.20		JN	Junction at 10 o'clock, 150mm dia	00:00:37		
17.60		JN	Junction at 10 o'clock, 150mm dia	00:00:57		
19.00	S01	DER	Settled deposits, coarse, 10% cross-sectional area loss, start	00:01:03		
19.20		SC	Pipe size changes, new size(s), 150mm high	00:01:03		
19.80		LU	Line deviates up	00:01:10		
19.80	F01	DER	Settled deposits, coarse, 10% cross-sectional area loss, finish	00:01:10		3
21.60		REF	Finish node, rodding eye, reference: RE2	00:01:37		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	2.0	0.1	2.0	3.0

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Holmbush Lane, Woodmancote
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Section Pictures - 11/20/2024 - RE2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
35	Upstream	RE2X		



ca418509-5204-4c18-a9e0-1272b34c7b3b.png, 00:00:00, 0.00 m
Water level, 0% of the vertical dimension



25a89e19-e6b3-4500-8873-8ea609ac43bc.png, 00:00:18, 2.20 m
Junction at 10 o'clock, 150mm dia



263e8a2f-6dc1-414a-afeb-6a98a38d6e22.png, 00:00:37, 9.20 m
Junction at 10 o'clock, 150mm dia



8dc2ff31-edd1-41b4-936d-d4d84b5fa8a9.png, 00:00:57, 17.60 m
Junction at 10 o'clock, 150mm dia



809760c4-61b3-4d8f-88cd-ce289111b4e5.png, 00:01:03, 19.20 m
Pipe size changes, new size(s), 150mm high



fe83d980-5a60-4062-9585-67284b62a8fb.png, 00:01:10, 19.80 m
Line deviates up

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - RE2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
35	Upstream	RE2X		



540ab761-26e5-4f26-a2ed-7aa140079447.png, 00:01:37, 21.60 m
Finish node, rodding eye, reference: RE2

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[redacted]
[redacted]*uk*

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
36	1	20/11/24	16:17	Not Specified	No Rain Or Snow	No	SW1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SW1
Road:	New Courtwick Lane	**Inspected Length:**	1.20 m	**Upstream Pipe Depth:**	1980.000 m
Location:	Footway	**Total Length:**	1.20 m	**Downstream Node:**	0/S
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW1	00:00:01		
0.00		WL	Water level, 0% of the vertical dimension	00:00:01		
0.50	S01	DES	Settled deposits, fine, 20% cross-sectional area loss, start	00:00:08		
1.20	F01	DES	Settled deposits, fine, 20% cross-sectional area loss, finish	00:00:22		4
1.20		OSF	Finish node, oil separator, reference: 0/S	00:00:22		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	5.0	4.2	5.0	4.0

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Section Pictures - 11/20/2024 - SW1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
36	Downstream	SW1X		



SW1.JPG, 00:00:01, 0.00 m
Start node, inspection chamber, reference: SW1



9ab07f88-a40f-4162-beff-e34734731286.png, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension



9e87aca4-fabf-4401-87bc-06c47323fa24.png, 00:00:08, 0.50 m
Settled deposits, fine, 20% cross-sectional area loss, start



bb6f0afa-ed79-448a-ba1c-d7af5202507b.png, 00:00:22, 1.20 m
Finish node, oil separator, reference: 0/S



OS (2).JPG, 00:00:22, 1.20 m
Finish node, oil separator, reference: 0/S

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Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
37	1	20/11/24	16:19	Not Specified	No Rain Or Snow	No	0/SX

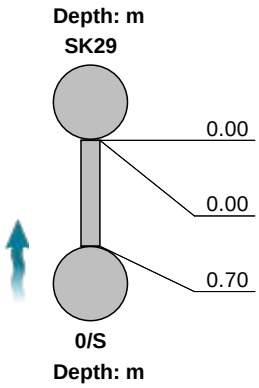
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	0/S
Road:	New Courtwick Lane	**Inspected Length:**	0.70 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	0.70 m	**Downstream Node:**	SK29
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	SK	Start node, soakaway, reference: SK29	00:00:08		
0.00	WL	Water level, 0% of the vertical dimension	00:00:08		
0.70	OSF	Finish node, oil separator, reference: 0/S	00:00:17		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 11/20/2024 - 0/SX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
37	Upstream	0/SX		



a4b7a8d3-767d-4cdb-b8c7-278695d999dd.png, 00:00:08, 0.00 m
Water level, 0% of the vertical dimension



ed5a5259-6fda-4ef4-bf1b-684dfd7efa62.png, 00:00:17, 0.70 m
Finish node, oil separator, reference: 0/S



OS.JPG, 00:00:17, 0.70 m
Finish node, oil separator, reference: 0/S

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Holmbush Lane, Woodmancote
[redacted]
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Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
38	1	20/11/24	16:22	Not Specified	No Rain Or Snow	No	SW2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	SW2
Road:	New Courtwick Lane	**Inspected Length:**	20.60 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	20.60 m	**Downstream Node:**	SW3
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	1450.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:179



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	IC	Start node, inspection chamber, reference: SW3	00:00:05		
0.00	WL	Water level, 0% of the vertical dimension	00:00:05		
20.60	ICF	Finish node, inspection chamber, reference: SW2: Unable to raise	00:01:08		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 11/20/2024 - SW2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
38	Upstream	SW2X		



47d80242-7105-423b-9b65-b855415df17a.png, 00:00:05, 0.00 m
Water level, 0% of the vertical dimension



37be1c38-1411-475b-924e-4ac160ca985b.png, 00:01:08, 20.60 m
Finish node, inspection chamber, reference: SW2, Unable to



SW2.JPG, 00:01:08, 20.60 m
Finish node, inspection chamber, reference: SW2, Unable to raise

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
39	1	20/11/24	16:27	Not Specified	No Rain Or Snow	No	SW3X

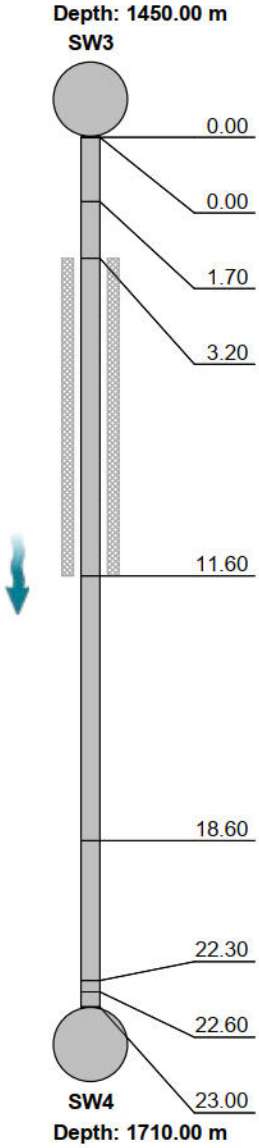
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SW3
Road:	New Courtwick Lane	**Inspected Length:**	23.00 m	**Upstream Pipe Depth:**	1450.000 m
Location:	Footway	**Total Length:**	23.00 m	**Downstream Node:**	SW4
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	1710.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:200



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW3	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension	00:00:00		
1.70		WL	Water level, 5% of the vertical dimension	00:00:33		
3.20	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start	00:03:52		
11.60	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	00:03:09		3
18.60		WL	Water level, 10% of the vertical dimension	00:02:33		
22.30		WL	Water level, 5% of the vertical dimension	00:02:07		
22.60		WL	Water level, 0% of the vertical dimension	00:02:07		
23.00		ICF	Finish node, inspection chamber, reference: SW4	00:01:55		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	2.0	0.8	18.0	3.0

Section Pictures - 11/20/2024 - SW3X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
39	Downstream	SW3X		



SW3.JPG, 00:00:00, 0.00 m
Start node, inspection chamber, reference: SW3



5ccfda83-8408-47e7-a068-65715d14267b.png, 00:00:00, 0.00 m
Water level, 10% of the vertical dimension



3a5f8e32-16b1-4b5c-b3d6-17ab0daf7007.png, 00:00:33, 1.70 m
Water level, 5% of the vertical dimension



7f8e58b7-792c-435e-acb5-06974d90e62a.png, 00:03:52, 3.20 m
Settled deposits, fine, 10% cross-sectional area loss, start



857012be-f8b7-462e-b72d-07ea5234a47b.png, 00:03:09, 11.60 m
Settled deposits, fine, 10% cross-sectional area loss, finish



e0ba923d-fe62-4f4f-9c1a-6a46701b6c71.png, 00:02:33, 18.60 m
Water level, 10% of the vertical dimension

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Holmbush Lane, Woodmancote
[redacted]

Section Pictures - 11/20/2024 - SW3X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
39	Downstream	SW3X		



580b4b39-58b6-4ca2-b8a1-1ef33fad79bb.png, 00:02:07, 22.30 m
Water level, 5% of the vertical dimension



113f2f3b-647b-4ff0-b09b-e494d665d97b.png, 00:01:55, 23.00 m
Finish node, inspection chamber, reference: SW4

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Abandoned section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
40	1	20/11/24	16:32	Not Specified	No Rain Or Snow	No	SW4X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SW4
Road:	New Courtwick Lane	**Inspected Length:**	21.90 m	**Upstream Pipe Depth:**	1710.000 m
Location:	Footway	**Total Length:**	21.90 m	**Downstream Node:**	SK35
Surface Type:	Block Paved	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:190



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW4	00:00:01		
0.00		WL	Water level, 0% of the vertical dimension	00:00:01		
2.10		FC	Fracture, circumferential from 2 o'clock to 9 o'clock	00:00:22		3 / 2
14.00	S01	DES	Settled deposits, fine, 10% cross-sectional area loss, start	00:01:22		
16.40	F01	DES	Settled deposits, fine, 10% cross-sectional area loss, finish	00:01:44		3
21.90		SA	Survey abandoned: Unable to push rod further	00:02:30		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	40.0	1.8	40.0	3.0	2	2.0	0.3	7.0	3.0

Section Pictures - 11/20/2024 - SW4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
40	Downstream	SW4X		



SW4.JPG, 00:00:01, 0.00 m
Start node, inspection chamber, reference: SW4



dd528cbf-328a-4843-b919-433c830ad100.png, 00:00:01, 0.00 m
Water level, 0% of the vertical dimension



bdea9d3e-0d33-4044-904c-79dc64d58044.png, 00:00:22, 2.10 m
Fracture, circumferential from 2 o'clock to 9 o'clock



9aceaf76-362e-4d67-ae6f-3401407a28bc.png, 00:01:22, 14.00 m
Settled deposits, fine, 10% cross-sectional area loss, start



9e67eb86-3714-4b59-b28a-068d71a605fd.png, 00:01:44, 16.40 m
Settled deposits, fine, 10% cross-sectional area loss, finish



b92b0fb9-e63e-4ebf-8d8e-562d1503784f.png, 00:02:30, 21.90 m
Survey abandoned, Unable to push rod further

AQUATECH DRAIN SERVICES

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Holmbush Lane, Woodmancote
[redacted]

Abandoned section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
41	1	20/11/24	16:37	Not Specified	No Rain Or Snow	No	SW5X

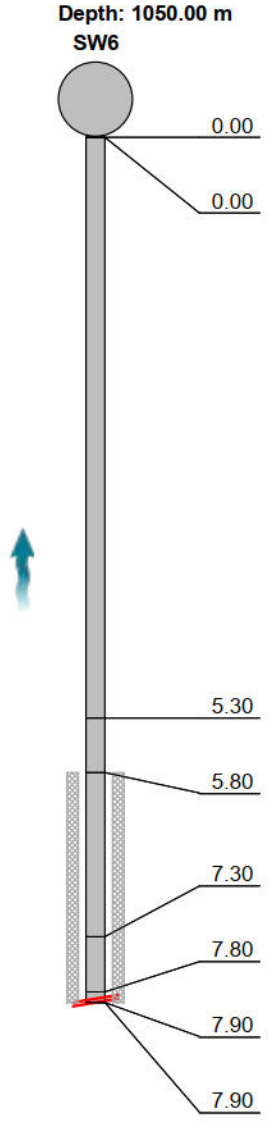
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	SW5
Road:	New Courtwick Lane	**Inspected Length:**	7.90 m	**Upstream Pipe Depth:**	760.000 m
Location:	Footway	**Total Length:**	7.90 m	**Downstream Node:**	SW6
Surface Type:	Paving Slabs	**Joint Length:**		**Downstream Pipe Depth:**	1050.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:69



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW6	00:00:04		
0.00		WL	Water level, 0% of the vertical dimension	00:00:04		
5.30		RMJ	Roots, mass at joint, 20% cross-sectional area loss	00:00:37		5
5.80	S01	RM	Roots, mass, 10% cross-sectional area loss, start	00:00:40		
7.30	C01	RM	Roots, mass, 30% cross-sectional area loss, change	00:00:53		
7.80	C01	RM	Roots, mass, 50% cross-sectional area loss, change	00:00:48		
7.90	F01	RM	Roots, mass, 50% cross-sectional area loss, finish	00:00:48		3
7.90		SA	Survey abandoned: Unable to proceed.	00:00:48		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	14.0	2.8	22.0	5.0

Section Pictures - 11/20/2024 - SW5X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
41	Upstream	SW5X		



500870fd-c838-4367-a9eb-cc52f2b318b6.png, 00:00:04, 0.00 m
Water level, 0% of the vertical dimension



aa7c023b-2d3d-4644-b80e-9269d3a44015.png, 00:00:37, 5.30 m
Roots, mass at joint, 20% cross-sectional area loss



356188df-ff96-42f4-ba8f-58c06a046212.png, 00:00:40, 5.80 m
Roots, mass, 10% cross-sectional area loss, start



2221a70a-3e96-4d7e-b1b2-e41bb7ceef7d.png, 00:00:53, 7.30 m
Roots, mass, 30% cross-sectional area loss, change



aacf961c-1b1f-4302-92c3-1afd8892e0ee.png, 00:00:48, 7.90 m
Roots, mass, 50% cross-sectional area loss, finish



SW5.JPG, 00:00:48, 7.90 m
Survey abandoned, Unable to proceed.

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Completed section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
42	1	20/11/24	16:42	Not Specified	No Rain Or Snow	No	SW7X

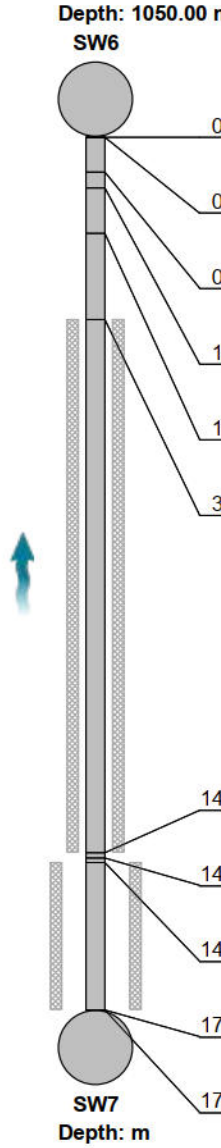
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Upstream	**Upstream Node:**	SW7
Road:	New Courtwick Lane	**Inspected Length:**	17.20 m	**Upstream Pipe Depth:**	
Location:	Footway	**Total Length:**	17.20 m	**Downstream Node:**	SW6
Surface Type:	Paving Slabs	**Joint Length:**		**Downstream Pipe Depth:**	1050.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:149



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW6	00:00:03		
0.00		WL	Water level, 0% of the vertical dimension	00:00:03		
0.70		WL	Water level, 5% of the vertical dimension	00:00:08		
1.00		WL	Water level, 10% of the vertical dimension	00:00:11		
1.90		WL	Water level, 15% of the vertical dimension	00:00:15		
3.60	S01	CUW	Loss of vision, camera under water, start	00:00:31		
14.10	F01	CUW	Loss of vision, camera under water, finish	00:01:30		
14.20		WL	Water level, 0% of the vertical dimension	00:01:30		
14.30	S02	DER	Settled deposits, coarse, 20% cross-sectional area loss, start	00:01:30		
17.20	F02	DER	Settled deposits, coarse, 20% cross-sectional area loss, finish	00:01:43		4
17.20		ICF	Finish node, inspection chamber, reference: SW7: Buried	00:01:43		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	1	5.0	0.9	15.0	4.0

Section Pictures - 11/20/2024 - SW7X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
42	Upstream	SW7X		



009aca62-fdc2-44d4-be76-f9c4b3e49da9.png, 00:00:03, 0.00 m
Water level, 0% of the vertical dimension



4c868512-70a5-43e9-b550-72b2d9902396.png, 00:00:08, 0.70 m
Water level, 5% of the vertical dimension



a16f89ad-a468-43a7-b263-1718e7f45c4f.png, 00:00:11, 1.00 m
Water level, 10% of the vertical dimension



a096bd98-6eca-4aa6-a173-cf730b9ad407.png, 00:00:15, 1.90 m
Water level, 15% of the vertical dimension



cf9ff427-d6cf-4909-86e8-ca8c9aceda0e.jpg, 00:00:31, 3.60 m
Loss of vision, camera under water, start



08bee1ad-681a-4c5f-999c-554894e9ca81.png, 00:01:30, 14.30 m
Settled deposits, coarse, 20% cross-sectional area loss, start

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
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Section Pictures - 11/20/2024 - SW7X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
42	Upstream	SW7X		



SW7.JPG, 00:01:43, 17.20 m
Finish node, inspection chamber, reference: SW7, Buried



31ee9c9e-602b-43f6-a2c9-2dcdf0e319b1.png, 00:01:43, 17.20 m
Finish node, inspection chamber, reference: SW7, Buried

Aquatech Drain Services Ltd
Holmbush Lane, Woodmancote
[redacted]

Abandoned section inspection

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
43	1	20/11/24	16:48	Not Specified	No Rain Or Snow	No	SW6X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
GG	Not Specified	Pearpoint P340	Not Specified	Private Drain	Not Specified

Town or Village:	Littlehampton	**Inspection Direction:**	Downstream	**Upstream Node:**	SW6
Road:	New Courtwick Lane	**Inspected Length:**	6.50 m	**Upstream Pipe Depth:**	1050.000 m
Location:	Footway	**Total Length:**	6.50 m	**Downstream Node:**	SK38
Surface Type:	Paving Slabs	**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	300 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:57



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		IC	Start node, inspection chamber, reference: SW6	00:00:03		
0.00		WL	Water level, 0% of the vertical dimension	00:00:03		
1.10		WL	Water level, 10% of the vertical dimension	00:00:11		
3.30		WL	Water level, 5% of the vertical dimension	00:00:22		
3.30	S01	DES	Settled deposits, fine, 15% cross-sectional area loss, start	00:00:22		
6.50		RM	Roots, mass, 60% cross-sectional area loss	00:00:36		5
6.50	F01	DES	Settled deposits, fine, 15% cross-sectional area loss, finish	00:00:36		3
6.50		SA	Survey abandoned: Unable to proceed	00:00:48		

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	2	17.0	3.5	23.0	5.0

Section Pictures - 11/20/2024 - SW6X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
43	Downstream	SW6X		



SW6.JPG, 00:00:03, 0.00 m
Start node, inspection chamber, reference: SW6



df6bd20b-84d9-44a5-a041-6f45843173f5.png, 00:00:03, 0.00 m
Water level, 0% of the vertical dimension



99706bf9-01a7-4073-88b5-c0de0c388a4c.png, 00:00:11, 1.10 m
Water level, 10% of the vertical dimension



051e00d7-8cdb-458b-8b8b-065122956f67.png, 00:00:22, 3.30 m
Settled deposits, fine, 15% cross-sectional area loss, start



5e520492-d202-47d8-955b-2f453bc632e4.png, 00:00:36, 6.50 m
Roots, mass, 60% cross-sectional area loss

Disclaimer

Although every effort has been made to produce a thorough and precise report, Aquatech Drain Services Ltd cannot be held liable for any
discrepancies or omissions. Furthermore Aquatech Drain Services Ltd cannot be held responsible for any actions taken based on the information supplied within this report.

APPENDIX G – MCA PROPOSED SITE PLAN DRAWINGS

File Location: /Users/danhutchinson/MCA Dropbox/MCA_PROJECTS_LIVE/2255_SUPERMARKET_AND_TRADE_COUNTER_WICK_LITTLEHAMPTON/2255_CAD-PLANNING/2255_P_PLN/2255_P_Wick, Littlehampton - Planning_V13.pln

Do not scale from this drawing for the purpose of construction. Work to indicated dimensions only. All dimensions to be confirmed on site. This drawing is to be read in conjunction with other drawings in this series and all relevant consultants drawings and documentation where applicable. This drawing has been produced for the specific client and project identified below and is not intended for use by any other person or for any other purpose other than indicated on this drawing. Please report any discrepancy on this drawing to Morgan Carn for clarification. © Morgan Carn Ltd.

N

0 10m 20m 25m

1:250 scale

Rev	Description	Issued By	Issue Date
C	Planning Amendments	MCA	15.07.25
D	Planning Amendments	MCA	22.07.25
E	Drainage Amendment	MCA	30.03.26

COURTWICK LANE

Site Boundary

Existing fence

Indicative acoustic fence line

Secure Staff Cycles Shelter (10 spaces)

Gate

Delivery / Service Yard

Service ramp no steeper than 1:18 gradient

External Plant

2.4m high plant encl. fencing

Plant Room

ALDI

1,912 m²

+4.535 AOD

OUTLINE OF EXISTING BUILDING

ESCAPE ONLY FOOTPATH

1.8m metal security fencing

Existing retaining wall

NORTH-SOUTH ECOLOGICAL CORRIDOR

High level canopy

Lobby

Visitor Cycles 8 Spaces

Trolley Bay

Entrance

Gate

10.7m

6No. DDA Parking Spaces

12No. P&C Parking Spaces

EV EV

Pedestrian Entrance

Potential Future EV Spaces

0.6m timber post & rail fence

Crossing

ENTRANCE AVENUE

+4.30 AOD

+4.90 AOD

+5.20 AOD

+4.45 AOD

+5.30 AOD

+6.00 AOD

Substation

Visitor Cycles 6 Spaces

Secure Staff Cycles 4 Spaces

Service Area

Costa DRIVE-THRU 167 m² +4.70 AOD

Entrance

3.3m wide footpath

8.7m

OUTLINE OF EXISTING BUILDING

Car Parking (50 Spaces)

Car Parking (118 Spaces)

Foodstore Vehicular Entrance

Potential Aldi Totem Location (dashed)

Potential Future EV Spaces

Pedestrian Entrance

4No. Fast EVC Spaces

Totem

Indicative totem

Site Boundary

McDonald's NG50 FF DRIVE-THRU 288 m² +4.70 AOD

Patio

Entrance

9.8m

Secure Staff Cycles 4 Spaces

Corral

Visitor Cycles 12 Spaces

DRIVE THRU

Height Restrictor

ORDER HERE

Retaining Wall

Grass bank

Existing kerblines dashed

Visibility Splay 2.4mx42m

Visibility Splay 2.4mx43m

39.5m

24.5m

27.5m

9.8m

Millfield Court

1 to 6

Millfield Court

Existing retaining wall

Poplar (Lombardy)

T72 -B1

G38 -U

T71 -B1

G37 -B2

T68 -B1

T70 -B1

T69 -B1

T67 -B1

T66 -A1

T6 -B1

G9 -B2

G8 -B2

T5 -B1

G7 -B2

H1 -B2

H4 -B2

H3 -B2

T32 -B1

Willow (Goat)

T33 -B1

T55 -B1

T56 -C1

T57 -B1

G32 -B2

G34 -B2

T59 -B1

T58 -C1

G33 -B2

G35 -C1

T60 -B1

G36 -C2

T61 -C1

NEW COURTWICK LANE

NEW STREET TREES

Retaining Wall

+4.15 AOD

+4.50 AOD

+5.25 AOD

+6.40 AOD

+4.05 AOD

+3.80 AOD

+3.40 AOD

+3.70 AOD

+4.00 AOD

16.4m

SCHEDULE:

EAST SITE (1.53 Ha) PHASE 1

2,367 m² GIA
(25,478ft² GIA)

2,512 m² GEA
(27,039 ft² GEA)

FOODSTORE = 1,912 m² GIA (20,580 ft²)
DRIVE-THRU = 455 m² GIA (4,898 ft²)

Blakers House
79 Stanford Avenue
Brighton BN1 6FA
01273 55 77 77
mca@morgancarn.com
www.morgancarn.com

MORGAN CARN ARCHITECTS

Client: NCL Estates Ltd

Project: LAND WEST OF NEW COURTWICK LANE, WICK, LITTLEHAMPTON

Drawing Title: PROPOSED SITE PLAN_PHASE 1

Drawing Scale(s): 1:250 @ A1

Status: PLANNING

Drawing Number: PROJECT - STAGE - DRAWING - REVISION

2255-P-010E

File Location: /Users/danhutchinson/MCA Dropbox/MCA_PROJECTS_LIVE/2255_SUPERMARKET_AND_TRADE_COUNTER_WICK_LITTLEHAMPTDN/2255_CAD-PLANNING/2255_P_PLN/2255_P_WICK_Littlehampton - Planning_V13.pln

Do not scale from this drawing for the purpose of construction. Work to indicated dimensions only. All dimensions to be confirmed on site. This drawing is to be read in conjunction with other drawings in this series and all relevant consultants drawings and documentation where applicable. This drawing has been produced for the specific client and project identified below and is not intended for use by any other person or for any other purpose other than indicated on this drawing. Please report any discrepancy on this drawing to Morgan Carn for clarification. © Morgan Carn Ltd.

N

0 10m 30m 50m

1:500 scale

Rev	Description	Issued By	Issue Date
C	Planning Amendments	MCA	15.07.25
D	Planning Amendments	MCA	22.07.25
E	Drainage Amendment	MCA	30.03.26

COURTWICK LANE

WILLIAM DYER GROVE

Play Area

RETAINED & ENHANCED WOODLAND

ENHANCED LANDSCAPE BUFFER

FORMER VEHICULAR ACCESS

LIGHT INDUSTRIAL / STORAGE UNITS

648 m²

971 m²

417 m²

417 m²

418 m²

418 m²

391 m²

390 m²

391 m²

434 m²

37 Parking Spaces

64 Parking Spaces

53 Parking Spaces

18 Parking Spaces

VEHICLE / CYCLE PARKING & SERVICING INDICATIVE

Substation

15m OFFSET FROM BOUNDARY

PLANTING TO CREATE VISUAL BUFFER & NORTH-SOUTH ECOLOGICAL CORRIDOR

ERNEST FITCHES WAY

TRADE COUNTER UNITS

193 m²

192 m²

205 m²

206 m²

202 m²

203 m²

MAIN SERVICE ROAD

HENRY LOCK WAY

A259

INDICATIVE MASTERPLAN LAYOUT

Delivery / Service Yard

ALDI
1,912 m²
+4.535 AOD

Car Parking
(118 Spaces)

Foodstore Vehicular Entrance

Entrance

Pedestrian Entrance

Millfield Court

NEW COURTWICK LANE

ENTRANCE AVENUE

Costa
DRIVE-THRU
167 m²
+4.70 AOD

Car Parking
(50 Spaces)

McDonald's
NC50 FF
DRIVE-THRU
288 m²
+4.70 AOD

Corral

Totem

Indicative totem

Substation

OUTLINE OF EXISTING BUILDING

NORTH-SOUTH ECOLOGICAL CORRIDOR

RETAINED & ENHANCED WOODLAND

ENHANCED LANDSCAPE BUFFER

FINCHES CLOSE

SCHEDULE:

WEST SITE (3.17 Ha) **INDICATIVE PHASE 2**
8,717 m² GIA
(93,829 ft² GIA)

TRADE COUNTER = 3,173.1 m² GIA (34,155 ft²)
LIGHT INDUSTRIAL = 1,606 m² GIA (17,287 ft²)
LIGHT IND / STORAGE = 3,937.9 m² GIA (42,387 ft²)

9,312 m² GEA
100,233.5 ft² GEA

EAST SITE (1.53 Ha) PHASE 1
2,367m² GIA
25,478ft² GIA

FOODSTORE = 1,912 m² GIA (20,580 ft²)
DRIVE-THRU = 455 m² GIA (4,898 ft²)

2,512 m² GEA
27,039 ft² GEA

Blakers House
79 Stanford Avenue
Brighton BN1 6FA
01273 55 77 77
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www.morgancarn.com

MORGAN CARN ARCHITECTS

Client: NCL Estates Ltd

Project: LAND WEST OF NEW COURTWICK LANE, WICK, LITTLEHAMPTON

Drawing Title: PROPOSED SITE PLAN_PHASE 2

Drawing Scale(s): 1:500 @ A1

Status: PLANNING

Drawing Number: PROJECT - STAGE - DRAWING - REVISION
2255-P-011E

APPENDIX H – SOUTHERN WATER SEWER RECORDS



(c) Crown copyright and database rights 2023 Ordnance Survey 100031673 | Date: 27/02/23 | Scale: 1:1250 | Map Centre: 502112,103597 | Data updated: 06/01/23 | Our Ref: 1095796 - 1 | Wastewater Plan A2

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2023 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

Foul Gravity Sewer | Combined Gravity Sewer | Culverted Water Course or Treated Effluent | Surface Water Gravity Sewer | Rising Main, Vacuum or Syphon

Combined Outfall | Foul Outfall | Surface Water Outfall | Surface Water Inlet

Combined Pumping Station | Surface Water Pumping Station | Foul Pumping Station | Water Treatment Works | Section 104 Area | Building Over Agreement Area

Foul Manhole | Combined Manhole | Surface Water Manhole | Side Entry Manhole, Decarcation Chamber, Dummy Manhole or Surface Water Soakaway

tadair@ardent-ce.co.uk
Littlehampton Wick

WATER for LIFE from Southern Water

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0701	F	4.97	3.01	
1303	F	0.00	0.00	
1304	F	0.00	0.00	
1305	F	0.00	0.00	
1701	F	3.97	2.18	
1702	F	3.57	1.77	
1703	F	3.15	1.07	
1704	F	2.92	1.51	
1705	F	3.09	1.30	
1801	F	0.00	0.90	
1802	F	3.15	0.84	
2302	F	0.00	0.00	
2600	F	2.68	0.01	
2700	F	2.55	-0.48	
2701	F	2.56	-0.59	
2702	F	3.17	1.75	
2703	F	0.00	0.00	
2704	F	0.00	0.00	
2800	F	0.00	0.00	
2801	F	2.48	0.56	
3303	F	4.82	3.92	
3601	F	2.75	0.94	
3602	F	2.68	0.67	
3603	F	2.36	-0.16	
3701	F	2.53	-0.21	
3702	F	2.65	-0.71	
3703	F	2.48	0.45	
3704	F	2.47	-1.39	
3705	F	2.48	-0.98	
3706	F	2.60	-0.87	
3707	F	2.56	-1.52	
3708	F	2.65	-0.78	
3709	F	2.53	-0.65	
3710	F	1.88	-1.89	
3711	F	1.81	-1.29	
3712	F	0.00	0.00	
3713	F	0.00	0.00	
3801	F	1.86	-0.32	
4309	F	0.00	0.00	
4703	F	2.15	0.00	
4705	F	2.53	-0.87	
4706	F	0.00	0.00	
4707	F	0.00	0.00	
4708	F	0.00	0.00	
4709	F	0.00	0.00	
4803	F	2.00	-0.63	
4805	F	0.00	0.00	
4806	F	0.00	0.00	
4807	F	0.00	0.00	
7405	F	8.31	6.97	
7420	F	8.08	6.23	
7424	F	8.48	7.04	
7501	F	7.64	6.07	
7507	F	7.84	6.34	
7508	F	7.99	6.46	
7603	F	8.77	3.55	
7604	F	8.70	5.53	
7605	F	8.27	5.71	
7606	F	7.95	5.90	
8302	F	8.28	5.19	
8401	F	8.31	7.26	
8408	F	8.11	5.99	
8409	F	8.05	6.36	
8411	F	7.93	6.59	
8501	F	8.26	6.30	
8502	F	8.16	6.65	
8503	F	8.34	6.92	
8601	F	8.14	3.92	
8602	F	8.13	4.09	
8603	F	8.33	4.19	
8604	F	8.01	4.47	
8605	F	8.04	4.68	
8606	F	7.97	4.48	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
8607	F	8.23	4.87	
8608	F	8.13	4.83	
9501	F	7.55	5.97	
9502	F	7.87	5.57	
9503	F	7.98	5.35	
9506	F	7.70	5.72	
9601	F	7.30	4.82	
9602	F	7.25	4.90	
9603	F	7.30	4.69	
9604	F	8.01	5.30	
9605	F	8.13	5.06	
9606	F	8.15	6.67	
1751	S	3.14	1.92	
2750	S	0.00	1.30	
2751	S	2.55	1.51	
2752	S	2.46	1.58	
2850	S	2.49	1.56	
3650	S	2.77	1.56	
3651	S	2.57	1.45	
3750	S	2.52	1.35	
3751	S	2.65	1.20	
3752	S	2.58	1.07	
3753	S	2.46	1.03	
3754	S	2.61	0.98	
3755	S	2.46	0.94	
3756	S	2.71	1.02	
3757	S	2.46	0.98	
3758	S	2.58	1.39	
3759	S	2.73	0.00	
3760	S	2.47	0.91	
3761	S	2.73	0.97	
3762	S	2.41	0.94	
3763	S	2.47	0.72	
3850	S	2.57	0.94	
3851	S	2.43	0.91	
3852	S	2.58	0.96	
3853	S	2.48	0.92	
4650	S	2.90	1.21	
4651	S	0.00	0.00	
4652	S	1.94	1.25	
4752	S	2.19	0.79	
4753	S	2.38	1.49	
4851	S	1.92	0.88	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

APPENDIX I – PROPOSED DRAINAGE LAYOUTS - INFILTRATION



PHASE 1 DRAINAGE LAYOUT
(1:250)

INDICATIVE ONLY

1:250
0 2.5m 5m 7.5m 10m 12.5m

© Copyright

1:20 0 0.2m 0.4m 0.6m 0.8m 1m
1:50 0 0.5m 1m 1.5m 2m 2.5m
1:100 0 1m 2m 3m 4m 5m

Project/Task No. 16785/02 Scale: AS SHOWN ORIGINAL DRAWING SIZE A0

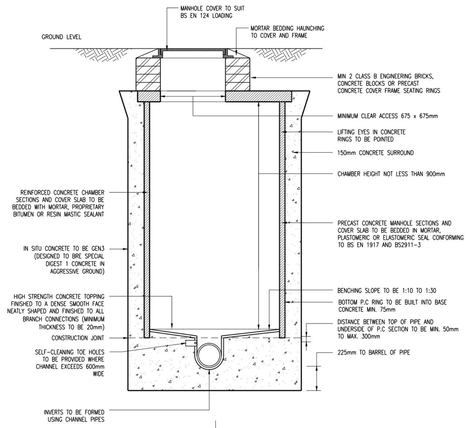
1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.



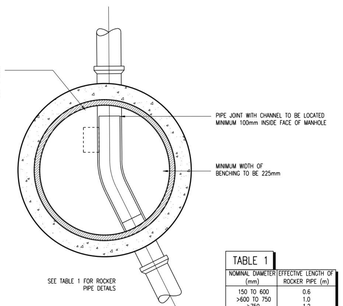
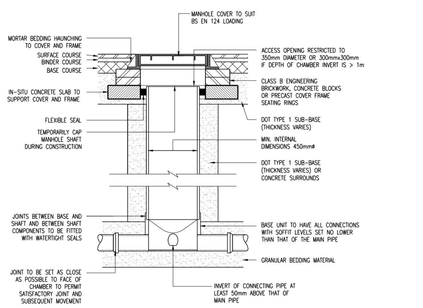
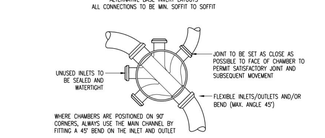


TABLE 1

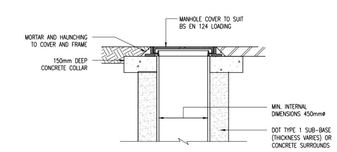
NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH OF ROCKER PIPE (m)
150 TO 600	0.6
>600 TO 750	1.0
>750	1.2

TYPE 2 MANHOLE
(DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE LESS THAN 3.0m)
(1:20)

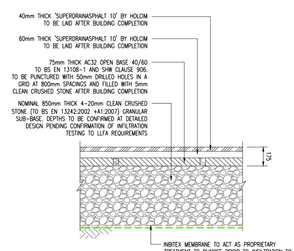




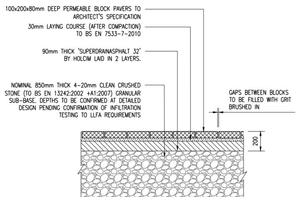
TYPE 3 ACCESS CHAMBER – FLEXIBLE MATERIAL
(SUBJECT TO VEHICLE LOADING, MAX. DEPTH 3m, NON-ENTRY)
(1:20)



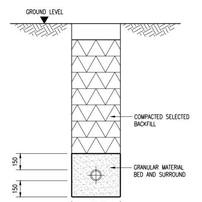
TYPE 3 ACCESS CHAMBER – FLEXIBLE MATERIAL
(SUBJECT TO LIGHT TRAFFIC LOADS,



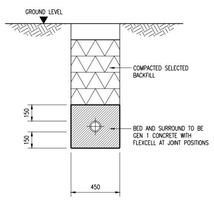
TRAFFICKED ASPHALT CONCRETE OVER DRAINAGE BLANKET
PERMEABLE ALLOWING FOR CONSTRUCTION TRAFFIC
(1:20)



TRAFFICKED BLOCK PAVING OVER DRAINAGE BLANKET
PERMEABLE
(1:20)



GRANULAR BEDDING DETAIL
(WHERE COVER >600mm)
(1:20)



CONCRETE BEDDING DETAIL
(WHERE COVER <600mm)
(1:20)

NOTE
ALL BACKFILLING AND REINSTATEMENT WITHIN ROADS AND STREETS TO BE IN ACCORDANCE WITH THE HIGHWAY AUTHORITY AND HAUC SPECIFICATION

ALDI SITE LEVELS RAISED	MB	AK	16.06.26	P2
PLANNING CONSULTATION RESPONSE	AK	AK	28.07.25	P1
Description	By	Apvd.	Date	Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: DRAINAGE STRATEGY PHASE 1

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD

HOP
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
HOP House, 41 Church Road
Hove, East Sussex BN3 2BE
www.hop.uk.com
ask@hop.uk.com
+44 (0)1273 223900

Drawing No. 16785-HOP-ZZ-XX-DR-C-0905 Status: S2 Rev.: P2

COVER LEVELS SHOWN INDICATIVELY BASED ON EXISTING SITE TOPOGRAPHY. SUBJECT TO DETAILED DESIGN.

COURTWICK LANE

WILLIAM DYER GROVE

ERNEST FITCHES WAY

HENRY LOCK WAY

ADJOINING PROPERTIES

Play

EXISTING PUBLIC FW MH SOUTHERN WATER REF: 9602 CL 7.25 IL 4.90 CONNECTION FOR FOUL WATER FROM PART OF PHASE 2 OF DEVELOPMENT. SUBJECT TO S106 APPROVAL FROM SOUTHERN WATER.

RETAINED & ENHANCED WOODLAND

ENHANCED LANDSCAPE BUFFER

FORMER VEHICULAR ACCESS

Drain

ESCAPE ONLY FOOTPATH

Footpath

Site Boundary

PHASE 2

PHASE 1

LIGHT INDUSTRIAL / STORAGE UNIT

971 m²

417 m²

418 m²

648 m²

193 m²

391 m²

192 m²

205 m²

206 m²

LOADING BAYS

37 Parking Spaces

64 Parking Spaces

53 Parking Spaces

18 Parking Spaces

VEHICLE / CYCLE PARKING & SERVICING INDICATIVE

15m OFFSET FROM BOUNDARY

PLANTING TO CREATE VISUAL BUFFER & NORTH-SOUTH ECOLOGICAL CORRIDOR

NORTH-SOUTH ECOLOGICAL CORRIDOR

DB01 – DRAINAGE BLANKET 01
CL 5.50
IL 4.50
EFFECTIVE AREA = 1,750m²
EFFECTIVE DEPTH = 1.0m
POROSITY = 0.3
CONTRIBUTING AREA = 3,880m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100 RAINFALL +45% CC = 0.676m

DB02 – DRAINAGE BLANKET 02
CL 5.50
IL 4.50
EFFECTIVE AREA = 1,320m²
EFFECTIVE DEPTH = 1.0m
POROSITY = 0.3
CONTRIBUTING AREA = 3,730m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6.00 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100
RAINFALL +45% CC = 0.903m

DB03 – DRAINAGE BLANKET 03
CL 5.50
IL 4.50
EFFECTIVE AREA = 900m²
EFFECTIVE DEPTH = 1.0m
POROSITY = 0.3
CONTRIBUTING AREA = 2,540m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6.00 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100 RAINFALL
+45% CC = 0.850m

DB04 – DRAINAGE BLANKET 04
CL 5.50
IL 4.50
EFFECTIVE AREA = 900m²
EFFECTIVE DEPTH = 1.0m
POROSITY = 0.3
CONTRIBUTING AREA = 2,500m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6.00 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100
RAINFALL +45% CC = 0.874m

DB05 – DRAINAGE BLANKET 05
CL 5.50
IL 4.50
EFFECTIVE AREA = 875m²
EFFECTIVE DEPTH = 1.0m
POROSITY = 0.3
CONTRIBUTING AREA = 2,510m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6.00 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100
RAINFALL +45% CC = 0.912m

DB06 – DRAINAGE BLANKET 06
CL 5.50
IL 4.00
EFFECTIVE AREA = 680m²
EFFECTIVE DEPTH = 1.50m
POROSITY = 0.3
CONTRIBUTING AREA = 2,690m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6.00 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100
RAINFALL +45% CC = 1.417m

DB07 – DRAINAGE BLANKET 06
CL 5.50
IL 4.50
EFFECTIVE AREA = 340m²
EFFECTIVE DEPTH = 1.0m
POROSITY = 0.3
CONTRIBUTING AREA = 1,030m²
Cv = 1.0
IGNORE TIME OF CONCENTRATION
(BRE GUIDANCE FOR F.O.S.)
BASE INFILTRATION = 6.00 x 10⁻⁶ m/s
MAXIMUM DEPTH FOR 1 IN 100
RAINFALL +45% CC = 0.937m

MAIN SERVICE ROAD

Road slopes at 1:36
1000mm rise over 35m

Proposed retaining wall

Existing retaining wall

Substation

RETAINED & ENHANCED WOODLAND

PHASE 2 DRAINAGE LAYOUT
(1:250)

SW MH F
INSPECTION MH FOR DISTRIBUTION PIPE
CL 4.433
IL 3.283
PC RING 1200ø

SW PUMP
TO DRAIN BASE SPECIALIST SUPPLIER TO SURFACE

SW24
PROVIDES STORAGE FOR RAMP RUNOFF
CL 4.70
IL 3.50
PC RING 1800ø
150mm ø ORIFICE PLATE FITTED TO OUTLET

MONO-PITCHED ROOF WITH RWP TO REAR ELEVATION. RWPs SHOWN INDICATIVE ONLY TO BE CONFIRMED BY ARCHITECT/M&E

Costa
DRIVE-THRU
167.10 m²
+4.70 AOD

FFL 4.70

FFL 4.5

OUTLINE OF EXISTING BUILDING

Visitor Cycles 8 Sheffield

Entrance from Courtwick Lane

HENRY LOCK WAY

LEGEND

- PROPOSED SURFACE WATER DRAIN
- PROPOSED FOUL WATER DRAIN
- PROPOSED DISTRIBUTION PIPE LAID AT BASE OF DRAINAGE BLANKET
- EXISTING SURFACE WATER SEWER
- EXISTING FOUL WATER SEWER
- PROPOSED CONCRETE MANHOLE
- PROPOSED PLASTIC INSPECTION CHAMBER (PPIC)
- PRIVATE HIGHWAY GULLY
- SOIL AND VENT PIPE (SVP)
- RAIN WATER PIPE (RWP)
- RWP & SVP LOCATIONS TO BE CONFIRMED, SHOWN INDICATIVELY BASED ON ARCHITECTS PLANS
- EXTENT OF PERMEABLE SUB-BASE/ DRAINAGE BLANKET INFILTRATION LAYER 2-40mm CLEAN CRUSHED STONE WITH MINIMUM 30% VOIDS.
- EXTENT OF PERMEABLE SUB-BASE/ DRAINAGE BLANKET ATTENUATION LAYER 2-40mm CLEAN CRUSHED STONE WITH MINIMUM 30% VOIDS.
- TP103S

INDICATIVE ONLY

1:250
0 2.5m 5m 7.5m 10m 12.5m

Project/Task No. 16785/02 Scale: AS SHOWN ORIGINAL DRAWING SIZE A0

1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.

ALDI SITE LEVELS RAISED	MB	AK	16.06.26	P2
PLANNING CONSULTATION RESPONSE	AK	AK	28.07.25	P1
Description	By	Apvd.	Date	Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: DRAINAGE STRATEGY PHASE 2

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD

HOP
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
HOP House, 41 Church Road Hove, East Sussex BN3 2BE
www.hop.uk.com
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Drawing No. 16785-HOP-ZZ-XX-DR-C-0906 Status S2 Rev. P2

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APPENDIX J – RUNOFF CATCHMENT PLAN

Project/Task No. 16785/2 Scale: AS SHOWN ORIGINAL DRAWING SIZE A0

1. GENERAL
(1) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.
(2) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.
(3) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.
(4) The contractor is responsible for all temporary works and for the stability of the works in progress.

COURTWICK LANE

Play Area

WILLIAM DYER GROVE

ERNEST FITCHES WAY

HENRY LOCK WAY

RETAINED & ENHANCED WOODLAND

ENHANCED LANDSCAPE BUFFER

FORMER VEHICULAR ACCESS

PLANTING TO CREATE VISUAL BUFFER & NORTH-SOUTH ECOLOGICAL CORRIDOR

15m OFFSET FROM BOUNDARY

ESCAPE ONLY FOOTPATH

Footpath

Site Boundary

Substation

LIGHT INDUSTRIAL / STORAGE UNITS

LIGHT INDUSTRIAL / STORAGE UNIT

LIGHT INDUSTRIAL UNITS

TRADE COUNTER UNITS

MAIN SERVICE ROAD

NORTH-SOUTH ECOLOGICAL CORRIDOR

OUTLINE OF EXISTING BUILDING

Proposed retaining wall

Existing retaining wall

1.8m metal security fencing

Costa

Aldi

Yellow Cycles 9 Spaces

6No. DDA Parking

12No. P&C Parking

0.6m timber post & rail fence

648 m²	648 m²	
971 m²	417 m²	418 m²
391 m²	390 m²	391 m²
193 m²	192 m²	192 m²	192 m²	193 m²
205 m²	205 m²	205 m²	205 m²	206 m²
434 m²	193 m²	192 m²	193 m²	202 m²	203 m²

DB01 CATCHMENT	0.388ha	37 Parking Spaces
DB02 CATCHMENT	0.373ha	64 Parking Spaces
DB03 CATCHMENT	0.254ha	
DB04 CATCHMENT	0.250ha	53 Parking Spaces
DB05 CATCHMENT	0.251ha	
DB06 CATCHMENT	0.269ha	18 Parking Spaces
DB07 CATCHMENT	0.103ha	
SW01 CATCHMENT	0.039ha	+4.20 AOD
SW02 CATCHMENT	0.057ha	
SW03 CATCHMENT	0.038ha	
SW04 CATCHMENT	0.018ha	
SW08 CATCHMENT	0.056ha	
SW09 CATCHMENT	0.033ha	
SW11 CATCHMENT	0.019ha	+4.70 AOD
SW12 CATCHMENT	0.009ha	
SW18 CATCHMENT	0.027ha	
SW19 CATCHMENT	0.008ha	
SW24 CATCHMENT	0.033ha	

LEGEND

- DB01 CATCHMENT
- DB02 CATCHMENT
- DB03 CATCHMENT
- DB04 CATCHMENT
- DB05 CATCHMENT
- DB06 CATCHMENT
- DB07 CATCHMENT

TOTAL CATCHMENT AREA = 1.887ha

INDICATIVE ONLY

1:250
0 2.5m 5m 7.5m 10m 12.5m

ISSUED WITH REPORT WB JK 16.06.26 P1
Description By Apvd. Date Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: PHASE 2 CATCHMENT AREAS

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD.

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CONSULTING CIVIL AND STRUCTURAL ENGINEERS
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Drawing No. 16785-HOP-ZZ-XX-DR-C-0931 Status S2 Rev. P1

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Project/Task No. 16785/2 Scale: AS SHOWN ORIGINAL DRAWING SIZE A1

1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.

SW04 CATCHMENT 0.018ha
SW03 CATCHMENT 0.038ha
SW02 CATCHMENT 0.057ha
SW01 CATCHMENT 0.039ha
SW08 CATCHMENT 0.056ha
SW09 CATCHMENT 0.033ha
ALDI BLANKET CATCHMENT 0.414ha
SW24 CATCHMENT 0.033ha
SW22 CATCHMENT 0.100ha
SW21 CATCHMENT 0.050ha
SW19 CATCHMENT 0.008ha
SW20 CATCHMENT 0.022ha
SW18 CATCHMENT 0.027ha
SW17 CATCHMENT 0.030ha
SW16 CATCH 0.024ha
SW11 CATCHMENT 0.019ha
SW12 CATCHMENT 0.009ha
SW13 CATCHMENT 0.046ha
SW15 CATCHMENT 0.052ha
SW14 CATCHMENT .022ha
MCD/COSTA BLANKET CATCHMENT 0.075ha

LEGEND

CATCHMENT AREA DRAINING TO CHAMBER

CATCHMENT AREA DRAINING TO STORAGE

TOTAL CATCHMENT AREA = 1.172ha

INDICATIVE ONLY

1:250
0 2.5m 5m 7.5m 10m 12.5m

ISSUED WITH REPORT	MB	AK	16.06.26	P1
Description	By	Aprvd.	Date	Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: PHASE 1 CATCHMENT AREAS

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD.

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Drawing No. 16785-HOP-ZZ-XX-DR-C-0930 Status S2 Rev. P1

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P:\PROJECTS\16785 New Courtwick Lane @ Wick, Littlehampton\Drawings\HOP\Task 02\16785-HOP-ZZ-XX-DR-C-0930 Catchment Areas.dwg Xref: Box Baker

APPENDIX K – HYDRAULIC CALCULATION OUTPUT - INFILTRATION

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
SW01	0.039	5.00	4.483	450	502193.607	103636.892	0.550	3.933
SW02	0.057	5.00	4.483	600	502193.568	103652.542	0.700	3.783
SW03	0.038	5.00	4.483	600	502193.607	103667.518	0.790	3.693
SW04	0.018	5.00	4.483	600	502199.150	103669.681	0.830	3.653
SW05			4.483	600	502212.342	103668.357	0.950	3.533
SW06			4.433	1350	502233.882	103668.357	1.050	3.383
SW07			4.433	1350	502243.187	103654.904	1.150	3.283
SW18	0.027	5.00	4.600	450	502195.190	103539.853	0.750	3.850
SW19	0.008	5.00	4.500	450	502213.273	103539.853	0.950	3.550
SW16	0.024	5.00	4.600	450	502261.315	103545.755	0.950	3.650
SW17	0.030	5.00	4.500	1200	502242.739	103545.891	0.950	3.550
SW20	0.022	5.00	4.500	1200	502227.740	103545.891	1.100	3.400
SW21	0.050	5.00	4.300	1200	502226.370	103560.865	0.950	3.350
SW22	0.100	5.00	4.200	1800	502226.690	103568.885	0.880	3.320
SW23			4.433	1200	502226.370	103576.552	1.150	3.283
SW08	0.056	5.00	4.483	450	502193.607	103612.537	0.870	3.613
SW09	0.033	5.00	4.483	600	502193.670	103593.712	1.100	3.383
SW10			4.433	1200	502206.720	103588.158	1.150	3.283
SW11	0.019	5.00	4.600	450	502195.138	103531.347	0.750	3.850
SW12	0.009	5.00	4.600	450	502195.138	103521.768	0.880	3.720
SW13	0.046	5.00	4.500	1200	502213.173	103521.767	0.950	3.550
SW14	0.022	5.00	4.500	450	502260.951	103518.525	0.700	3.800
SW15	0.052	5.00	4.500	450	502242.802	103518.616	0.950	3.550
ALDI BLANKET	0.414	5.00	4.433		502247.342	103594.826	1.150	3.283

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Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
Dummy Outfall			4.433		502252.481	103594.585	0.333	4.100
MACD/COSTA BLANKET	0.075	5.00	4.500		502226.118	103530.223	0.950	3.550
SW24	0.033	5.00	4.700	1800	502211.787	103568.703	1.200	3.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SW01	SW02	15.650	0.600	3.933	3.783	0.150	104.3	300	5.17	36.8
1.001	SW02	SW03	14.976	0.600	3.783	3.693	0.090	166.4	300	5.37	36.2
1.002	SW03	SW04	5.950	0.600	3.693	3.653	0.040	148.8	300	5.45	36.0
1.003	SW04	SW05	13.258	0.600	3.653	3.533	0.120	110.5	300	5.60	35.6
1.004	SW05	SW06	21.540	0.600	3.533	3.383	0.150	143.6	450	5.81	35.1
1.005	SW06	SW07	16.357	0.600	3.383	3.283	0.100	163.6	450	5.98	34.6
6.000	SW18	SW19	18.083	0.600	3.850	3.550	0.300	60.3	225	5.18	36.7
Dummy Pipe	ALDI BLANKET	Dummy Outfall	5.145	0.600	4.200	4.100	0.100	51.4	100	7.07	32.0
5.000	SW16	SW17	18.576	0.600	3.650	3.550	0.100	185.8	225	5.32	36.4

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.539	108.8	5.2	0.250	0.400	0.039	0.0	44	0.800
1.001	1.216	85.9	12.6	0.400	0.490	0.096	0.0	77	0.875
1.002	1.287	90.9	17.4	0.490	0.530	0.134	0.0	89	1.000
1.003	1.495	105.7	19.6	0.530	0.650	0.152	0.0	87	1.150
1.004	1.694	269.4	19.3	0.500	0.600	0.152	0.0	80	0.996
1.005	1.587	252.3	19.0	0.600	0.700	0.152	0.0	83	0.951
6.000	1.687	67.1	3.6	0.525	0.725	0.027	0.0	35	0.897
Dummy Pipe	1.077	8.5	135.7	0.133	0.233	1.172	0.0	100	1.106
5.000	0.956	38.0	3.2	0.725	0.725	0.024	0.0	44	0.581

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
7.001	SW20	SW21	15.037	0.600	3.400	3.350	0.050	300.7	300	6.15	34.2
7.002	SW21	SW22	8.026	0.600	3.350	3.320	0.030	267.5	300	6.29	33.9
7.003	SW22	SW23	7.674	0.600	3.320	3.283	0.037	207.4	300	6.41	33.6
2.000	SW08	SW09	18.825	0.600	3.613	3.383	0.230	81.8	225	5.22	36.6
2.001	SW09	SW10	14.183	0.600	3.383	3.283	0.100	141.8	225	5.43	36.1
3.000	SW11	SW12	9.579	0.600	3.850	3.720	0.130	73.7	225	5.10	36.9
3.001	SW12	SW13	18.035	0.600	3.720	3.550	0.170	106.1	225	5.34	36.3
4.000	SW14	SW15	18.149	0.600	3.800	3.550	0.250	72.6	225	5.20	36.7
1.006 (Dummy)	SW07	ALDI BLANKET	60.222	0.600	3.283	3.283	0.000	0.0	450	6.99	32.2
2.002 (Dummy)	SW10	ALDI BLANKET	41.166	0.600	3.283	3.283	0.000	0.0	300	6.12	34.3
7.004 (Dummy)	SW23	ALDI BLANKET	27.817	0.600	3.283	3.283	0.000	0.0	300	6.87	32.5
4.001 (Dummy)	SW15	MACD/COSTA BLANKET	20.324	0.600	3.550	3.550	0.000	0.0	225	5.54	35.8
3.002 (Dummy)	SW13	MACD/COSTA BLANKET	15.462	0.600	3.550	3.550	0.000	0.0	225	5.60	35.6

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
7.001	0.901	63.7	41.3	0.800	0.650	0.334	0.0	176	0.957
7.002	0.956	67.6	47.0	0.650	0.580	0.384	0.0	184	1.030
7.003	1.088	76.9	62.8	0.580	0.850	0.517	0.0	207	1.208
2.000	1.446	57.5	7.4	0.645	0.875	0.056	0.0	54	0.999
2.001	1.096	43.6	11.6	0.875	0.925	0.089	0.0	79	0.927
3.000	1.525	60.6	2.5	0.525	0.655	0.019	0.0	31	0.758
3.001	1.269	50.4	3.7	0.655	0.725	0.028	0.0	41	0.744
4.000	1.536	61.1	2.9	0.475	0.725	0.022	0.0	33	0.791
1.006 (Dummy)	1.000	159.0	17.7	0.700	0.700	0.152	0.0	450	0.000
2.002 (Dummy)	1.000	70.7	11.0	0.850	0.850	0.089	0.0	300	0.000
7.004 (Dummy)	1.000	70.7	60.7	0.850	0.850	0.517	0.0	300	0.000
4.001 (Dummy)	1.000	39.8	9.6	0.725	0.725	0.074	0.0	225	0.000
3.002 (Dummy)	1.000	39.8	9.5	0.725	0.725	0.074	0.0	225	0.000

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
6.001	SW19	MACD/COSTA BLANKET	16.054	0.600	3.550	3.550	0.000	0.0	225	5.45	36.0
5.001	SW17	MACD/COSTA BLANKET	22.842	0.600	3.550	3.550	0.000	0.0	225	5.70	35.4
7.000	MACD/COSTA BLANKET	SW20	15.752	0.600	3.550	3.400	0.150	105.0	300	5.88	34.9
8.000	SW24	SW22	14.904	0.600	3.500	3.320	0.180	82.8	300	5.14	36.8

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
6.001	1.000	39.8	4.6	0.725	0.725	0.035	0.0	225	0.000
5.001	1.000	39.8	6.9	0.725	0.725	0.054	0.0	225	0.000
7.000	1.534	108.4	39.4	0.650	0.800	0.312	0.0	125	1.414
8.000	1.729	122.2	4.4	0.900	0.580	0.033	0.0	38	0.824

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	15.650	104.3	300	Circular	4.483	3.933	0.250	4.483	3.783	0.400
1.001	14.976	166.4	300	Circular	4.483	3.783	0.400	4.483	3.693	0.490
1.002	5.950	148.8	300	Circular	4.483	3.693	0.490	4.483	3.653	0.530
1.003	13.258	110.5	300	Circular	4.483	3.653	0.530	4.483	3.533	0.650
1.004	21.540	143.6	450	Circular	4.483	3.533	0.500	4.433	3.383	0.600
1.005	16.357	163.6	450	Circular	4.433	3.383	0.600	4.433	3.283	0.700

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SW01	450	Manhole	Adoptable	SW02	600	Manhole	Adoptable
1.001	SW02	600	Manhole	Adoptable	SW03	600	Manhole	Adoptable
1.002	SW03	600	Manhole	Adoptable	SW04	600	Manhole	Adoptable
1.003	SW04	600	Manhole	Adoptable	SW05	600	Manhole	Adoptable
1.004	SW05	600	Manhole	Adoptable	SW06	1350	Manhole	Adoptable
1.005	SW06	1350	Manhole	Adoptable	SW07	1350	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
6.000	18.083	60.3	225	Circular	4.600	3.850	0.525	4.500	3.550	0.725
Dummy Pipe	5.145	51.4	100	Circular	4.433	4.200	0.133	4.433	4.100	0.233
5.000	18.576	185.8	225	Circular	4.600	3.650	0.725	4.500	3.550	0.725
7.001	15.037	300.7	300	Circular	4.500	3.400	0.800	4.300	3.350	0.650
7.002	8.026	267.5	300	Circular	4.300	3.350	0.650	4.200	3.320	0.580
7.003	7.674	207.4	300	Circular	4.200	3.320	0.580	4.433	3.283	0.850
2.000	18.825	81.8	225	Circular	4.483	3.613	0.645	4.483	3.383	0.875
2.001	14.183	141.8	225	Circular	4.483	3.383	0.875	4.433	3.283	0.925
3.000	9.579	73.7	225	Circular	4.600	3.850	0.525	4.600	3.720	0.655
3.001	18.035	106.1	225	Circular	4.600	3.720	0.655	4.500	3.550	0.725
4.000	18.149	72.6	225	Circular	4.500	3.800	0.475	4.500	3.550	0.725
1.006 (Dummy)	60.222	0.0	450	Circular	4.433	3.283	0.700	4.433	3.283	0.700
2.002 (Dummy)	41.166	0.0	300	Circular	4.433	3.283	0.850	4.433	3.283	0.850
7.004 (Dummy)	27.817	0.0	300	Circular	4.433	3.283	0.850	4.433	3.283	0.850

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
6.000	SW18	450	Manhole	Adoptable	SW19	450	Manhole	Adoptable
Dummy Pipe	ALDI BLANKET		Junction		Dummy Outfall		Junction	
5.000	SW16	450	Manhole	Adoptable	SW17	1200	Manhole	Adoptable
7.001	SW20	1200	Manhole	Adoptable	SW21	1200	Manhole	Adoptable
7.002	SW21	1200	Manhole	Adoptable	SW22	1800	Manhole	Adoptable
7.003	SW22	1800	Manhole	Adoptable	SW23	1200	Manhole	Adoptable
2.000	SW08	450	Manhole	Adoptable	SW09	600	Manhole	Adoptable
2.001	SW09	600	Manhole	Adoptable	SW10	1200	Manhole	Adoptable
3.000	SW11	450	Manhole	Adoptable	SW12	450	Manhole	Adoptable
3.001	SW12	450	Manhole	Adoptable	SW13	1200	Manhole	Adoptable
4.000	SW14	450	Manhole	Adoptable	SW15	450	Manhole	Adoptable
1.006 (Dummy)	SW07	1350	Manhole	Adoptable	ALDI BLANKET		Junction	
2.002 (Dummy)	SW10	1200	Manhole	Adoptable	ALDI BLANKET		Junction	
7.004 (Dummy)	SW23	1200	Manhole	Adoptable	ALDI BLANKET		Junction	

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.001 (Dummy)	20.324	0.0	225	Circular	4.500	3.550	0.725	4.500	3.550	0.725
3.002 (Dummy)	15.462	0.0	225	Circular	4.500	3.550	0.725	4.500	3.550	0.725
6.001	16.054	0.0	225	Circular	4.500	3.550	0.725	4.500	3.550	0.725
5.001	22.842	0.0	225	Circular	4.500	3.550	0.725	4.500	3.550	0.725
7.000	15.752	105.0	300	Circular	4.500	3.550	0.650	4.500	3.400	0.800
8.000	14.904	82.8	300	Circular	4.700	3.500	0.900	4.200	3.320	0.580

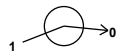
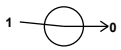
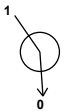
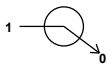
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.001 (Dummy)	SW15	450	Manhole	Adoptable	MACD/COSTA BLANKET		Junction	
3.002 (Dummy)	SW13	1200	Manhole	Adoptable	MACD/COSTA BLANKET		Junction	
6.001	SW19	450	Manhole	Adoptable	MACD/COSTA BLANKET		Junction	
5.001	SW17	1200	Manhole	Adoptable	MACD/COSTA BLANKET		Junction	
7.000	MACD/COSTA BLANKET		Junction		SW20	1200	Manhole	Adoptable
8.000	SW24	1800	Manhole	Adoptable	SW22	1800	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW01	502193.607	103636.892	4.483	0.550	450	 0	1.000	3.933	300
SW02	502193.568	103652.542	4.483	0.700	600	1	1.000	3.783	300
						0	1.001	3.783	300

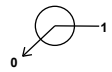
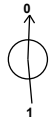
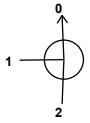
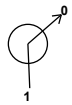
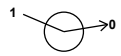
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW03	502193.607	103667.518	4.483	0.790	600	1	1.001	3.693	300
									
						0	1.002	3.693	300
SW04	502199.150	103669.681	4.483	0.830	600	1	1.002	3.653	300
									
						0	1.003	3.653	300
SW05	502212.342	103668.357	4.483	0.950	600	1	1.003	3.533	300
									
						0	1.004	3.533	450
SW06	502233.882	103668.357	4.433	1.050	1350	1	1.004	3.383	450
									
						0	1.005	3.383	450
SW07	502243.187	103654.904	4.433	1.150	1350	1	1.005	3.283	450
									
						0	1.006 (Dummy)	3.283	450
SW18	502195.190	103539.853	4.600	0.750	450				
						0	6.000	3.850	225
SW19	502213.273	103539.853	4.500	0.950	450	1	6.000	3.550	225
									
						0	6.001	3.550	225
SW16	502261.315	103545.755	4.600	0.950	450				
						0	5.000	3.650	225

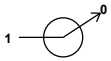
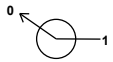
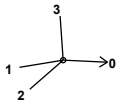
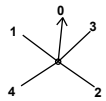
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW17	502242.739	103545.891	4.500	0.950	1200	1	5.000	3.550	225
									
						0	5.001	3.550	225
SW20	502227.740	103545.891	4.500	1.100	1200	1	7.000	3.400	300
									
						0	7.001	3.400	300
SW21	502226.370	103560.865	4.300	0.950	1200	1	7.001	3.350	300
									
						0	7.002	3.350	300
SW22	502226.690	103568.885	4.200	0.880	1800	1	8.000	3.320	300
						2	7.002	3.320	300
									
						0	7.003	3.320	300
SW23	502226.370	103576.552	4.433	1.150	1200	1	7.003	3.283	300
									
						0	7.004 (Dummy)	3.283	300
SW08	502193.607	103612.537	4.483	0.870	450				
						0	2.000	3.613	225
SW09	502193.670	103593.712	4.483	1.100	600	1	2.000	3.383	225
									
						0	2.001	3.383	225
SW10	502206.720	103588.158	4.433	1.150	1200	1	2.001	3.283	225
									
						0	2.002 (Dummy)	3.283	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW11	502195.138	103531.347	4.600	0.750	450				
						0	3.000	3.850	225
SW12	502195.138	103521.768	4.600	0.880	450				
						1	3.000	3.720	225
						0	3.001	3.720	225
SW13	502213.173	103521.767	4.500	0.950	1200				
						1	3.001	3.550	225
						0	3.002 (Dummy)	3.550	225
SW14	502260.951	103518.525	4.500	0.700	450				
						0	4.000	3.800	225
SW15	502242.802	103518.616	4.500	0.950	450				
						1	4.000	3.550	225
						0	4.001 (Dummy)	3.550	225
ALDI BLANKET	502247.342	103594.826	4.433	1.150					
						1	2.002 (Dummy)	3.283	300
						2	7.004 (Dummy)	3.283	300
						3	1.006 (Dummy)	3.283	450
						0	Dummy Pipe	4.200	100
Dummy Outfall	502252.481	103594.585	4.433	0.333					
						1	Dummy Pipe	4.100	100
MACD/COSTA BLANKET	502226.118	103530.223	4.500	0.950					
						1	6.001	3.550	225
						2	4.001 (Dummy)	3.550	225
						3	5.001	3.550	225
						4	3.002 (Dummy)	3.550	225
						0	7.000	3.550	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW24	502211.787	103568.703	4.700	1.200	1800				
						0	8.000	3.500	300

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node SW20 Online Orifice Control

Flap Valve	x	Replaces Downstream Link	x	Design Depth (m)	1.000	Diameter (m)	0.085
Downstream Link	7.001	Invert Level (m)	3.400	Design Flow (l/s)	15.0	Discharge Coefficient	0.600

Node SW24 Online Orifice Control

Flap Valve	x	Replaces Downstream Link	x	Diameter (m)	0.150
Downstream Link	8.000	Invert Level (m)	3.500	Discharge Coefficient	0.600

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Node ALDI BLANKET Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	40.000	Depth (m)	1.150
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.283	Length (m)	95.000	Inf Depth (m)	0.850
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Node MACD/COSTA BLANKET Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	25.000	Depth (m)	1.050
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	3.550	Length (m)	30.000	Inf Depth (m)	0.800
Safety Factor	2.0	Time to half empty (mins)	378	Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 5760 minute winter	1.857	0.734
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 600 minute summer	12.330	3.373	1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 600 minute winter	8.425	3.373	1 year +45% CC 10080 minute winter	1.445	0.571
1 year +45% CC 720 minute summer	10.991	2.946	2 year +45% CC 15 minute summer	167.167	47.303
1 year +45% CC 720 minute winter	7.386	2.946	2 year +45% CC 15 minute winter	117.310	47.303

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800
100 year +45% CC 180 minute summer	110.647	28.473
100 year +45% CC 180 minute winter	71.924	28.473
100 year +45% CC 240 minute summer	86.171	22.772
100 year +45% CC 240 minute winter	57.250	22.772
100 year +45% CC 360 minute summer	64.180	16.516
100 year +45% CC 360 minute winter	41.719	16.516
100 year +45% CC 480 minute summer	49.575	13.101
100 year +45% CC 480 minute winter	32.936	13.101

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 1440 minute winter	13.261	5.288	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 2160 minute summer	13.711	3.789	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 2160 minute winter	9.447	3.789	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 2880 minute summer	11.214	3.005	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 year +45% CC Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW01	10	3.984	0.051	6.9	0.0081	0.0000	OK
15 minute summer	SW02	10	3.878	0.095	16.9	0.0268	0.0000	OK
15 minute summer	SW03	10	3.810	0.117	23.4	0.0332	0.0000	OK
15 minute summer	SW04	10	3.763	0.110	26.5	0.0310	0.0000	OK
15 minute summer	SW05	11	3.631	0.098	26.3	0.0278	0.0000	OK
480 minute winter	SW06	464	3.509	0.126	4.3	0.1810	0.0000	OK
480 minute winter	SW07	464	3.509	0.226	4.3	0.3239	0.0000	OK
15 minute summer	SW18	10	3.890	0.040	4.8	0.0064	0.0000	OK
180 minute summer	SW19	120	3.703	0.153	2.7	0.0243	0.0000	OK
180 minute summer	SW16	120	3.703	0.053	1.8	0.0084	0.0000	OK
180 minute summer	SW17	120	3.703	0.153	4.1	0.1729	0.0000	OK
180 minute summer	SW20	116	3.733	0.333	22.0	0.3761	0.0000	SURCHARGED
480 minute winter	SW21	464	3.510	0.160	8.3	0.1805	0.0000	OK
480 minute winter	SW22	464	3.510	0.190	11.7	0.4824	0.0000	OK
480 minute winter	SW23	464	3.510	0.227	11.6	0.2562	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW01	1.000	SW02	6.9	0.521	0.063	0.2106	
15 minute summer	SW02	1.001	SW03	16.7	0.752	0.195	0.3339	
15 minute summer	SW03	1.002	SW04	23.3	0.957	0.256	0.1452	
15 minute summer	SW04	1.003	SW05	26.3	1.218	0.249	0.2872	
15 minute summer	SW05	1.004	SW06	26.5	1.035	0.098	0.5583	
480 minute winter	SW06	1.005	SW07	4.3	0.266	0.017	0.9512	
480 minute winter	SW07	1.006 (Dummy)	ALDI BLANKET	4.0	0.189	0.025	4.8086	
15 minute summer	SW18	6.000	SW19	4.8	0.545	0.071	0.1818	
180 minute summer	SW19	6.001	MACD/COSTA BLANKET	2.4	0.190	0.062	0.4605	
180 minute summer	SW16	5.000	SW17	1.8	0.184	0.047	0.3323	
180 minute summer	SW17	5.001	MACD/COSTA BLANKET	3.8	0.261	0.095	0.6556	
180 minute summer	SW20	7.001	SW21	7.5	0.468	0.118	0.3055	
480 minute winter	SW21	7.002	SW22	8.9	0.450	0.132	0.3411	
480 minute winter	SW22	7.003	SW23	11.6	0.435	0.151	0.3990	
480 minute winter	SW23	7.004 (Dummy)	ALDI BLANKET	11.1	0.504	0.157	1.5872	

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Results for 1 year +45% CC Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW08	10	3.676	0.063	9.9	0.0100	0.0000	OK
480 minute winter	SW09	464	3.509	0.126	2.5	0.0358	0.0000	OK
480 minute winter	SW10	464	3.509	0.226	2.5	0.2561	0.0000	OK
15 minute summer	SW11	10	3.886	0.036	3.4	0.0057	0.0000	OK
15 minute summer	SW12	10	3.767	0.047	5.0	0.0075	0.0000	OK
180 minute summer	SW13	120	3.703	0.153	5.7	0.1728	0.0000	OK
15 minute summer	SW14	10	3.838	0.038	3.9	0.0061	0.0000	OK
180 minute summer	SW15	120	3.703	0.153	5.7	0.0243	0.0000	OK
480 minute winter	ALDI BLANKET	464	3.509	0.226	28.9	252.3842	0.0000	OK
15 minute summer	Dummy Outfall	1	4.100	0.000	0.0	0.0000	0.0000	OK
180 minute summer	MACD/COSTA BLANKET	120	3.703	0.153	27.1	34.0214	0.0000	OK
15 minute summer	SW24	11	3.596	0.096	5.9	0.2442	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW08	2.000	SW09	9.8	0.774	0.171	0.2410	
480 minute winter	SW09	2.001	SW10	2.5	0.286	0.057	0.4447	
480 minute winter	SW10	2.002 (Dummy)	ALDI BLANKET	2.3	0.163	0.033	2.3483	
15 minute summer	SW11	3.000	SW12	3.4	0.670	0.056	0.0485	
15 minute summer	SW12	3.001	SW13	4.9	0.395	0.097	0.2315	
180 minute summer	SW13	3.002 (Dummy)	MACD/COSTA BLANKET	5.4	0.403	0.137	0.4437	
15 minute summer	SW14	4.000	SW15	3.9	0.318	0.063	0.2304	
180 minute summer	SW15	4.001 (Dummy)	MACD/COSTA BLANKET	5.5	0.402	0.138	0.5834	
480 minute winter	ALDI BLANKET	Dummy Pipe	Dummy Outfall	0.0	0.000	0.000	0.0000	0.0
480 minute winter	ALDI BLANKET	Infiltration		4.6				
180 minute summer	MACD/COSTA BLANKET	7.000	SW20	22.0	0.499	0.203	0.8368	
15 minute summer	SW24	8.000	SW22	5.7	0.255	0.047	0.3659	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW01	10	3.996	0.063	10.6	0.0099	0.0000	OK
15 minute summer	SW02	10	3.906	0.123	26.1	0.0348	0.0000	OK
15 minute summer	SW03	10	3.845	0.152	36.2	0.0431	0.0000	OK
15 minute summer	SW04	10	3.794	0.141	40.9	0.0399	0.0000	OK
15 minute summer	SW05	10	3.657	0.124	40.7	0.0352	0.0000	OK
600 minute winter	SW06	585	3.591	0.208	4.6	0.2974	0.0000	OK
600 minute winter	SW07	585	3.591	0.308	4.4	0.4405	0.0000	OK
15 minute summer	SW18	10	3.900	0.050	7.4	0.0080	0.0000	OK
180 minute summer	SW19	124	3.778	0.228	3.6	0.0363	0.0000	SURCHARGED
180 minute summer	SW16	124	3.778	0.128	2.5	0.0204	0.0000	OK
180 minute summer	SW17	124	3.778	0.228	5.7	0.2584	0.0000	SURCHARGED
180 minute summer	SW20	124	3.778	0.378	19.6	0.4273	0.0000	SURCHARGED
600 minute winter	SW21	555	3.592	0.242	8.6	0.2738	0.0000	OK
600 minute winter	SW22	585	3.591	0.271	12.6	0.6904	0.0000	OK
600 minute winter	SW23	585	3.591	0.308	12.6	0.3486	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW01	1.000	SW02	10.5	0.570	0.097	0.2956	
15 minute summer	SW02	1.001	SW03	25.8	0.820	0.301	0.4723	
15 minute summer	SW03	1.002	SW04	36.0	1.054	0.396	0.2036	
15 minute summer	SW04	1.003	SW05	40.7	1.357	0.385	0.3983	
15 minute summer	SW05	1.004	SW06	40.9	1.098	0.152	0.8032	
600 minute winter	SW06	1.005	SW07	4.4	0.248	0.017	1.5303	
600 minute winter	SW07	1.006 (Dummy)	ALDI BLANKET	4.1	0.166	0.026	6.9599	
15 minute summer	SW18	6.000	SW19	7.3	0.628	0.109	0.2526	
180 minute summer	SW19	6.001	MACD/COSTA BLANKET	3.2	0.385	0.081	0.6385	
180 minute summer	SW16	5.000	SW17	2.5	0.186	0.065	0.5868	
180 minute summer	SW17	5.001	MACD/COSTA BLANKET	5.0	0.254	0.127	0.9085	
180 minute summer	SW20	7.001	SW21	8.0	0.473	0.126	0.5569	
600 minute winter	SW21	7.002	SW22	8.6	0.437	0.128	0.5121	
600 minute winter	SW22	7.003	SW23	12.6	0.420	0.163	0.5274	
600 minute winter	SW23	7.004 (Dummy)	ALDI BLANKET	11.7	0.456	0.166	1.9589	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW08	10	3.692	0.079	15.3	0.0125	0.0000	OK
720 minute winter	SW09	690	3.591	0.208	2.4	0.0588	0.0000	OK
720 minute winter	SW10	690	3.591	0.308	2.3	0.3482	0.0000	SURCHARGED
15 minute summer	SW11	10	3.895	0.045	5.2	0.0072	0.0000	OK
15 minute summer	SW12	10	3.779	0.059	7.7	0.0093	0.0000	OK
180 minute summer	SW13	124	3.778	0.228	7.7	0.2584	0.0000	SURCHARGED
15 minute summer	SW14	10	3.847	0.047	6.0	0.0075	0.0000	OK
180 minute summer	SW15	124	3.779	0.229	7.8	0.0363	0.0000	SURCHARGED
600 minute winter	ALDI BLANKET	585	3.591	0.308	30.8	345.2543	0.0000	OK
15 minute summer	Dummy Outfall	1	4.100	0.000	0.0	0.0000	0.0000	OK
180 minute summer	MACD/COSTA BLANKET	124	3.778	0.228	31.5	51.0436	0.0000	OK
15 minute summer	SW24	10	3.627	0.127	9.0	0.3221	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW08	2.000	SW09	15.2	0.838	0.264	0.3424	
720 minute winter	SW09	2.001	SW10	2.3	0.224	0.054	0.5540	
720 minute winter	SW10	2.002 (Dummy)	ALDI BLANKET	2.2	0.152	0.031	2.8989	
15 minute summer	SW11	3.000	SW12	5.2	0.749	0.085	0.0664	
15 minute summer	SW12	3.001	SW13	7.6	0.453	0.150	0.3256	
180 minute summer	SW13	3.002 (Dummy)	MACD/COSTA BLANKET	7.3	0.458	0.183	0.6149	
15 minute summer	SW14	4.000	SW15	6.0	0.364	0.097	0.3262	
180 minute summer	SW15	4.001 (Dummy)	MACD/COSTA BLANKET	7.4	0.410	0.186	0.8083	
600 minute winter	ALDI BLANKET	Dummy Pipe	Dummy Outfall	0.0	0.000	0.000	0.0000	0.0
600 minute winter	ALDI BLANKET	Infiltration		4.6				
180 minute summer	MACD/COSTA BLANKET	7.000	SW20	17.6	0.353	0.163	1.0079	
15 minute summer	SW24	8.000	SW22	8.8	0.282	0.072	0.4829	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW01	10	4.021	0.088	20.9	0.0140	0.0000	OK
15 minute summer	SW02	10	3.985	0.202	51.4	0.0573	0.0000	OK
15 minute summer	SW03	10	3.940	0.247	71.0	0.0698	0.0000	OK
15 minute summer	SW04	10	3.871	0.218	80.2	0.0618	0.0000	OK
720 minute winter	SW05	705	3.796	0.263	6.4	0.0744	0.0000	OK
720 minute winter	SW06	705	3.796	0.413	6.4	0.5906	0.0000	OK
720 minute winter	SW07	705	3.796	0.513	6.1	0.7337	0.0000	SURCHARGED
180 minute summer	SW18	136	4.015	0.165	4.9	0.0262	0.0000	OK
180 minute summer	SW19	136	4.015	0.465	6.3	0.0739	0.0000	SURCHARGED
180 minute summer	SW16	136	4.015	0.365	4.3	0.0580	0.0000	SURCHARGED
180 minute summer	SW17	136	4.015	0.465	9.5	0.5255	0.0000	SURCHARGED
180 minute summer	SW20	140	4.013	0.613	20.7	0.6937	0.0000	SURCHARGED
720 minute winter	SW21	705	3.796	0.446	8.7	0.5043	0.0000	SURCHARGED
720 minute winter	SW22	705	3.796	0.476	14.2	1.2123	0.0000	SURCHARGED
720 minute winter	SW23	705	3.796	0.513	14.2	0.5799	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW01	1.000	SW02	20.8	0.627	0.191	0.5304	
15 minute summer	SW02	1.001	SW03	50.6	0.897	0.589	0.8426	
15 minute summer	SW03	1.002	SW04	70.5	1.205	0.775	0.3478	
15 minute summer	SW04	1.003	SW05	79.8	1.585	0.755	0.6662	
720 minute winter	SW05	1.004	SW06	6.4	0.622	0.024	2.6746	
720 minute winter	SW06	1.005	SW07	6.1	0.219	0.024	2.5411	
720 minute winter	SW07	1.006 (Dummy)	ALDI BLANKET	5.6	0.182	0.035	9.5418	
180 minute summer	SW18	6.000	SW19	4.9	0.227	0.073	0.6410	
180 minute summer	SW19	6.001	MACD/COSTA BLANKET	6.1	0.217	0.152	0.6385	
180 minute summer	SW16	5.000	SW17	4.1	0.176	0.107	0.7388	
180 minute summer	SW17	5.001	MACD/COSTA BLANKET	9.2	0.444	0.231	0.9085	
180 minute summer	SW20	7.001	SW21	9.2	0.488	0.145	1.0585	
720 minute winter	SW21	7.002	SW22	8.8	0.428	0.130	0.5652	
720 minute winter	SW22	7.003	SW23	14.2	0.409	0.184	0.5404	
720 minute winter	SW23	7.004 (Dummy)	ALDI BLANKET	13.5	0.488	0.191	1.9589	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	SW08	720	3.796	0.183	2.4	0.0291	0.0000	OK
720 minute winter	SW09	720	3.796	0.413	3.8	0.1168	0.0000	SURCHARGED
720 minute winter	SW10	720	3.796	0.513	3.7	0.5799	0.0000	SURCHARGED
180 minute summer	SW11	136	4.015	0.165	3.4	0.0262	0.0000	OK
180 minute summer	SW12	136	4.015	0.295	5.0	0.0469	0.0000	SURCHARGED
180 minute summer	SW13	136	4.015	0.465	12.7	0.5257	0.0000	SURCHARGED
180 minute summer	SW14	136	4.015	0.215	4.0	0.0342	0.0000	OK
180 minute summer	SW15	136	4.015	0.465	13.4	0.0739	0.0000	SURCHARGED
720 minute winter	ALDI BLANKET	720	3.796	0.513	40.0	578.8289	0.0000	OK
15 minute summer	Dummy Outfall	1	4.100	0.000	0.0	0.0000	0.0000	OK
180 minute summer	MACD/COSTA BLANKET	136	4.015	0.465	53.7	104.1746	0.0000	SURCHARGED
15 minute summer	SW24	11	3.845	0.345	17.7	0.8777	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	SW08	2.000	SW09	2.4	0.485	0.042	0.6995	
720 minute winter	SW09	2.001	SW10	3.7	0.211	0.085	0.5641	
720 minute winter	SW10	2.002 (Dummy)	ALDI BLANKET	3.5	0.167	0.050	2.8989	
180 minute summer	SW11	3.000	SW12	3.4	0.639	0.056	0.3398	
180 minute summer	SW12	3.001	SW13	4.4	0.204	0.087	0.7173	
180 minute summer	SW13	3.002 (Dummy)	MACD/COSTA BLANKET	12.2	0.576	0.308	0.6149	
180 minute summer	SW14	4.000	SW15	4.0	0.169	0.065	0.7158	
180 minute summer	SW15	4.001 (Dummy)	MACD/COSTA BLANKET	13.1	0.586	0.329	0.8083	
720 minute winter	ALDI BLANKET	Dummy Pipe	Dummy Outfall	0.0	0.000	0.000	0.0000	0.0
720 minute winter	ALDI BLANKET	Infiltration		4.6				
180 minute summer	MACD/COSTA BLANKET	7.000	SW20	18.5	0.401	0.171	1.1092	
15 minute summer	SW24	8.000	SW22	17.7	0.308	0.145	0.9657	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW01	11	4.086	0.153	27.3	0.0243	0.0000	OK
15 minute summer	SW02	11	4.083	0.300	66.1	0.0848	0.0000	OK
15 minute summer	SW03	11	4.009	0.316	90.7	0.0895	0.0000	SURCHARGED
960 minute winter	SW04	945	3.941	0.288	6.3	0.0814	0.0000	OK
960 minute winter	SW05	945	3.940	0.407	6.3	0.1151	0.0000	OK
960 minute winter	SW06	945	3.939	0.556	6.1	0.7960	0.0000	SURCHARGED
720 minute winter	SW07	720	3.940	0.657	7.4	0.9408	0.0000	SURCHARGED
120 minute winter	SW18	116	4.188	0.338	5.8	0.0537	0.0000	SURCHARGED
120 minute winter	SW19	116	4.188	0.638	7.5	0.1014	0.0000	SURCHARGED
120 minute winter	SW16	116	4.188	0.538	5.1	0.0855	0.0000	SURCHARGED
120 minute winter	SW17	116	4.188	0.638	11.2	0.7213	0.0000	SURCHARGED
120 minute winter	SW20	116	4.186	0.786	19.3	0.8892	0.0000	SURCHARGED
15 minute summer	SW21	11	3.940	0.590	35.0	0.6678	0.0000	SURCHARGED
720 minute winter	SW22	705	3.939	0.619	15.9	1.5765	0.0000	FLOOD RISK
720 minute winter	SW23	720	3.940	0.657	15.7	0.7435	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW01	1.000	SW02	26.9	0.645	0.247	0.8321	
15 minute summer	SW02	1.001	SW03	65.3	0.928	0.760	1.0542	
15 minute summer	SW03	1.002	SW04	90.8	1.298	0.998	0.4076	
960 minute winter	SW04	1.003	SW05	6.3	0.830	0.060	0.9269	
960 minute winter	SW05	1.004	SW06	6.1	0.578	0.023	3.3307	
960 minute winter	SW06	1.005	SW07	5.8	0.199	0.023	2.5917	
720 minute winter	SW07	1.006 (Dummy)	ALDI BLANKET	6.7	0.195	0.042	9.5418	
120 minute winter	SW18	6.000	SW19	5.8	0.304	0.086	0.7192	
120 minute winter	SW19	6.001	MACD/COSTA BLANKET	7.2	0.514	0.181	0.6385	
120 minute winter	SW16	5.000	SW17	4.8	0.200	0.127	0.7388	
120 minute winter	SW17	5.001	MACD/COSTA BLANKET	10.9	0.534	0.275	0.9085	
120 minute winter	SW20	7.001	SW21	10.2	0.461	0.161	1.0589	
15 minute summer	SW21	7.002	SW22	27.0	0.384	0.400	0.5652	
720 minute winter	SW22	7.003	SW23	15.7	0.404	0.204	0.5404	
720 minute winter	SW23	7.004 (Dummy)	ALDI BLANKET	15.7	0.547	0.222	1.9589	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	SW08	720	3.940	0.327	2.9	0.0519	0.0000	SURCHARGED
720 minute winter	SW09	720	3.940	0.557	4.6	0.1575	0.0000	SURCHARGED
720 minute winter	SW10	720	3.940	0.657	4.5	0.7425	0.0000	SURCHARGED
120 minute winter	SW11	116	4.188	0.338	4.1	0.0537	0.0000	SURCHARGED
120 minute winter	SW12	116	4.188	0.468	5.9	0.0744	0.0000	SURCHARGED
120 minute winter	SW13	116	4.188	0.638	15.2	0.7214	0.0000	SURCHARGED
120 minute winter	SW14	116	4.188	0.388	4.7	0.0617	0.0000	SURCHARGED
120 minute winter	SW15	116	4.188	0.638	15.3	0.1014	0.0000	SURCHARGED
720 minute winter	ALDI BLANKET	720	3.940	0.657	48.5	742.7564	0.0000	OK
15 minute summer	Dummy Outfall	1	4.100	0.000	0.0	0.0000	0.0000	OK
120 minute winter	MACD/COSTA BLANKET	116	4.188	0.638	63.9	143.1296	0.0000	SURCHARGED
15 minute summer	SW24	11	4.109	0.609	23.1	1.5506	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	SW08	2.000	SW09	2.9	0.471	0.050	0.7487	
720 minute winter	SW09	2.001	SW10	4.5	0.209	0.104	0.5641	
720 minute winter	SW10	2.002 (Dummy)	ALDI BLANKET	4.5	0.185	0.064	2.8989	
120 minute winter	SW11	3.000	SW12	4.0	0.669	0.066	0.3810	
120 minute winter	SW12	3.001	SW13	5.3	0.232	0.106	0.7173	
120 minute winter	SW13	3.002 (Dummy)	MACD/COSTA BLANKET	14.9	0.658	0.374	0.6149	
120 minute winter	SW14	4.000	SW15	4.4	0.188	0.072	0.7218	
120 minute winter	SW15	4.001 (Dummy)	MACD/COSTA BLANKET	15.0	0.624	0.378	0.8083	
720 minute winter	ALDI BLANKET	Dummy Pipe	Dummy Outfall	0.0	0.000	0.000	0.0000	0.0
720 minute winter	ALDI BLANKET	Infiltration		4.6				
120 minute winter	MACD/COSTA BLANKET	7.000	SW20	16.9	0.422	0.156	1.1092	
15 minute summer	SW24	8.000	SW22	22.3	0.316	0.182	1.0495	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW01	10	4.342	0.409	34.2	0.0651	0.0000	FLOOD RISK
15 minute summer	SW02	10	4.321	0.538	83.0	0.1522	0.0000	FLOOD RISK
15 minute summer	SW03	10	4.200	0.507	115.2	0.1434	0.0000	FLOOD RISK
960 minute winter	SW04	930	4.136	0.483	7.8	0.1368	0.0000	SURCHARGED
960 minute winter	SW05	960	4.135	0.602	7.8	0.1703	0.0000	SURCHARGED
960 minute winter	SW06	945	4.137	0.754	7.6	1.0786	0.0000	FLOOD RISK
960 minute winter	SW07	945	4.135	0.852	7.2	1.2189	0.0000	FLOOD RISK
120 minute winter	SW18	118	4.393	0.543	7.2	0.0863	0.0000	FLOOD RISK
120 minute winter	SW19	118	4.393	0.843	8.8	0.1340	0.0000	FLOOD RISK
120 minute winter	SW16	118	4.393	0.743	6.4	0.1181	0.0000	FLOOD RISK
120 minute winter	SW17	118	4.393	0.843	14.2	0.9532	0.0000	FLOOD RISK
120 minute winter	SW20	118	4.391	0.991	22.4	1.1206	0.0000	FLOOD RISK
15 minute summer	SW21	11	4.199	0.849	43.9	0.9600	0.0000	FLOOD RISK
15 minute summer	SW22	11	4.187	0.867	137.7	2.2063	0.0000	FLOOD RISK
960 minute winter	SW23	960	4.133	0.850	15.5	0.9616	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW01	1.000	SW02	33.5	0.645	0.308	1.1021	
15 minute summer	SW02	1.001	SW03	82.1	1.166	0.955	1.0546	
15 minute summer	SW03	1.002	SW04	114.6	1.627	1.260	0.4190	
960 minute winter	SW04	1.003	SW05	7.8	0.852	0.074	0.9336	
960 minute winter	SW05	1.004	SW06	7.6	0.578	0.028	3.4129	
960 minute winter	SW06	1.005	SW07	7.2	0.195	0.028	2.5917	
960 minute winter	SW07	1.006 (Dummy)	ALDI BLANKET	6.9	0.185	0.043	9.5418	
120 minute winter	SW18	6.000	SW19	6.7	0.343	0.101	0.7192	
120 minute winter	SW19	6.001	MACD/COSTA BLANKET	8.5	0.503	0.214	0.6385	
120 minute winter	SW16	5.000	SW17	6.1	0.212	0.159	0.7388	
120 minute winter	SW17	5.001	MACD/COSTA BLANKET	13.8	0.552	0.346	0.9085	
120 minute winter	SW20	7.001	SW21	11.1	0.459	0.174	1.0589	
15 minute summer	SW21	7.002	SW22	31.5	0.447	0.466	0.5652	
15 minute summer	SW22	7.003	SW23	135.6	1.925	1.763	0.5404	
960 minute winter	SW23	7.004 (Dummy)	ALDI BLANKET	15.5	0.531	0.219	1.9589	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW08	11	4.285	0.672	49.1	0.1068	0.0000	FLOOD RISK
960 minute winter	SW09	945	4.133	0.750	4.5	0.2124	0.0000	SURCHARGED
960 minute winter	SW10	945	4.133	0.850	4.5	0.9619	0.0000	FLOOD RISK
120 minute winter	SW11	118	4.393	0.543	5.1	0.0863	0.0000	FLOOD RISK
120 minute winter	SW12	118	4.393	0.673	7.2	0.1070	0.0000	FLOOD RISK
120 minute winter	SW13	118	4.393	0.843	19.2	0.9532	0.0000	FLOOD RISK
120 minute winter	SW14	118	4.393	0.593	5.9	0.0942	0.0000	FLOOD RISK
120 minute winter	SW15	118	4.393	0.843	19.6	0.1340	0.0000	FLOOD RISK
960 minute winter	ALDI BLANKET	945	4.134	0.851	48.2	963.8820	0.0000	OK
15 minute summer	Dummy Outfall	1	4.100	0.000	0.0	0.0000	0.0000	OK
120 minute winter	MACD/COSTA BLANKET	118	4.393	0.843	80.3	189.2274	0.0000	FLOOD RISK
15 minute summer	SW24	12	4.465	0.965	29.0	2.4551	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW08	2.000	SW09	47.2	1.187	0.821	0.7487	
960 minute winter	SW09	2.001	SW10	4.5	0.208	0.103	0.5641	
960 minute winter	SW10	2.002 (Dummy)	ALDI BLANKET	4.4	0.179	0.063	2.8989	
120 minute winter	SW11	3.000	SW12	4.8	0.659	0.078	0.3810	
120 minute winter	SW12	3.001	SW13	6.8	0.237	0.135	0.7173	
120 minute winter	SW13	3.002 (Dummy)	MACD/COSTA BLANKET	18.8	0.706	0.473	0.6149	
120 minute winter	SW14	4.000	SW15	5.6	0.193	0.091	0.7218	
120 minute winter	SW15	4.001 (Dummy)	MACD/COSTA BLANKET	19.2	0.666	0.483	0.8083	
960 minute winter	ALDI BLANKET	Dummy Pipe	Dummy Outfall	0.0	0.000	0.000	0.0000	0.0
960 minute winter	ALDI BLANKET	Infiltration		4.6				
120 minute winter	MACD/COSTA BLANKET	7.000	SW20	20.6	0.454	0.190	1.1092	
15 minute summer	SW24	8.000	SW22	29.7	0.422	0.243	1.0495	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB01	0.210	5.00	5.500		502150.279	103650.337	1.000	4.500
101	0.044	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.044	5.00	5.500	1200	502175.304	103649.826	0.525	4.975
DUMMY MH10			6.000	1200	502150.010	103665.613	0.250	5.750
103	0.045	5.00	5.500	1200	502136.249	103633.346	0.450	5.050
104	0.045	5.00	5.500	1200	502162.593	103633.190	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	101	DB01	10.000	0.600	4.975	4.500	0.475	21.1	225	5.06	37.0
2.000	102	DB01	10.000	0.600	4.975	4.500	0.475	21.1	225	5.06	37.0
1.001	DB01	DUMMY MH10	10.000	0.600	4.500	5.750	-1.250	-8.0	150	29.80	13.9
3.000	103	DB01	10.000	0.600	5.050	4.500	0.550	18.2	225	5.05	37.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.864	113.9	5.9	0.300	0.775	0.044	0.0	35	1.527
2.000	2.864	113.9	5.9	0.300	0.775	0.044	0.0	35	1.527
1.001	0.007	0.1	19.4	0.850	0.100	0.388	0.0	150	0.000
3.000	3.083	122.6	6.0	0.225	0.775	0.045	0.0	34	1.618

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.000	104	DB01	10.000	0.600	5.050	4.500	0.550	18.2	225	5.05	37.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	3.083	122.6	6.0	0.225	0.775	0.045	0.0	34	1.618

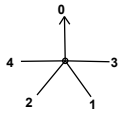
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
2.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
1.001	10.000	-8.0	150	Circular	5.500	4.500	0.850	6.000	5.750	0.100
3.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775
4.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB01		Junction	
2.000	102	1200	Manhole	Adoptable	DB01		Junction	
1.001	DB01		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB01		Junction	
4.000	104	1200	Manhole	Adoptable	DB01		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB01	502150.279	103650.337	5.500	1.000			1	4.000	4.500	225
							2	3.000	4.500	225
							3	2.000	4.500	225
							4	1.000	4.500	225
							0	1.001	4.500	150
101	502123.935	103650.025	5.500	0.525	1200		0	1.000	4.975	225
102	502175.304	103649.826	5.500	0.525	1200		0	2.000	4.975	225
DUMMY MH10	502150.010	103665.613	6.000	0.250	1200		1	1.001	5.750	150
103	502136.249	103633.346	5.500	0.450	1200		0	3.000	5.050	225
104	502162.593	103633.190	5.500	0.450	1200		0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB01 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	50.000	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.500	Length (m)	35.000	Inf Depth (m)	
Safety Factor	5.0	Time to half empty (mins)	1395	Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754	30 year +45% CC 480 minute summer	39.723	10.498
10 year +45% CC 960 minute winter	11.960	4.754	30 year +45% CC 480 minute winter	26.391	10.498
10 year +45% CC 1440 minute summer	12.748	3.417	30 year +45% CC 600 minute summer	31.932	8.734
10 year +45% CC 1440 minute winter	8.568	3.417	30 year +45% CC 600 minute winter	21.818	8.734
10 year +45% CC 2160 minute summer	8.965	2.478	30 year +45% CC 720 minute summer	28.010	7.507
10 year +45% CC 2160 minute winter	6.177	2.478	30 year +45% CC 720 minute winter	18.825	7.507
10 year +45% CC 2880 minute summer	7.422	1.989	30 year +45% CC 960 minute summer	22.414	5.902
10 year +45% CC 2880 minute winter	4.988	1.989	30 year +45% CC 960 minute winter	14.847	5.902
10 year +45% CC 4320 minute summer	5.701	1.491	30 year +45% CC 1440 minute summer	15.749	4.221
10 year +45% CC 4320 minute winter	3.754	1.491	30 year +45% CC 1440 minute winter	10.584	4.221
10 year +45% CC 5760 minute summer	4.817	1.233	30 year +45% CC 2160 minute summer	10.988	3.037
10 year +45% CC 5760 minute winter	3.118	1.233	30 year +45% CC 2160 minute winter	7.571	3.037
10 year +45% CC 7200 minute summer	4.217	1.076	30 year +45% CC 2880 minute summer	9.032	2.421
10 year +45% CC 7200 minute winter	2.722	1.076	30 year +45% CC 2880 minute winter	6.070	2.421
10 year +45% CC 8640 minute summer	3.798	0.969	30 year +45% CC 4320 minute summer	6.847	1.790
10 year +45% CC 8640 minute winter	2.451	0.969	30 year +45% CC 4320 minute winter	4.509	1.790
10 year +45% CC 10080 minute summer	3.494	0.891	30 year +45% CC 5760 minute summer	5.723	1.465
10 year +45% CC 10080 minute winter	2.255	0.891	30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 15 minute summer	428.381	121.217	30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 15 minute winter	300.618	121.217	30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 30 minute summer	283.634	80.259	30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 30 minute winter	199.041	80.259	30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 60 minute summer	192.610	50.901	30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 60 minute winter	127.966	50.901	30 year +45% CC 10080 minute winter	2.617	1.034
30 year +45% CC 120 minute summer	117.132	30.955	100 year +45% CC 15 minute summer	538.288	152.317
30 year +45% CC 120 minute winter	77.820	30.955	100 year +45% CC 15 minute winter	377.746	152.317
30 year +45% CC 180 minute summer	88.762	22.842	100 year +45% CC 30 minute summer	359.991	101.865
30 year +45% CC 180 minute winter	57.698	22.842	100 year +45% CC 30 minute winter	252.625	101.865
30 year +45% CC 240 minute summer	69.247	18.300	100 year +45% CC 60 minute summer	245.951	64.998
30 year +45% CC 240 minute winter	46.006	18.300	100 year +45% CC 60 minute winter	163.404	64.998
30 year +45% CC 360 minute summer	51.557	13.267	100 year +45% CC 120 minute summer	146.817	38.800
30 year +45% CC 360 minute winter	33.513	13.267	100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 year +45% CC Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	DB01	450	4.657	0.157	13.2	81.2837	0.0000	SURCHARGED
15 minute summer	101	9	5.018	0.043	7.8	0.0483	0.0000	OK
15 minute summer	102	9	5.018	0.043	7.8	0.0483	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.092	0.042	8.0	0.0472	0.0000	OK
15 minute summer	104	9	5.092	0.042	8.0	0.0472	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	DB01	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute summer	DB01	Infiltration		2.1				
15 minute summer	101	1.000	DB01	7.8	2.142	0.068	0.0466	
15 minute summer	102	2.000	DB01	7.8	2.142	0.068	0.0466	
15 minute summer	103	3.000	DB01	8.0	2.264	0.065	0.0460	
15 minute summer	104	4.000	DB01	8.0	2.264	0.065	0.0460	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	DB01	352	4.721	0.221	17.5	114.7800	0.0000	SURCHARGED
15 minute summer	101	9	5.027	0.052	12.0	0.0589	0.0000	OK
15 minute summer	102	9	5.027	0.052	12.0	0.0589	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.101	0.051	12.3	0.0572	0.0000	OK
15 minute summer	104	9	5.101	0.051	12.3	0.0572	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	DB01	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
360 minute winter	DB01	Infiltration		2.1				
15 minute summer	101	1.000	DB01	12.0	2.297	0.105	0.0760	
15 minute summer	102	2.000	DB01	12.0	2.297	0.105	0.0760	
15 minute summer	103	3.000	DB01	12.3	2.411	0.100	0.0753	
15 minute summer	104	4.000	DB01	12.3	2.411	0.100	0.0753	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB01	472	4.901	0.401	22.7	209.5024	0.0000	SURCHARGED
15 minute summer	101	9	5.046	0.071	23.6	0.0802	0.0000	OK
15 minute summer	102	9	5.046	0.071	23.6	0.0802	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.119	0.069	24.1	0.0778	0.0000	OK
15 minute summer	104	9	5.119	0.069	24.1	0.0778	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB01	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB01	Infiltration		2.1				
15 minute summer	101	1.000	DB01	23.6	2.469	0.207	0.1684	
15 minute summer	102	2.000	DB01	23.6	2.469	0.207	0.1684	
15 minute summer	103	3.000	DB01	24.1	2.589	0.197	0.1680	
15 minute summer	104	4.000	DB01	24.1	2.589	0.197	0.1680	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	DB01	585	5.021	0.521	23.5	272.5848	0.0000	SURCHARGED
15 minute summer	101	9	5.056	0.081	30.7	0.0914	0.0000	OK
15 minute summer	102	9	5.056	0.081	30.7	0.0914	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.128	0.078	31.4	0.0884	0.0000	OK
15 minute summer	104	9	5.128	0.078	31.4	0.0884	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB01	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB01	Infiltration		2.1				
15 minute summer	101	1.000	DB01	30.8	2.509	0.270	0.2141	
15 minute summer	102	2.000	DB01	30.8	2.509	0.270	0.2141	
15 minute summer	103	3.000	DB01	31.4	2.632	0.256	0.2126	
15 minute summer	104	4.000	DB01	31.4	2.632	0.256	0.2126	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB01	705	5.176	0.676	25.4	353.9070	0.0000	SURCHARGED
720 minute winter	101	705	5.176	0.201	2.9	0.2275	0.0000	OK
720 minute winter	102	705	5.176	0.201	2.9	0.2275	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
720 minute winter	103	705	5.176	0.126	2.9	0.1426	0.0000	OK
720 minute winter	104	705	5.176	0.126	2.9	0.1426	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB01	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB01	Infiltration		2.1				
720 minute winter	101	1.000	DB01	2.9	0.823	0.025	0.3862	
720 minute winter	102	2.000	DB01	2.9	0.823	0.025	0.3862	
720 minute winter	103	3.000	DB01	2.9	0.856	0.024	0.3133	
720 minute winter	104	4.000	DB01	2.9	0.856	0.024	0.3133	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB02	0.131	5.00	5.500		502150.279	103650.493	1.000	4.500
101	0.060	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.060	5.00	5.500	1200	502175.375	103649.826	0.525	4.975
DUMMY MH10			6.000	1200	502149.967	103665.613	0.250	5.750
103	0.061	5.00	5.500	1200	502136.249	103633.346	0.450	5.050
104	0.061	5.00	5.500	1200	502162.465	103633.233	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	101	DB02	10.000	0.600	4.975	4.500	0.475	21.1	225	5.06	37.0
2.000	102	DB02	10.000	0.600	4.975	4.500	0.475	21.1	225	5.06	37.0
1.001	DB02	DUMMY MH10	10.000	0.600	4.500	5.750	-1.250	-8.0	150	29.80	13.9
3.000	103	DB02	10.000	0.600	5.050	4.500	0.550	18.2	225	5.05	37.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.864	113.9	8.0	0.300	0.775	0.060	0.0	40	1.663
2.000	2.864	113.9	8.0	0.300	0.775	0.060	0.0	40	1.663
1.001	0.007	0.1	18.7	0.850	0.100	0.373	0.0	150	0.000
3.000	3.083	122.6	8.2	0.225	0.775	0.061	0.0	39	1.767

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.000	104	DB02	10.000	0.600	5.050	4.500	0.550	18.2	225	5.05	37.1

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	3.083	122.6	8.2	0.225	0.775	0.061	0.0	39	1.767

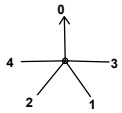
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
2.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
1.001	10.000	-8.0	150	Circular	5.500	4.500	0.850	6.000	5.750	0.100
3.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775
4.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB02		Junction	
2.000	102	1200	Manhole	Adoptable	DB02		Junction	
1.001	DB02		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB02		Junction	
4.000	104	1200	Manhole	Adoptable	DB02		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB02	502150.279	103650.493	5.500	1.000			1	4.000	4.500	225
							2	3.000	4.500	225
							3	2.000	4.500	225
							4	1.000	4.500	225
							0	1.001	4.500	150
101	502123.935	103650.025	5.500	0.525	1200		0	1.000	4.975	225
102	502175.375	103649.826	5.500	0.525	1200		0	2.000	4.975	225
DUMMY MH10	502149.967	103665.613	6.000	0.250	1200		1	1.001	5.750	150
103	502136.249	103633.346	5.500	0.450	1200		0	3.000	5.050	225
104	502162.465	103633.233	5.500	0.450	1200		0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB02 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	33.000	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.500	Length (m)	40.000	Inf Depth (m)	
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 year +45% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB02	456	4.713	0.213	10.4	83.7147	0.0000	SURCHARGED
15 minute summer	101	9	5.025	0.050	10.6	0.0563	0.0000	OK
15 minute summer	102	9	5.025	0.050	10.6	0.0563	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.098	0.048	10.8	0.0545	0.0000	OK
15 minute summer	104	9	5.098	0.048	10.8	0.0545	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB02	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB02	Infiltration		1.6				
15 minute summer	101	1.000	DB02	10.6	2.307	0.093	0.0617	
15 minute summer	102	2.000	DB02	10.6	2.307	0.093	0.0617	
15 minute summer	103	3.000	DB02	10.8	2.424	0.088	0.0608	
15 minute summer	104	4.000	DB02	10.8	2.424	0.088	0.0608	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB02	464	4.801	0.301	13.6	118.3421	0.0000	SURCHARGED
15 minute summer	101	9	5.035	0.060	16.4	0.0683	0.0000	OK
15 minute summer	102	9	5.035	0.060	16.4	0.0683	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.109	0.059	16.7	0.0663	0.0000	OK
15 minute summer	104	9	5.109	0.059	16.7	0.0663	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB02	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB02	Infiltration		1.6				
15 minute summer	101	1.000	DB02	16.4	2.455	0.144	0.1025	
15 minute summer	102	2.000	DB02	16.4	2.455	0.144	0.1025	
15 minute summer	103	3.000	DB02	16.7	2.572	0.136	0.1020	
15 minute summer	104	4.000	DB02	16.7	2.572	0.136	0.1020	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB02	705	5.031	0.531	15.7	209.4645	0.0000	SURCHARGED
15 minute summer	101	9	5.058	0.083	32.1	0.0942	0.0000	OK
15 minute summer	102	9	5.058	0.083	32.1	0.0942	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.130	0.080	32.6	0.0910	0.0000	OK
15 minute summer	104	9	5.130	0.080	32.6	0.0910	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB02	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB02	Infiltration		1.6				
15 minute summer	101	1.000	DB02	32.2	2.602	0.282	0.2111	
15 minute summer	102	2.000	DB02	32.2	2.602	0.282	0.2111	
15 minute summer	103	3.000	DB02	32.7	2.717	0.267	0.2094	
15 minute summer	104	4.000	DB02	32.7	2.717	0.267	0.2094	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB02	705	5.190	0.690	19.5	272.5687	0.0000	SURCHARGED
720 minute winter	101	705	5.190	0.215	3.1	0.2435	0.0000	OK
720 minute winter	102	705	5.190	0.215	3.1	0.2435	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
720 minute winter	103	705	5.190	0.140	3.2	0.1587	0.0000	OK
720 minute winter	104	705	5.190	0.140	3.2	0.1587	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB02	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB02	Infiltration		1.6				
720 minute winter	101	1.000	DB02	3.1	0.838	0.027	0.3946	
720 minute winter	102	2.000	DB02	3.1	0.838	0.027	0.3946	
720 minute winter	103	3.000	DB02	3.2	0.871	0.026	0.3290	
720 minute winter	104	4.000	DB02	3.2	0.871	0.026	0.3290	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	DB02	945	5.403	0.903	19.4	356.7995	0.0000	FLOOD RISK
960 minute winter	101	945	5.403	0.428	3.1	0.4841	0.0000	FLOOD RISK
960 minute winter	102	945	5.403	0.428	3.1	0.4841	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
960 minute winter	103	945	5.403	0.353	3.2	0.3993	0.0000	FLOOD RISK
960 minute winter	104	945	5.403	0.353	3.2	0.3993	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	DB02	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
960 minute winter	DB02	Infiltration		1.6				
960 minute winter	101	1.000	DB02	3.1	0.775	0.027	0.3977	
960 minute winter	102	2.000	DB02	3.1	0.775	0.027	0.3977	
960 minute winter	103	3.000	DB02	3.2	0.801	0.026	0.3977	
960 minute winter	104	4.000	DB02	3.2	0.801	0.026	0.3977	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	0.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB03	0.129	5.00	5.500		502150.279	103650.493	1.000	4.500
101	0.022	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.021	5.00	5.500	1200	502175.531	103649.869	0.525	4.975
DUMMY MH10			6.000	1200	502149.967	103665.613	0.250	5.750
103	0.041	5.00	5.500	1200	502136.249	103633.346	0.450	5.050
104	0.041	5.00	5.500	1200	502162.593	103633.190	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
1.000	101	DB03	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
2.000	102	DB03	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
1.001	DB03	DUMMY MH10	10.000	0.600	4.500	5.750	-1.250	-8.0	150	0.00
3.000	103	DB03	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.864	113.9	0.300	0.775	0.022	0.0	0	0.000
2.000	2.864	113.9	0.300	0.775	0.021	0.0	0	0.000
1.001	0.007	0.1	0.850	0.100	0.254	0.0	0	0.000
3.000	3.083	122.6	0.225	0.775	0.041	0.0	0	0.000

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
4.000	104	DB03	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	3.083	122.6	0.225	0.775	0.041	0.0	0	0.000

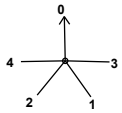
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
2.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
1.001	10.000	-8.0	150	Circular	5.500	4.500	0.850	6.000	5.750	0.100
3.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775
4.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB03		Junction	
2.000	102	1200	Manhole	Adoptable	DB03		Junction	
1.001	DB03		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB03		Junction	
4.000	104	1200	Manhole	Adoptable	DB03		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB03	502150.279	103650.493	5.500	1.000			1	4.000	4.500	225
							2	3.000	4.500	225
							3	2.000	4.500	225
							4	1.000	4.500	225
							0	1.001	4.500	150
101	502123.935	103650.025	5.500	0.525	1200		0	1.000	4.975	225
102	502175.531	103649.869	5.500	0.525	1200		0	2.000	4.975	225
DUMMY MH10	502149.967	103665.613	6.000	0.250	1200		1	1.001	5.750	150
103	502136.249	103633.346	5.500	0.450	1200		0	3.000	5.050	225
104	502162.593	103633.190	5.500	0.450	1200		0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB03 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	30.000	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.500	Length (m)	30.000	Inf Depth (m)	1.000
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 year +45% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	DB03	472	4.712	0.212	10.6	56.8207	0.0000	SURCHARGED
15 minute summer	101	10	5.003	0.028	3.9	0.0321	0.0000	OK
15 minute summer	102	9	5.003	0.028	3.7	0.0315	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.089	0.039	7.3	0.0437	0.0000	OK
15 minute summer	104	9	5.089	0.039	7.3	0.0437	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute summer	DB03	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute summer	DB03	Infiltration		1.1				
15 minute summer	101	1.000	DB03	3.9	1.451	0.034	0.0550	
15 minute summer	102	2.000	DB03	3.7	1.402	0.032	0.0550	
15 minute summer	103	3.000	DB03	7.3	2.039	0.060	0.0565	
15 minute summer	104	4.000	DB03	7.3	2.039	0.060	0.0565	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB03	464	4.795	0.295	9.3	79.1996	0.0000	SURCHARGED
15 minute summer	101	10	5.010	0.035	6.0	0.0395	0.0000	OK
15 minute summer	102	10	5.009	0.034	5.7	0.0386	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.097	0.047	11.2	0.0527	0.0000	OK
15 minute summer	104	9	5.097	0.047	11.2	0.0527	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB03	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB03	Infiltration		1.1				
15 minute summer	101	1.000	DB03	6.0	1.483	0.052	0.0973	
15 minute summer	102	2.000	DB03	5.7	1.448	0.050	0.0972	
15 minute summer	103	3.000	DB03	11.2	2.138	0.091	0.0990	
15 minute summer	104	4.000	DB03	11.2	2.138	0.091	0.0990	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	DB03	585	5.034	0.534	12.4	143.8936	0.0000	SURCHARGED
600 minute winter	101	585	5.034	0.059	1.1	0.0672	0.0000	OK
600 minute winter	102	585	5.034	0.059	1.0	0.0672	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.114	0.064	21.9	0.0726	0.0000	OK
15 minute summer	104	10	5.114	0.064	21.9	0.0726	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB03	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB03	Infiltration		1.1				
600 minute winter	101	1.000	DB03	1.1	0.498	0.010	0.2407	
600 minute winter	102	2.000	DB03	1.0	0.498	0.009	0.2407	
15 minute summer	103	3.000	DB03	21.9	2.214	0.179	0.2035	
15 minute summer	104	4.000	DB03	21.9	2.214	0.179	0.2035	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB03	705	5.183	0.683	13.2	184.1274	0.0000	SURCHARGED
720 minute winter	101	705	5.183	0.208	1.2	0.2358	0.0000	OK
720 minute winter	102	705	5.183	0.208	1.1	0.2358	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
720 minute winter	103	705	5.183	0.133	2.1	0.1509	0.0000	OK
720 minute winter	104	705	5.183	0.133	2.1	0.1509	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB03	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB03	Infiltration		1.1				
720 minute winter	101	1.000	DB03	1.2	0.508	0.011	0.3910	
720 minute winter	102	2.000	DB03	1.1	0.508	0.010	0.3910	
720 minute winter	103	3.000	DB03	2.1	0.756	0.017	0.3215	
720 minute winter	104	4.000	DB03	2.1	0.756	0.017	0.3215	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.68%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	DB03	945	5.395	0.895	13.1	241.3318	0.0000	FLOOD RISK
960 minute winter	101	945	5.395	0.420	1.1	0.4754	0.0000	FLOOD RISK
960 minute winter	102	945	5.395	0.420	1.1	0.4754	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
960 minute winter	103	945	5.395	0.345	2.1	0.3906	0.0000	FLOOD RISK
960 minute winter	104	945	5.395	0.345	2.1	0.3906	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	DB03	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
960 minute winter	DB03	Infiltration		1.1				
960 minute winter	101	1.000	DB03	1.1	0.528	0.010	0.3977	
960 minute winter	102	2.000	DB03	1.1	0.528	0.010	0.3977	
960 minute winter	103	3.000	DB03	2.1	0.781	0.017	0.3977	
960 minute winter	104	4.000	DB03	2.1	0.781	0.017	0.3977	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	0.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB04	0.098	5.00	5.500		502150.279	103650.493	1.000	4.500
101	0.038	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.038	5.00	5.500	1200	502175.488	103649.869	0.525	4.975
DUMMY MH10			6.000	1200	502149.967	103665.613	0.250	5.750
103	0.038	5.00	5.500	1200	502136.249	103633.346	0.450	5.050
104	0.038	5.00	5.500	1200	502162.593	103633.190	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
1.000	101	DB04	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
2.000	102	DB04	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
1.001	DB04	DUMMY MH10	10.000	0.600	4.500	5.750	-1.250	-8.0	150	0.00
3.000	103	DB04	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.864	113.9	0.300	0.775	0.038	0.0	0	0.000
2.000	2.864	113.9	0.300	0.775	0.038	0.0	0	0.000
1.001	0.007	0.1	0.850	0.100	0.250	0.0	0	0.000
3.000	3.083	122.6	0.225	0.775	0.038	0.0	0	0.000

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
4.000	104	DB04	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	3.083	122.6	0.225	0.775	0.038	0.0	0	0.000

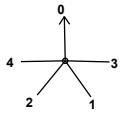
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
2.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
1.001	10.000	-8.0	150	Circular	5.500	4.500	0.850	6.000	5.750	0.100
3.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775
4.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB04		Junction	
2.000	102	1200	Manhole	Adoptable	DB04		Junction	
1.001	DB04		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB04		Junction	
4.000	104	1200	Manhole	Adoptable	DB04		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB04	502150.279	103650.493	5.500	1.000		 1	4.000	4.500	225
						2	3.000	4.500	225
						3	2.000	4.500	225
						4	1.000	4.500	225
						0	1.001	4.500	150
101	502123.935	103650.025	5.500	0.525	1200	 0	1.000	4.975	225
102	502175.488	103649.869	5.500	0.525	1200	 0	2.000	4.975	225
DUMMY MH10	502149.967	103665.613	6.000	0.250	1200	 1	1.001	5.750	150
103	502136.249	103633.346	5.500	0.450	1200	 0	3.000	5.050	225
104	502162.593	103633.190	5.500	0.450	1200	 0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB04 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	30.000	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.500	Length (m)	30.000	Inf Depth (m)	1.000
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 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 (m³)	Flood (m³)	Status
600 minute summer	DB04	495	4.709	0.209	8.6	56.0281	0.0000	SURCHARGED
15 minute summer	101	9	5.014	0.039	6.7	0.0437	0.0000	OK
15 minute summer	102	9	5.014	0.039	6.7	0.0437	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.087	0.037	6.7	0.0420	0.0000	OK
15 minute summer	104	9	5.087	0.037	6.7	0.0420	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	DB04	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute summer	DB04	Infiltration		1.1				
15 minute summer	101	1.000	DB04	6.7	1.911	0.059	0.0557	
15 minute summer	102	2.000	DB04	6.7	1.911	0.059	0.0557	
15 minute summer	103	3.000	DB04	6.7	1.988	0.055	0.0553	
15 minute summer	104	4.000	DB04	6.7	1.988	0.055	0.0553	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute summer	DB04	600	4.792	0.292	11.2	78.3965	0.0000	SURCHARGED
15 minute summer	101	9	5.022	0.047	10.4	0.0527	0.0000	OK
15 minute summer	102	9	5.022	0.047	10.4	0.0527	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.095	0.045	10.4	0.0506	0.0000	OK
15 minute summer	104	9	5.095	0.045	10.4	0.0506	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	DB04	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute summer	DB04	Infiltration		1.1				
15 minute summer	101	1.000	DB04	10.4	2.004	0.091	0.0965	
15 minute summer	102	2.000	DB04	10.4	2.004	0.091	0.0965	
15 minute summer	103	3.000	DB04	10.3	2.078	0.084	0.0962	
15 minute summer	104	4.000	DB04	10.3	2.078	0.084	0.0962	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB04	472	5.019	0.519	14.5	139.8165	0.0000	SURCHARGED
15 minute summer	101	10	5.039	0.064	20.3	0.0725	0.0000	OK
15 minute summer	102	10	5.039	0.064	20.3	0.0725	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.112	0.062	20.3	0.0698	0.0000	OK
15 minute summer	104	10	5.112	0.062	20.3	0.0698	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB04	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB04	Infiltration		1.1				
15 minute summer	101	1.000	DB04	20.3	2.082	0.178	0.2011	
15 minute summer	102	2.000	DB04	20.3	2.082	0.178	0.2011	
15 minute summer	103	3.000	DB04	20.3	2.153	0.166	0.2004	
15 minute summer	104	4.000	DB04	20.3	2.153	0.166	0.2004	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB04	705	5.173	0.673	13.1	181.4338	0.0000	SURCHARGED
720 minute winter	101	705	5.173	0.198	2.0	0.2245	0.0000	OK
720 minute winter	102	705	5.173	0.198	2.0	0.2245	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
720 minute winter	103	705	5.173	0.123	2.0	0.1397	0.0000	OK
720 minute winter	104	705	5.173	0.123	2.0	0.1397	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB04	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB04	Infiltration		1.1				
720 minute winter	101	1.000	DB04	2.0	0.707	0.018	0.3844	
720 minute winter	102	2.000	DB04	2.0	0.707	0.018	0.3844	
720 minute winter	103	3.000	DB04	2.0	0.734	0.016	0.3104	
720 minute winter	104	4.000	DB04	2.0	0.734	0.016	0.3104	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	DB04	960	5.374	0.874	19.7	235.6440	0.0000	FLOOD RISK
960 minute summer	101	960	5.374	0.399	3.0	0.4516	0.0000	FLOOD RISK
960 minute summer	102	960	5.374	0.399	3.0	0.4516	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
960 minute summer	103	960	5.374	0.324	3.0	0.3667	0.0000	FLOOD RISK
960 minute summer	104	960	5.374	0.324	3.0	0.3667	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	DB04	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
960 minute summer	DB04	Infiltration		1.1				
960 minute summer	101	1.000	DB04	3.0	0.679	0.026	0.3977	
960 minute summer	102	2.000	DB04	3.0	0.679	0.026	0.3977	
960 minute summer	103	3.000	DB04	3.0	0.701	0.024	0.3977	
960 minute summer	104	4.000	DB04	3.0	0.701	0.024	0.3977	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	0.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB05	0.117	5.00	5.500		502150.365	103650.493	1.000	4.500
101	0.023	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.023	5.00	5.500	1200	502175.531	103649.869	0.525	4.975
DUMMY MH10			6.000	1200	502149.967	103665.613	0.250	5.750
103	0.044	5.00	5.500	1200	502136.249	103633.346	0.450	5.050
104	0.044	5.00	5.500	1200	502162.593	103633.190	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
1.000	101	DB05	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
2.000	102	DB05	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
1.001	DB05	DUMMY MH10	10.000	0.600	4.500	5.750	-1.250	-8.0	150	0.00
3.000	103	DB05	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.864	113.9	0.300	0.775	0.023	0.0	0	0.000
2.000	2.864	113.9	0.300	0.775	0.023	0.0	0	0.000
1.001	0.007	0.1	0.850	0.100	0.251	0.0	0	0.000
3.000	3.083	122.6	0.225	0.775	0.044	0.0	0	0.000

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
4.000	104	DB05	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	3.083	122.6	0.225	0.775	0.044	0.0	0	0.000

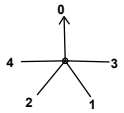
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
2.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
1.001	10.000	-8.0	150	Circular	5.500	4.500	0.850	6.000	5.750	0.100
3.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775
4.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB05		Junction	
2.000	102	1200	Manhole	Adoptable	DB05		Junction	
1.001	DB05		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB05		Junction	
4.000	104	1200	Manhole	Adoptable	DB05		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB05	502150.365	103650.493	5.500	1.000			1	4.000	4.500	225
							2	3.000	4.500	225
							3	2.000	4.500	225
							4	1.000	4.500	225
							0	1.001	4.500	150
101	502123.935	103650.025	5.500	0.525	1200		0	1.000	4.975	225
102	502175.531	103649.869	5.500	0.525	1200		0	2.000	4.975	225
DUMMY MH10	502149.967	103665.613	6.000	0.250	1200		1	1.001	5.750	150
103	502136.249	103633.346	5.500	0.450	1200		0	3.000	5.050	225
104	502162.593	103633.190	5.500	0.450	1200		0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB05 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	21.875	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.500	Length (m)	40.000	Inf Depth (m)	1.000
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 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 (m³)	Flood (m³)	Status
600 minute summer	DB05	525	4.716	0.216	8.6	56.0660	0.0000	SURCHARGED
15 minute summer	101	10	5.004	0.029	4.1	0.0329	0.0000	OK
15 minute summer	102	10	5.004	0.029	4.1	0.0329	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.090	0.040	7.8	0.0453	0.0000	OK
15 minute summer	104	9	5.090	0.040	7.8	0.0453	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	DB05	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute summer	DB05	Infiltration		1.0				
15 minute summer	101	1.000	DB05	4.1	1.456	0.036	0.0565	
15 minute summer	102	2.000	DB05	4.1	1.456	0.036	0.0565	
15 minute summer	103	3.000	DB05	7.8	2.082	0.064	0.0583	
15 minute summer	104	4.000	DB05	7.8	2.082	0.064	0.0583	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB05	464	4.802	0.302	9.0	78.7279	0.0000	SURCHARGED
15 minute summer	101	10	5.011	0.036	6.3	0.0405	0.0000	OK
15 minute summer	102	10	5.011	0.036	6.3	0.0405	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	9	5.098	0.048	12.0	0.0548	0.0000	OK
15 minute summer	104	9	5.098	0.048	12.0	0.0548	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB05	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB05	Infiltration		1.0				
15 minute summer	101	1.000	DB05	6.3	1.496	0.055	0.0996	
15 minute summer	102	2.000	DB05	6.3	1.496	0.055	0.0996	
15 minute summer	103	3.000	DB05	12.0	2.185	0.098	0.1016	
15 minute summer	104	4.000	DB05	12.0	2.185	0.098	0.1016	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	DB05	585	5.043	0.543	12.1	142.0100	0.0000	SURCHARGED
600 minute winter	101	585	5.043	0.068	1.1	0.0769	0.0000	OK
600 minute winter	102	585	5.043	0.068	1.1	0.0769	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.117	0.067	23.5	0.0752	0.0000	OK
15 minute summer	104	10	5.117	0.067	23.5	0.0752	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB05	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB05	Infiltration		1.0				
600 minute winter	101	1.000	DB05	1.1	0.485	0.010	0.2493	
600 minute winter	102	2.000	DB05	1.1	0.485	0.010	0.2493	
15 minute summer	103	3.000	DB05	23.5	2.280	0.192	0.2062	
15 minute summer	104	4.000	DB05	23.5	2.280	0.192	0.2062	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	DB05	600	5.197	0.697	15.3	182.3326	0.0000	SURCHARGED
600 minute winter	101	600	5.197	0.222	1.4	0.2506	0.0000	OK
600 minute winter	102	600	5.197	0.222	1.4	0.2506	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
600 minute winter	103	600	5.197	0.147	2.7	0.1658	0.0000	OK
600 minute winter	104	600	5.197	0.147	2.7	0.1658	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB05	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB05	Infiltration		1.0				
600 minute winter	101	1.000	DB05	1.4	0.613	0.012	0.3969	
600 minute winter	102	2.000	DB05	1.4	0.613	0.012	0.3969	
600 minute winter	103	3.000	DB05	2.7	0.782	0.022	0.3358	
600 minute winter	104	4.000	DB05	2.7	0.782	0.022	0.3358	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB05	720	5.412	0.912	16.5	238.9965	0.0000	FLOOD RISK
720 minute winter	101	720	5.412	0.437	1.5	0.4948	0.0000	FLOOD RISK
720 minute winter	102	720	5.412	0.437	1.5	0.4948	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
720 minute winter	103	720	5.412	0.362	2.9	0.4099	0.0000	FLOOD RISK
720 minute winter	104	720	5.412	0.362	2.9	0.4099	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB05	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB05	Infiltration		1.0				
720 minute winter	101	1.000	DB05	1.5	0.432	0.013	0.3977	
720 minute winter	102	2.000	DB05	1.5	0.432	0.013	0.3977	
720 minute winter	103	3.000	DB05	2.9	0.801	0.024	0.3977	
720 minute winter	104	4.000	DB05	2.9	0.801	0.024	0.3977	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	0.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB06	0.036	5.00	5.500		502150.279	103650.493	1.500	4.000
101	0.058	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.058	5.00	5.500	1200	502175.531	103649.869	0.525	4.975
DUMMY MH10			6.000	1200	502149.967	103665.613	0.250	5.750
103	0.059	5.00	5.500	1200	502136.249	103633.346	0.450	5.050
104	0.058	5.00	5.500	1200	502162.593	103633.190	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
1.000	101	DB06	10.000	0.600	4.975	4.000	0.975	10.3	225	0.00
2.000	102	DB06	10.000	0.600	4.975	4.000	0.975	10.3	225	0.00
1.001	DB06	DUMMY MH10	10.000	0.600	4.000	5.750	-1.750	-5.7	150	0.00
3.000	103	DB06	10.000	0.600	5.050	4.000	1.050	9.5	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	4.109	163.4	0.300	1.275	0.058	0.0	0	0.000
2.000	4.109	163.4	0.300	1.275	0.058	0.0	0	0.000
1.001	0.007	0.1	1.350	0.100	0.269	0.0	0	0.000
3.000	4.265	169.6	0.225	1.275	0.059	0.0	0	0.000

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
4.000	104	DB06	10.000	0.600	5.050	4.000	1.050	9.5	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	4.265	169.6	0.225	1.275	0.058	0.0	0	0.000

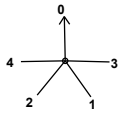
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	10.3	225	Circular	5.500	4.975	0.300	5.500	4.000	1.275
2.000	10.000	10.3	225	Circular	5.500	4.975	0.300	5.500	4.000	1.275
1.001	10.000	-5.7	150	Circular	5.500	4.000	1.350	6.000	5.750	0.100
3.000	10.000	9.5	225	Circular	5.500	5.050	0.225	5.500	4.000	1.275
4.000	10.000	9.5	225	Circular	5.500	5.050	0.225	5.500	4.000	1.275

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB06		Junction	
2.000	102	1200	Manhole	Adoptable	DB06		Junction	
1.001	DB06		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB06		Junction	
4.000	104	1200	Manhole	Adoptable	DB06		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB06	502150.279	103650.493	5.500	1.500			1	4.000	4.000	225
							2	3.000	4.000	225
							3	2.000	4.000	225
							4	1.000	4.000	225
							0	1.001	4.000	150
101	502123.935	103650.025	5.500	0.525	1200		0	1.000	4.975	225
102	502175.531	103649.869	5.500	0.525	1200		0	2.000	4.975	225
DUMMY MH10	502149.967	103665.613	6.000	0.250	1200		1	1.001	5.750	150
103	502136.249	103633.346	5.500	0.450	1200		0	3.000	5.050	225
104	502162.593	103633.190	5.500	0.450	1200		0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB06 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	20.000	Depth (m)	1.500
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.000	Length (m)	34.000	Inf Depth (m)	1.500
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 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 (m³)	Flood (m³)	Status
600 minute winter	DB06	585	4.364	0.364	6.4	66.3492	0.0000	SURCHARGED
15 minute summer	101	10	5.013	0.038	10.3	0.0431	0.0000	OK
15 minute summer	102	10	5.013	0.038	10.3	0.0431	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.088	0.038	10.5	0.0428	0.0000	OK
15 minute summer	104	10	5.087	0.037	10.3	0.0423	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB06	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB06	Infiltration		0.8				
15 minute summer	101	1.000	DB06	10.2	2.364	0.063	0.0993	
15 minute summer	102	2.000	DB06	10.2	2.364	0.063	0.0993	
15 minute summer	103	3.000	DB06	10.4	2.423	0.062	0.0992	
15 minute summer	104	4.000	DB06	10.2	2.407	0.060	0.0992	

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Results for 2 year +45% CC Critical Storm Duration. Lowest mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	DB06	705	4.507	0.507	7.1	93.0394	0.0000	SURCHARGED
15 minute summer	101	10	5.022	0.047	15.8	0.0532	0.0000	OK
15 minute summer	102	10	5.022	0.047	15.8	0.0532	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.097	0.047	16.1	0.0527	0.0000	OK
15 minute summer	104	10	5.096	0.046	15.8	0.0522	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	DB06	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute winter	DB06	Infiltration		0.8				
15 minute summer	101	1.000	DB06	15.7	2.387	0.096	0.1643	
15 minute summer	102	2.000	DB06	15.7	2.387	0.096	0.1643	
15 minute summer	103	3.000	DB06	16.0	2.448	0.095	0.1641	
15 minute summer	104	4.000	DB06	15.7	2.426	0.093	0.1641	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.62%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	DB06	960	4.854	0.854	13.5	159.2770	0.0000	SURCHARGED
15 minute summer	101	10	5.041	0.066	31.0	0.0748	0.0000	OK
15 minute summer	102	10	5.041	0.066	31.0	0.0748	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.115	0.065	31.5	0.0740	0.0000	OK
15 minute summer	104	10	5.115	0.065	31.0	0.0734	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	DB06	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
960 minute summer	DB06	Infiltration		0.8				
15 minute summer	101	1.000	DB06	31.0	2.511	0.190	0.2402	
15 minute summer	102	2.000	DB06	31.0	2.511	0.190	0.2402	
15 minute summer	103	3.000	DB06	31.5	2.574	0.186	0.2395	
15 minute summer	104	4.000	DB06	31.0	2.568	0.183	0.2391	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.43%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	DB06	945	5.092	1.092	11.1	205.8341	0.0000	SURCHARGED
960 minute winter	101	945	5.092	0.117	2.4	0.1325	0.0000	OK
960 minute winter	102	945	5.092	0.117	2.4	0.1325	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.125	0.075	41.2	0.0850	0.0000	OK
15 minute summer	104	10	5.125	0.075	40.5	0.0843	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	DB06	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
960 minute winter	DB06	Infiltration		0.8				
960 minute winter	101	1.000	DB06	2.4	0.847	0.015	0.3033	
960 minute winter	102	2.000	DB06	2.4	0.847	0.015	0.3033	
15 minute summer	103	3.000	DB06	41.2	2.728	0.243	0.2551	
15 minute summer	104	4.000	DB06	40.5	2.704	0.239	0.2544	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	DB06	1410	5.417	1.417	9.8	270.9023	0.0000	FLOOD RISK
1440 minute winter	101	1410	5.417	0.442	2.1	0.5003	0.0000	FLOOD RISK
1440 minute winter	102	1410	5.417	0.442	2.1	0.5003	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
1440 minute winter	103	1410	5.417	0.367	2.2	0.4155	0.0000	FLOOD RISK
1440 minute winter	104	1410	5.417	0.367	2.1	0.4155	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	DB06	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
1440 minute winter	DB06	Infiltration		0.8				
1440 minute winter	101	1.000	DB06	2.1	0.616	0.013	0.3977	
1440 minute winter	102	2.000	DB06	2.1	0.616	0.013	0.3977	
1440 minute winter	103	3.000	DB06	2.2	0.623	0.013	0.3977	
1440 minute winter	104	4.000	DB06	2.1	0.623	0.012	0.3977	

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Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	0.00	Preferred Cover Depth (m)	0.300
Return Period (years)	1	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
DB07	0.037	5.00	5.500		502150.279	103650.536	1.000	4.500
101	0.016	5.00	5.500	1200	502123.935	103650.025	0.525	4.975
102	0.016	5.00	5.500	1200	502175.531	103649.869	0.525	4.975
DUMMY MH10			6.000	1200	502150.139	103665.441	0.250	5.750
103	0.017	5.00	5.500	1200	502136.249	103633.389	0.450	5.050
104	0.017	5.00	5.500	1200	502162.507	103633.104	0.450	5.050

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
1.000	101	DB07	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
2.000	102	DB07	10.000	0.600	4.975	4.500	0.475	21.1	225	0.00
1.001	DB07	DUMMY MH10	10.000	0.600	4.500	5.750	-1.250	-8.0	150	0.00
3.000	103	DB07	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.864	113.9	0.300	0.775	0.016	0.0	0	0.000
2.000	2.864	113.9	0.300	0.775	0.016	0.0	0	0.000
1.001	0.007	0.1	0.850	0.100	0.103	0.0	0	0.000
3.000	3.083	122.6	0.225	0.775	0.017	0.0	0	0.000

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
4.000	104	DB07	10.000	0.600	5.050	4.500	0.550	18.2	225	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
4.000	3.083	122.6	0.225	0.775	0.017	0.0	0	0.000

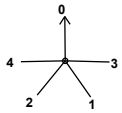
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
2.000	10.000	21.1	225	Circular	5.500	4.975	0.300	5.500	4.500	0.775
1.001	10.000	-8.0	150	Circular	5.500	4.500	0.850	6.000	5.750	0.100
3.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775
4.000	10.000	18.2	225	Circular	5.500	5.050	0.225	5.500	4.500	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	101	1200	Manhole	Adoptable	DB07		Junction	
2.000	102	1200	Manhole	Adoptable	DB07		Junction	
1.001	DB07		Junction		DUMMY MH10	1200	Manhole	Adoptable
3.000	103	1200	Manhole	Adoptable	DB07		Junction	
4.000	104	1200	Manhole	Adoptable	DB07		Junction	

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
DB07	502150.279	103650.536	5.500	1.000			1	4.000	4.500	225
							2	3.000	4.500	225
							3	2.000	4.500	225
							4	1.000	4.500	225
							0	1.001	4.500	150
101	502123.935	103650.025	5.500	0.525	1200		0	1.000	4.975	225
102	502175.531	103649.869	5.500	0.525	1200		0	2.000	4.975	225
DUMMY MH10	502150.139	103665.441	6.000	0.250	1200		1	1.001	5.750	150
103	502136.249	103633.389	5.500	0.450	1200		0	3.000	5.050	225
104	502162.507	103633.104	5.500	0.450	1200		0	4.000	5.050	225

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	45	0	0	30	45	0	0
2	45	0	0	100	45	0	0
10	45	0	0				

Node DB07 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02160	Porosity	0.30	Width (m)	17.000	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	4.500	Length (m)	20.000	Inf Depth (m)	1.000
Safety Factor	5.0	Time to half empty (mins)		Slope (1:X)	9999.9		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 15 minute summer	108.635	30.740	1 year +45% CC 600 minute summer	12.330	3.373
1 year +45% CC 15 minute winter	76.235	30.740	1 year +45% CC 600 minute winter	8.425	3.373
1 year +45% CC 30 minute summer	70.715	20.010	1 year +45% CC 720 minute summer	10.991	2.946
1 year +45% CC 30 minute winter	49.625	20.010	1 year +45% CC 720 minute winter	7.386	2.946
1 year +45% CC 60 minute summer	47.735	12.615	1 year +45% CC 960 minute summer	9.028	2.377
1 year +45% CC 60 minute winter	31.714	12.615	1 year +45% CC 960 minute winter	5.981	2.377
1 year +45% CC 120 minute summer	35.817	9.465	1 year +45% CC 1440 minute summer	6.575	1.762
1 year +45% CC 120 minute winter	23.796	9.465	1 year +45% CC 1440 minute winter	4.419	1.762
1 year +45% CC 180 minute summer	29.530	7.599	1 year +45% CC 2160 minute summer	4.791	1.324
1 year +45% CC 180 minute winter	19.195	7.599	1 year +45% CC 2160 minute winter	3.301	1.324
1 year +45% CC 240 minute summer	24.157	6.384	1 year +45% CC 2880 minute summer	4.081	1.094
1 year +45% CC 240 minute winter	16.050	6.384	1 year +45% CC 2880 minute winter	2.743	1.094
1 year +45% CC 360 minute summer	18.948	4.876	1 year +45% CC 4320 minute summer	3.279	0.857
1 year +45% CC 360 minute winter	12.316	4.876	1 year +45% CC 4320 minute winter	2.159	0.857
1 year +45% CC 480 minute summer	15.028	3.971	1 year +45% CC 5760 minute summer	2.869	0.734
1 year +45% CC 480 minute winter	9.984	3.971	1 year +45% CC 5760 minute winter	1.857	0.734

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +45% CC 7200 minute summer	2.584	0.659
1 year +45% CC 7200 minute winter	1.668	0.659
1 year +45% CC 8640 minute summer	2.384	0.608
1 year +45% CC 8640 minute winter	1.539	0.608
1 year +45% CC 10080 minute summer	2.239	0.571
1 year +45% CC 10080 minute winter	1.445	0.571
2 year +45% CC 15 minute summer	167.167	47.303
2 year +45% CC 15 minute winter	117.310	47.303
2 year +45% CC 30 minute summer	108.352	30.660
2 year +45% CC 30 minute winter	76.037	30.660
2 year +45% CC 60 minute summer	73.280	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	50.859	13.441
2 year +45% CC 120 minute winter	33.790	13.441
2 year +45% CC 180 minute summer	40.632	10.456
2 year +45% CC 180 minute winter	26.412	10.456
2 year +45% CC 240 minute summer	32.639	8.625
2 year +45% CC 240 minute winter	21.684	8.625
2 year +45% CC 360 minute summer	25.069	6.451
2 year +45% CC 360 minute winter	16.296	6.451
2 year +45% CC 480 minute summer	19.668	5.198
2 year +45% CC 480 minute winter	13.067	5.198
2 year +45% CC 600 minute summer	16.015	4.380
2 year +45% CC 600 minute winter	10.942	4.380
2 year +45% CC 720 minute summer	14.188	3.802
2 year +45% CC 720 minute winter	9.535	3.802
2 year +45% CC 960 minute summer	11.526	3.035
2 year +45% CC 960 minute winter	7.635	3.035
2 year +45% CC 1440 minute summer	8.297	2.224
2 year +45% CC 1440 minute winter	5.576	2.224
2 year +45% CC 2160 minute summer	5.964	1.648
2 year +45% CC 2160 minute winter	4.109	1.648
2 year +45% CC 2880 minute summer	5.025	1.347
2 year +45% CC 2880 minute winter	3.377	1.347
2 year +45% CC 4320 minute summer	3.971	1.038
2 year +45% CC 4320 minute winter	2.615	1.038
2 year +45% CC 5760 minute summer	3.431	0.878
2 year +45% CC 5760 minute winter	2.221	0.878
2 year +45% CC 7200 minute summer	3.058	0.780
2 year +45% CC 7200 minute winter	1.974	0.780
2 year +45% CC 8640 minute summer	2.796	0.713
2 year +45% CC 8640 minute winter	1.805	0.713
2 year +45% CC 10080 minute summer	2.607	0.665
2 year +45% CC 10080 minute winter	1.682	0.665
10 year +45% CC 15 minute summer	328.332	92.906
10 year +45% CC 15 minute winter	230.408	92.906
10 year +45% CC 30 minute summer	215.126	60.873
10 year +45% CC 30 minute winter	150.965	60.873
10 year +45% CC 60 minute summer	145.349	38.412
10 year +45% CC 60 minute winter	96.567	38.412
10 year +45% CC 120 minute summer	91.208	24.104
10 year +45% CC 120 minute winter	60.596	24.104
10 year +45% CC 180 minute summer	69.954	18.002
10 year +45% CC 180 minute winter	45.472	18.002
10 year +45% CC 240 minute summer	54.909	14.511
10 year +45% CC 240 minute winter	36.480	14.511
10 year +45% CC 360 minute summer	41.104	10.577
10 year +45% CC 360 minute winter	26.718	10.577
10 year +45% CC 480 minute summer	31.781	8.399
10 year +45% CC 480 minute winter	21.115	8.399
10 year +45% CC 600 minute summer	25.612	7.005
10 year +45% CC 600 minute winter	17.500	7.005
10 year +45% CC 720 minute summer	22.508	6.032
10 year +45% CC 720 minute winter	15.127	6.032

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year +45% CC 960 minute summer	18.055	4.754
10 year +45% CC 960 minute winter	11.960	4.754
10 year +45% CC 1440 minute summer	12.748	3.417
10 year +45% CC 1440 minute winter	8.568	3.417
10 year +45% CC 2160 minute summer	8.965	2.478
10 year +45% CC 2160 minute winter	6.177	2.478
10 year +45% CC 2880 minute summer	7.422	1.989
10 year +45% CC 2880 minute winter	4.988	1.989
10 year +45% CC 4320 minute summer	5.701	1.491
10 year +45% CC 4320 minute winter	3.754	1.491
10 year +45% CC 5760 minute summer	4.817	1.233
10 year +45% CC 5760 minute winter	3.118	1.233
10 year +45% CC 7200 minute summer	4.217	1.076
10 year +45% CC 7200 minute winter	2.722	1.076
10 year +45% CC 8640 minute summer	3.798	0.969
10 year +45% CC 8640 minute winter	2.451	0.969
10 year +45% CC 10080 minute summer	3.494	0.891
10 year +45% CC 10080 minute winter	2.255	0.891
30 year +45% CC 15 minute summer	428.381	121.217
30 year +45% CC 15 minute winter	300.618	121.217
30 year +45% CC 30 minute summer	283.634	80.259
30 year +45% CC 30 minute winter	199.041	80.259
30 year +45% CC 60 minute summer	192.610	50.901
30 year +45% CC 60 minute winter	127.966	50.901
30 year +45% CC 120 minute summer	117.132	30.955
30 year +45% CC 120 minute winter	77.820	30.955
30 year +45% CC 180 minute summer	88.762	22.842
30 year +45% CC 180 minute winter	57.698	22.842
30 year +45% CC 240 minute summer	69.247	18.300
30 year +45% CC 240 minute winter	46.006	18.300
30 year +45% CC 360 minute summer	51.557	13.267
30 year +45% CC 360 minute winter	33.513	13.267
30 year +45% CC 480 minute summer	39.723	10.498
30 year +45% CC 480 minute winter	26.391	10.498
30 year +45% CC 600 minute summer	31.932	8.734
30 year +45% CC 600 minute winter	21.818	8.734
30 year +45% CC 720 minute summer	28.010	7.507
30 year +45% CC 720 minute winter	18.825	7.507
30 year +45% CC 960 minute summer	22.414	5.902
30 year +45% CC 960 minute winter	14.847	5.902
30 year +45% CC 1440 minute summer	15.749	4.221
30 year +45% CC 1440 minute winter	10.584	4.221
30 year +45% CC 2160 minute summer	10.988	3.037
30 year +45% CC 2160 minute winter	7.571	3.037
30 year +45% CC 2880 minute summer	9.032	2.421
30 year +45% CC 2880 minute winter	6.070	2.421
30 year +45% CC 4320 minute summer	6.847	1.790
30 year +45% CC 4320 minute winter	4.509	1.790
30 year +45% CC 5760 minute summer	5.723	1.465
30 year +45% CC 5760 minute winter	3.704	1.465
30 year +45% CC 7200 minute summer	4.964	1.266
30 year +45% CC 7200 minute winter	3.204	1.266
30 year +45% CC 8640 minute summer	4.436	1.132
30 year +45% CC 8640 minute winter	2.863	1.132
30 year +45% CC 10080 minute summer	4.054	1.034
30 year +45% CC 10080 minute winter	2.617	1.034
100 year +45% CC 15 minute summer	538.288	152.317
100 year +45% CC 15 minute winter	377.746	152.317
100 year +45% CC 30 minute summer	359.991	101.865
100 year +45% CC 30 minute winter	252.625	101.865
100 year +45% CC 60 minute summer	245.951	64.998
100 year +45% CC 60 minute winter	163.404	64.998
100 year +45% CC 120 minute summer	146.817	38.800
100 year +45% CC 120 minute winter	97.542	38.800

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 180 minute summer	110.647	28.473	100 year +45% CC 1440 minute winter	13.261	5.288
100 year +45% CC 180 minute winter	71.924	28.473	100 year +45% CC 2160 minute summer	13.711	3.789
100 year +45% CC 240 minute summer	86.171	22.772	100 year +45% CC 2160 minute winter	9.447	3.789
100 year +45% CC 240 minute winter	57.250	22.772	100 year +45% CC 2880 minute summer	11.214	3.005
100 year +45% CC 360 minute summer	64.180	16.516	100 year +45% CC 2880 minute winter	7.536	3.005
100 year +45% CC 360 minute winter	41.719	16.516	100 year +45% CC 4320 minute summer	8.389	2.193
100 year +45% CC 480 minute summer	49.575	13.101	100 year +45% CC 4320 minute winter	5.525	2.193
100 year +45% CC 480 minute winter	32.936	13.101	100 year +45% CC 5760 minute summer	6.923	1.772
100 year +45% CC 600 minute summer	39.939	10.924	100 year +45% CC 5760 minute winter	4.481	1.772
100 year +45% CC 600 minute winter	27.289	10.924	100 year +45% CC 7200 minute summer	5.944	1.516
100 year +45% CC 720 minute summer	35.091	9.405	100 year +45% CC 7200 minute winter	3.836	1.516
100 year +45% CC 720 minute winter	23.584	9.405	100 year +45% CC 8640 minute summer	5.264	1.343
100 year +45% CC 960 minute summer	28.122	7.405	100 year +45% CC 8640 minute winter	3.398	1.343
100 year +45% CC 960 minute winter	18.628	7.405	100 year +45% CC 10080 minute summer	4.772	1.217
100 year +45% CC 1440 minute summer	19.732	5.288	100 year +45% CC 10080 minute winter	3.080	1.217

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Results for 1 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 (m³)	Flood (m³)	Status
600 minute winter	DB07	570	4.740	0.240	2.5	24.4179	0.0000	SURCHARGED
15 minute summer	101	10	4.999	0.024	2.8	0.0275	0.0000	OK
15 minute summer	102	10	4.999	0.024	2.8	0.0275	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.074	0.024	3.0	0.0274	0.0000	OK
15 minute summer	104	10	5.074	0.024	3.0	0.0274	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB07	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB07	Infiltration		0.4				
15 minute summer	101	1.000	DB07	2.8	1.218	0.024	0.0576	
15 minute summer	102	2.000	DB07	2.8	1.218	0.024	0.0576	
15 minute summer	103	3.000	DB07	3.0	1.321	0.024	0.0575	
15 minute summer	104	4.000	DB07	3.0	1.321	0.024	0.0575	

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Results for 2 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 (m³)	Flood (m³)	Status
720 minute summer	DB07	720	4.827	0.327	4.1	33.2296	0.0000	SURCHARGED
15 minute summer	101	10	5.005	0.030	4.4	0.0340	0.0000	OK
15 minute summer	102	10	5.005	0.030	4.4	0.0340	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.080	0.030	4.6	0.0336	0.0000	OK
15 minute summer	104	10	5.080	0.030	4.6	0.0336	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	DB07	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute summer	DB07	Infiltration		0.4				
15 minute summer	101	1.000	DB07	4.4	1.234	0.038	0.1008	
15 minute summer	102	2.000	DB07	4.4	1.234	0.038	0.1008	
15 minute summer	103	3.000	DB07	4.6	1.317	0.037	0.1008	
15 minute summer	104	4.000	DB07	4.6	1.317	0.037	0.1008	

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Results for 10 year +45% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	DB07	472	5.066	0.566	6.0	57.6437	0.0000	SURCHARGED
480 minute winter	101	472	5.066	0.091	0.9	0.1031	0.0000	OK
480 minute winter	102	472	5.066	0.091	0.9	0.1031	0.0000	OK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
15 minute summer	103	10	5.091	0.041	9.1	0.0467	0.0000	OK
15 minute summer	104	10	5.091	0.041	9.1	0.0467	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	DB07	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
480 minute winter	DB07	Infiltration		0.4				
480 minute winter	101	1.000	DB07	0.9	0.615	0.008	0.2742	
480 minute winter	102	2.000	DB07	0.9	0.615	0.008	0.2742	
15 minute summer	103	3.000	DB07	9.0	1.408	0.074	0.2023	
15 minute summer	104	4.000	DB07	9.0	1.408	0.074	0.2023	

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Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 99.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	DB07	585	5.220	0.720	6.2	73.3474	0.0000	FLOOD RISK
600 minute winter	101	585	5.220	0.245	1.0	0.2772	0.0000	FLOOD RISK
600 minute winter	102	585	5.220	0.245	1.0	0.2772	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
600 minute winter	103	585	5.220	0.170	1.0	0.1924	0.0000	OK
600 minute winter	104	585	5.220	0.170	1.0	0.1924	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	DB07	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
600 minute winter	DB07	Infiltration		0.4				
600 minute winter	101	1.000	DB07	1.0	0.534	0.009	0.3977	
600 minute winter	102	2.000	DB07	1.0	0.534	0.009	0.3977	
600 minute winter	103	3.000	DB07	1.0	0.553	0.008	0.3599	
600 minute winter	104	4.000	DB07	1.0	0.553	0.008	0.3599	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.07%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	DB07	720	5.437	0.937	10.2	95.4461	0.0000	FLOOD RISK
720 minute summer	101	720	5.437	0.462	1.6	0.5222	0.0000	FLOOD RISK
720 minute summer	102	720	5.437	0.462	1.6	0.5222	0.0000	FLOOD RISK
15 minute summer	DUMMY MH10	1	5.750	0.000	0.0	0.0000	0.0000	OK
720 minute summer	103	720	5.437	0.387	1.7	0.4374	0.0000	FLOOD RISK
720 minute summer	104	720	5.437	0.387	1.7	0.4374	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	DB07	1.001	DUMMY MH10	0.0	0.000	0.000	0.0880	0.0
720 minute summer	DB07	Infiltration		0.4				
720 minute summer	101	1.000	DB07	1.6	0.369	0.014	0.3977	
720 minute summer	102	2.000	DB07	1.6	0.369	0.014	0.3977	
720 minute summer	103	3.000	DB07	1.7	0.378	0.014	0.3977	
720 minute summer	104	4.000	DB07	1.7	0.378	0.014	0.3977	

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APPENDIX L – ALTERNATIVE ATTENUATED SYSTEM LAYOUT PLANS

COURTWICK LANE

PHASE 1

ASE 2

ADJOINING PROPERTIES

Site Boundary

Existing fence

Indicative acoustic fence line

Secure Staff Cycle Shelter
10 Spaces

SW PUMP UNIT
TO DRAIN BASE OF SERVICE RAMP
SPECIALIST DESIGN BY OTHERS. RISING
MAIN TO CONNECT TO SURFACE WATER
DRAINAGE AT HIGH LEVEL.

External Plant

2.4m high plant screening

MONO-PITCHED ROOF WITH RWP OUETS ON REAR ELEVATION. RWPs SHOWN INDICATIVELY TO BE CONFIRMED BY ARCHITECT/ MEP CONSULTANT

1.8m metal security fencing

ESCAPE ONLY FOOTPATH

OUTLINE OF EXISTING BUILDING

NORTH-SOUTH ECOLOGICAL CORRIDOR

ALDI
1,911.86 m²
+4.20 AOD

FFL 4.20

Lobby

Trolley Bay

Visitor Cycles
6 Spaces

10.7m

Entrance

Flight level canopy

Car Parking
(118 Spaces)

Foodstore Vehicular Entrance

Millfield Court

Indicative acoustic fence line

SW MH
CL 2.80
IL 1.73

225mm 1:225

SW MH
CL TBA
IL 1.61

MH 3650
CL 2.77
IL 1.56

NEW HEADWALL
INTEGRATED INTO EXISTING CULVERT STRUCTURE

LB

MH 4650
CL 2.60
IL 1.21

SW MH
CL TBA
IL 1.21

MH 4651
CL UNK
IL UNK

El Sub Sta

UNDERGROUND ELECTRICITY

Potential Aldi Totem Location (dashed)

SW MH
CL 4.10
IL 2.01

SW MH
CL 3.13
IL 1.95

ALDI HYDROBRAKE
CL 4.10
IL 2.70
Existing FLOW LIMITED TO 1.5l/s dashed

ALDI TANK
CL 4.10
IL 2.70
TANK SIZE AS PER DIMENSIONS
0.8m DEEP
TOTAL STORAGE 868.68m³

Potential Flood Risk Area

Pedestrian Entrance

4No. Fast EVC Spaces

Totem

6No. DDA Parking Spaces

12No. P&C Parking Spaces

Pedestrian Entrance

2.00? 300ø CONNECTION TO ALDI DRAINAGE BLANKET IN FLOW MODEL

0.6m timber post & rail fence

NEW COURTWICK LANE

ENTRANCE AVENUE

Crossing

SW MH
CL 4.30
IL 2.56

SW MH
CL 4.30
IL 2.28

Substation

COSTA & McDONALDS HYDROBRAKE
CL 4.50
IL 3.10
FLOW LIMITED TO 0.8l/s

Existing kerblines dashed

Corral

Totem

FFL 4.70

OUTLINE OF EXISTING BUILDING

Costa
DRIVE-THRU
167.10 m²
+4.70 AOD

Car Parking
(50 Spaces)

McDonald's
NG50 FF
DRIVE-THRU
288.42 m²
+4.70 AOD

FFL 4.70

Service Area

Patio

Entrance

NEW STREET TREES

Retaining Wall

COSTA TANK
CL 4.50
IL 3.10
30.0x10.0x0.8m TANK
228.0m³ STORAGE

McDONALDS TANK
CL 4.50
IL 3.10
30.0x10.0x0.8m TANK
228.0m³ STORAGE

Grass bank

Indicative totem

Site Boundary

Minster Court

Martello Enterprise Centre

Mast (Telecommunication)

T72 -B1 T71 -B1 G38 -U G37 -B2 T68 -B1 T70 -B1 T69 -B1 T67 -B1 T66 -A1 T6 -B1 G39 -B2 G40 -B2 T5 -B1 G41 -B2 H1 -B2 G7 -B2 G6 -B2 T31 -B1 T32 -B1 T33 -B1 T55 -B1 G32 -B2 T56 -C1 G34 -B2 T58 -C1 T57 -B1 G33 -B2 G35 -C1 T60 -B1 T61 -C1 G36 -B2 H2 -B2 H3 -B2 T3 -B2 T4 -B2

PHASE 1 – ALDI NOTES:
AREA DRAINED = 0.738ha, INCLUDING ENTRANCE AVENUE WITHIN PHASE 1
GREENFIELD 2yr RATE = 1.5l/s
STORAGE REQUIRED FOR 100yr STORM (+45%) = 854m³

PHASE 1 – COSTA NOTES:
AREA DRAINED = 0.395ha
GREENFIELD 2yr RATE = 0.8l/s
STORAGE REQUIRED FOR 100yr STORM (+45%) = 455m³
456m³ PROVIDED BETWEEN 2No. TANKS

PHASE 1 DRAINAGE LAYOUT
(1:250)

N

INDICATIVE ONLY

1:250
0 2.5m 5m 7.5m 10m 12.5m

LEGEND

- PROPOSED SURFACE WATER DRAIN
- PROPOSED COLLECTION PIPE IN TRENCH BELOW PERMEABLE SUB-BASE
- EXISTING SURFACE WATER SEWER
- EXISTING FOUL WATER SEWER
- PROPOSED CONCRETE MANHOLE
- PROPOSED PLASTIC INSPECTION CHAMBER (IPIC)
- PRIVATE HIGHWAY GULLY
- RAIN WATER PIPE (RWP)
- RWP & SVP LOCATIONS TO BE CONFIRMED, SHOWN INDICATIVELY BASED ON ARCHITECT'S PLANS
- EXTENT OF PERMEABLE SUB-BASE 2-40mm CLEAN CRUSHED STONE WITH MINIMUM 30% VOIDS.
- PROPOSED ATTENUATION TANK STORAGE SIZED BASED ON CRATE SYSTEM WITH UNIT DIMENSIONS 1.0x0.5x0.4m

1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.

FIRST ISSUE	MB	AK	27.03.26	P1
Description	By	Apvd.	Date	Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: ALTERNATIVE STORM WATER ATTENUATION SCHEME – PHASE 1

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD

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Drawing No. 16785-HOP-ZZ-XX-DR-C-0907 Status S2 Rev. P1

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Project/Task No. 16785/02 Scale: AS SHOWN ORIGINAL DRAWING SIZE A0

1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.

COVER LEVELS SHOWN INDICATIVELY BASED ON EXISTING SITE TOPOGRAPHY. SUBJECT TO DETAILED DESIGN.

COURTWICK LANE

ADJOINING PROPERTIES

Play

EXISTING PUBLIC FW MH SOUTHERN WATER REF: 9602 CL 7.25 IL 4.90 CONNECTION FOR FOUL WATER FROM PART OF PHASE 2 OF DEVELOPMENT. SUBJECT TO S106 APPROVAL FROM SOUTHERN WATER.

WILLIAM DYER GROVE

RETAINED & ENHANCED WOODLAND

G15 -C1 G14 -B2 G13 -C1 T13 -B1 T12 -B1 G12 -B2 T11 -C1 T10 -B1 T9 -B1 T7 -B1 T72 -B1 G38 -U T71 -B1

5.5m

Drain

4.3m

FORMER VEHICULAR ACCESS

ENHANCED LANDSCAPE BUFFER

ESCAPE ONLY FOOTPATH

PHASE 2

PHASE 1

Site Boundary

648 m²

TANK 1
CL 5.50
IL 4.10
31.0x16.0x0.8m TANK
376.96m³ STORAGE

LIGHT INDUSTRIAL / STORAGE UNITS

LOADING BAYS

Footpath

37 Parking Spaces

VEHICLE / CYCLE PARKING & SERVICING INDICATIVE

971 m²

LIGHT INDUSTRIAL / STORAGE UNIT

G10 -B2 T8 -B1

RETAINED & ENHANCED WOODLAND

T6 -B1

PHASE 2 NOTES:
AREA DRAINED = 1.921ha
GREENFIELD 2yr RATE = 3.9l/s
STORAGE REQUIRED FOR 100yr STORM (+45%) = 2073m³
STORAGE DIVIDED BETWEEN TANKS AS SHOWN
TOTAL STORAGE PROVIDED = 2079.36m³

Substation

G3 -C1

G1 -B2

G5 -B2

T5 -B1

G8 -B2

T4 -B2

G7 -B2

SW MH
CL 5.50
IL 4.10

sign

417 m²

LIGHT INDUSTRIAL / STORAGE UNITS

15m OFFSET FROM BOUNDARY

SW MH
CL 5.50
IL 3.98

391 m²

193 m²

192 m²

205 m²

206 m²

203 m²

64 Parking Spaces

53 Parking Spaces

18 Parking Spaces

TANK 2
CL 5.50
IL 4.10
11.0x48.0x0.8m TANK
401.28m³ STORAGE

TANK 3
CL 5.50
IL 4.10
11.0x38.0x0.8m TANK
317.68m³ STORAGE

TANK 4
CL 5.50
IL 4.10
12.0x30.0x0.8m TANK
273.6m³ STORAGE

TANK 5
CL 5.50
IL 4.10
12.0x30.0x0.8m TANK
273.6m³ STORAGE

TANK 6
CL 5.50
IL 4.10
14.0x15.0x0.8m TANK
159.6m³ STORAGE

TANK 7
CL 5.50
IL 4.10
28.0x13.0x0.8m TANK
276.64m³ STORAGE

418 m²

SW MH
CL 5.50
IL 3.64

SW MH
CL 5.50
IL 3.56

SW MH
CL 5.50
IL 5.03

SW MH
CL 5.50
IL 4.10

PHASE 2 HYDROBRAKE
CL 5.50
IL 2.75
FLOW LIMITED TO 3.9l/s

MAIN SERVICE ROAD

Road slopes at 1:35
1000mm rise over 35m

225mm 1:250

ESCAPE ONLY CORRIDOR

ESCAPE ONLY FOOTPATH

PLANTING TO CREATE VISUAL BUFFER & NORTH-SOUTH ECOLOGICAL CORRIDOR

ERNEST FITCHES WAY

T43 -C1 T42 -B1

RETAINED & ENHANCED WOODLAND

T44 -B1 T45 -B1 T47 -B2 T46 -B1 T48 -C1 T49 -B1 T52 -C1 T51 -B2 G28 -A2 G25 -B2 G29 -B2 T50 -B2 G29 -C1 T53 -C1 G30 -B2 G21 -C1

ENHANCED LANDSCAPE BUFFER

G31 -B2 T55 -B1

PHASE 2 DRAINAGE LAYOUT
(1:250)

HENRY LOCK WAY

T31 -B1 Poplar (Removed)

T32 -B1 Willow (Good)

T33 -B1

G32 -B2 Poplar (Lombardy)

G6 -B2 Poplar (Lombardy)

T1 -B2

SW MH
CL 4.30
IL 2.56

Substation

Costa
DRIVE-THRU
167.10 m²
+4.70 AOD

FFL 4.70

Service Area

Entrance

Existing retaining wall

OUTLINE OF EXISTING BUILDING

NORTH-SOUTH ECOLOGICAL CORRIDOR

MONO-PITCHED ROOF WITH RWP TO REAR ELEVATION. RWPs SHOWN INDICATIVELY TO BE CONFIRMED BY ARCHITECT/M&E

SW PUMP TO DRAIN SPECIALIST MAIN TO DRAINAGE

External Plant

2.4m high plant area screening

1.8m metal security fencing

ESCAPE ONLY FOOTPATH

Existing ambulance

LEGEND

- PROPOSED SURFACE WATER DRAIN
- PROPOSED COLLECTION PIPE IN TRENCH BELOW PERMEABLE SUB-BASE
- EXISTING SURFACE WATER SEWER
- EXISTING FOUL WATER SEWER
- PROPOSED CONCRETE MANHOLE
- PROPOSED PLASTIC INSPECTION CHAMBER (PPIC)
- PRIVATE HIGHWAY GULLY
- RAIN WATER PIPE (RWP)
- RWP & SVP LOCATIONS TO BE CONFIRMED, SHOWN INDICATIVELY BASED ON ARCHITECT'S PLANS
- EXTENT OF PERMEABLE SUB-BASE 2-40mm CLEAN CRUSHED STONE WITH MINIMUM 30% VOIDS.
- PROPOSED ATTENUATION TANK STORAGE SIZED BASED ON CRATE SYSTEM WITH UNIT DIMENSIONS 1.0x0.5x0.4m

INDICATIVE ONLY

1:250
0 2.5m 5m 7.5m 10m 12.5m

FIRST ISSUE		MD	AK	27.03.26	P1
Description		By	Apvd.	Date	Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: ALTERNATIVE STORM WATER ATTENUATION SCHEME – PHASE 2

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD

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Drawing No. 16785-HOP-ZZ-XX-DR-C-0908 Status S2 Rev. P1

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APPENDIX M – HYDRAULIC CALCULATION OUTPUT - ATTENUATION

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.900
Return Period (years)	100	Maximum Rainfall (mm/hr)	500.0	Include Intermediate Ground	✓
Additional Flow (%)	45	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
MH 4651			2.600	1500	115.235	62.105	1.400	1.200
DEMARCATION			4.100	1500	82.919	60.316	1.597	2.503
M&C CONTROL			4.500	1500	79.355	42.509	1.400	3.100
PHASE 2 CONTROL			5.500	1500	61.761	47.158	1.400	4.100
ALDI CONTROL			4.100	1500	76.604	60.163	1.400	2.700
PHASE 2 CONNECTION			4.200	1500	81.880	47.168	1.190	3.010
ALDI TANK	0.738	5.00	4.100		68.647	60.133	1.350	2.750
M&C TANK	0.395	5.00	4.500		76.648	38.143	1.350	3.150
PHASE 2 TANK	1.921	5.00	5.500		55.432	47.073	1.350	4.150

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
P2 LINK	PHASE 2 CONTROL	PHASE 2 CONNECTION	115.000	0.600	4.100	3.010	1.090	105.5	900	5.66	146.7
P2 - DEMARCATION LINK	PHASE 2 CONNECTION	DEMARCATION	55.000	0.600	3.010	2.503	0.507	108.5	900	5.97	124.0
NEW SEWER	DEMARCATION	MH 4651	200.000	0.600	2.503	1.200	1.303	153.5	1000	7.20	100.5
M&C LINK	M&C CONTROL	PHASE 2 CONNECTION	10.000	0.600	3.100	3.010	0.090	111.1	500	5.12	168.3
ALDI LINK	ALDI CONTROL	DEMARCATION	10.000	0.600	2.700	2.503	0.197	50.8	600	5.11	169.1
ALDI TANK LINK	ALDI TANK	ALDI CONTROL	7.957	0.600	2.750	2.700	0.050	159.1	675	5.06	170.0
P2 TANK LINK	PHASE 2 TANK	PHASE 2 CONTROL	6.330	0.600	4.150	4.100	0.050	126.6	1000	5.04	170.3
M&C TANK LINK	M&C TANK	M&C CONTROL	5.137	0.600	3.150	3.100	0.050	102.7	525	5.04	170.2

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
P2 LINK	3.050	1940.2	1476.8	0.500	0.290	1.921	0.0	590	3.337
P2 - DEMARCATION LINK	3.008	1913.3	1504.9	0.290	0.697	2.316	0.0	605	3.311
NEW SEWER	2.696	2117.7	1608.4	0.597	0.400	3.054	0.0	655	2.949
M&C LINK	2.060	404.5	348.4	0.900	0.690	0.395	0.0	360	2.303
ALDI LINK	3.423	967.8	654.0	0.800	0.997	0.738	0.0	362	3.662
ALDI TANK LINK	2.075	742.4	657.4	0.675	0.725	0.738	0.0	497	2.326
P2 TANK LINK	2.970	2332.9	1714.3	0.350	0.400	1.921	0.0	640	3.229
M&C TANK LINK	2.209	478.3	352.3	0.825	0.875	0.395	0.0	336	2.405

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

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

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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	40	0	0	30	40	0	0
10	40	0	0	100	45	0	0

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Results for 2 year +40% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	MH 4651	1020	1.236	0.036	5.3	0.0000	0.0000	OK
1440 minute summer	DEMARCATION	1020	2.540	0.037	5.3	0.0652	0.0000	OK
1440 minute winter	M&C CONTROL	1410	3.423	0.323	1.7	0.5703	0.0000	OK
1440 minute winter	PHASE 2 CONTROL	1380	4.521	0.421	8.9	0.7434	0.0000	OK
1440 minute summer	ALDI CONTROL	1380	2.876	0.176	4.6	0.3111	0.0000	OK
720 minute summer	PHASE 2 CONNECTION	540	3.041	0.031	4.2	0.0553	0.0000	OK
1440 minute winter	ALDI TANK	1410	2.875	0.125	13.5	313.0816	0.0000	OK
1440 minute winter	M&C TANK	1410	3.423	0.273	5.9	165.2444	0.0000	OK
1440 minute winter	PHASE 2 TANK	1380	4.521	0.371	28.7	751.9238	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	DEMARCATION	NEW SEWER	MH 4651	5.3	0.603	0.003	1.7669	411.1
1440 minute winter	M&C CONTROL	M&C LINK	PHASE 2 CONNECTION	0.5	0.209	0.001	0.0321	
1440 minute winter	PHASE 2 CONTROL	P2 LINK	PHASE 2 CONNECTION	3.7	0.593	0.002	0.7258	
1440 minute summer	ALDI CONTROL	ALDI LINK	DEMARCATION	1.1	0.264	0.001	0.0447	
720 minute summer	PHASE 2 CONNECTION	P2 - DEMARCATION LINK	DEMARCATION	4.2	0.561	0.002	0.4159	
1440 minute winter	ALDI TANK	ALDI TANK LINK	ALDI CONTROL	3.9	-0.109	0.005	0.4699	
1440 minute winter	M&C TANK	M&C TANK LINK	M&C CONTROL	1.7	0.166	0.004	0.6485	
1440 minute winter	PHASE 2 TANK	P2 TANK LINK	PHASE 2 CONTROL	8.9	0.304	0.004	1.8240	

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Results for 10 year +40% CC Critical Storm Duration. Lowest mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	MH 4651	390	1.236	0.036	5.3	0.0000	0.0000	OK
720 minute summer	DEMARCATION	390	2.540	0.037	5.3	0.0652	0.0000	OK
1440 minute winter	M&C CONTROL	1440	3.600	0.500	2.7	0.8839	0.0000	SURCHARGED
1440 minute winter	PHASE 2 CONTROL	1410	4.773	0.673	11.4	1.1886	0.0000	OK
1440 minute winter	ALDI CONTROL	1470	2.953	0.253	4.4	0.4475	0.0000	OK
60 minute summer	PHASE 2 CONNECTION	71	3.041	0.031	4.2	0.0553	0.0000	OK
1440 minute winter	ALDI TANK	1440	2.952	0.202	17.3	508.2699	0.0000	OK
1440 minute winter	M&C TANK	1440	3.600	0.450	9.1	272.7585	0.0000	OK
1440 minute winter	PHASE 2 TANK	1410	4.773	0.623	44.1	1264.6810	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute summer	DEMARCATION	NEW SEWER	MH 4651	5.3	0.603	0.003	1.7669	250.7
1440 minute winter	M&C CONTROL	M&C LINK	PHASE 2 CONNECTION	0.5	0.211	0.001	0.0321	
1440 minute winter	PHASE 2 CONTROL	P2 LINK	PHASE 2 CONNECTION	3.7	0.594	0.002	0.7258	
1440 minute winter	ALDI CONTROL	ALDI LINK	DEMARCATION	1.1	0.274	0.001	0.0447	
60 minute summer	PHASE 2 CONNECTION	P2 - DEMARCATION LINK	DEMARCATION	4.2	0.563	0.002	0.4159	
1440 minute winter	ALDI TANK	ALDI TANK LINK	ALDI CONTROL	4.4	0.175	0.006	0.8431	
1440 minute winter	M&C TANK	M&C TANK LINK	M&C CONTROL	2.7	0.194	0.006	1.0516	
1440 minute winter	PHASE 2 TANK	P2 TANK LINK	PHASE 2 CONTROL	11.4	0.275	0.005	3.3980	

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Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	MH 4651	720	1.236	0.036	5.3	0.0000	0.0000	OK
1440 minute summer	DEMARCATION	720	2.540	0.037	5.3	0.0653	0.0000	OK
1440 minute winter	M&C CONTROL	1440	3.717	0.617	2.7	1.0898	0.0000	SURCHARGED
1440 minute winter	PHASE 2 CONTROL	1440	4.953	0.853	10.3	1.5064	0.0000	OK
1440 minute winter	ALDI CONTROL	1440	3.006	0.306	5.0	0.5402	0.0000	OK
480 minute winter	PHASE 2 CONNECTION	240	3.041	0.031	4.2	0.0553	0.0000	OK
1440 minute winter	ALDI TANK	1440	3.006	0.256	21.5	642.0156	0.0000	OK
1440 minute winter	M&C TANK	1440	3.716	0.566	11.2	342.9844	0.0000	SURCHARGED
1440 minute winter	PHASE 2 TANK	1440	4.953	0.803	54.5	1627.9360	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	DEMARCATION	NEW SEWER	MH 4651	5.3	0.603	0.003	1.7671	422.3
1440 minute winter	M&C CONTROL	M&C LINK	PHASE 2 CONNECTION	0.6	0.207	0.001	0.0321	
1440 minute winter	PHASE 2 CONTROL	P2 LINK	PHASE 2 CONNECTION	3.7	0.594	0.002	0.7258	
1440 minute winter	ALDI CONTROL	ALDI LINK	DEMARCATION	1.1	0.284	0.001	0.0447	
480 minute winter	PHASE 2 CONNECTION	P2 - DEMARCATION LINK	DEMARCATION	4.2	0.562	0.002	0.4158	
1440 minute winter	ALDI TANK	ALDI TANK LINK	ALDI CONTROL	5.0	0.151	0.007	1.1170	
1440 minute winter	M&C TANK	M&C TANK LINK	M&C CONTROL	2.7	0.189	0.006	1.1098	
1440 minute winter	PHASE 2 TANK	P2 TANK LINK	PHASE 2 CONTROL	9.9	0.246	0.004	4.3807	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 95.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	MH 4651	450	1.236	0.036	5.3	0.0000	0.0000	OK
960 minute summer	DEMARCATION	450	2.540	0.037	5.3	0.0652	0.0000	OK
1440 minute winter	M&C CONTROL	1440	3.899	0.799	2.0	1.4116	0.0000	SURCHARGED
1440 minute summer	PHASE 2 CONTROL	1500	5.407	1.307	134.4	2.3089	0.0000	FLOOD RISK
1440 minute winter	ALDI CONTROL	1440	3.090	0.390	4.4	0.6893	0.0000	OK
15 minute summer	PHASE 2 CONNECTION	89	3.041	0.031	4.2	0.0553	0.0000	OK
1440 minute winter	ALDI TANK	1440	3.090	0.340	27.6	854.0038	0.0000	OK
1440 minute winter	M&C TANK	1440	3.901	0.751	14.6	455.0530	0.0000	SURCHARGED
1440 minute winter	PHASE 2 TANK	1380	5.172	1.022	70.8	2073.2740	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute summer	DEMARCATION	NEW SEWER	MH 4651	5.3	0.603	0.003	1.7669	320.8
1440 minute winter	M&C CONTROL	M&C LINK	PHASE 2 CONNECTION	0.6	0.212	0.002	0.0323	
1440 minute summer	PHASE 2 CONTROL	P2 LINK	PHASE 2 CONNECTION	3.7	0.593	0.002	0.7258	
1440 minute winter	ALDI CONTROL	ALDI LINK	DEMARCATION	1.1	0.283	0.001	0.0447	
15 minute summer	PHASE 2 CONNECTION	P2 - DEMARCATION LINK	DEMARCATION	4.2	0.646	0.002	0.4159	
1440 minute winter	ALDI TANK	ALDI TANK LINK	ALDI CONTROL	4.4	0.201	0.006	1.5666	
1440 minute winter	M&C TANK	M&C TANK LINK	M&C CONTROL	2.0	-0.123	0.004	1.1098	
1440 minute winter	PHASE 2 TANK	P2 TANK LINK	PHASE 2 CONTROL	9.4	0.243	0.004	4.9528	

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APPENDIX N – EXCEEDANCE FLOW PATH PLAN

Project/Task No. 16785/02 Scale: 1:500 ORIGINAL DRAWING SIZE A1

1. GENERAL

(i) This drawing is not to be scaled, work to figured dimensions only, confirmed on site.

(ii) This drawing is to be read in conjunction with all relevant architectural drawings, detailed specifications where applicable and all associated drawings in this series.

(iii) Any discrepancy on this drawing is to be reported immediately to the partnership for clarification.

(iv) The contractor is responsible for all temporary works and for the stability of the works in progress.

LEGEND

INDICATIVE EXCEEDANCE FLOW PATH ROUTE

N

INDICATIVE ONLY

1:500
0 5m 10m 15m 20m 25m

ISSUED WITH FRADS REPORT	MB	AK	17.06.26	P1
Description	By	Aprvd.	Date	Rev.

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

Title: INDICATIVE EXCEEDANCE FLOW PATHS

Project: NEW COURTWICK LANE, WICK LITTLEHAMPTON

Client: ROKEBY DEVELOPMENTS LTD

HOP
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
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Drawing No. 16785-HOP-ZZ-XX-DR-C-0950 Status S2 Rev. P1

© Copyright

1:20 0 0.2m 0.4m 0.6m 0.8m 1m
1:50 0 0.5m 1m 1.5m 2m 2.5m
1:100 0 1m 2m 3m 4m 5m

P:\PROJECTS\16785 New Courtwick Lane @ Wick, Littlehampton\Drawing\HOP\16785-HOP-ZZ-XX-DR-C-0950.pcd 06/06 Mon 4pm

APPENDIX O – SuDS MAINTENANCE AND MANAGEMENT SCHEDULE

NEW COURTWICK LANE, WICK, LITTLEHAMPTON

PROPOSED MAINTENANCE & INSPECTION SCHEDULE FOR BELOW GROUND DRAINAGE (FOUL WATER AND SURFACE WATER) INCLUDING SUSTAINABLE DRAINAGE SYSTEMS (SuDS)

Item	Required Maintenance/Monitoring	Suggested Frequency	Responsibility
Foul Water Drainage	Visual inspection of chambers and manholes for damage, condition and function.	Every 3 months	Facilities Management
	Undertake a CCTV drainage survey of the drainage network to establish condition.	Every 10 years	Specialist
	Replace or repair malfunctioning parts or structures	As required	Specialist
Surface Water Drainage	Visual inspection of chambers and manholes for damage, condition and function.	Every 3 months and after storms	Facilities Management
	Undertake a CCTV drainage survey of the drainage network to establish condition.	Every 10 years	Specialist
	Replace or repair malfunctioning parts or structures.	As required	Specialist
Gullies and Channel Drains	Check gullies and channel drains for damage, condition and function.	Every 3 months and after storms	Facilities Management
	Remove sediment, oil/grease, litter and debris.	As necessary	Facilities Management
	Replace or repair malfunctioning parts or structures.	As required	Specialist
Surface Water Filter Trench	Check silt traps and inspection chambers and note the rate of sediment accumulation.	Every month for the first year and then annually, or as conditions require	Facilities Management
	Undertake a CCTV drainage survey pipework. Note sediment build up and remove sediment/debris if present.	Every 10 years, or as conditions require	Specialist
Surface Water Pump	Check operation and system function on BMS system	Daily	Facilities Management
	Maintenance service and general inspection – in line with manufacturers' guidance.	Annually	Specialist
	Full service and testing – in line with manufacturers' guidance.	Every 5 years	Specialist
Permeable Block Paving	Sweep clean of debris and inspect integrity of bedding grit. Replace bedding grit locally if required.	Every 6 months	Facilities Management
	Lift blocks and remove bedding grit and replace and re-bed paving.	Full bedding replacement currently recommended by manufacturers every 20 years	Specialist
Filter trench Pipework and Catchpits	Inspect infiltration pipes and chambers for signs of siltation and ponding	Every 3 months and after storms	Facilities Management
	Check underdrains are free-flowing and inlets/outlets are blockage free.	Every 3 months and after storms	Facilities Management
	Remove litter and general detritus.	Every 3 months and after storms	Facilities Management
	Remove and replace filter medium	As required – SuDS Manual recommends every 20 years	Specialist
General	Remove sediment, litter, debris and vegetation from the surface of pathways areas	As necessary and after heavy rainfall	Facilities Management
Flood Flow Routes	Ensure flood flow routes are not obstructed (i.e. lower lying portions of the land that will direct surface water runoff away from vulnerable assets in the event of drainage failure).	Every six months and during periods of heavy rainfall	Facilities Management

NOTES

The site facilities management team will be responsible for the implementation of the maintenance schedule for below ground drainage, by appointing appropriate persons and/or sub-consultants that are qualified to undertake these operations.

Maintenance is to be carried out by the facilities management or by a specialist contractor, as noted in the Responsibility column above.

This maintenance schedule has been produced with reference to the guidelines outlined in 'The SuDS Manual' (CIRIA C753: 2015). The suggested frequency of maintenance is considered a guide, and should not replace the guidance from manufacturers of proprietary systems.

APPENDIX P – TERRAM PROPRIETARY INBITEX GEOTEXTILE DATA SHEET

Product Data Sheet

Inbitex™ Geotextile

TERRAM
Geosynthetics you can trust

PDS012 Issue 2—June 2021

DESCRIPTION:

Inbitex™* is a specialist nonwoven geotextile designed for use within PPS (pervious pavement systems) or SUDS (sustainable urban drainage systems) to provide separation, filtration and removal of pollutants from water runoff. Inbitex™ geotextile is manufactured using advanced bico technology from UV stabilised virgin polymers (PE&PP) that have been thermally bonded to provide high mechanical strength with excellent hydraulic characteristics.

APPLICATIONS:

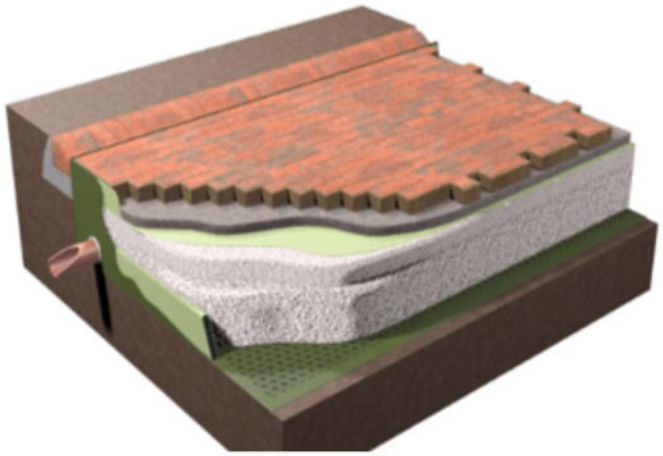
Inbitex™ was developed to enhance the performance of Formpave Aquaflow permeable concrete block paving systems and can be used with Terram Bodpave or any other PPS (pervious pavement systems). With 20 years of extensive research, testing and thousands of installations, Inbitex™ geotextile has been proven to be a key component in the removal of pollutants in water run off in a PPS.



- Formpave Aquaflow permeable concrete block paving system
- Terram Bodpave pervious pavement system
- Terram Truckpave pervious pavement system
- Porous/pervious paving systems (PPS)
- Filter wrap to geocellular attenuation/infiltration tanks
- Filter wrap for diffuser boxes
- Sustainable Drainage Systems (SuDS) filtration

FEATURES & BENEFITS:

- Attracts & traps hydrocarbons (oil) - prevents pollution
- Unique fibre matrix provides perfect habitat for microbial film - breaks down up to 400g oil/SQM/year
- Nonwoven material with isotropic properties—same strength in all directions extending pavement life
- High permeability and low pore sizes—effectively filters silts and other pollutants
- Chemically inert and durable—service life in excess of 100 years
- Lightweight and easy to handle - low risk of manual handling injury





*Inbitex is a licensed trademark of Forterra (Hanson) Building Products Ltd

Inbitex™ Geotextile

Product Data Sheet

PDS012 Issue 2 —June 2021

INTENDED USE/FUNCTION:



INTENDED APPLICATION:



MECHANICAL PROPERTIES	TEST METHOD	UNIT	MEAN VALUE
Tensile Strength	EN ISO 10319	kN/m	8.5
Tensile Elongation	EN ISO 10319	%	30
CBR Puncture Resistance	EN ISO 12236	kN	1.575
Cone Drop	EN ISO 13433	mm	38
HYDRAULIC PROPERTIES			
Pore Size - Mean AOS	EN ISO 12956	µm	145
Permeability	EN ISO 11058	Litres/m²s	80
DURABILITY PROPERTIES			
Weathering (UV Exposure)	EN 12224	Days	30
Combined ageing (Oxidation, temperature & moisture)	EN ISO 13438	Service Life (Yrs)	100
PHYSCIAL PROPERTIES			
Thickness (Nominal)	EN ISO 9863-1	mm	0.7
Composition			Polypropylene core (70%)/polyethylene sheath (30%)
MATERIAL DIMENSIONS			
Width		m	4.5
Length		m	100
Gross Roll Weight (Nominal)		kg	63

PACKAGING & IDENTIFICATION
Terram geosynthetics are supplied on cardboard cores and wrapped in Polyethylene sheeting with identification labels in accordance with ISO 10320.

STORAGE
The rolls of geosynthetics shall be stored on stable/ level ground and stacked not more than two rolls high and no other materials shall be stacked on top. The rolls can be stored outdoors when packaged, but should be protected from exposure to UV. All materials should be stored in accordance with good health and safety practice and in accordance with local laws. For additional information please refer to Terram Geotextiles MSDS.

QUALITY
Terram geosynthetics are supplied having met internal quality requirements in accordance with our Quality Management system which is certified to BS EN ISO 9001:2015.

NOTES
Reported values are arithmetic mean values unless otherwise stated. For further details on physical parameters please refer to the individual Declaration of Performance certificates available for download from www.terram.com

Reported values related to durability testing are generally based on the lowest grade product within a family.

A Nominal value indicates that the value is not part of the performance specification and is provided for guidance only.

Gross roll weights are provided for lifting guidance only and does not form part of quality control.

ADDITIONAL INFORMATION
Refer to the Terram Jointing Methods (downloadable from www.terram.com) for when simple overlaps are required for subsequent and adjacent roll lengths. However, pegging, sewing, stapling or gluing can also be used depending upon the application, the sub-grade conditions, the loading, the convenience and the cost.

These figures relate to standard product weights and roll sizes. Other weights, sizes and colours may be available on request.

For further information please contact Terram Technical Support.

[redacted]

www.terram.com

TERRAM
Geosynthetics you can trust

As part of its continued improvement process Terram® Ltd reserve the right to change the properties listed on this data sheet without prior notice.
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A brand of Berry