

South Downs College, Waterlooville

Places for People

Flood Risk Assessment



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Flood Risk Assessment

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1 Introduction

1.1 Awcock Ward Partnership (AWP) has been commissioned by Places for People to prepare a Flood Risk Assessment in support of a detailed planning application for 85 dwellings and public open space on Land to the south of South Downs College, Waterloooville.

1.2 The location of the proposed development is shown on Figure 1.1 below:

Figure 1:1 - Site Location – Wide Area



National Planning Policy Framework

1.3 The National Planning Policy Framework (NPPF) and the Planning Practice Guidance were first published by the Department for Communities and Local Government in March 2012 and March 2014 respectively.

1.4 The latest version of the NPPF states that “a site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment

Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding”.

- 1.5 The aim of a site-specific flood risk assessment is to demonstrate that “the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall”.
- 1.6 Furthermore, the site-specific flood risk assessment must “assess the flood risk to and from a development site ... The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users”, as required by the Planning Practice Guidance.

Structure and limitations of this FRA

- 1.7 This site-specific FRA has been written in line with the above Framework. It also includes a Surface Water Management Plan (SWMP) that indicates how the surface water runoff can be managed in such a way as not to increase the flood risk to the downstream catchment.

Reference

- 1.8 This FRA has been prepared by reference to the following documents:
- National Planning Policy Framework (Online);
 - Planning Practice Guidance (Online);
 - Environment Agency (EA) Flood Information Service (online);
 - Magic.gov.uk Soilscape Dataset (online)
 - CIRIA Guide 753 – The SuDS Manual (November 2015); and,
 - Southern Water Asset Mapping
 - Hampshire County Council Surface Water and Sustainable Drainage Guidance for Developers, Designers and Planners.
 - Havant Borough Council Strategic Flood Risk Assessment (Havant Local Plan Site).

2 Existing Conditions

Context

- 2.1 The proposed site is located within the Town of Waterlooville, Hampshire. The location of the proposed site in relation to its surroundings is shown on Figure 3.1 below:

Figure 3.1 - Site Location – Local Area



Existing land uses

- 2.2 The proposed development site comprises of an existing tarmac car park located to the south of Havant and South Downs College (HSDC).

Surrounding land use

- 2.3 The site is bordered to the north by the 'South Downs' campus of HSDC. To the east and south, the site is bordered by greenfield land (allocation H41 'Land east of College Road, Campdown' withdrawn from the draft local plan). To the west, the site is bordered by College Road.

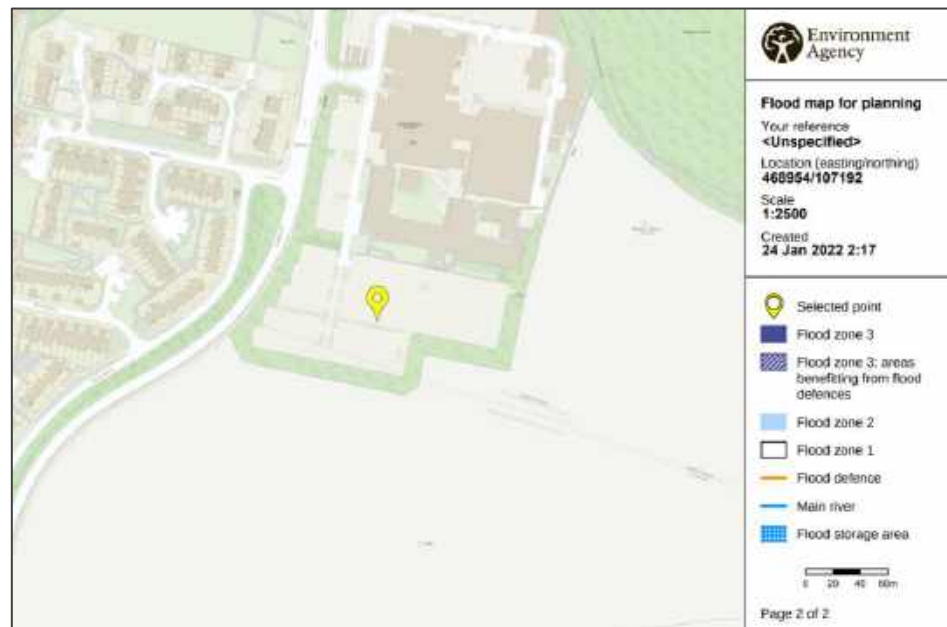
Topographic survey

- 2.4 A topographic survey has been undertaken. Topographic data indicates that the northern part of the site falls from a high point in the central part of the existing car park of circa 58.5mAOD toward the edges of the car park. The levels in the NE, SE, S, SW, and NW corners are 57.51, 57.61, 57.02, 56.33, 57.83mAOD respectively.
- 2.5 An 'Existing Site Plan' that sets the context of the pre-development site and can be found within Appendix A of this report.

Existing Flood Risk

- 2.6 The EA's 'Flood Warning Information Service' provides flood risk information and mapping throughout England.
- 2.7 An extract of the 'Flood Map for Planning' has been reproduced as Figure 2.2 below and shows the site to be within 'Flood Zone 1', as land assessed as have a probability of flooding from rivers and the sea in excess of a 0.1% Annual Exceedance Probability.

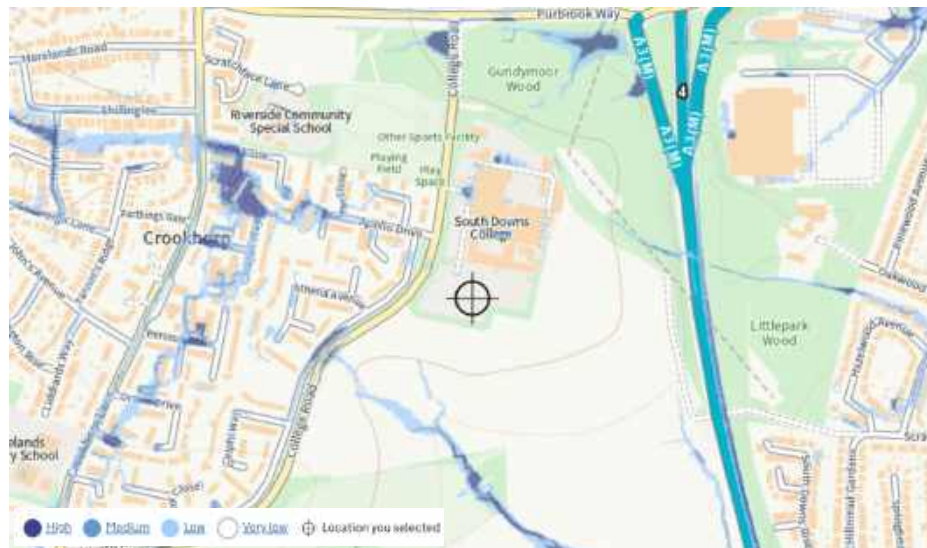
Figure 2.2 – Flood Map for Planning



- 2.8 An extract of the 'Flood Risk from Surface Water' mapping has been reproduced as Figure 2.3 below. This mapping is based on LIDAR data and indicates the typical conveyance routes of surface water runoff. The mapping shows that the site is not at risk

of surface water flooding from off-site flows or from excessive ponding on site.

Figure 2.3 – Flood Risk from Surface Water



Existing Drainage Infrastructure

- 2.9 The Southern Water existing asset records indicate that a public surface water sewer exists in College Road to the west and that a public foul sewer is present to the south of the proposed development. The site is not known to be at risk of flooding from existing drainage infrastructure.
- 2.10 The remainder of the college, located north of this application site, is served by independent drainage networks, with stormwater connection to the head of the Southern Water sewer. The stormwater drainage which serves the western extents of the retained college has been surveyed as this will form part of the proposed surface water management plan for the site. A copy of the CCTV survey report can be found within Appendix A.

Existing site drainage

- 2.11 The existing drainage regime for the application site appears positive and collects discharge from surface gullies to indicated soakaways.
- 2.12 The effectiveness of the proposed soakaways has been explored through BRE Digest 365 compliant soakaway testing, with the tests concluding that infiltration is not an effective means of discharge.

It is therefore anticipated that under intense rainfall conditions site runoff is likely to overwhelm the existing soakaways and will emerge as overland runoff.

- 2.13 The results of the soakaway testing are discussed in more detail within the Ground Conditions sub-section of this report.

Flooding from Reservoirs and canals.

- 2.14 The site is not at risk of flooding from reservoir failure, either alone or in combination with river flooding.

Groundwater Flooding

- 2.15 The overlying soils are of low permeability over a low permeability clay, and the site is not located at a natural low point in local topography or close to a watercourse. Therefore, the site is not considered at risk of flooding from groundwater.

Ground conditions

- 2.16 A Ground Investigation (GI) was previously undertaken by Hydrock and reports,

"The ground conditions as proven by the investigation undertaken at the site comprise:

- Surface Cover – bituminous bound pavement hardstanding – from ground level to 0.25m below ground level (bgl), comprising asphalt; over*
- Made Ground – between 0.10m and 1.10m below ground level (bgl), comprising granular sub-base material over sandy gravelly silt and/ clay, with man-made fragments of brick and asphalt.*
- Wittering Formation – between 0.40m and 9.00m bgl, comprising greyish green/ orange/ grey brown cohesive deposits of sandy clay and granular deposits of gravelly sand; over*
- London Clay Formation – between 4.50m and >20.00m bgl, comprising grey to blueish grey slightly sandy silty clay."*

- 2.17 More recently, 'Ground and Water' completed soakaway testing within the site, in line with BRE Digest 365. The testing included three trial pits spread through the site, with tests undertaken at



approximately 2m below ground level (BGL). No groundwater strikes were noted and all tests failed to complete three complete cycles due to the low rates of percolation, with the Soakaway Letter Report concluding that "soakaway systems are not deemed suitable on-site". Instead, a discharge to a surface water sewer will be utilised.

- 2.18 A copy of the Soakaway Letter Report has been included within Appendix B of this report.

3 Development Proposals

Introduction

- 3.1 The development proposals comprise of 85 residential dwellings, with associated access roads, garaging and parking and associated landscaping, public open space, drainage and engineering works.
- 3.2 A copy of the site layout for the scheme can be found within Appendix C of this report.

Vulnerability

- 3.3 In accordance with the Planning Practice Guidance, residential dwellings are considered to be "More Vulnerable". However, given the site is located within 'Flood Zone 1', Table 3 of the Planning Practice Guidance confirms this as being an appropriate form of development at this site.
- 3.4 Due to the above, the proposals are classified as an appropriate form of development for the level of flood risk at the site.

Sequential Test

- 3.5 The site is located within 'Flood Zone 1' and therefore passes the Sequential Test, as there are no competing sites with a lower flood risk classification.

Cross sections and finished levels

- 3.6 It is anticipated that the existing ground profile will be modified locally to reflect the requirements of the new development.
- 3.7 Any future levels design should aim to minimise the extent of any re-profiling works and should look to retain existing catchment areas wherever possible.

Safe access and egress

- 3.8 The full extents of the site and all roads surrounding the site are within 'Flood Zone 1' and hence access and egress for motorised and non-motorised vehicles will not be affected during flood events.

Drainage strategy requirements

- 3.9 'CIRIA C753 – The SuDS Manual' and Hampshire County Council Surface Water and Sustainable Drainage Guidance for Developers, Designers and Planners advises that surface water disposal should be to be prioritised in the following order:
- Infiltration
 - Discharge to surface waters
 - Discharge to a surface water sewer, highway drain or other drainage system
 - Discharge to a combined sewer
- 3.10 As required by the NPPF, the drainage strategy must demonstrate that the development will be safe throughout its lifetime, without increasing flood risk elsewhere, whilst also taking account of the impacts of climate change.
- 3.11 The strategy and attenuation modelling also allow for +10% urban creep to the residential catchment.

Outline drainage strategy

- 3.12 Infiltration is not a feasible strategy for discharge of surface water from the development. There are no effective surface water features or public sewers within the application boundary.
- 3.13 In accordance with the drainage hierarchy, the outline drainage strategy for the site comprises an attenuated discharge to the Southern Water adopted surface water network. The drainage strategy for the development will comprise the following:
- Adoptable and non-adoptable underground pipework;
 - Cellular Storage;
 - Hydraulic controls;
 - Treatment measures; and,
 - Overland exceedance measures.
- 3.14 The drawing included in Appendix D (reference 1017-01-PDL-1001) shows a preliminary drainage layout for the site.

- 3.15 Details on the attenuation requirements are given within the preliminary drainage layout drawing and have been summarised within the 'Surface Water Management Plan' section of this report.

Climate change impacts

- 3.16 The NPPF requires that the impact of climate change be considered to minimise vulnerability and provide resilience. The NPPF and Planning Practice Guidance explain that an FRA should demonstrate how flood risk will be managed across the development's lifetime, taking climate change into account.
- 3.17 Climate change allowances for peak rainfall in England is published online by the Department for Environment, Food and Rural Affairs (DEFRA).
- 3.18 The 'East Hampshire Management Catchment peak rainfall allowances' are summarised in Table 3.1 below. The climate change recommendations provide for developments with a lifetime up to 2125 (epoch 2070s).

Table 3.1 – Peak rainfall allowances

Allowance category	Epoch	Central allowance	Upper end allowance
3.3% annual exceedance rainfall event	2050s	20%	35%
	2070s	25%	40%
1% annual exceedance rainfall event	2050s	20%	40%
	2070s	25%	45%

- 3.19 The 50th percentile (central allowance) is the point at which half of the possible scenarios for peak rainfall fall below it. The upper end allowance is based on the 95% percentile, thus only 5% of possible scenarios fall above an allowance level.
- 3.20 The guidance states for peak rainfall intensity, Flood Risk Assessments should "assess both the central and upper end allowances to understand the range of impact".

4 Surface Water Management Plan

Existing surface water runoff

- 4.1 The existing site is almost entirely hard paved. The existing drainage regime is positive and collects discharge from surface gullies to indicated soakaways, which based on the soakaway testing are known to be ineffective during heavier return period storms.
- 4.2 Exceedance routes follow the existing site topography and are generally directed towards each corner of the site.
- 4.3 The route from the north-west corner follows the topography of the car-park, headed towards the adopted highway and existing college site.
- 4.4 The route to the north-east, would follow the existing developed ground levels either through the edge of college site, or east beyond the edge of existing bund and across the adjacent greenfield land.
- 4.5 The route in the south-east corner would be impounded behind the existing bund, resulting in localised ponding. As the depth of ponding increases, flows would overcome the localised topography and be directed to the south-western exceedance route.
- 4.6 The route to the south-west discharges around the western end of the existing embankment and follows the existing topology of the greenfield land to the south.
- 4.7 The Casueway Flow has been used to assess the equivalent greenfield runoff rates for the site using the FEH Statistical method. This method is listed as an appropriate method for assessing greenfield run-off in CIRIA C753 'The SuDS Manual'.
- 4.8 A copy of this assessment can be seen within Appendix E of this report, with the results summarised in Table 4.1.

Table 4.1 – Equivalent Greenfield Runoff Rates

Return Period	Equivalent Greenfield Rates (l/s)
2 year	8.6
30 year	19.44
100 year	23.7

- 4.1 To ensure the development will be safe throughout its lifetime and that it does not increase flood risk elsewhere, the drainage strategy will include appropriate mitigation measures, so that the pre-development greenfield runoff rates can be replicated or reduced.
- 4.2 This will offer significant betterment compared to the sites existing brownfield conditions, whereby runoff is directed towards ineffective soakaways, beyond which any excess runoff will continue overland and off-site.

Proposed Surface Water Strategy

- 4.3 The surface water strategy for this site has been developed to respect the masterplan, accounting for runoff in up to the 100 year (+45% climate change) critical storm event.
- 4.4 Runoff will be conveyed via a new storm network, towards an attenuation feature in the central public open space.
- 4.5 The attenuation feature will take the form of a below ground cellular attenuation storage tank.
- 4.6 Proposed parking bays will be surfaced with under-drained (lined) permeable paving to offer treatment of runoff prior to reaching the cellular attenuation storage tank.
- 4.7 An oversized pipe will drain the tank towards the north-western corner of the site, where an area of existing college car park is to be intercepted (0.052ha) and merged with the site drainage.
- 4.8 Both the development catchment and intercepted college car park area will drain towards a new flow control chamber, which

limits flows to the equivalent brownfield rates from the intercepted catchment only.

- 4.9 This 'flow-balancing' approach ensures there is no increase in peak flow being received by the retained college drainage system and downstream Southern Water network. Furthermore, the provision of climate change allowance in the proposed drainage system introduces betterment and resilience.
- 4.10 The brownfield runoff rates for the intercepted car park area (0.052ha) have been estimated using the Modified Rational Method, with the results summarised below in Table 4.2. These results present the maximum allowable discharge rates.

Table 4.2 – Brownfield Runoff Rates (0.052ha catchment)

Return Period	Brownfield Rates (l/s)
2 year	6.4
30 year	17.5
100 year	23.2

- 4.11 The outflow from the flow control chamber will drain through a new hydrodynamic separator, which offers a final stage of treatment prior to flows being received by the retained college drainage and downstream Southern Water network.
- 4.12 Through previous correspondence Southern Water advised that their network had capacity to receive an additional 5 l/s peak flow, however the approach taken is intercepting and attenuating an off-site catchment, so that the peak flows received by the Southern Water system are not increased. It is therefore considered that this approach will be favourably received by Southern Water.
- 4.13 The preliminary drainage layout drawing can be seen within Appendix D of this report, whilst copies of our correspondence with Southern Water can be seen within Appendix F.

Off-site Highways

- 4.14 The scheme proposes off-site highway improvement works to provide a roundabout junction at the access to the site.

- 4.15 It is anticipated that drainage associated with the proposed off-site highway works will be designed as a separate system in which additional flows from any increase in highway catchment are off-set within the system locally, by incorporation of storage and flow controls so that impacts to the local highway drainage system are mitigated.
- 4.16 The exact highway arrangements are subject to detailed design and adoption application. This approach may require the interception of highway drainage outside the areas directly affected by the new junction.

Attenuation storage volumes

- 4.17 The Causeway flow has been used to determine the attenuation requirements for the proposed development, with +10% allowance for urban creep applied to domestic dwellings.
- 4.18 The output of these models can be seen within Appendix E of this report, with the results summarised in Table 4.3 below.

Table 4.3 – Attenuation Storage Requirements

Proposed attenuation feature	Proposed Volume (m ³)
Cellular Tank 355 m ² x 1.6m deep	548.7
Total	548.7

- 4.19 The provision of under-drained permeable paving has been included to offer water quality enhancement but at the design stage it could also be used to mobilise stormwater runoff and to offset some of the cellular attenuation requirement.

Exceedance events

- 4.20 During exceedance events beyond the 100 year critical storm, surface water runoff will overflow from the aforementioned systems.
- 4.21 Overland flow will follow the topography of the site and will be informed by the proposed carriageway and external works design.

- 4.22 Where possible exceedance flows should be routed towards convenient holding points, such as areas of public open space and the proposed attenuation feature.
- 4.23 Beyond the capacity of the site, flows would continue off-site via three separate exceedance routes, in the south-west, north-west and north-east corners – reflecting existing conditions.
- 4.24 The development offers a reduced impermeable catchment compared to existing conditions and provides a significant volume of stormwater attenuation, with new areas of planting and landscaping. It is considered that both the frequency and volume of exceedance flows from the site will be significantly reduced by the development, compared to existing conditions.

Water Quality Management, amenity and biodiversity.

- 4.25 In line with the pollution indices set out in CIRIA SuDS Manual (C753) the scheme is required to provide 'SuDS component features' which have a 'total SuDS mitigation index' greater than or equal to the 'pollution hazard index'.
- 4.26 Table 4.4 outlines the pollution hazard indices required for the proposed land use at this site, taken from Table 26.2 of C753 as summarised below;

"Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. <300 traffic movements/day."

Table 4.4 – Pollution Hazard Indices (Ref. C753 Table 26.2)

Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Low	0.5	0.4	0.4

- 4.27 The SuDS components proposed for the site and their relevant 'mitigation indices' are identified within Table 4.5.

Table 4.5 – SuDS Mitigation Indices

SuDS Component	Total Suspended Solids	Metals	Hydrocarbons
Hydrodynamic Separator	0.5	0.4	0.5
Permeable Paving	0.7	0.6	0.7

- 4.28 Table 4.5 demonstrates that the 'SuDS mitigation index' for each proposed feature would be greater than or equal to the 'pollution hazard index'. The higher risk areas represented by parking, receive a double barrier treatment scheme in which the treatment provided exceeds the minimum necessary under CIRIA C753 'The SuDS Manual'. Therefore, overall, the scheme provide a robust treatment train.
- 4.29 The SuDS scheme contributes to the provision of amenity and biodiversity by occupying areas of the site such that development is restricted, these areas have been used as green public open space that can provide areas in which planting and landscaping can contribute to placing making and biodiversity provision.

Proposed foul water strategy

- 4.30 In terms of future connectivity, the developer is entitled to make a connection to the nearest practical point on the foul sewer network where the existing sewer is at least the same diameter as the new sewer required to provide capacity for the development.
- 4.31 Under the provisions of the Water Industry Act 1992 (as amended), the developer will need to pay the sewerage undertaker the published sewer connection charges and infrastructure charge, and the sewerage undertaker is responsible for any network reinforcement.
- 4.32 A pre-development capacity enquiry has been submitted to Southern Water and their response confirms that foul flows from the development can be accommodated by their nearest available foul sewer network, located south of the development.

- 4.33 Connectivity to the Southern Water foul network can be achieved under a Section 98 requisition.
- 4.34 We have shown an indicative alignment for the new adoptable foul sewerage system on the preliminary drainage layout included within Appendix D of this report, but the final requisition route will be designed and confirmed by Southern Water.
- 4.35 Copies of the Southern Water asset mapping and correspondence has been included within Appendix F of this report.

Maintenance

- 4.36 Any adoptable sewerage networks will be designed in accordance with the Design and Construction Guidance and will be offered to Southern Water for adoption.
- 4.37 Any storm drainage which solely serves the adopted highway will be offered to Hampshire County Council for adoption.
- 4.38 Any private drainage will be designed in accordance with Building Regulations Part H and will become the responsibility of an appointed management company.
- 4.39 The operation and maintenance of any SuDS features will be undertaken in accordance with 'CIRIA C753 – The SUDS Manual, Chapter 32 – Operation and Maintenance'.
- 4.40 It is considered that the proposed surface water network will be retained under private ownership, up to the point of connectivity with the retained college stormwater system, whereas the foul water network is likely to be designed and offered for adoption.

5 Miscellaneous Issues

Construction issues

- 5.1 It is good practice to offer a Construction Environmental Management Plan (CEMP) to allow the construction and phasing of drainage works to be closely monitored. Prior to the commencement of construction, it is recommended the contractor produce a CEMP and agree it with the LLFA.

Residual flood risks

- 5.2 The proposed development site is located wholly within 'Flood Zone 1' and is not impacted by flooding from surface water.
- 5.3 The residual risk of blockage or failure of any key component within the proposed drainage strategy will be reduced through appropriate operation and maintenance procedures.
- 5.4 Beyond the capacity of the site, flows would continue off-site via three separate exceedance routes, in the south-west, north-west and north-east corners – reflecting existing conditions.
- 5.5 The development offers a reduced impermeable catchment compared to existing conditions and provides a significant volume of stormwater attenuation, with new areas of planting and landscaping. It is considered that both the frequency and volume of exceedance flows from the site will be significantly reduced by the development, compared to existing conditions.
- 5.6 Safe access and egress has been identified.

Health and safety

- 5.7 The site Ground Investigation has identified asbestos fibres are present in samples analysed from the site.
- 5.8 Under the CDM Regulations, adequate information about the site must be provided by the client in order to allow the potential hazards to be reviewed by the designer, and avoidance / mitigation measures taken where reasonably practicable.

6 Mitigation, Conclusions and Recommendations

Mitigation

- 6.1 The proposed development has been assessed in line with the NPPF, to allow the planning application to be progressed and to show that the development can be undertaken in an acceptable manner from a flood risk perspective.
- 6.2 The extents of built development are limited to 'Flood Zone 1' only and are not susceptible to surface flooding from pluvial, groundwater, infrastructure or artificial sources.
- 6.3 To ensure the development is safe throughout its lifetime, the surface water strategy accounts for runoff in up to the 100 year return period.
- 6.4 The strategy also safeguards against the upper end allowances for climate change (45%), providing betterment over undeveloped conditions, where the rate and volume of runoff would continue to increase due to climate change.
- 6.5 The Ground Investigation indicates the site has a low infiltration rate that precludes the use of soakaways.
- 6.6 The drainage strategy provides a 10% allowance for future urban creep to domestic properties and offers a 'flow-balancing' approach to ensure peak rates of runoff received by the downstream Southern Water network are not increased.
- 6.7 The drainage arrangements include a treatment scheme to mitigate against degradation of water quality as a result of the development. The proposals contribute to the provision of amenity space, and provide potential for planting to improve biodiversity of the development.
- 6.8 During exceedance events runoff will be directed away from buildings and toward low points where exceedance drainage provision is provided,
- 6.9 Foul flows generated by the development are proposed to be discharged via a requisitioned connection to the public foul sewer to the south of the site, as agreed with Southern Water.

Conclusions

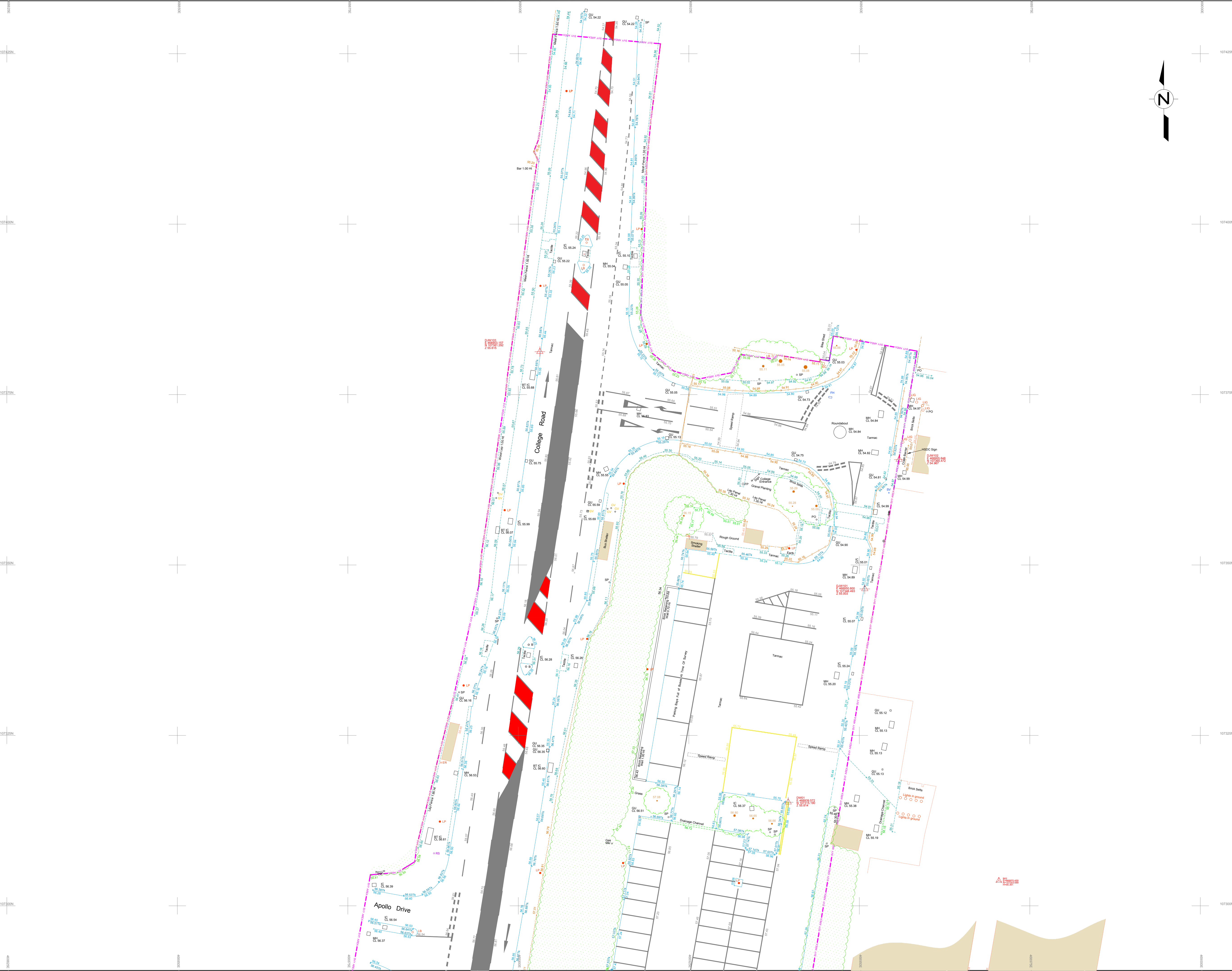
This Flood Risk Assessment has been assessed in line with the NPPF. It is concluded that the development can be undertaken in a sustainable manner, whilst also reducing the flood risk to existing properties in the downstream catchment.

Recommendations

- 6.10 As demonstrated, the development will be safe from flooding throughout its lifetime and will actively reduce flood risk to properties within the downstream path of the southern catchment.
- 6.11 There are therefore no grounds for objections, and we trust that the Lead Local Flood Authority will confirm to the local planning authority accordingly.
- 6.12 The proposed development has been assessed in line with the NPPF, to allow the planning application to be progressed and to show that the development can be undertaken in an acceptable manner from a flood risk perspective.



Appendix A Existing Survey Information



UTILITY LINETYPES

British Telecom	Gas	HT Cable
Cable Television	Heating Pipes	Multiple Services Route
Closed Circuit Television	HT Cable	MSR
Communications	HT Cable	MSR
Drainage	HT Cable	MSR
Drainage - Combined Water	HT Cable	MSR
Drainage - Fuel Water	HT Cable	MSR
Drainage - Storm Water	HT Cable	MSR
Empty Duct	HT Cable	MSR
Electric	HT Cable	MSR
Fire Hydrant Man	HT Cable	MSR
Flow Cuts	HT Cable	MSR
Fuel	HT Cable	MSR
Assumed Service Route - See GENERAL NOTES	HT Cable	MSR

UTILITY SURVEY INFORMATION

Area of Concern	Unable to Survey	UTS
Contracted Survey Area	Unable to LFT (Error)	UTL
Previous Survey Area	Unable to Trace	HT
Extent of (Post processed) GPR	Unable to Trace (due to blockage)	HT
Depth to Top of Service (metres)	Unable to Trace Further	HT
	End of Trace	HT

ABBREVIATIONS used on a PAS 128 Survey

(0.65d 82P) 0.65d = Depth in metres, 82 = Quality Level, P = Post processed GPR

TOPOGRAPHIC & UTILITY DETAILS

Barrier (symbol - sized)	Pipe into Ground (symbol)	Tree (dimensions in metres - e.g.)
Bestial Beacon (symbol)	Post (symbol)	Tree (dimensions in metres - e.g.)
Boiler (symbol)	Rain Water Pipe (symbol)	Tree (dimensions in metres - e.g.)
Bombardier (symbol)	Rodding Eye (symbol)	Tree (dimensions in metres - e.g.)
British Telecoms IC (sized)	Sign Post (symbol)	Tree (dimensions in metres - e.g.)
Building (incomplete detail)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Cable TV Box (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
CCTV Camera (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Cable Level in metres	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Direction of Flow (Drainage)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Distribution board (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Earth Rod (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Electric Cabinet (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Electric Flow (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Electric Sign (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Enlightenment	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Feeder Pipe (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Fire Hydrant (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Flag Pole (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Fuel Roof Level in metres	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Flood Light (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Gas Valve (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Gate	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Ground Level in metres	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Guylot (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Inspection Cover (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Invert Level in metres	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Junction Box - BT (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Junction Box - Comms (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Junction Box - Elec (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Lamp Post (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Light (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Light in ground (symbol)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Manhole (sized)	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Manhole Capped Port	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Parapet Level in metres	Spot Light (symbol)	Tree (dimensions in metres - e.g.)
Pipe Diameter in millimetres	Spot Light (symbol)	Tree (dimensions in metres - e.g.)

GENERAL NOTES

Respectful of the information provided by a utility survey and statutory plans, excavation work should be undertaken with extreme caution and in accordance with HSE Guidelines - HSG47 Avoiding Danger from Underground Services

Only sub-surface utility information is provided. Above ground utility information may be shown where it assists with positional referencing.

Utilities may continue outside of the survey area. Any point marks outside of the area are for investigative purposes only and may not represent the full extent of the sub-surface utilities.

Where logic indicates a utility exists but which cannot be positively confirmed with the technology, an assumed route (ASR) is recorded. All assumed service routes (ASR) have been highlighted with a background yellow colour for visual enhancement.

Sewer and manhole details shown on this drawing have been obtained by observation and measurement from the surface and as such cannot be guaranteed.

Vertical & Horizontal Position - Vertical position (depth) is indicative to the top of the utility feature and is recorded as (x,y,z) i.e. (1,256) - (depth to top of service) and should not be taken as exact, as this could be the surround to the service rather than the service itself. Where depth information from the technology is unclear, depth is not shown. Drains and pipeducts may have been detected using threading and the depth indicated could be between the top (soffit) and the bottom (invert). Horizontal position is indicative to the centre of the utility feature and should not be taken as exact.

Warranty - Biodegradable paints are used to mark-out the position of the utilities. Markings may become illegible quickly depending on ground, weather and traffic conditions. No warranty is given in respect of the durability of the paint markings and that they are a complete representation of the sub-surface utilities, therefore, this drawing should be used as the primary reference for the survey results.

This drawing does not provide an absolute representation of the sub-surface. Utilities have been detected using non-invasive technologies only and the performance can be adversely affected by ground, weather and site conditions outside of SUMO's control, therefore, some utilities may be undetectable. While SUMO uses reasonable endeavours to detect all utilities, it does not warrant that 100% detection will be achieved and that approximate depth penetration of the technologies SUMO uses will not be greater than two metres.

SHEET LAYOUT

Sheet 01

Sheet 02

Sheet 03

CCTV reference numbers added. Additional drainage information from CCTV added.

Rev | Notes

Notes:

Survey is referenced to OS Grid and Level Datum.

Previous Sumo Survey "SOR013620.dwg" has been inserted into this model for reference.

sumo **SUMO SERVICES Ltd**

8 HAYWARD BUSINESS CENTRE
NEW LANE
HAYWANT
HAMPSHIRE
PO9 2NL
TEL: 0845 456 1104
www.sumoservices.com

Title:
Utility Mapping & Topographical & CCTV Survey

Client:
Places For People

Project:
Havant & South Downs College, College Road, Witley, Waterlooville

Date Completed: 20/03/2020 Post Code: PO7 8AA

Surveyed: SW, DW Scale: 1/250 (A1 Sheet)

Drawn: DM

Checked: SW, DW

Job No: SOR017240 Dwg No: 01 Rev: A

[illegible]

GENERAL NOTES

Irrespective of the information provided by a utility survey and statutory plans, excavation work should be undertaken with extreme caution and in accordance with HSE Guidelines - HSG47 Avoiding Danger from Underground Services

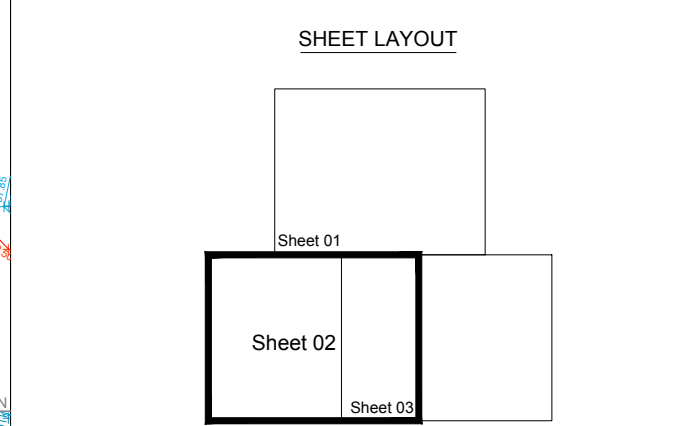
Only sub-surface utility information is provided. Above ground utility information may be shown

Where logic indicates a utility exists but which cannot be positively confirmed with the technology, an assumed route (ASR) is recorded. All assumed service routes (ASR) have been highlighted with a background yellow colour for visual enhancement.

Vertical & Horizontal Position: Vertical position (depth) is indicative to the top of the utility/feature and is recorded as (x.x00) i.e. (2.50) - depth to top of service) and should not be taken as exact, as this could be the surround to the service rather than the service itself. Where depth information from the technology is unclear, this is not shown. Drains and manholes may have been located by using the top (invert) and the depth indicated could be to the top (soft) and the bottom (invert). Horizontal position is indicative to the centre of the utility/feature and should not be taken as exact.

Warranty: Boregrade points are used to mark-out the position of the utilities. Markings may become illegible quickly depending on ground, weather and traffic conditions. No warranty is given in respect of the durability of the paint markings and that they are a complete representation of the sub-surface utilities, therefore, this drawing should be used as the primary reference for the survey results.

This drawing does not provide an absolute representation of the sub-surface. Utilities have been detected using non-invasive technologies only and the performance can be adversely affected by ground, weather and site conditions outside of SUMO's control, therefore, some utilities may be undetectable. While SUMO uses reasonable endeavours to detect all utilities, it does not warrant that 100% detection will be achieved and that approximate depth penetration of the technologies SUMO uses will not be greater than two metres.



CCTV reference numbers added.

A	Additional drainage information from CCTV added.	MWS	6/4/20
Rev	Notes	Drawn	Date

Notes:

Survey is referenced to OS Grid and Level Datum.

Previous Sumo Survey "SOR013620.dwg" has been inserted into this model for reference.

Sumo
Survey
Services

SUMO SERVICES Ltd
8 HAYWARD BUSINESS CENTRE
NEW LANE
HAVANT
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TEL: 0845 456 1104
www.sumoservices.com

Title: Utility Mapping & Topographical & CCTV Survey

Client: **Places For People**

Project:
Havant & South Downs College, College Road,
Widley, Waterlooville

Date Completed:	20/03/2020	Post Code:	POT 8AA
Surveyed:	SW, DW	Scale: 1/250 (A1 Sheet)	
Drawn:	DM		
Checked:	SW, DW		
Job No:		Dwg No:	Rev:
SOR017240		02	A



CCTV SURVEYS



**HIGH PRESSURE
JETTING**



**MAN ENTRY
SURVEYS**



RELINING & REPAIRS



PILING SURVEYS



CHIMNEY SURVEYS



**5 SUFFOLK ROAD
MALDON
ESSEX
CM9 6AX**

Telephone: 07971 910370

CCTV REPORT

CLIENT	AWCOCK WARD PARTNERSHIP
LOCATION	SOUTH DOWNS CAMPUS COLLEGE ROAD WATERLOOVILLE HAMPSHIRE PO7 8AA
DATE	26/02/2023
REF	071497

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6. SURVEY TECHNIQUES.....	7
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REGISTER OF APPENDICES

- A. MANHOLE INSPECTION REPORT
- B. COPIES OF SITE HAND WRITTEN DAILY RECORD SHEETS
- C. ANNOTATED SITE DRAWINGS

GENERAL INFORMATION

Utility Surveys Ltd have been appointed by Awcock Ward Partnership to undertake a Sewer Condition Survey at the location identified. This survey commenced on 26 February 2023.

CONTACT INFORMATION

SITE ADDRESS: SOUTH DOWNS CAMPUS COLLEGE ROAD WATERLOOVILLE HAMPSHIRE PO7 8AA	SITE CONTACT: N/A CONTACT NO: EMAIL:
CLIENT DETAILS: AWCOCK WARD PARTNERSHIP ADA HOUSE PYNES HILL EXETER EX2 5TU	CONTACT: CHRIS YALDEN CONTACT NO: 07843 107790 EMAIL:

UTILITY SURVEYS LTD CONTACT DETAILS

OFFICE	SIMON GARDINER 07971 910370 simon@utilitysurveysltd.co.uk
RIG MANAGER	SIMON GARDINER

SITE DESCRIPTION

Site Description

COLLEGE CAMPUS CAR PARK

Site Boundaries

CLEARLY DEFINED ON SUPPLIED DRAWINGS

SURVEY BRIEF

Sewer Condition Inspection Survey

The Purpose of the Sewer Condition Inspection Survey was to establish the location and extent of foul and/ or surface water drainage systems and to document their condition prior to any further works.

- A full condition survey can only be produced if precleansing / jetting is carried out in conjunction with the CCTV survey.
- If precleansing is not carried out at the time of the survey further faults and conditional defects may be present but not recorded in this report.

In addition Utility Surveys Ltd have;

- Attempted to investigate all agreed areas, although if not all could be fully accessed (see Daily Record Sheet).
- Produced a report to establish the location and extent of foul and surface water drainage systems and to document their condition prior to any further works.
- Provided the basic information from which a remediation or management plan can be instigated.
- Highlighted the requirement for urgent action to repair or remediation works to the surveyed drainage system.
- Incorporated in the results any additional manholes/ drainage found, which may have been buried, obscured or not identified in the original scope of works.

Agreed Restrictions and Exclusions

This report is based upon a Sewer Condition Inspection Survey of an unfamiliar site.

During the course of the survey all reasonable efforts were made to identify and access all Manholes and foul/ surface drainage/ outfall, throughout the site.

Some installations/ areas may not have been inspected due to access and or safety reasons (e.g. Wet Wells, Large Unventilated Tanks, Traffic Management Situations). Unless an accepted safe system of work has been devised.

Access may not have been gained to several areas of the site due to conditions outside the control of the client or contractor, any such areas have been documented within this report (see Daily Record Sheet).

Any diagrams/ CAD drawings in the report are not to be scaled and are illustrative only to indicate approximate locations.

Manhole covers will not be lifted if:

- a) There is a danger of damaging surrounding flooring or finishes.
- b) They are covered, i.e. under fitted carpets, flooring, tiling or paving etc.
- c) Under fittings, fixtures, fencing, equipment etc.

Buried manholes will be located, if possible, position marked. If instructed, excavated in soft ground only up to a depth of 350mm with temporary reinstatement.

No allowance has been made for any precleansing unless stated in the quotation.

Full and free access to all areas affected is to be arranged by the instructing party.

SURVEY TECHNIQUES

The areas set out within the survey brief underwent inspection for a Sewer Condition Inspection Survey each area within the agreed scope of works was surveyed for location extent and condition of foul and/ or surface water drainage systems and CCTV footage gathered for confirmation. Every reasonable effort was made to investigate all aspects of the drainage system. Additional photographs were taken where relevant to the inspection.

There were no deviations from the agreed scope of works.

This Sewer Condition Inspection Survey was carried out in accordance with the Utility Surveys Ltd documented 'in-house' procedure 820 'Code of Working Practice' based on National Sewerage Association guidance. The Sewer Condition Inspection Survey Report states information recorded at the time of survey only, based on visual and CCTV assessment in accordance with sewer classification codings issued by WRC, incorporating the following inspection criteria:

CONDITION of pipe work
LOCATION of pipe work
EXTENT of the pipe work

A defect grade description has been provided for the identification of defective pipe work.

Changes to any of the above criteria shall necessitate the need for reassessment

These gradings and the reports can be used to form the basis of a planned preventative maintenance programme. This can be the subject of further discussions with our technical support team.

Drainage Report



Prepared For
AWCOCK WARD PARTNERSHIP
ADA HOUSE
PYNES HILL
EXETER
EX2 5TU

Site
SOUTH DOWNS CAMPUS
COLLEGE ROAD
WATERLOOVILLE
HAMPSHIRE
PO7 8AA



UTILITY SURVEYS LIMITED
Surveyor: Simon Gardiner
simon@utilitysurveysltd.co.uk

Total Defects for Project



Total DRB Grades for Project



071497 South Downs Campus Waterlooville - CCTV Survey Report : 26/02/23

Name :	UTILITY SURVEYS LIMITED
Contact :	SIMON GARDINER
Location :	5 SUFFOLK ROAD
Town :	MALDON
Region :	ESSEX
Postcode :	CM9 6AX
Email :	simon@utilitysurveysltd.co.uk
Contact Number :	
Surveyor :	Simon Gardiner
Valid Certification No :	L1103

Client Information

Name :	AWCOCK WARD PARTNERSHIP
Contact :	CHRIS YALDEN
Location :	ADA HOUSE
Town :	PYNES HILL
Region :	EXETER
Postcode :	EX2 5TU
Tel :	
Mobile :	07843 107790
Email :	
Fax :	

Site Information

Name :	SOUTH DOWNS CAMPUS
Contact :	
Location :	COLLEGE ROAD
Town :	WATERLOOVILLE
Region :	HAMPSHIRE
Postcode :	PO7 8AA
Tel :	
Mobile :	
Email :	
Fax :	

Total Defects for Project



Total DRB Grades for Project



Report interpretation.

Overview:

Each section of the drainage system is allocated a score indicating areas that require attention. These areas are detailed in the Overview section on the following page and also at the bottom right of the first few pages. We use colour coding as an indicator of severity. Additional information concerning rehabilitation options/recommendations is included in the Overview page, which can also be used as an, "at a glance" indication of system condition. More in depth information for each section, including images can be found later in the report. Grade indicators are as follows:

Grade A: Drain is serviceable no recommendations required

Grade B: There is an issue that might require remedial works

Grade C: There is a defect that requires remedial works, the drain is not serviceable.

Observations:

Each section of drainage reported on (manhole to manhole for example), contains detailed information about that drain and any observations made concerning condition are detailed below the header section. The observations are colour coded and given a severity score, with more significant defects being given a higher score, using a scale from 1 to 5 as detailed below:

Severity 1 to 2: These defects may require remedial monitoring

Severity 3: These defects probably require some form of remedial works

Severity 4 to 5: Defects that will require remedial repair or replacement

General:

The information provided is relevant at the time of survey. The coding system in this report is based on the Manual of Sewer Condition Classification, 5th edition (MSCC5) domestic codes (BS EN 13508-1:2003). This is the official standard for the water industry.

The severity system is based on significant experience in general practice and the 1 -5 grades represent the severity of individual defects: 5 representing a more serious defect.

Please feel free to contact us for further explanation or pricing for remedial works required.

Total Defects for Project



Total DRB Grades for Project



Overview

Section: 1 From: S1 To: G1	Grade B	DRB Grade: B Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 2 From: S1 To: S2	Grade C	DRB Grade: C Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 3 From: S2 To: S3	Grade A	DRB Grade: A Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 4 From: S3 To: S4	Grade B	DRB Grade: B Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 5 From: S3 To: G4	Grade B	DRB Grade: B Pipe Size: 100 Material: Polyvinyl Chloride Use: Surface Water
Section: 6 From: G2 To: S4	Grade A	DRB Grade: A Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 7 From: G3 To: S5	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 8 From: G5 To: S5	Grade A	DRB Grade: A Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water

Total Defects for Project



Total DRB Grades for Project



Section: 9 From: S4 To: S5	Grade B	DRB Grade: B Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 10 From: S5 To: G6	Grade B	DRB Grade: B Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 11 From: S5 To: SPUR A	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 12 From: S5 To: SPUR B	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 13 From: S5 To: SPUR C	Grade A	DRB Grade: A Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 14 From: G7 To: S6	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 15 From: S6 To: S5	Grade B	DRB Grade: B Pipe Size: 150 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 16 From: S6 To: S7	Grade A	DRB Grade: A Pipe Size: 375 Material: Concrete Use: Surface Water
Section: 17 From: S8 To: S6	Grade A	DRB Grade: A Pipe Size: 300 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water

Total Defects for Project



Total DRB Grades for Project



Section: 18 From: S8 To: S9	Grade B	DRB Grade: B Pipe Size: 225 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 19 From: S8 To: S10	Grade B	DRB Grade: B Pipe Size: 300 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 20 From: G8 To: DOWN	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 21 From: G9 To: MAIN	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 22 From: G10 To: MAIN	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water
Section: 23 From: G11 To: MAIN	Grade B	DRB Grade: B Pipe Size: 100 Material: Vitrified Clay (i.e. all clayware) Use: Surface Water

Total Defects for Project



Total DRB Grades for Project



Site: COLLEGE ROAD, WATERLOOVILLE

Section 1

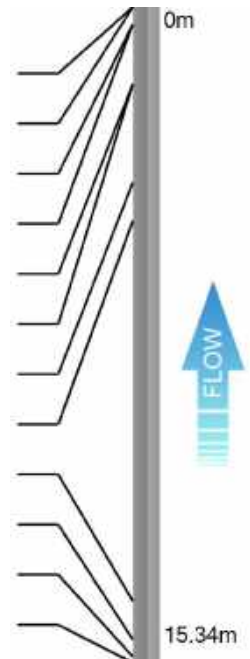
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
---------------------------------------	---	------------------------------------	---------------	-----------------------------------	---------------------

Start Node Ref: S1	Finish Node Ref: G1	Direction: U	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	15.34	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 0%			0:00:00	
00.40m	DER	S1 Settled deposits coarse 10%	S1	0_2	0:00:00	
00.40m	R	S2 Roots	S2		0:00:06	
01.80m	R	F2 Roots	F2		0:00:06	
01.80m	DER	F1 Settled deposits coarse 10%	F1	0_-2	0:00:00	
04.10m	CC	Crack, circumferential 06-06		0_4	0:00:39	
05.00m	DES	S3 Settled deposits fine 5%	S3		0:00:53	
13.90m	R	Roots		0_6	0:02:09	
14.80m	R	Roots		0_7	0:02:28	
15.20m	DES	F3 Settled deposits fine 5%	F3		0:00:53	
15.34m	GYF	Finish node type Gully				



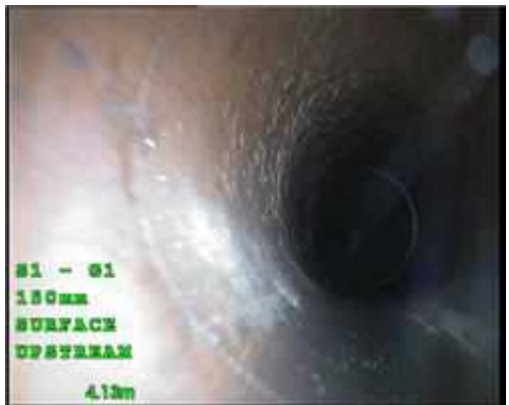
Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 1

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S1	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:00	S1 DER	Settled deposits coarse 0.4m - 1.8m: 10% Cross sectional area loss - Severity 3	Image Provided - Ref: 0_2 
00.40m	0:00:06	S2 R	Roots 0.4m - 1.8m - Severity 3 FINE ROOTS	
01.80m	0:00:06	F2 R	Roots Defect End - Severity 3 FINE ROOTS	
01.80m	0:00:00	F1 DER	Settled deposits coarse Defect End: 10% Cross sectional area loss - Severity 3	
04.10m	0:00:39	CC	Crack, circumferential from 06 o'clock to 06 o'clock - Severity 1	Image Provided - Ref: 0_4 
05.00m	0:00:53	S3 DES	Settled deposits fine 5m - 15.2m: 5% Cross sectional area loss - Severity 3	

Total Defects for section

DRB Grade for Section



Pos	Video Ref	Code	Description	Image
13.90m	0:02:09	R	Roots - Severity 3 TAP ROOTS	Image Provided - Ref: 0_6 
14.80m	0:02:28	R	Roots - Severity 3 MASS ROOTS	Image Provided - Ref: 0_7 
15.20m	0:00:53	F3 DES	Settled deposits fine Defect End: 5% Cross sectional area loss - Severity 3	
15.34m		GYF	Finish node type Gully G1	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 2

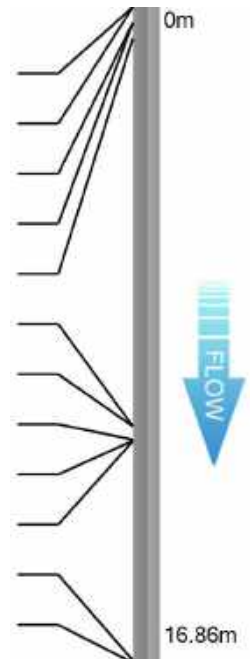
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
---------------------------------------	---	------------------------------------	---------------	-----------------------------------	---------------------

Start Node Ref: S1	Finish Node Ref: S2	Direction: D	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	16.86	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 0%			0:00:00	
00.40m	R	Roots		1_2	0:00:00	
00.40m	DES	S1 Settled deposits fine 5%	S1		0:00:39	
00.80m	JDM	Joint displaced medium			0:00:12	
10.78m	CC	Crack, circumferential 06-02		1_5	0:01:32	
10.78m	CL	Crack, longitudinal 08			0:01:35	
11.12m	H	Hole in drain/sewer 11		1_7	0:01:35	
11.15m	FC	Fracture circumferential 12-07		1_8	0:01:36	
11.16m	H	Hole in drain/sewer 12		1_9	0:01:36	
16.80m	DES	F1 Settled deposits fine 5%	F1		0:00:39	
16.86m	MHF	Finish node type, manhole				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 2

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S1	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:00	R	Roots - Severity 3 FINE ROOTS	Image Provided - Ref: 1_2 
00.40m	0:00:39	S1 DES	Settled deposits fine 0.4m - 16.8m: 5% Cross sectional area loss - Severity 3	
00.80m	0:00:12	JDM	Joint displaced medium - Severity 3	
10.78m	0:01:32	CC	Crack, circumferential from 06 o'clock to 02 o'clock - Severity 1	Image Provided - Ref: 1_5 
10.78m	0:01:35	CL	Crack, longitudinal at 08 o'clock - Severity 1	

Total Defects for section



DRB Grade for Section



Pos	Video Ref	Code	Description	Image
11.12m	0:01:35	H	Hole in drain/sewer at 11 o'clock - Severity 4	Image Provided - Ref: 1_7 
11.15m	0:01:36	FC	Fracture circumferential from 12 o'clock to 07 o'clock - Severity 3	Image Provided - Ref: 1_8 
11.16m	0:01:36	H	Hole in drain/sewer at 12 o'clock - Severity 4	Image Provided - Ref: 1_9 
16.80m	0:00:39	F1 DES	Settled deposits fine Defect End: 5% Cross sectional area loss - Severity 3	
16.86m		MHF	Finish node type, manhole S2	

Total Defects for section

DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 3

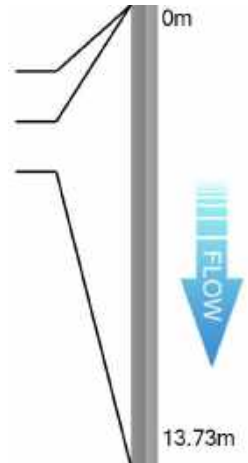
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
---------------------------------------	---	------------------------------------	---------------	-----------------------------------	---------------------

Start Node Ref: S2	Finish Node Ref: S3	Direction: D	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

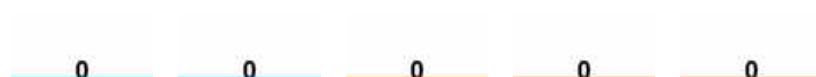
Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	13.73	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 5%			0:00:00
13.73m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section

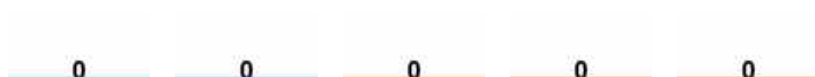


Descriptive Report with Remarks and Observation Images

Section 3

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S2	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
13.73m		MHF	Finish node type, manhole S3	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 4

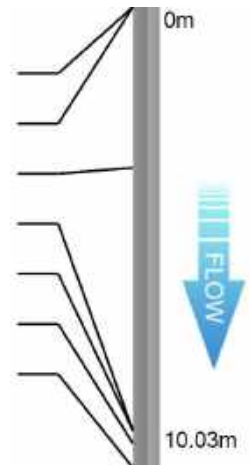
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S3	Finish Node Ref: S4	Direction: D	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	10.03	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 5%			0:00:00
03.50m	DER	Settled deposits coarse 10%			0:00:32
09.22m	CL	Crack, longitudinal 12	3_3		0:01:31
09.22m	CL	Crack, longitudinal 02	3_4		0:01:31
09.50m	DEE	Attached deposits, encrustation 08-12 5%	3_5		0:01:37
10.03m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 4

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S3	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
03.50m	0:00:32	DER	Settled deposits coarse: 10% Cross sectional area loss - Severity 3	
09.22m	0:01:31	CL	Crack, longitudinal at 12 o'clock - Severity 1	Image Provided - Ref: 3_3 
09.22m	0:01:31	CL	Crack, longitudinal at 02 o'clock - Severity 1	Image Provided - Ref: 3_4 
09.50m	0:01:37	DEE	Attached deposits, encrustation from 08 o'clock to 12 o'clock: 5% Cross sectional area loss - Severity 3	Image Provided - Ref: 3_5 

Total Defects for section



DRB Grade for Section



Pos	Video Ref	Code	Description	Image
10.03m		MHF	Finish node type, manhole S4	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 5

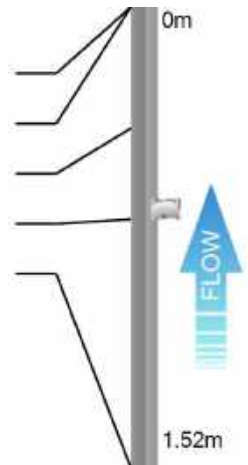
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S3	Finish Node Ref: G4	Direction: U	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: PVC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	1.52	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 0%			0:00:00
00.40m	DES	Settled deposits fine 10%			0:00:00
00.70m	JN	Junction 09 : 100mm Diameter			0:00:11
01.52m	GYF	Finish node type Gully			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 5

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S3	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:00	DES	Settled deposits fine: 10% Cross sectional area loss - Severity 3	
00.70m	0:00:11	JN	Junction at 09 o'clock: 100mm Diameter	
01.52m		GYF	Finish node type Gully G4	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 6

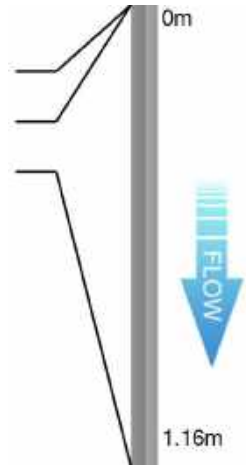
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G2	Finish Node Ref: S4	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
GY				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	1.16	

Position	Code	Description	CD	Pic	Video Ref
00.00m	GY	Start node type Gully			
00.00m	WL	Water level 5%			0:00:00
01.16m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section

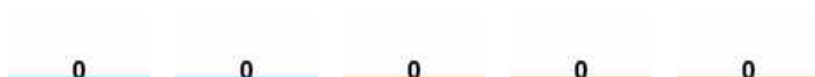


Descriptive Report with Remarks and Observation Images

Section 6

Pos	Video Ref	Code	Description	Image
00.00m		GY	Start node type Gully G2	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
01.16m		MHF	Finish node type, manhole S4	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 7

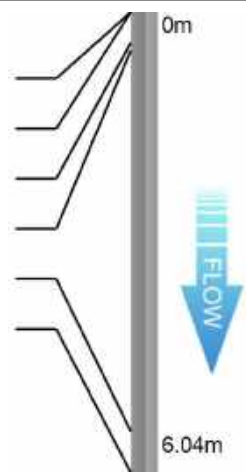
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G3	Finish Node Ref: S5	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
GY				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	6.04	

Position	Code	Description	CD	Pic	Video Ref
00.00m	GY	Start node type Gully			
00.00m	WL	Water level 0%			0:00:00
00.40m	DES	Settled deposits fine 10%			0:00:00
00.50m	SC	Dimension of drain/sewer changes : 150mm			0:00:00
05.50m	R	Roots			0:00:00
06.04m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 7

Pos	Video Ref	Code	Description	Image
00.00m		GY	Start node type Gully G3	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:00	DES	Settled deposits fine: 10% Cross sectional area loss - Severity 3	
00.50m	0:00:00	SC	Dimension of drain/sewer changes: 150mm Diameter	
05.50m	0:00:00	R	Roots - Severity 3 FINE ROOTS	
06.04m		MHF	Finish node type, manhole S5	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 8

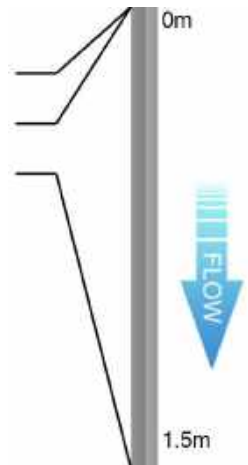
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G5	Finish Node Ref: S5	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
GY				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	1.5	

Position	Code	Description	CD	Pic	Video Ref
00.00m	GY	Start node type Gully			
00.00m	WL	Water level 5%			0:00:00
01.50m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 8

Pos	Video Ref	Code	Description	Image
00.00m		GY	Start node type Gully G5	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
01.50m		MHF	Finish node type, manhole S5	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 9

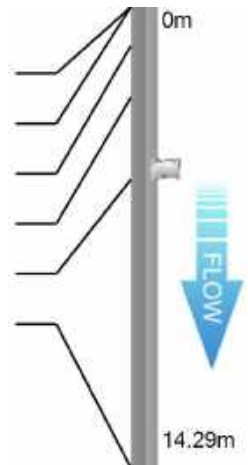
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S4	Finish Node Ref: S5	Direction: D	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	14.29	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 5%			0:00:00
01.20m	DES	Settled deposits fine 10%			0:00:11
02.80m	DES	Settled deposits fine 5%			0:00:30
05.35m	JN	Junction 10 : 100mm Diameter			0:00:47
14.29m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 9

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S4	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
01.20m	0:00:11	DES	Settled deposits fine: 10% Cross sectional area loss - Severity 3	
02.80m	0:00:30	DES	Settled deposits fine: 5% Cross sectional area loss - Severity 3	
05.35m	0:00:47	JN	Junction at 10 o'clock: 100mm Diameter	
14.29m		MHF	Finish node type, manhole S5	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 10

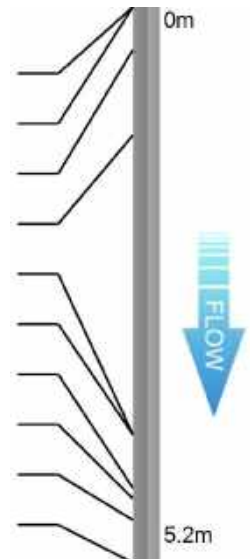
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S5	Finish Node Ref: G6	Direction: D	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	5.2	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 0%			0:00:00	
00.40m	DER	Settled deposits coarse 10%			0:00:14	
01.20m	R	Roots			0:00:14	
04.00m	JDM	Joint displaced medium	9_4		0:00:40	
04.00m	DES	Settled deposits fine 5%			0:00:40	
04.50m	DER	Settled deposits coarse 10%			0:00:48	
04.60m	MC	Material of drain/sewer changes			0:00:52	
04.80m	LRF	Line of drain/sewer deviates right [full]			0:00:55	
05.20m	SA	Survey abandoned				



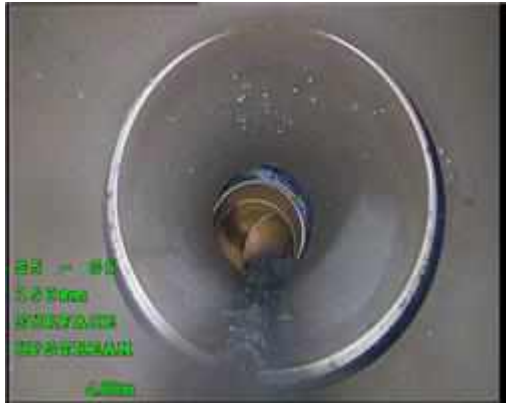
Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 10

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S5	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:14	DER	Settled deposits coarse: 10% Cross sectional area loss - Severity 3	
01.20m	0:00:14	R	Roots - Severity 3 TAP ROOTS	
04.00m	0:00:40	JDM	Joint displaced medium - Severity 3	Image Provided - Ref: 9_4 
04.00m	0:00:40	DES	Settled deposits fine: 5% Cross sectional area loss - Severity 3	
04.50m	0:00:48	DER	Settled deposits coarse: 10% Cross sectional area loss - Severity 3	
04.60m	0:00:52	MCPVC	Material of pipe changes to Polyvinyl Chloride	
04.80m	0:00:55	LRF	Line of drain/sewer deviates right [full]	
05.20m		SA	Survey abandoned UNABLE TO PASS BEND	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 11

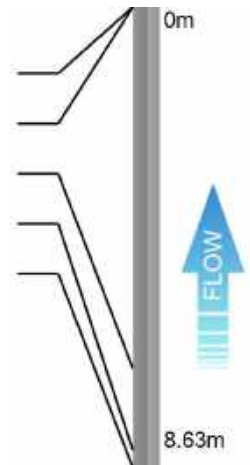
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S5	Finish Node Ref: SPUR A	Direction: U	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	8.63	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 0%			0:00:00
06.77m	FC	Fracture circumferential 06-06			0:01:17
08.30m	LUF	Line of drain/sewer deviates up [full]			0:01:33
08.63m	SA	Survey abandoned			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 11

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S5	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
06.77m	0:01:17	FC	Fracture circumferential from 06 o'clock to 06 o'clock - Severity 3	
08.30m	0:01:33	LUF	Line of drain/sewer deviates up [full]	
08.63m		SA	Survey abandoned SHARP BEND UP	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 12

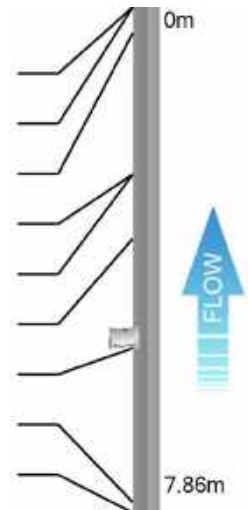
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S5	Finish Node Ref: SPUR B	Direction: U	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	7.86	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 0%			0:00:00	
00.40m	DES	S1 Settled deposits fine 20%	S1		0:00:00	
02.60m	DES	F1 Settled deposits fine 20%	F1		0:00:00	
02.60m	DES	Settled deposits fine 10%			0:00:35	
03.60m	DES	Settled deposits fine 5%			0:00:48	
05.30m	JN	Junction 02 : 100mm Diameter			0:01:04	
07.70m	LUF	Line of drain/sewer deviates up [full]			0:01:39	
07.86m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 12

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S5	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:00	S1 DES	Settled deposits fine 0.4m - 2.6m: 20% Cross sectional area loss - Severity 3	
02.60m	0:00:00	F1 DES	Settled deposits fine Defect End: 20% Cross sectional area loss - Severity 3	
02.60m	0:00:35	DES	Settled deposits fine: 10% Cross sectional area loss - Severity 3	
03.60m	0:00:48	DES	Settled deposits fine: 5% Cross sectional area loss - Severity 3	
05.30m	0:01:04	JN	Junction at 02 o'clock: 100mm Diameter	
07.70m	0:01:39	LUF	Line of drain/sewer deviates up [full]	
07.86m		SA	Survey abandoned SHARP BEND UP	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 13

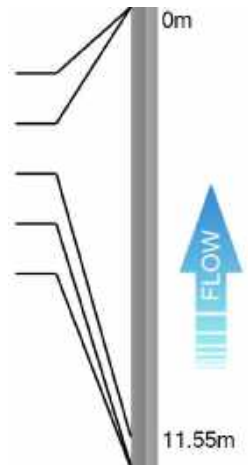
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S5	Finish Node Ref: SPUR C	Direction: U	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

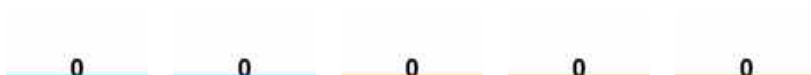
Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	11.55	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 0%			0:00:00	
10.78m	LLH	Line of drain/sewer deviates left [half]			0:02:00	
11.50m	LUF	Line of drain/sewer deviates up [full]			0:02:15	
11.55m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section

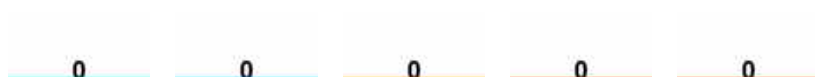


Descriptive Report with Remarks and Observation Images

Section 13

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S5	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
10.78m	0:02:00	LLH	Line of drain/sewer deviates left [half]	
11.50m	0:02:15	LUF	Line of drain/sewer deviates up [full]	
11.55m		SA	Survey abandoned SHARP BEND UP	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 14

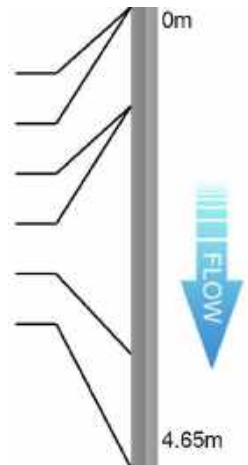
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G7	Finish Node Ref: S6	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
GY				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	4.65	

Position	Code	Description	CD	Pic	Video Ref
00.00m	GY	Start node type Gully			
00.00m	WL	Water level 0%			0:00:00
01.00m	DES	Settled deposits fine 5%			0:00:20
01.00m	WL	Water level 5%			0:00:20
03.50m	JDM	Joint displaced medium			0:00:40
04.65m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 14

Pos	Video Ref	Code	Description	Image
00.00m		GY	Start node type Gully G7	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
01.00m	0:00:20	DES	Settled deposits fine: 5% Cross sectional area loss - Severity 3	
01.00m	0:00:20	WL	Water level: 5% Height/Diameter	
03.50m	0:00:40	JDM	Joint displaced medium - Severity 3	
04.65m		MHF	Finish node type, manhole S6	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 15

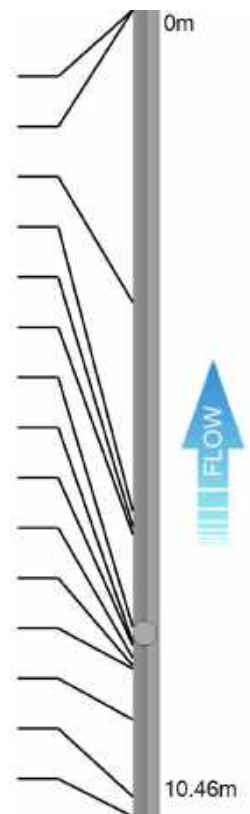
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S6	Finish Node Ref: S5	Direction: U	Height/Dia: 150
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	10.46	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 5%			0:00:00	
03.79m	R	Roots		14_2	0:00:36	
06.50m	RJ	Roots at joint		14_3	0:01:29	
06.70m	WL	Water level 10%			0:01:31	
06.80m	WL	Water level 20%			0:01:32	
08.00m	JDM	Joint displaced medium		14_6	0:01:40	
08.20m	JN	Junction 12 : 150mm Diameter			0:01:44	
08.24m	DEE	Attached deposits, encrustation 09-03 10%		14_8	0:01:44	
08.40m	WL	Water level 10%			0:01:46	
08.50m	WL	Water level 5%			0:01:49	
08.54m	RJ	Roots at joint			0:01:49	
09.20m	R	Roots		14_1	0:01:58	
10.20m	R	Roots		14_1	0:03:06	
10.46m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 15

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S6	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
03.79m	0:00:36	R	Roots - Severity 3 ROOTS	Image Provided - Ref: 14_2 
06.50m	0:01:29	RJ	Roots at joint - Severity 3 FINE ROOTS AT JOINT	Image Provided - Ref: 14_3 
06.70m	0:01:31	WL	Water level: 10% Height/Diameter	
06.80m	0:01:32	WL	Water level: 20% Height/Diameter	

Total Defects for section



DRB Grade for Section



Pos	Video Ref	Code	Description	Image
08.00m	0:01:40	JDM	Joint displaced medium - Severity 3	Image Provided - Ref: 14_6 
08.20m	0:01:44	JN	Junction at 12 o'clock: 150mm Diameter	
08.24m	0:01:44	DEE	Attached deposits, encrustation from 09 o'clock to 03 o'clock: 10% Cross sectional area loss - Severity 3	Image Provided - Ref: 14_8 
08.40m	0:01:46	WL	Water level: 10% Height/Diameter	
08.50m	0:01:49	WL	Water level: 5% Height/Diameter	
08.54m	0:01:49	RJ	Roots at joint - Severity 3 FINE ROOTS AT JOINT	
09.20m	0:01:58	R	Roots - Severity 3 MASS ROOTS	Image Provided - Ref: 14_12 

Total Defects for section

DRB Grade for Section



Pos	Video Ref	Code	Description	Image
10.20m	0:03:06	R	Roots - Severity 3 MASS ROOTS	Image Provided - Ref: 14_13 
10.46m		SA	Survey abandoned MASS ROOTS	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 16

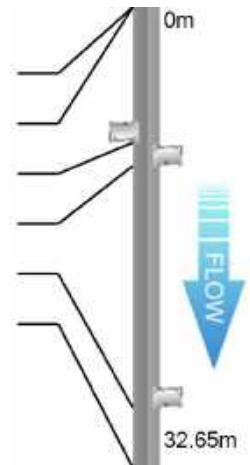
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S6	Finish Node Ref: S7	Direction: D	Height/Dia: 375
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: CO	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	32.65	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 5%			0:00:00
09.60m	CN	Connection other than junction 01 : 100mm			0:00:56
11.26m	CN	Connection other than junction 11 : 100mm			0:01:06
28.40m	CN	Connection other than junction 11 : 100mm			0:02:38
32.65m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section

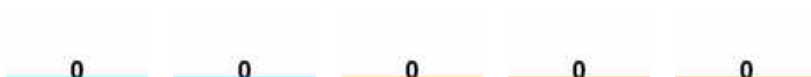


Descriptive Report with Remarks and Observation Images

Section 16

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S6	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
09.60m	0:00:56	CN	Connection other than junction at 01 o'clock: 100mm Diameter	
11.26m	0:01:06	CN	Connection other than junction at 11 o'clock: 100mm Diameter	
28.40m	0:02:38	CN	Connection other than junction at 11 o'clock: 100mm Diameter	
32.65m		MHF	Finish node type, manhole S7	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 17

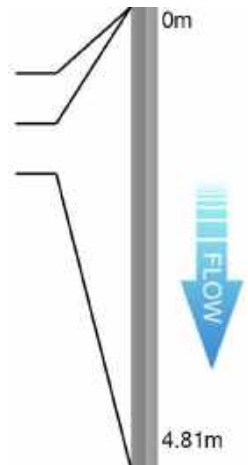
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S8	Finish Node Ref: S6	Direction: D	Height/Dia: 300
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	4.81	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 10%			0:00:00
04.81m	MHF	Finish node type, manhole			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 17

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S8	
00.00m	0:00:00	WL	Water level: 10% Height/Diameter	
04.81m		MHF	Finish node type, manhole S6	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 18

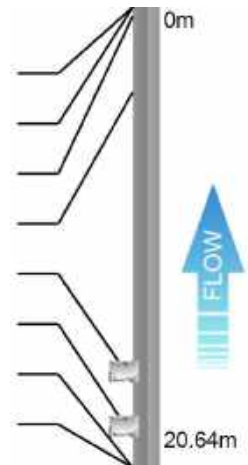
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S8	Finish Node Ref: S9	Direction: U	Height/Dia: 225
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	20.64	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 10%			0:00:00	
00.40m	DES	S1 Settled deposits fine 5%	S1		0:00:00	
03.80m	WL	Water level 5%			0:00:31	
16.80m	CN	Connection other than junction 01 : 150mm			0:02:32	
19.27m	CN	Connection other than junction 02 : 150mm			0:03:07	
20.64m	DES	F1 Settled deposits fine 5%	F1		0:00:00	
20.64m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 18

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S8	
00.00m	0:00:00	WL	Water level: 10% Height/Diameter	
00.40m	0:00:00	S1 DES	Settled deposits fine 0.4m - 20.64m: 5% Cross sectional area loss - Severity 3	
03.80m	0:00:31	WL	Water level: 5% Height/Diameter	
16.80m	0:02:32	CN	Connection other than junction at 01 o'clock: 150mm Diameter	
19.27m	0:03:07	CN	Connection other than junction at 02 o'clock: 150mm Diameter	
20.64m	0:00:00	F1 DES	Settled deposits fine Defect End: 5% Cross sectional area loss - Severity 3	
20.64m		SA	Survey abandoned END OF SURVEY REQUIREMENT	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 19

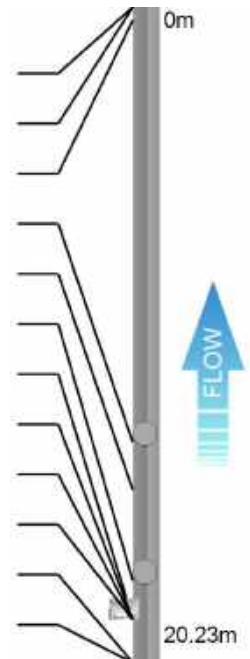
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: S8	Finish Node Ref: S10	Direction: U	Height/Dia: 300
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	20.23	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	MH	Start node type, manhole				
00.00m	WL	Water level 5%			0:00:00	
00.40m	DES	S1 Settled deposits fine 5%	S1		0:00:56	
13.43m	CN	Connection other than junction 12 : 75mm		18_3	0:01:54	
14.90m	DER	Settled deposits coarse 10%			0:02:16	
17.70m	CN	Connection other than junction 12 : 100mm			0:02:36	
18.90m	CN	Connection other than junction 01 : 100mm			0:02:47	
18.90m	DEE	Attached deposits, encrustation 01-06 5%		18_7	0:02:47	
18.90m	FL	Fracture longitudinal 01			0:02:47	
18.90m	FL	Fracture longitudinal 02			0:02:47	
20.23m	DES	F1 Settled deposits fine 5%	F1		0:00:56	
20.23m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 19

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole S8	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
00.40m	0:00:56	S1 DES	Settled deposits fine 0.4m - 20.23m: 5% Cross sectional area loss - Severity 3	
13.43m	0:01:54	CN	Connection other than junction at 12 o'clock: 75mm Diameter	Image Provided - Ref: 18_3 
14.90m	0:02:16	DER	Settled deposits coarse: 10% Cross sectional area loss - Severity 3	
17.70m	0:02:36	CN	Connection other than junction at 12 o'clock: 100mm Diameter	
18.90m	0:02:47	CN	Connection other than junction at 01 o'clock: 100mm Diameter	
18.90m	0:02:47	DEE	Attached deposits, encrustation from 01 o'clock to 06 o'clock: 5% Cross sectional area loss - Severity 3	Image Provided - Ref: 18_7 
18.90m	0:02:47	FL	Fracture longitudinal at 01 o'clock - Severity 3	

Total Defects for section

DRB Grade for Section



Pos	Video Ref	Code	Description	Image
18.90m	0:02:47	FL	Fracture longitudinal at 02 o'clock - Severity 3	
20.23m	0:00:56	F1 DES	Settled deposits fine Defect End: 5% Cross sectional area loss - Severity 3	
20.23m		SA	Survey abandoned END OF SURVEY REQUIREMENT	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 20

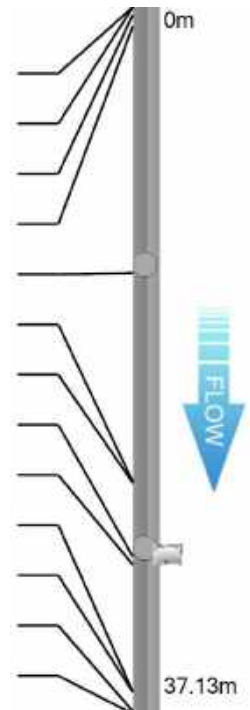
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G8	Finish Node Ref: DOWN	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
GY				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	37.13	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	GY	Start node type Gully				
00.00m	WL	Water level 5%			0:00:00	
00.40m	DES	S1 Settled deposits fine 5%	S1		0:00:33	
01.00m	LRH	Line of drain/sewer deviates right [half]			0:00:09	
13.98m	JN	Junction 12 : 100mm Diameter			0:02:01	
24.95m	LRH	Line of drain/sewer deviates right [half]			0:03:36	
25.00m	WL	Water level 0%			0:03:53	
28.88m	JN	Junction 12 : 100mm Diameter			0:04:21	
29.30m	JN	Junction 10 : 100mm Diameter			0:04:28	
36.00m	DES	F1 Settled deposits fine 5%	F1		0:00:33	
36.00m	DER	Settled deposits coarse 20%			0:05:34	
37.00m	DER	Settled deposits coarse 40%			0:06:05	
37.13m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 20

Pos	Video Ref	Code	Description	Image
00.00m		GY	Start node type Gully G8	
00.00m	0:00:00	WL	Water level: 5% Height/Diameter	
00.40m	0:00:33	S1 DES	Settled deposits fine 0.4m - 36m: 5% Cross sectional area loss - Severity 3	
01.00m	0:00:09	LRH	Line of drain/sewer deviates right [half]	
13.98m	0:02:01	JN	Junction at 12 o'clock: 100mm Diameter	
24.95m	0:03:36	LRH	Line of drain/sewer deviates right [half]	
25.00m	0:03:53	WL	Water level: 0% Height/Diameter	
28.88m	0:04:21	JN	Junction at 12 o'clock: 100mm Diameter	
29.30m	0:04:28	JN	Junction at 10 o'clock: 100mm Diameter	
36.00m	0:00:33	F1 DES	Settled deposits fine Defect End: 5% Cross sectional area loss - Severity 3	
36.00m	0:05:34	DER	Settled deposits coarse: 20% Cross sectional area loss - Severity 3	
37.00m	0:06:05	DER	Settled deposits coarse: 40% Cross sectional area loss - Severity 3	
37.13m		SA	Survey abandoned UNABLE TO PASS DEBRIS	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 21

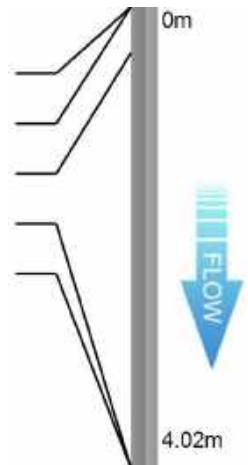
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G9	Finish Node Ref: MAIN	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
GY				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	4.02	

Position	Code	Description	CD	Pic	Video Ref	
00.00m	GY	Start node type Gully				
00.00m	WL	Water level 0%			0:00:00	
00.40m	DER	S1 Settled deposits coarse 30%	S1		0:00:00	
04.02m	DER	F1 Settled deposits coarse 30%	F1		0:00:00	
04.02m	SA	Survey abandoned				



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 21

Pos	Video Ref	Code	Description	Image
00.00m		GY	Start node type Gully G9	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
00.40m	0:00:00	S1 DER	Settled deposits coarse 0.4m - 4.02m: 30% Cross sectional area loss - Severity 3	
04.02m	0:00:00	F1 DER	Settled deposits coarse Defect End: 30% Cross sectional area loss - Severity 3	
04.02m		SA	Survey abandoned UNABLE TO PAS DEBRIS	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 22

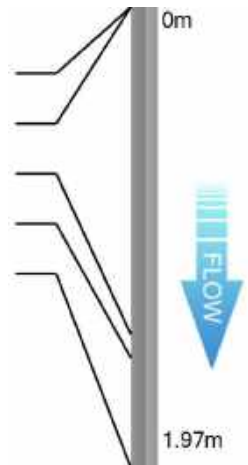
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G10	Finish Node Ref: MAIN	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	1.97	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 20%			0:00:00
01.40m	R	Roots			21_2 0:00:16
01.50m	REM	General remark			21_3 0:00:23
01.97m	SA	Survey abandoned			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 22

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole G10	
00.00m	0:00:00	WL	Water level: 20% Height/Diameter	
01.40m	0:00:16	R	Roots - Severity 3 TAP ROOTS	Image Provided - Ref: 21_2 
01.50m	0:00:23	REM	General remark POSSIBLE REDUNDANT GULLY	Image Provided - Ref: 21_3 
01.97m		SA	Survey abandoned UNABLE TO PASS OBSTRUCTION	

Total Defects for section



DRB Grade for Section



Site: COLLEGE ROAD, WATERLOOVILLE

Section 23

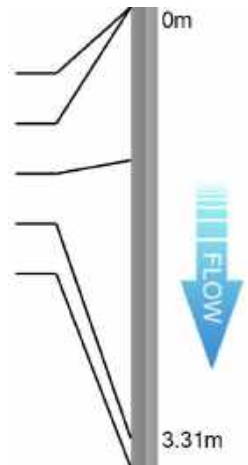
Client: AWCOCK WARD PARTNERSHIP	Location (Street Name): COLLEGE ROAD	City/Town/Village WATERLOOVILLE	Cust Job Ref.	Surveyors Name: Simon Gardiner	Date: 26/02/2023
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Start Node Ref: G11	Finish Node Ref: MAIN	Direction: D	Height/Dia: 100
Start Node Depth: 0.00	Finish Node Depth: 0.00	Use: S	Shape: C
Start Node Coordinate:	Finish Node Coordinate:	Material: VC	Cleaned N

Node Type	Cover Condition	Benching Condition	1/2 Channel Condition	Node Condition Remarks
MH				

Drain Type	Lining Type	Lining Mat.	Year Const.	Weather	Flow Cont.	Length	General Remarks
A				D	N	3.31	

Position	Code	Description	CD	Pic	Video Ref
00.00m	MH	Start node type, manhole			
00.00m	WL	Water level 0%			0:00:00
01.10m	JDM	Joint displaced medium			0:00:10
03.10m	REM	General remark			22_3 0:00:22
03.31m	WRF	Finish node type, major connection without			



Total Defects for section

DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 23

Pos	Video Ref	Code	Description	Image
00.00m		MH	Start node type, manhole G11	
00.00m	0:00:00	WL	Water level: 0% Height/Diameter	
01.10m	0:00:10	JDM	Joint displaced medium - Severity 3	
03.10m	0:00:22	REM	General remark JOINS MAIN	Image Provided - Ref: 22_3 
03.31m		WRF	Finish node type, major connection without manhole JOINS MAIN	

Total Defects for section



DRB Grade for Section

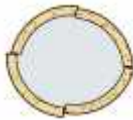


A guide to defects and other observations in drainage systems

More detailed information can be found in the National Standard (BS EN 13508-1:2003) and in the Manual of Sewer Condition Classification (MSCC) 5th Edition, written by the Water Research Centre (WRc).

Use	
Code	Description
C	Combined
F	Foul
S	Surface Water
T	Trade Effluent
W	Culverted Watercourse
Z	Other
Common Materials	
Code	Description
VC	Vitrified Clay
PVC	Polyvinyl Chloride
CO	Concrete
CI	Cast Iron
PF	Pitch Fibre
PE	Polyethylene
DI	Ductile Iron

Start Node	Description	Finish Node
MH	Manhole	MHF
IC	Inspection Chamber	ICF
GY	Gulley	GYF
RE	Rodding Eye	REF
SK	Soakaway	SKF
BN	Buchan Trap	BNF
BR	Major Connection without Ref	BRF
CP	Catch Pit	CPF
OC	Other Special Chamber	OCF
OF	Outfall	OFF
OS	Oil Separator	OSF
WR	Major Connection without mh	WRF
LH	Lamphole	LHF

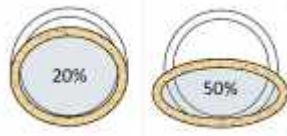
Code	Observation	Description	Attributes	
B	Broken	Pieces pipe have visibly moved	Defined by clock references. Associated with deformity in rigid pipe	
CC CL CM CR	Cracks	Cracks are break lines that are not visibly open	Defined by clock reference position/s. Longitudinal and radiating cracks attract only one clock reference	
CN	Connection	Lateral pipe has been connected after original construction	Described by clock reference position and diameter	

Total Defects for section



DRB Grade for Section

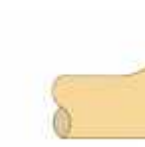
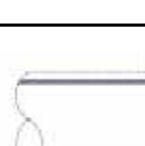
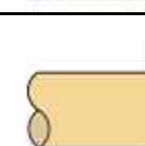
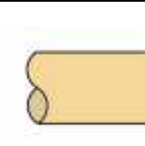
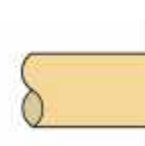
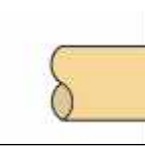


CX(I)	Defective Connection (Intruding)	Defective by intrusion or damage due to factors including: cracks, fractures, obstruction, position etc	Described by clock reference position and diameter (+ % intrusion)	
CU	Loss of Vision	Lens of camera is obscured by debris, water etc. Operator is unable to see drain clearly	'W' can be added if loss of vision is due to water	
D	Deformed	Pipe has lost its structure	Described by percentage loss of height or width. Recorded in 5% increments	
DEE	Deposits Encrustation	Eg. Attached scale deposits evident	Described by clock referenced position and percentage loss of cross-sectional area (5% increments)	
DEG	Deposits Grease	Attached grease deposits evident	Described by clock referenced position and percentage loss of cross-sectional area (5% increments)	
DER DES	Deposits Coarse/Fine	Settled deposits on the invert of the pipe.	Described by percentage loss of height or diameter. Recorded in 5% increments.	
FC FL FM FR	Fractures	Fractures are visibly open. Pieces of pipe have not moved	Defined by clock reference position/s. Longitudinal and radiating fractures attract only one clock reference	
H	Holes	Section of pipe fabric is missing	Defined by clock reference location. Normally two clock references	
I	Infiltration	Water is infiltrating the pipe, normally via a joint but could be via another defect	Can be described in Remarks using terms such as Seeper, Dripper and Runner	
JDL	Joint Displaced Large	Pipe has moved at joint, perpendicular to axis of pipe	More than 1.5 times the pipe wall thickness must be visible	

Total Defects for section

DRB Grade for Section

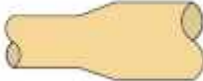


JDM	Joint Displaced Medium	Pipe has moved at joint, perpendicular to axis of pipe	Between 1 and 1.5 times the pipe wall thickness must be visible	
JN	Junction	Lateral pipe was installed at construction	Described by clock reference position and diameter	
JX	Defective Junction	Lateral pipe was installed at construction but is defective in some way	Joint can be defective due to factors including: cracks, fractures, obstruction, position etc	
LD LU LL LR	Line Deviation	LD = Line Down, LU = Line Up, LL = Line Left, LR = Line Right. Not related to CIPP lining.	Additional modifiers are added: Q = Quarter (22.5), H = Half (45), F = Full (90). In degrees.	
LC	Lining Changes	If the drain is lined, the lining material has changed	Position of lining material change	
MC	Material Change	The pipe material has changed	Position of change is noted. Type of material change can be defined	
OB	Obstruction/Obstacle	An obstruction or obstacle is affecting the flow through the pipe	Described in percentage loss of cross-sectional area	
OJL	Open Joint Large	Pipe has moved at joint, along the axis of pipe	More than 1.5 times the pipe wall thickness must be visible	
OJM	Open Joint Medium	Pipe has moved at joint, along the axis of pipe	Between 1 and 1.5 times the pipe wall thickness must be visible	
PC	Pipe Length Changes	Length of individual pipe changes	New length described at this position	

Total Defects for section

DRB Grade for Section



R	Roots	Evidence of root ingress	Roots will normally infiltrate via bad joints, cracks, fractures, breaks etc	
REM	Remark	General remark	Used for additional information	
S	Surface Damage	This might include corrosion, spalling and chemical attack	Position only. Additional information can be added in Remarks	
SA	Survey Abandoned	Used when a survey cannot continue for any reason	The reason for abandoning a survey should be noted in the remarks area	
SC	Shape Changes	Dimension of drain changes	Diameter dimension change recorded. Second dimension is recorded for no circular pipe changes	
SR	Sealing Ring	Sealing ring intrudes into pipe at joint	Described by clock reference position	
V	Vermin	Evidence of Vermin in pipe	Can also be used for evidence within manhole etc	
WL	Water Level	Used to record changes in water level. Always shown at the beginning of every survey, if dry noted as 00.	Described by percentage of height or diameter. Recorded in 5% increments	
XP	Collapsed	Drain is suffering from complete loss of structural integrity. Always followed by SA - Survey Abandoned	Percentage loss of cross-sectional area is recorded. Other related structural defects are not recorded	

REGISTER OF APPENDICES

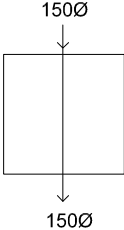
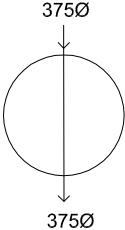
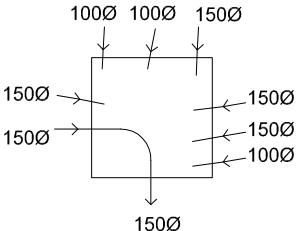
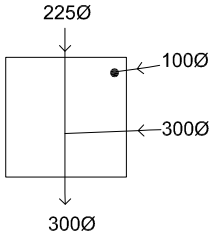
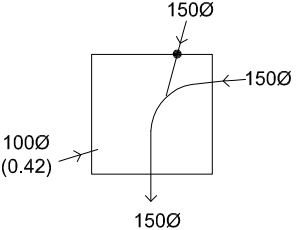
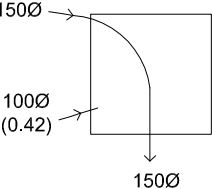
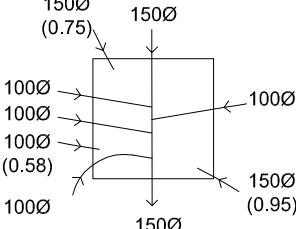
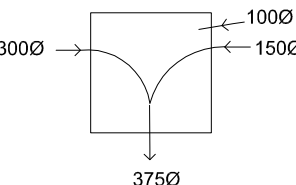
- A. MANHOLE INSPECTION REPORT
- B. COPIES OF SITE HAND WRITTEN DAILY RECORD SHEETS
- C. ANNOTATED SITE DRAWINGS

UTILITY SURVEYS LTD

5 SUFFOLK ROAD MALDON ESSEX CM9 6AX

LOCATION: SOUTH DOWNS CAMPUS COLLEGE ROAD WATERLOOVILLE JOB REF: 071497

CLIENT: AWCOCK WARD PARTNERSHIP DATE: 26/02/2023

MH No. S1 DEPTH. 0.73 COVER. SM CONSTRUCTION. Br REMARKS. MUD IN CHANNEL		MH No. S7 DEPTH. 3.56 COVER. SH CONSTRUCTION. Co Ring REMARKS.	
MH No. S2 DEPTH. 1.35 COVER. RH CONSTRUCTION. Br REMARKS.		MH No. S8 DEPTH. 2.60 COVER. RH CONSTRUCTION. Br REMARKS.	
MH No. S3 DEPTH. 1.99 COVER. RH CONSTRUCTION. Br REMARKS.		MH No. S9 DEPTH. COVER. CONSTRUCTION. REMARKS.	BEYOND SURVEY REQUIREMENT
MH No. S4 DEPTH. 2.32 COVER. RH CONSTRUCTION. Br REMARKS.		MH No. S10 DEPTH. COVER. CONSTRUCTION. REMARKS.	BEYOND SURVEY REQUIREMENT
MH No. S5 DEPTH. 2.40 COVER. RH CONSTRUCTION. Br REMARKS.			
MH No. S6 DEPTH. 2.68 COVER. RH CONSTRUCTION. Br REMARKS.			
KEY: C - Circular S - Square T - Triangular L - Light Duty M - Medium Duty H - Heavy Duty Co - Concrete Br - Brick R - Rectangular			



GULLY 01 (UNDER MUD AND LEAVES)



MH S8 (WATER CONTINUALLY RUNNING INTO MANHOLE)

CCTV Sewer Survey – Daily Record Sheet

Date 26/02/2023 Job No 071497

Client AUCCOCK WARD PARTNERSHIP

Site Address SOUTH DOWNS CAMPUS
COLLEGE ROAD
WATERLOOVILLE HAMPSHIRE PO78AA

Rig Manager S. GARDINER Operative M. CAMPBELL



5 Suffolk Road
Maldon
Essex
CM9 6AX

Tel: 07971910370

Manhole		Sewer dia.	Recorded Metreage	Survey Abandoned	Remarks
Start	Finish				
S1	G1	150	15-34		
S1	S2	150	16-86		
S2	S3	150	13-73		
S3	SA	150	10-03		
S3	G4	100	1-52		
G2	SA	100	1-16		
G3	S5	100	6-04		
G5	S5	100	1-50		
SA	S5	150	14-29		
S5	G6	150	5-02	✓	UNABLE TO PASS BEND.
S5	SPUR A	100	8-63	✓	BEND UP
S5	SPUR B	100	7-86	✓	BEND UP
S5	SPUR C	100	11-55	✓	BEND UP
G7	S6	100	4-65		
S6	S5	150	10-46	✓	ROOTS
S6	S7	375	32-65		
S8	S6	300	4-81		
S8	S9	225	20-64	✓	END OF SURVEY/REQUIREMENT
S8	S10	300	20-23	✓	END OF SURVEY/REQUIREMENT
G8	DOWN	100	37-13	✓	DEBRIS
TOTAL					

Standing Time Meterage check ☒ Length OK

Reason for standing time

Remarks

Checked

CCTV Sewer Survey – Daily Record Sheet

Date	26/02/2023	Job No	071497
Client	ANCOCK WARD PARTNERSHIP		
Site Address	SOUTH DOWNS COLLEGE COLLEGE ROAD WATERLOOVILLE, HAMPSHIRE PO78AA		
Rig Manager	S. GARDINER	Operative	M. CAMPBELL



UTILITY SURVEYS LTD.

5 Suffolk Road
Maldon
Essex
CM9 6AX

Tel: 07971910370

Manhole		Sewer dia.	Recorded Metreage	Survey Abandoned	Remarks
Start	Finish				
G9	MAIN	100	4-32	✓	DEBRIS
G10	MAIN	100	1-97	✓	OBSTRUCTION (OLD GULLY)
G11	MAIN	100	3-31		JOINS MAIN
TOTAL					

Standing Time	
---------------	--

Meterage check	X
----------------	---

Length	OK
--------	----

Reason for standing time

Remarks G12 NO ACCESS FOR CAMERA.

Checked





Appendix B Soakaway Test Report

SOAKAGE LETTER REPORT

CLIENT	Places For People																																																				
SITE ADDRESS	Havant College, College Road, Widley, Waterlooville PO7 8AA																																																				
REPORT REFERENCE	GWPR5236 The conditions and limitations of this preliminary summary can be viewed within Appendix A.																																																				
ENGINEER	Myles Finnerty, Ground and Water Limited																																																				
ANTICIPATED GEOLOGY AND HYDROGEOLOGY	The British Geological Survey (BGS) maps and DEFRA online maps for the area suggest that the site was located on bedrock deposits of the Wittering Formation within the north-eastern half of the site, classified as a Secondary A Aquifer, underlain by bedrock deposits of the London Clay Formation across the whole site area, classified as Unproductive Strata. Based on this, it was anticipated that groundwater was likely to be encountered at shallow to moderate depth within the Wittering Formation, capping the Unproductive Strata of the London Clay Formation. Some amounts of perched water will be encountered within the shallow surface soils, particularly after periods of prolonged or intense rainfall, or capping cohesive layers.																																																				
SCOPE OF WORKS	Site works were undertaken on 16 th – 17 th February and comprised the machine excavation of 3No. Trial Pits (TP1 – TP3) to 1.92 – 2.00m bgl. Soakage testing in accordance with the principles of BRE365 was undertaken within all three of the trial holes. Upon completion of the site works all trial pits were backfilled and made good/reinstated in relation to the surrounding area. A trial hole location plan has been provided within Figure 1.																																																				
GROUND CONDITIONS ENCOUNTERED	A summary of the ground conditions encountered can be viewed within the following table. The trial hole logs can be seen within Appendix B. <table><tr><th colspan="4">Summary of Strata Encountered</th></tr><tr><th>Strata</th><th>Top Depth (m bgl)</th><th>Base Depth (m bgl)</th><th>Thickness (m)</th></tr><tr><td>TARMAC (ALL LOCATIONS)</td><td>0.00</td><td>0.22 – 0.26</td><td>0.22 – 0.26</td></tr><tr><td>MADE GROUND (TP1 & TP2): Brown silty slightly gravelly fine to coarse SAND. Gravel is sub-rounded to angular fine to coarse brick, flint and chalk.</td><td>0.22 – 0.23</td><td>0.50 - 0.52</td><td>0.27 - 0.30</td></tr><tr><td>MADE GROUND (TP3): MOT/TYPE 1</td><td>0.26</td><td>0.49</td><td>0.23</td></tr><tr><td>PLASTIC MEMBRANE (TP3)</td><td>0.49</td><td>0.49</td><td>0.005</td></tr><tr><td>WITTERING FORMATION (TP1): Inter bedded orangish brown and greyish brown sandy CLAY. Sand is fine to coarse.</td><td>0.52</td><td>1.14</td><td>0.62</td></tr><tr><td>WITTERING FORMATION (TP1): Yellowish brown to reddish brown clayey fine to medium SAND and sandy CLAY.</td><td>1.14</td><td>>2.00</td><td>>0.86</td></tr><tr><td>WITTERING FORMATION (TP2): Greenish brown silty fine to medium SAND.</td><td>0.50</td><td>0.56</td><td>0.06</td></tr><tr><td>WITTERING FORMATION (TP2): Grey to orangish brown silty fine to medium SAND.</td><td>0.56</td><td>1.33</td><td>0.77</td></tr><tr><td>WITTERING FORMATION (TP2): Orangish brown and grey slightly sandy SILT.</td><td>1.33</td><td>>1.99</td><td>>0.66</td></tr><tr><td>WITTERING FORMATION (TP3): Light orangish brown clayey fine to coarse SAND.</td><td>0.49</td><td>0.82</td><td>0.33</td></tr><tr><td>WITTERING FORMATION (TP3): Light yellowish brown to orangish brown silty slightly gravelly fine to coarse SAND. Gravel is sub-rounded fine to coarse flint.</td><td>0.82</td><td>>1.92</td><td>>1.10</td></tr></table>	Summary of Strata Encountered				Strata	Top Depth (m bgl)	Base Depth (m bgl)	Thickness (m)	TARMAC (ALL LOCATIONS)	0.00	0.22 – 0.26	0.22 – 0.26	MADE GROUND (TP1 & TP2): Brown silty slightly gravelly fine to coarse SAND. Gravel is sub-rounded to angular fine to coarse brick, flint and chalk.	0.22 – 0.23	0.50 - 0.52	0.27 - 0.30	MADE GROUND (TP3): MOT/TYPE 1	0.26	0.49	0.23	PLASTIC MEMBRANE (TP3)	0.49	0.49	0.005	WITTERING FORMATION (TP1): Inter bedded orangish brown and greyish brown sandy CLAY. Sand is fine to coarse.	0.52	1.14	0.62	WITTERING FORMATION (TP1): Yellowish brown to reddish brown clayey fine to medium SAND and sandy CLAY.	1.14	>2.00	>0.86	WITTERING FORMATION (TP2): Greenish brown silty fine to medium SAND.	0.50	0.56	0.06	WITTERING FORMATION (TP2): Grey to orangish brown silty fine to medium SAND.	0.56	1.33	0.77	WITTERING FORMATION (TP2): Orangish brown and grey slightly sandy SILT.	1.33	>1.99	>0.66	WITTERING FORMATION (TP3): Light orangish brown clayey fine to coarse SAND.	0.49	0.82	0.33	WITTERING FORMATION (TP3): Light yellowish brown to orangish brown silty slightly gravelly fine to coarse SAND. Gravel is sub-rounded fine to coarse flint.	0.82	>1.92	>1.10
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GROUNDWATER	No groundwater strikes were noted during the site investigation. It should also be noted that further groundwater strikes may have been obscured by the excavation processes.																																																				

SOAKAGE LETTER REPORT

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The investigation was undertaken in February 2022 when groundwater levels are likely to be at their annual maximum (highest elevation). Exact groundwater levels may only be determined through long term measurements from monitoring wells installed on-site.

SURFACE DISPOSAL

WATER

Soakage testing, following the principles of BRE365 was undertaken within the Wittering Formation. The infiltration test results can be seen in the following table.

Soakage Testing Results						
Trial Hole	Test Number	Test Base (m bgl)	Start Depth (m bgl)	Finish Depth (m bgl)	Time Taken (mins)	Infiltration Rate (m/sec)
TP1	1	2.00	1.00	1.755	345	5.787×10^{-6}
	2*	1.70	0.99	1.48	289	8.057×10^{-6}
TP2	1*	1.99	0.75	1.32	1200	1.126×10^{-6}
	2*	1.80	1.32	1.38	359	6.854×10^{-7}
TP3	1*	1.92	0.89	1.165	119	5.68×10^{-6}
	2*	1.58	0.91	1.18	281	3.687×10^{-6}

***Given the relatively slow infiltration rate encountered, only one test could be undertaken and it did not reach 75% mark.**

Based on the infiltration rates shown above soakaway systems are not deemed suitable on-site.

Consultation with the Environment Agency must be sought regarding any use that may have an impact on groundwater resources, abstractions and surface water features/watercourses.

Figure 1 Trial Hole Location Plan

Appendix A Conditions and Limitations

Appendix B Trial Hole Logs

This preliminary information may be subject to amendment in the final report and no liability can be accepted for any actions based on this preliminary information.

FIGURES



- Site boundary
- Soakage Trial Pit

NOT TO SCALE

Havant College, College Road, Widley, Waterlooville PO7 8AA

Places For People

March 2023

Figure 1 – Trial Hole Location Plan

GWPR5236



APPENDIX A: Conditions and Limitations

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The report has been prepared on the basis of information, data and materials which were available at the time of writing. Accordingly any conclusions, opinions or judgements made in the report should not be regarded as definitive or relied upon to the exclusion of other information, opinions and judgements.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief; as such these do not necessarily address all aspects of ground behaviour at the site. No liability is accepted for any reliance placed on it by others unless specifically agreed in writing.

Any decisions made by you, or by any organisation, agency or person who has read, received or been provided with information contained in the report (“you” or “the Recipient”) are decisions of the Recipient and we will not make, or be deemed to make, any decisions on behalf of any Recipient. We will not be liable for the consequences of any such decisions.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Any Recipient must take into account any other factors apart from the Report of which they and their experts and advisers are or should be aware. The information, data, conclusions, opinions and judgements set out in the report may relate to certain contexts and may not be suitable in other contexts. It is your responsibility to ensure that you do not use the information we provide in the wrong context.

This report is based on readily available geological records, the recorded physical investigation, the strata observed in the works, together with the results of completed site and laboratory tests. Whilst skill and care has been taken to interpret these conditions likely between or below investigation points, the possibility of other characteristics not revealed cannot be discounted, for which no liability can be accepted. The impact of our assessment on other aspects of the development required evaluation by other involved parties.

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist. It was not part of the scope of this report to comment on environment/contaminated land considerations.

The conclusions and recommendations relate to Havant College, College Road, Widley, Waterlooville PO7 8AA.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sampler borehole implies the specific technique used to produce a trial hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot-by-plot basis prior to the construction of foundations. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets, remain with Ground and Water Limited. Licence is for the sole use of the client and may not be assigned, transferred or given to a third party.

Only our client may rely on this report and should this report or any information contained in it be provided to any third party we accept no responsibility to the third party for the contents of this report save to the extent expressly outlined by us in writing in a reliance letter addressed from us to the third party.

Recipients are not permitted to publish this report outside of their organisation without our express written consent.

APPENDIX B: Trial Hole Logs



Trial Pit Log

Project Name: Havant College		Client: Places For People		Date: 16/02/2023	
Location: College Road, Widley, Waterlooville PO7 8AA		Contractor:		Co-ords: E468957.00 N107219.00	
Project No. : GWPR5236		Crew Name:		Equipment: 3.5T Excavator.	
Location Number TP1	Location Type TP	Level	Logged By MF	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.22			TARMAC	
					0.52			MADE GROUND: Brown silty slightly gravelly fine to coarse SAND. Gravel is sub-rounded to angular fine to coarse brick (15%), flint (70%) and chalk (15%).	
					1.14			Inter bedded orangish brown and greyish brown sandy CLAY. Sand is fine to coarse. (WITTERING FORMATION.)	1
					2.00			Yellowish brown to reddish brown clayey fine to medium SAND and sandy CLAY. (WITTERING FORMATION.)	
								End of Borehole at 2.000m	2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.40	0.35	Moderate spalling noted.	N/A				

Remarks	
Trial pit carried out to a depth of 2.00m bgl. No fresh roots noted. No groundwater encountered.	



Trial Pit Log

Project Name: Havant College		Client: Places For People		Date: 16/02/2023	
Location: College Road, Widley, Waterlooville PO7 8AA		Contractor:		Co-ords: E468945.00 N107170.00	
Project No. : GWPR5236		Crew Name:		Equipment: 3.5T Excavator.	
Location Number TP3	Location Type TP	Level	Logged By MF	Scale 1:25	Page Number Sheet 1 of 1

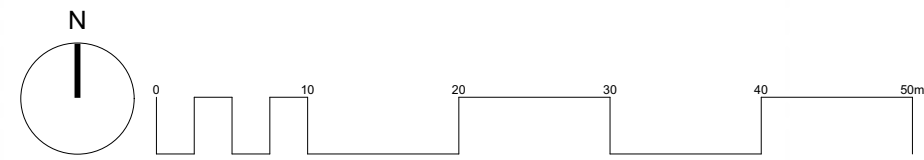
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.26			TARMAC	
					0.49			MOT/TYPE 1	
					0.82			Light orangish brown clayey fine to coarse SAND. (WITTERING FORMATION.) <u>MEMBRANE NOTED</u>	
					1.92			Light yellowish brown to orangish brown silty slightly gravelly fine to coarse SAND. Gravel is sub-rounded fine to coarse flint. (WITTERING FORMATION.)	1
								End of Borehole at 1.920m	2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.60	0.35	Moderate spalling noted.	N/A				

Remarks Trial pit carried out to a depth of 1.92m bgl. No fresh roots noted. No groundwater encountered.							
--	--	--	--	--	--	--	---



Appendix C Proposed Masterplan



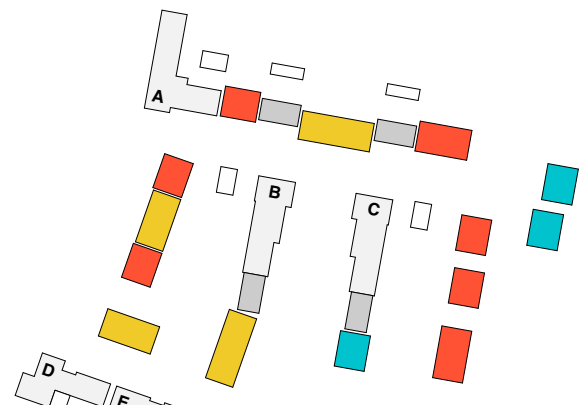
Please Note:

This drawing can only be scaled for planning purposes. Dimensions to be checked on site and any discrepancies are to be highlighted to the Architect prior to construction.

Topographical / Ordnance Survey information shown has been prepared by a third party. HGP accept no responsibility for accuracy or completeness of the survey.

This drawing is to be read in conjunction with all other project drawings, construction notes and / or project specifications including those by other project consultants and specialists. All discrepancies should be reported immediately.

Design subject to detail development / approval. Measurements and accommodation schedules subject to amendments following coordinated input by others. Costings cannot be finalised until approval / confirmation by relevant authorities and client



Key Plan
NTS

- Apartment Blocks
- HT21 - FOG 2B4P @ 70.5m²
- HT23 - 2B4P @ 79.2m²
- HT37 - 3B6P @ 108.6m²
- HT42 - 4B7P @ 113.5m²
- Outbuildings

17	For Planning	12.03.24	VF / CK
16	Amended in accordance to Highways	15.02.24	VF / CK
15	Central PCS update	09.01.24	VF / CK
14	Central apartments moved south. Informal play area indicated. SE corner update	14.12.23	VF / CK
13	Fire tender cycle route added. turning head update. parking reconfiguration	01.12.23	VF / CK
12	General layout improvements	08.11.23	VF / CK
11	Amended layout to fit with following consultation with HBC	05.10.23	CK / CC
10	Updated tree key	20.09.23	VF / CC
09	Updated fence	15.09.23	VF / CC
08	Updated fence	14.09.23	VF / CC
07	Sheds indicated in gardens	27.04.23	VF / CK
06	Areas updated	26.04.23	VF / CK
05	Layout amended. Retaining wall indicated.	26.04.23	VF / CK
04	Layout amended	08.04.23	VF / CK
03	Layout amended	08.04.22	VF / CK
02	Layout amended	26.03.22	VF / CK
01	For Planning	18.03.22	VF / CC

Rev	Description	Date	DB	CB
20	Increased PCS to SE corner. Reduced density	08.12.24	VF / CK	
19	Reconfiguration and tree relocation / enhancement to 24-32, 30 & 51 row 4B	08.11.24	VF / CK	
18	Plots 24 to 27 joined as staggered terrace, step to plot 26 entrance	26.03.24	VF / CK	



Block Plan

PROJECT	Havant College	JOB NO	20.001
SCALE	1:500@A1	DATE	Mar 2024
DRAWN BY/CHECKED BY	VF / CC	REVISION	P20
DWG#	20.001.101	STATUS	For Planning

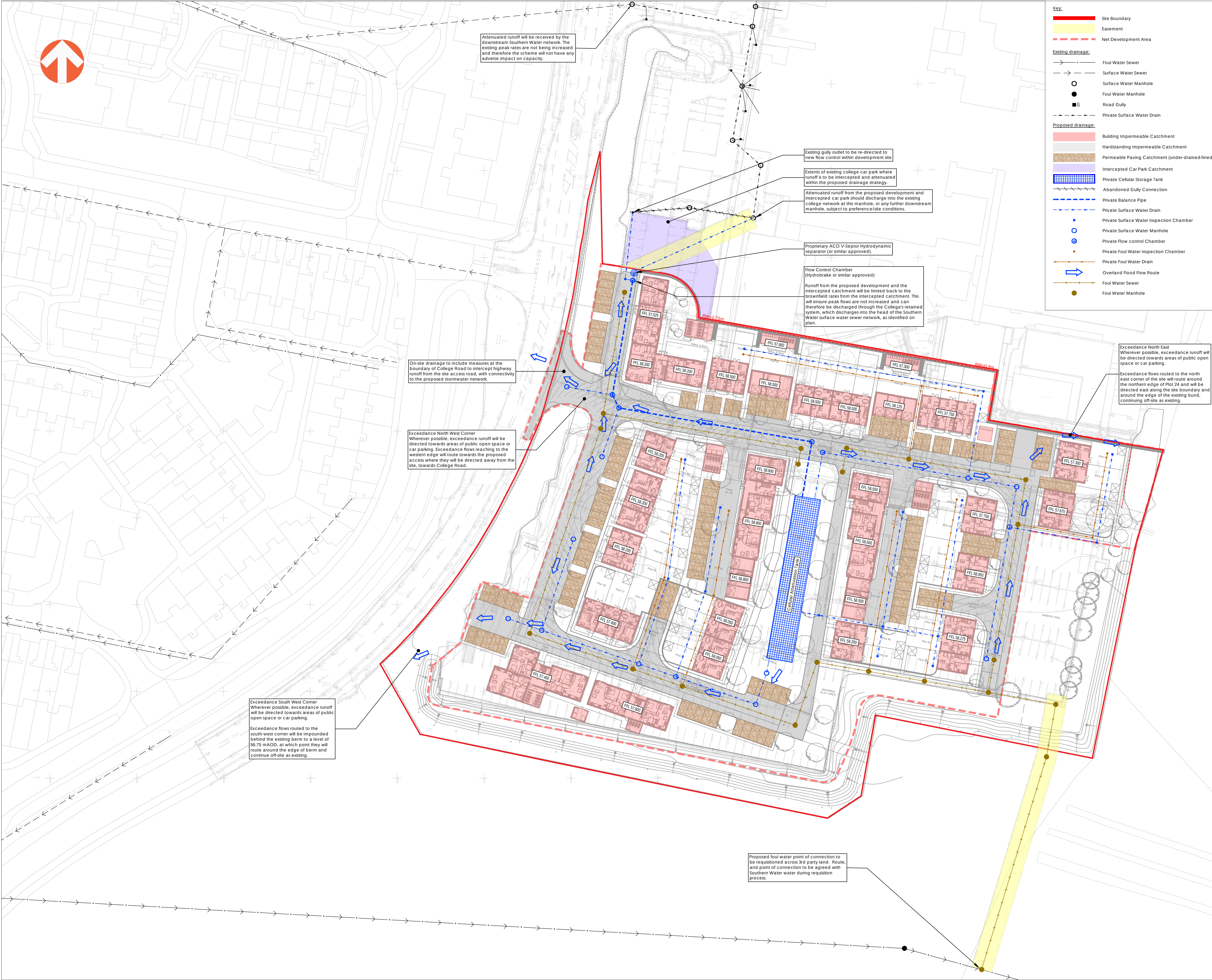
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Appendix D Preliminary Drainage Layout



Key:

- Site Boundary
- Easement
- Net Development Area

Existing drainage:

- Foul Water Sewer
- Surface Water Sewer
- Surface Water Manhole
- Foul Water Manhole
- Road Gully
- Private Surface Water Drain

Proposed drainage:

- Building Impermeable Catchment
- Hardstanding Impermeable Catchment
- Permeable Paving Catchment (under-drained/inlet)
- Intercepted Car Park Catchment
- Private Cellular Storage Tank
- Abandoned Gully Connection
- Private Balance Pipe
- Private Surface Water Drain
- Private Surface Water Inspection Chamber
- Private Surface Water Manhole
- Private Flow Control Chamber
- Private Foul Water Inspection Chamber
- Private Foul Water Drain
- Overland Flood Flow Route
- Foul Water Sewer
- Foul Water Manhole

Area Summary Schedule

Net Developable Area	1.777 ha
Intercepted catchment from college	0.052 ha
Proposed imp. Catchment	0.942 ha
Urban Creep	0.018 ha
Total Modelled Catchment	0.960 ha

Pre-Development Runoff

Return Period	Greenfield Rate (l/s)
2yr	8.6
30yr	19.4
100yr	23.7

The equivalent greenfield runoff rates have been assessed for the 'net developable areas' using the FEH Method. The calculation excludes large areas of open space which will remain undeveloped.

The Southern Water storm network has very limited available capacity and is not able to accept a new discharge at the sites equivalent greenfield runoff rates. To overcome this the proposals will intercept runoff from an area of retained college carpark and will attenuate this alongside new development runoff, with the total discharge limited to the existing brownfield rates from the intercepted catchment only.

The proposed system will intercept 0.052ha of the existing college car park, immediately north of the application site. The peak flow from the intercepted catchment (0.052ha) has been calculated using the Modified Rational Method and is summarised below:

Return Period	Brownfield Rate (l/s)
2yr	6.4
30yr	17.5
100yr	23.2

Runoff from the proposed development and the intercepted catchment will be limited back to the above brownfield rates, ensuring peak flows are not increased and can therefore be discharged through the College's retained system, which discharges into the head of the Southern Water surface water sewer network, as identified on plan.

Ownership and maintenance responsibilities for the proposed flow control chamber, and downstream hydrodynamic separator, lie within the developer's appointed management company, and not the college.

Attenuation Summary

Catchment	0.960 ha
Control Chamber Invert	53.535 m AOD
Hydraulic Control	Hydrobrake @ L
	Ref: CIL 94E-0118-6400-1070-6400
	0.079mØ Orifice @ L + 1.075m
	0.055mØ Orifice @ L + 1.680m
Tank Invert Level	54.900 m AOD
Tank Cover Level	58.200 m AOD
Porosity	95%
Dimension	355 m ² X 1.6m Deep
Total Volume Required:	548.7 m ³
Total 2yr+45% Peak Discharge	6.4 l/s
Total 30yr+45% Peak Discharge	17.4 l/s
Total 100yr+45% Peak Discharge	22.8 l/s

The storm network also comprises 109 m of 600mm diameter pipework, laid at 1:300, connecting the flow control chamber to the cellular tank (plus online manholes). This section of network provides an additional storage volume of approximately 30m³.

Within the drainage strategy the use of under-drained permeable paving offers treatment of runoff but is not being used to mobilise attenuation storage. At the design stage further controls could be incorporated to attenuate within the paving sub-base, offsetting the cellular tank volume.

Notes:

- The proposed development has been assessed in line with the NPPF, to allow the planning application to be progressed and to show that the development can be undertaken in an acceptable manner from a flood risk perspective.
- The extents of built development are limited to 'Flood Zone 1' only and are not susceptible to surface flooding from pluvial, groundwater, infrastructure or artificial sources.
- To ensure the development is safe throughout its lifetime, the surface water strategy accounts for runoff in up to the 100 year return period.
- The strategy also safeguards against the upper end allowances for climate change (45%), providing betterment over undeveloped conditions, where the rate and volume of runoff would continue to increase due to climate change.
- The Ground Investigation indicates the site has a low infiltration rate that precludes the use of soakaways by virtue of excessive half drain-down time (in excess 7 days).
- The drainage strategy also provides a 10% allowance for future urban creep and discharge at existing greenfield runoff rates. The cumulative impact of the various design allowances will ensure that flood risk within the downstream catchment is reduced as a result of the proposed development.
- The drainage arrangements include a treatment scheme to mitigate against degradation of water quality as a result of the development. The proposals contribute to the provision of amenity space, and provide potential for planting to improve biodiversity of the development.
- During exceedance events runoff will be directed away from buildings and toward low points where exceedance drainage provision is provided.
- Foul flows generated by the development are proposed to be discharged via a requisitioned connection to the public foul sewer to the south of the site.

F	31.01.2025	UPDATED TO SUIT LATEST LAYOUT	TMR	CPY	CPY
E	30.04.2024	UPDATED TO SUIT LATEST LAYOUT	TMR	CPY	CPY
D	01.08.2023	UPDATED TO SUIT LFA COMMENTS	TMR	CPY	CPY
REV	DATE	DESCRIPTION	BY	CHK	APD

DRAWING STATUS: **PLANNING APPLICATION**

CLIENT: **PLACES FOR PEOPLE**

PROJECT: **SOUTH DOWNS COLLEGE**

TITLE: **PRELIMINARY DRAINAGE LAYOUT**

PROJECT No:	DRAWING No:	REV:
1017	01-PDL-1001	F

SCALE @ A1: 0 1:500 25 metres

DESIGN BY:  **awcockward partnership**

Awcock Ward Partnership, Ada House, Pynes Hill, Exeter, EX2 5TU
Tel: 01392 409007 Web: www.awpartnership.com



Appendix E Calcs and Casueway Flow Outputs



Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	8.6
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	19.4
Winter CV	0.840	Additional Storage (m ³ /ha)	20.0	100 year (l/s)	23.7
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x

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 %)
2	45	0	0
30	45	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.98
Greenfield Method	FEH	Growth Factor 100 year	2.42
Positively Drained Area (ha)	1.777	Betterment (%)	0
SAAR (mm)	761	QMed	9.1
Host	1	QBar	9.8
BFIHost	0.373	Q 2 year (l/s)	8.6
Region	8	Q 30 year (l/s)	19.4
QBar/QMed conversion factor	1.075	Q 100 year (l/s)	23.7
Growth Factor 2 year	0.88		

Colebrook-White Pipe Capacity Analysis

Project No.	1017	
Project Title	South Downs College	
Client	Places for People Homes	
Sheet Ref	P:\1017 South Downs College\D Design and Analysis\SPREADSHEETS\01 Drainage\03 Sewer Design\[Colebrook White Equation (pipe velocity & capacity)-car park brownfield.xlsx]Colebrook-White southern area	

Calcs by	TMR
Checked by	CPY
Approved by	CPY
Date	30.04.2024
Revision	initial issue

Catchment area analysis based on Modified Rational Method equation (HR Wallingford, 1990);

$$Q_{BAR} = 2.78 \cdot i \cdot A$$

Hydrological Region:

7

 *see map

Where:

Q_{BAR} Average discharge (l/s)

i Rainfall intensity (mm/hr)

A Catchment area (m²)

i

50.4

 mm/hr *see map

Return Period	2yr	30yr	100yr
Growth Factor (Q/QBAR)	0.88	2.4	3.19
Critical Area (ha)	2.3039	0.8448	0.6356

(area that can freely drain)

Brownfield flow rate analysis based on Modified Rational Method (HR Wallingford, 1990);

	2yr	30yr	100yr	QBAR
Area (ha): 0.052	6.4	17.5	23.2	7.3

BF flow (l/s):

Foul capacity analysis for dwellings based on Sewers for Adoption (6th Edition);

l/dwelling/day	0.046
No. dwellings served	6136
No. dwellings served +10% infiltration	5578



Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.708	5.00	58.200	1500	468965.644	107231.008	3.300
2	0.028	5.00	57.975	1500	468968.463	107247.061	3.129
3	0.040	5.00	58.000	1500	468913.883	107256.658	3.339
4	0.063	5.00	57.825	1500	468912.015	107260.405	3.178
5	0.052	5.00	56.500	450	468917.887	107312.943	0.750
6			57.450	600	468915.689	107293.758	2.086
7-flow control	0.069	5.00	57.450	1500	468917.886	107293.373	2.915
8			57.450	1200	468917.611	107295.695	2.930
8_OUT			55.190	1200	468952.540	107311.341	1.350

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	1	2	16.299	0.600	54.900	54.846	0.054	300.0	600	5.19	50.0
1.001	2	3	55.417	0.600	54.846	54.661	0.185	300.0	600	5.85	50.0
1.002	3	4	4.187	0.600	54.661	54.647	0.014	300.0	600	5.90	50.0
1.003	4	7-flow control	33.487	0.600	54.647	54.535	0.112	300.0	600	6.30	50.0
2.000	5	6	19.311	0.600	55.750	55.364	0.386	50.0	150	5.23	50.0
2.001	6	7-flow control	2.230	0.600	55.364	55.336	0.028	79.7	150	5.26	50.0
1.004	7-flow control	8	2.243	0.600	54.535	54.520	0.015	149.5	150	6.35	50.0
1.005	8	8_OUT	38.273	0.600	54.520	53.840	0.680	56.3	150	6.82	50.0

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	1.400	396.0	96.0	2.700	2.529	0.708	0.0	200	1.163
1.001	1.400	396.0	99.7	2.529	2.739	0.736	0.0	204	1.175
1.002	1.400	396.0	105.2	2.739	2.578	0.776	0.0	210	1.192
1.003	1.400	396.0	113.7	2.578	2.315	0.839	0.0	219	1.216
2.000	1.425	25.2	7.0	0.600	1.936	0.052	0.0	54	1.225
2.001	1.127	19.9	7.0	1.936	1.964	0.052	0.0	62	1.033
1.004	0.819	14.5	130.1	2.765	2.780	0.960	0.0	150	0.835
1.005	1.343	23.7	130.1	2.780	1.200	0.960	0.0	150	1.368

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	8.6
Summer CV	0.750	Drain Down Time (mins)	240	30 year (l/s)	19.4
Winter CV	0.840	Additional Storage (m³/ha)	20.0	100 year (l/s)	23.7
Analysis Speed	Normal	Check Discharge Rate(s)	✓	Check Discharge Volume	x



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 %)
2	45	0	0
30	45	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.98
Greenfield Method	FEH	Growth Factor 100 year	2.42
Positively Drained Area (ha)	1.777	Betterment (%)	0
SAAR (mm)	761	QMed	9.1
Host	1	QBar	9.8
BFIHost	0.373	Q 2 year (l/s)	8.6
Region	8	Q 30 year (l/s)	19.4
QBar/QMed conversion factor	1.075	Q 100 year (l/s)	23.7
Growth Factor 2 year	0.88		

Node 7-flow control Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	54.535	Product Number	CTL-SHE-0118-6400-1070-6400
Design Depth (m)	1.070	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	6.4	Min Node Diameter (mm)	1200

Node 7-flow control Online Orifice Control

Flap Valve	x	Invert Level (m)	55.610	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.078		

Node 6 Online Orifice Control

Flap Valve	✓	Invert Level (m)	55.364	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.150		

Node 7-flow control Online Orifice Control

Flap Valve	x	Invert Level (m)	56.215	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.055		

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	54.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	352.0	0.0	1.600	352.0	0.0	1.601	0.0	0.0



Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year +45% CC 15 minute summer	153.340	43.390
2 year +45% CC 15 minute winter	107.607	43.390
2 year +45% CC 30 minute summer	104.146	29.470
2 year +45% CC 30 minute winter	73.085	29.470
2 year +45% CC 60 minute summer	73.279	19.366
2 year +45% CC 60 minute winter	48.685	19.366
2 year +45% CC 120 minute summer	55.133	14.570
2 year +45% CC 120 minute winter	36.629	14.570
2 year +45% CC 180 minute summer	46.460	11.956
2 year +45% CC 180 minute winter	30.200	11.956
2 year +45% CC 240 minute summer	38.724	10.234
2 year +45% CC 240 minute winter	25.727	10.234
2 year +45% CC 360 minute summer	31.149	8.016
2 year +45% CC 360 minute winter	20.247	8.016
2 year +45% CC 480 minute summer	25.102	6.634
2 year +45% CC 480 minute winter	16.677	6.634
2 year +45% CC 600 minute summer	20.814	5.693
2 year +45% CC 600 minute winter	14.221	5.693
2 year +45% CC 720 minute summer	18.689	5.009
2 year +45% CC 720 minute winter	12.560	5.009
2 year +45% CC 960 minute summer	15.478	4.076
2 year +45% CC 960 minute winter	10.253	4.076
2 year +45% CC 1440 minute summer	11.327	3.036
2 year +45% CC 1440 minute winter	7.612	3.036
2 year +45% CC 2160 minute summer	8.286	2.290
2 year +45% CC 2160 minute winter	5.709	2.290
2 year +45% CC 2880 minute summer	7.073	1.896
2 year +45% CC 2880 minute winter	4.753	1.896
2 year +45% CC 4320 minute summer	5.668	1.482
2 year +45% CC 4320 minute winter	3.732	1.482
2 year +45% CC 5760 minute summer	4.943	1.265
2 year +45% CC 5760 minute winter	3.199	1.265
2 year +45% CC 7200 minute summer	4.447	1.134
2 year +45% CC 7200 minute winter	2.870	1.134
2 year +45% CC 8640 minute summer	4.101	1.046
2 year +45% CC 8640 minute winter	2.647	1.046
2 year +45% CC 10080 minute summer	3.854	0.983
2 year +45% CC 10080 minute winter	2.487	0.983
30 year +45% CC 15 minute summer	362.533	102.584
30 year +45% CC 15 minute winter	254.409	102.584
30 year +45% CC 30 minute summer	250.956	71.012
30 year +45% CC 30 minute winter	176.109	71.012
30 year +45% CC 60 minute summer	177.943	47.025
30 year +45% CC 60 minute winter	118.221	47.025
30 year +45% CC 120 minute summer	115.914	30.633
30 year +45% CC 120 minute winter	77.010	30.633
30 year +45% CC 180 minute summer	91.632	23.580
30 year +45% CC 180 minute winter	59.563	23.580
30 year +45% CC 240 minute summer	73.623	19.456
30 year +45% CC 240 minute winter	48.913	19.456
30 year +45% CC 360 minute summer	56.969	14.660
30 year +45% CC 360 minute winter	37.031	14.660



Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +45% CC 480 minute summer	45.041	11.903
30 year +45% CC 480 minute winter	29.924	11.903
30 year +45% CC 600 minute summer	36.922	10.099
30 year +45% CC 600 minute winter	25.227	10.099
30 year +45% CC 720 minute summer	32.901	8.818
30 year +45% CC 720 minute winter	22.111	8.818
30 year +45% CC 960 minute summer	26.994	7.108
30 year +45% CC 960 minute winter	17.882	7.108
30 year +45% CC 1440 minute summer	19.598	5.252
30 year +45% CC 1440 minute winter	13.171	5.252
30 year +45% CC 2160 minute summer	14.229	3.932
30 year +45% CC 2160 minute winter	9.804	3.932
30 year +45% CC 2880 minute summer	12.068	3.234
30 year +45% CC 2880 minute winter	8.111	3.234
30 year +45% CC 4320 minute summer	9.549	2.497
30 year +45% CC 4320 minute winter	6.288	2.497
30 year +45% CC 5760 minute summer	8.243	2.110
30 year +45% CC 5760 minute winter	5.335	2.110
30 year +45% CC 7200 minute summer	7.360	1.877
30 year +45% CC 7200 minute winter	4.750	1.877
30 year +45% CC 8640 minute summer	6.748	1.721
30 year +45% CC 8640 minute winter	4.355	1.721
30 year +45% CC 10080 minute summer	6.313	1.610
30 year +45% CC 10080 minute winter	4.074	1.610
100 year +45% CC 15 minute summer	446.305	126.289
100 year +45% CC 15 minute winter	313.197	126.289
100 year +45% CC 30 minute summer	311.933	88.266
100 year +45% CC 30 minute winter	218.900	88.266
100 year +45% CC 60 minute summer	223.049	58.945
100 year +45% CC 60 minute winter	148.189	58.945
100 year +45% CC 120 minute summer	141.345	37.353
100 year +45% CC 120 minute winter	93.906	37.353
100 year +45% CC 180 minute summer	110.458	28.424
100 year +45% CC 180 minute winter	71.800	28.424
100 year +45% CC 240 minute summer	88.251	23.322
100 year +45% CC 240 minute winter	58.632	23.322
100 year +45% CC 360 minute summer	68.035	17.508
100 year +45% CC 360 minute winter	44.225	17.508
100 year +45% CC 480 minute summer	53.801	14.218
100 year +45% CC 480 minute winter	35.744	14.218
100 year +45% CC 600 minute summer	44.171	12.082
100 year +45% CC 600 minute winter	30.181	12.082
100 year +45% CC 720 minute summer	39.445	10.572
100 year +45% CC 720 minute winter	26.509	10.572
100 year +45% CC 960 minute summer	32.530	8.566
100 year +45% CC 960 minute winter	21.548	8.566
100 year +45% CC 1440 minute summer	23.827	6.386
100 year +45% CC 1440 minute winter	16.013	6.386
100 year +45% CC 2160 minute summer	17.274	4.774
100 year +45% CC 2160 minute winter	11.902	4.774
100 year +45% CC 2880 minute summer	14.555	3.901
100 year +45% CC 2880 minute winter	9.782	3.901



Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 4320 minute summer	11.331	2.963
100 year +45% CC 4320 minute winter	7.462	2.963
100 year +45% CC 5760 minute summer	9.644	2.469
100 year +45% CC 5760 minute winter	6.242	2.469
100 year +45% CC 7200 minute summer	8.534	2.177
100 year +45% CC 7200 minute winter	5.508	2.177
100 year +45% CC 8640 minute summer	7.775	1.983
100 year +45% CC 8640 minute winter	5.018	1.983
100 year +45% CC 10080 minute summer	7.240	1.847
100 year +45% CC 10080 minute winter	4.673	1.847



Results for 2 year +45% 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
480 minute winter	1	448	55.608	0.708	31.0	240.9290	0.0000	SURCHARGED
480 minute winter	2	448	55.608	0.762	10.2	1.4822	0.0000	SURCHARGED
480 minute winter	3	448	55.608	0.947	8.8	1.8998	0.0000	SURCHARGED
480 minute winter	4	448	55.608	0.961	7.6	2.0787	0.0000	SURCHARGED
15 minute winter	5	10	55.816	0.066	10.3	0.1026	0.0000	OK
480 minute winter	6	448	55.608	0.244	2.0	0.0689	0.0000	SURCHARGED
480 minute winter	7-flow control	448	55.608	1.073	7.9	2.4036	0.0000	SURCHARGED
30 minute winter	8	255	54.574	0.054	6.4	0.0610	0.0000	OK
30 minute winter	8_OUT	255	53.893	0.053	6.4	0.0000	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	1	1.000	2	9.7	0.551	0.025	4.5911	
480 minute winter	2	1.001	3	8.2	0.393	0.021	15.6097	
480 minute winter	3	1.002	4	6.6	0.385	0.017	1.1794	
480 minute winter	4	1.003	7-flow control	6.0	0.111	0.015	9.4325	
15 minute winter	5	2.000	6	10.2	0.751	0.405	0.2424	
480 minute winter	6	2.001	7-flow control	2.0	0.677	0.100	0.0393	
480 minute winter	7-flow control	1.004	8	6.4	0.906	0.441	0.0158	
30 minute winter	8	1.005	8_OUT	6.4	1.134	0.269	0.2156	98.3



Results for 30 year +45% 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
480 minute winter	1	360	56.238	1.338	58.1	455.6824	0.0000	SURCHARGED
480 minute winter	2	360	56.238	1.392	15.4	2.7095	0.0000	SURCHARGED
480 minute winter	3	360	56.238	1.577	15.5	3.1651	0.0000	SURCHARGED
480 minute winter	4	360	56.238	1.591	15.7	3.4428	0.0000	SURCHARGED
480 minute winter	5	360	56.239	0.489	3.6	0.7561	0.0000	FLOOD RISK
480 minute winter	6	360	56.238	0.874	3.6	0.2474	0.0000	SURCHARGED
480 minute winter	7-flow control	360	56.238	1.703	17.7	3.8158	0.0000	SURCHARGED
480 minute winter	8	360	54.619	0.099	17.7	0.1124	0.0000	OK
480 minute winter	8_OUT	360	53.936	0.096	17.7	0.0000	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	1	1.000	2	15.4	0.544	0.039	4.5911	
480 minute winter	2	1.001	3	15.5	0.377	0.039	15.6097	
480 minute winter	3	1.002	4	15.5	0.335	0.039	1.1794	
480 minute winter	4	1.003	7-flow control	15.7	0.112	0.040	9.4325	
480 minute winter	5	2.000	6	3.6	0.541	0.143	0.3400	
480 minute winter	6	2.001	7-flow control	3.2	0.751	0.159	0.0393	
480 minute winter	7-flow control	1.004	8	17.7	1.178	1.220	0.0330	
480 minute winter	8	1.005	8_OUT	17.7	1.452	0.744	0.4654	476.2



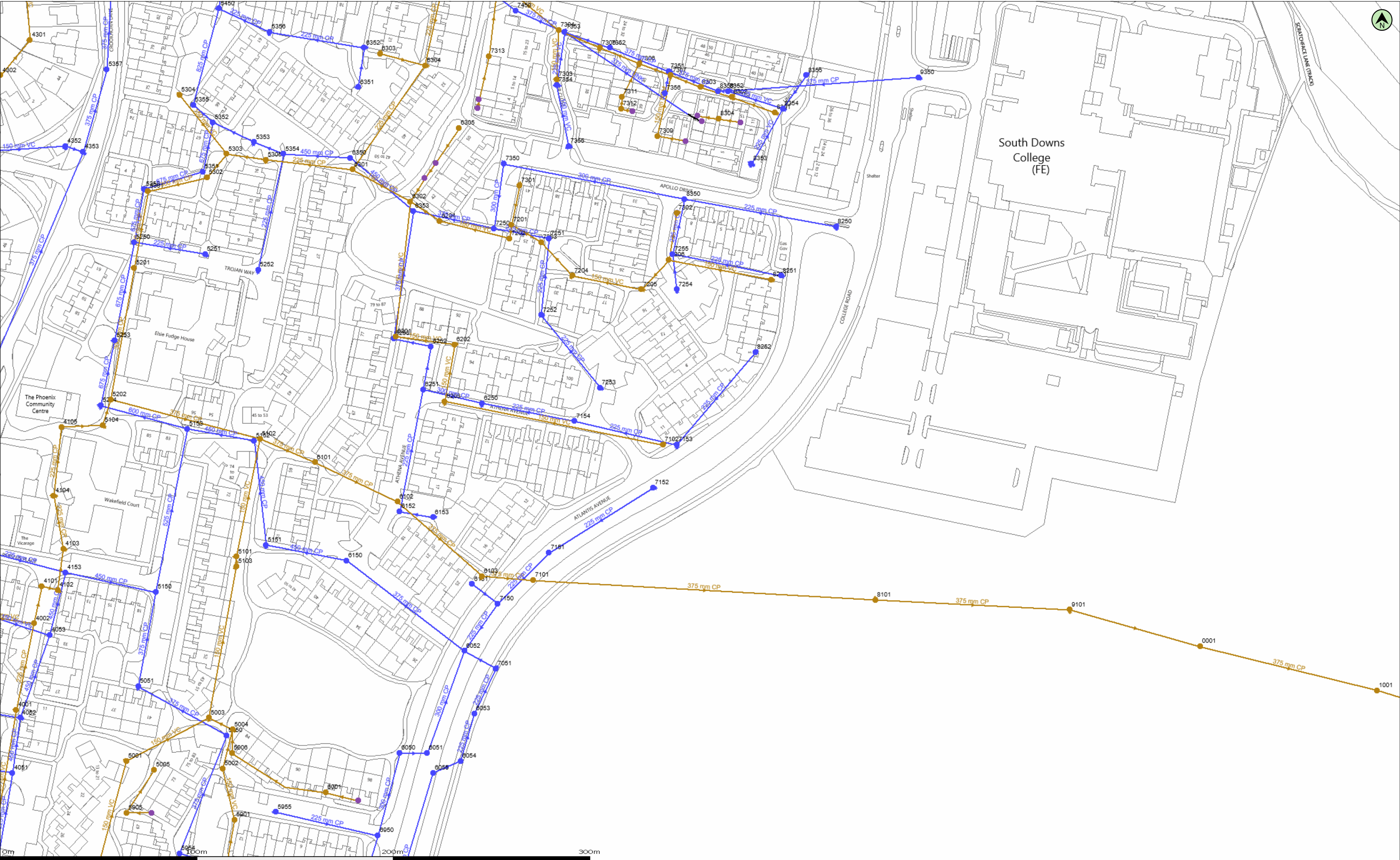
Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	352	56.565	1.665	65.7	545.2936	0.0000	SURCHARGED
480 minute winter	2	352	56.564	1.718	20.1	3.3441	0.0000	SURCHARGED
480 minute winter	3	352	56.564	1.903	20.7	3.8184	0.0000	SURCHARGED
480 minute winter	4	352	56.563	1.916	22.5	4.1470	0.0000	SURCHARGED
480 minute winter	5	344	56.500	0.750	4.3	1.1595	2.1859	FLOOD
480 minute winter	6	344	56.504	1.140	4.2	0.3226	0.0000	SURCHARGED
480 minute winter	7-flow control	352	56.563	2.028	24.5	4.5444	0.0000	SURCHARGED
480 minute winter	8	352	54.650	0.130	23.9	0.1469	0.0000	OK
480 minute winter	8_OUT	352	53.977	0.137	24.0	0.0000	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	1	1.000	2	19.3	0.553	0.049	4.5911	
480 minute winter	2	1.001	3	19.6	0.363	0.050	15.6097	
480 minute winter	3	1.002	4	20.7	0.311	0.052	1.1794	
480 minute winter	4	1.003	7-flow control	22.5	0.102	0.057	9.4325	
480 minute winter	5	2.000	6	4.2	0.544	0.167	0.3400	
480 minute winter	6	2.001	7-flow control	3.7	0.750	0.185	0.0393	
480 minute winter	7-flow control	1.004	8	23.9	1.364	1.652	0.0379	
480 minute winter	8	1.005	8_OUT	24.0	1.500	1.009	0.6334	588.3



Appendix F Southern Water Correspondence



(c) Crown copyright and database rights 2022 Ordnance Survey 100031673

Date: 04/03/22

Scale: 1:1250

Map Centre: 468809,107192

Data updated: 17/01/22

Our Ref: 797208 - 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 2022 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.

tom.richards@awpexeter.com

1017 - HSDC





Ben Fenton
Awcock Ward Partnership
Ada House
Pynes Hill
Exeter
EX2 5TU

Your ref

Our ref

DSA000010002

Date

19 April 2022

Contact

Tel 0330 303 0119

Dear Mr Fenton,

Level 1 Capacity Check Enquiry: Site off College Road, HSDC South Downs Car Park, College Road, Bedhampton, Purbrook, Havant, Hampshire, PO7 8AX.

We have completed the capacity check for the above development site and the results are as follows:

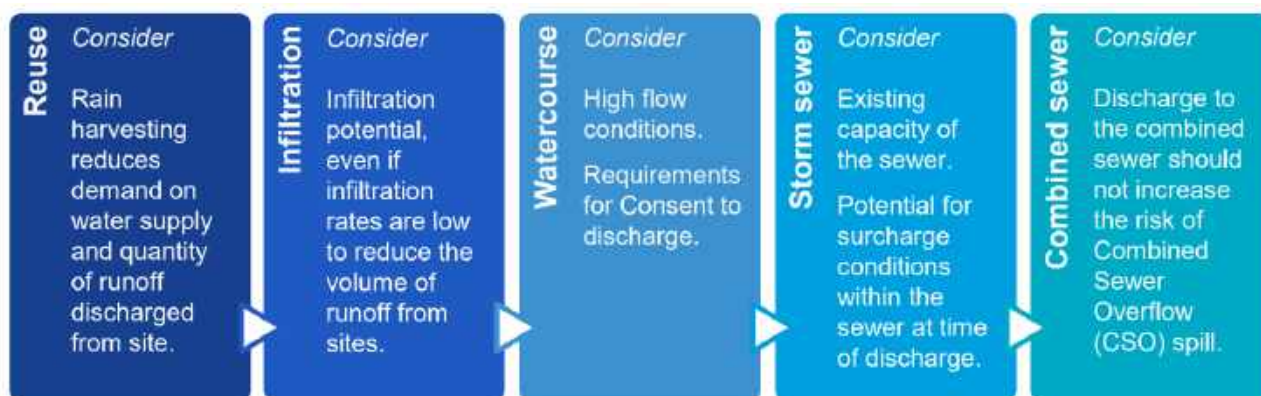
Foul Water

There is currently adequate capacity in the local sewerage network to accommodate a foul flow of **0.92 l/s** for the above development at manhole reference SU6807**9101**. Please note that no surface water flows (existing or proposed) can be accommodated within the existing foul sewerage system unless agreed by the Lead Local Flood Authority in consultation with Southern Water, after the hierarchy Part H3 of Building Regulations has been complied with.

Surface Water

There is currently inadequate capacity within the local surface water network to accommodate a flow of **138.34 l/s** at manhole reference SU6807**9350**. Please note, there are no surface water sewers with sufficient capacity in the vicinity of the development site.

In situations where surface water is being considered for discharge to our network, we require the below hierarchy for surface water to be followed which is reflected in part H3 of the Building Regulations. Whilst reuse does not strictly form part of this hierarchy, Southern Water would encourage the consideration of reuse for new developments.



Guidance on Building Regulations is here: gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h

We would like to engage with you on the design for disposal of surface water, with a particular focus on the potential for incorporating Sustainable Drainage Systems (SuDS), for this development at the earliest opportunity and we recommend that civil engineers and landscape architects work together and with Southern Water. In many cases this may negate or reduce the need for network reinforcement and allow earlier completion of the development.

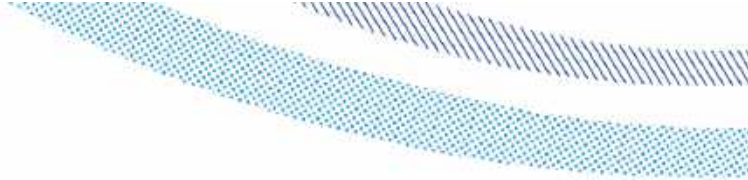
Where a surface water connection to the foul or combined sewer is being considered, this should be agreed by the Lead Local Flood Authority, in consultation with Southern Water.

Southern Water has a duty to provide Network capacity from the point of practical connection (point of equivalent or larger diameter pipe) funded by the New Infrastructure Charge.

Southern Water aim to provide this within 24 months following the date that planning has been granted for developments not identified as strategic sites in our current business plan. Strategic sites are larger developments and will often take longer than 24 months for a full solution to be provided.

New Infrastructure Charging

Please note as of 1st April 2018 we have moved to the “New Connections Services Charging Arrangements”. We understand that this may cause uncertainty for customers, particularly where they may have already committed to a development based on previous charging arrangements. We have worked with our stakeholders and Water UK to agree a set of principles by which we will base our charges. Please read through our new charging arrangement documents available at the following link: southernwater.co.uk/developing-building/connection-charging-arrangements



Alternatively, New Appointees and Variations (NAVs), also known as 'inset' companies, can provide new connection services or take ownership of the new water and wastewater connection infrastructure provided for a new development. NAVs are appointed by Ofwat and replace the regional water company. It is for the developer to choose whether to use a NAV or the regional water company to supply services for new sites, according to certain legal criteria.

Connecting to our network

It should be noted that this information is only a hydraulic assessment of the existing sewerage network and does not grant approval for a connection to the public sewerage system. A formal Sewer Connection (S106) application is required to be completed and approved by Southern Water Services. To make an application visit: developerservices.southernwater.co.uk

Please note the information provided above does not grant approval for any designs/drawings submitted for the capacity analysis. The results quoted above are only valid for 12 months from the date of issue of this letter.

Should it be necessary to contact us please quote our above reference number relating to this application by email at southernwaterplanning@southernwater.co.uk

Yours sincerely,

Growth Planning Team
Business Channels

southernwater.co.uk/developing-building/planning-your-development



Ben Fenton
Awcock Ward Partnership
Ada House
Pynes Hill
Exeter
EX2 5TU

Your ref

Our ref
DSA000010002

Date
10 August 2022

Contact
Tel 0330 303 0119

Dear Mr Fenton,

Level 1 Capacity Check Enquiry: Site off College Road, HSDC South Downs Car Park, College Road, Bedhampton, Purbrook, Havant, Hampshire, PO7 8AX.

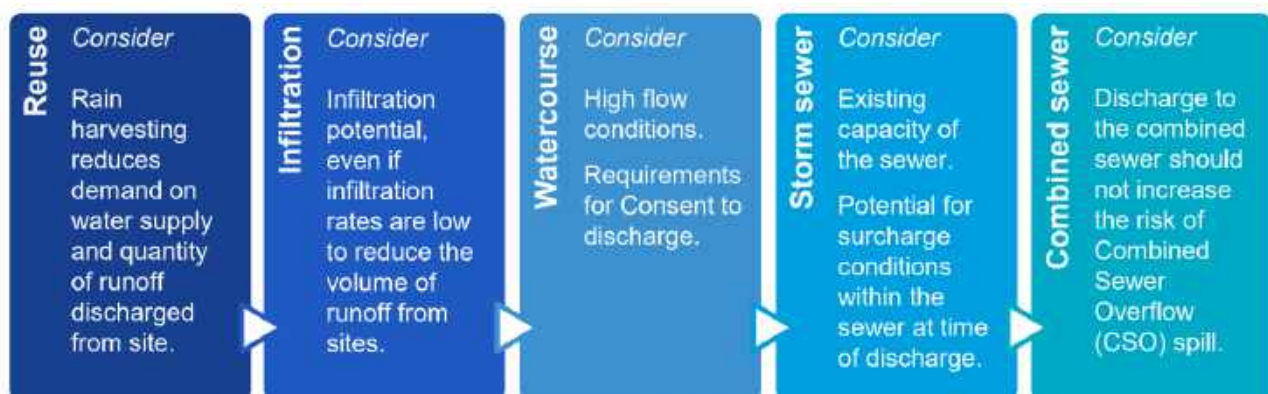
We have completed the capacity check for the above development site and the results are as follows:

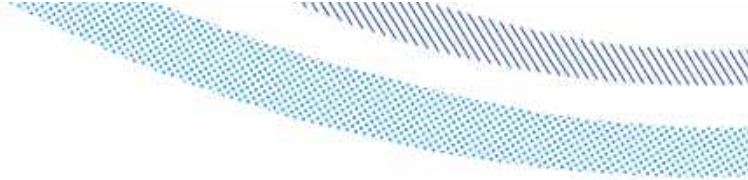
Surface Water

The enquiry has been reassessed to determine the maximum capacity available at manhole reference SU68079350.

There is currently adequate capacity in the local surface water network to accommodate a surface water flow of **5 l/s** for the above development at manhole reference SU6807**9350**.

Although capacity in the surface water network has been identified, in all situations where surface water is being considered for discharge to our network, we require the below hierarchy for surface water to be followed which is reflected in part H3 of the Building Regulations. Whilst reuse does not strictly form part of this hierarchy, Southern Water would encourage the consideration of reuse for new developments.





Guidance on Building Regulations is here: [gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h](https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h)

We would welcome the opportunity to engage with you on the design for disposal of surface water, with a particular focus on the potential for incorporating Sustainable Drainage Systems (SuDS), for this development at the earliest opportunity and we recommend that civil engineers and landscape architects work together and with Southern Water.

Where a surface water connection to the foul or combined sewer is being considered, this should be agreed by the Lead Local Flood Authority, in consultation with Southern Water.

It should be noted that although the above assessment indicates that there is capacity available for your proposed surface water flows the LLFA (Local Lead Flood Authority) may impose/request that a lower flow is discharged to the public surface water sewer.

If the excess surface water flows are to be attenuated on site, it could have a significant effect on any proposed Sewer Adoption (S104) Agreements. Any attenuation proposals should be agreed before any works are implemented on site. Where capacity is limited/restricted, agreement should be sought if you are to include any highway drainage within your proposals as Southern Water is not obligated to accept highway flows.

Connecting to our network

It should be noted that this information is only a hydraulic assessment of the existing sewerage network and does not grant approval for a connection to the public sewerage system. A formal Sewer Connection (S106) application is required to be completed and approved by Southern Water Services. To make an application visit: developerservices.southernwater.co.uk

Please note the information provided above does not grant approval for any designs/drawings submitted for the capacity analysis. The results quoted above are only valid for 12 months from the date of issue of this letter.

Should it be necessary to contact us please quote our above reference number relating to this application by email at southernwaterplanning@southernwater.co.uk

Yours sincerely,

Future Growth Planning Team
Business Channels

southernwater.co.uk/developing-building/planning-your-development