



Flood Risk Assessment and Drainage Strategy

Capella House Car Park, Railway Approach, Worthing,
BN11 1UR

Client

Architectus LTD

Ref: 13974

Date: August 2026

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Issue	Issue date	Compiled	Checked
First Draft Issue	12/09/2025	NG	FVV
First Issue – for submission	18/09/2025	NG	FVV
Second Issue – for submission	02/10/2025	NG	FVV
Third Issue – for submission	13/08/2026	DT	FVV
Fourth Issue – for submission	25/08/2026	DT	FVV

1 Introduction

- 1.1 This report has been prepared for the Client in relation to the proposed development at Capella House Car Park, Railway Approach, Worthing, BN11 1UR. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.2 GTA Civils & Transport Limited was appointed by Architectus LTD to prepare a Flood Risk Assessment (FRA) report as required by Worthing Borough Council (WBC) in order to achieve Planning Permission at Capella House Car Park, Railway Approach, Worthing, BN11 1UR.
- 1.3 This report will take the form of a formal Flood Risk Assessment in accordance with the 2025 National Planning Policy Framework (NPPF) and the current Planning Practice Guidance (PPG).
- 1.4 The third issue of the FRA has been prepared to reflect the amended scheme. Comments received from West Sussex County Council (WSCC) as the Lead Local Flood Authority (LLFA) on the previously submitted application ref AWDM/1329/25, have also been reviewed and addressed within the FRA. The consultation response letter is included in Appendix I.
- 1.5 This fourth issue includes an updated architect's layout together with updated drawings and calculations.

2 Existing Site & Current Flood Risk

- 2.1 The application site lies to the north of Worthing local centre, immediately south of the existing railway line. It is bounded by Sandell House to the west, Railway Approach to the south and a vacant plot to the east. The site currently comprises a fully tarmacked car park, with a small strip of grass along the western boundary, adjacent to Sandell House. A site location map and aerial view are shown in Appendix A.
- 2.2 Hydrology: The site lies approximately 1.12km north of the English Channel. There is no ordinary watercourse at or near the site. The nearest Main River is the Teville Stream, approximately 1.9km to the east. Refer to the Main Rivers map in Appendix C.
- 2.3 Topography: The levels across the car park site range from approximately 6.70m Above Ordnance Datum (AOD) along the southern site boundary, to 7.30mAOD along the northern site boundary. The topographic survey is included in Appendix B.
- 2.4 Geology: The BGS's online geology map shows that the site is underlain by London Clay Formation with Superficial deposits of River Terrace Deposits.
- 2.5 A site investigation carried out on the 12th of August 2025 generally confirmed the published geology, with an additional stratum of Made Ground between 0.85m to 1.80m deep overlying the site. Soil soakage testing was carried out on site within the River Terrace Deposits. The calculated infiltration rate was found to be 1.65×10^{-6} m/s – however, as the water level did not fall below 25% of the initial test depth within the trial pit over the duration of the test, this value is based on extrapolated results. The infiltration test report is included in Appendix D.
- 2.6 Groundwater levels on site were found to be a maximum of 3.4m below ground level during the site investigation. Groundwater monitoring conducted between October 2025 and April 2026 found groundwater varied at the site between 3.4m bgl and 2.5m bgl at its shallowest. The groundwater monitoring results are included in Appendix D.
- 2.7 The EA's Groundwater Vulnerability Zones (GWVZ) mapping shows the site overlay a "Low" vulnerability aquifer, with some soluble rock risks. The site is not within a Source Protection Zone (SPZ) – refer to the maps in Appendix C.
- 2.8 Fluvial/Tidal Flooding: The EA's Flood Map for Planning shows the Site lies within Flood Zone 1– Low Probability, having less than a 1 in 1,000 (0.1%) annual exceedance probability (AEP) of river flooding.
- 2.9 Surface Water Flooding: this can occur when excess rainwater does not infiltrate into

the ground, or is not intercepted by urban drainage systems, and instead flows across the surface. The EA's online Surface Water Flood Map indicates that the site is not affected by surface water flooding. There are areas of surface water flooding on the lower lying ground east and south of the site.

- 2.10 Safe access and egress from the development: The site itself and Railway Approach, where directly adjacent to the site, are not subject to surface water flood risks. This includes the approach to Worthing Train Station.
- 2.11 Notwithstanding the above, the EA hazard mapping indicates that the expected flooding within Railway Approach and Cross Street would be of Very Low to Low hazard in all storm events. Refer to Appendix J. It is therefore contended that emergency access can be provided.
- 2.12 Climate Change: the site lies within the Adur and Ouse Management Catchment. The relevant peak river flow allowance for new residential developments is the Central Allowance, which is 37% in this catchment (2080s). The applicable peak rainfall allowances are 40% for the 1 in 30 AEP events, and 45% for the 1 in 100 AEP events.
- 2.13 A Climate Change (2070 to 2125) layer was added to the Flood Map for Planning by the EA on 27th of August 2025. This dataset is intended to show how the combined extent of Flood Zones 2 and 3 could increase with climate change over the next century, ignoring the benefits of any existing flood defences and assuming no changes to the flood defences or land-use during that time. The future Flood Zone extent borders the eastern and southern boundary of the site, but the site itself remains clear.
- 2.14 Similarly, the EA have published a Surface Water Flood Risk dataset which includes consideration of climate change. This indicates that the surface water flood risk in the vicinity of the site is unlikely to significantly change when climate change is taken into account. The Adur and Worthing Strategic Flood Risk Assessment (SFRA) also includes mapping of future Surface Water Flood Risk within the borough – the resolution of this map doesn't allow a precise review of the flood extent, however, it appears that the application site remains clear of flooding in both the 25% climate change and 45% climate change scenarios.
- 2.15 The flood extents, including the climate change extents, are mapped on the Flood Risk Constraint Plan, included in Appendix C.
- 2.16 Groundwater Flooding: Groundwater flooding can occur when groundwater rises up from the underlying aquifer to flood subsurface infrastructure or to emerge at the

ground surface. Adur and Worthing SFRA include a mapped of expected groundwater levels within the borough. This indicates that the site is susceptible to shallow groundwater levels (0.025m to 0.5m below the ground surface) and therefore at low risk of groundwater flooding. However, the site levels being higher than the immediately adjacent surrounding grounds, and the observed groundwater level on site discussed earlier in this report, indicates that the likelihood of groundwater flooding at surface level is remote.

- 2.17 Artificial Sources: flooding from reservoirs, canals and docks. The EA's Reservoirs Flood Map in Appendix C shows the site to be removed from this source of flooding. There are no docks or canals in this area.
- 2.18 Historical Flooding: A review of the available data and documents has not identified any records of flooding incidents at or close to the site. The EA's historical flood maps is also in Appendix D.
- 2.19 In conclusion, the flood risk profile at the site is Low. No further mitigation is required.
- 2.20 Public Sewers Infrastructure: Southern Water sewer records indicate that the nearest public foul sewers to the site are a 450mm diameter sewer 60m east of the site, across Broadwater Road; and a 450mm diameter sewer approximately 80m south of the site.
- 2.21 Southern Water records also indicate an existing 225mm surface water sewer within Railway Approach. The sewer records are included in Appendix E.
- 2.22 A CCTV survey of the existing site drainage was carried out to confirm the existing apparatus and connections from the adjacent Sandell House (Appendix E). It confirms the presence of an existing private foul connection to the Southern Water sewer to the east, across the adjacent vacant plot. The surface water from Sandell House is routed to an existing soakaway, though this does not appear to function properly as the upstream surface water manholes are flooded.
- 2.23 There is no formal surface water drainage within the existing car park – based on levels, this is currently allowed to drain unrestricted towards the gullies on Railway Approach, which discharge to the existing Southern Water surface water sewer.
- 2.24 The runoff rates for the existing impermeable site area (0.079 ha) was calculated using the Modified Rational Method (MRM) on Causeway Flow. The corresponding greenfield rates for the site have been calculated based on FEH data on the UK SuDS tool. The

calculated rates are summarised in Table 1 below (see Appendix G for calculations):

Table 1: Existing Runoff Rates

Event	Brownfield Flow Rate (l/s)	Greenfield Flow Rate (l/s)
1 in 2 yr	1.3	0.2
1 in 30 yrs	3.4	0.4
1 in 100 yrs	4.2	0.6

2.25 Greenfield runoff volumes: Greenfield volumes calculations are provided in Appendix G. The greenfield runoff volume for a 100-year, 360min storm event is 19.2m³.

2.26 Note however that this is a brownfield site, and the existing discharge volumes are therefore much higher than this. The brownfield runoff volumes have been estimated via the Modified Rational Method (MRM) on Causeway Flow as 57m³ for a 100-year, 360min storm event.

3 Proposed SuDS & Foul Water Drainage Strategy

- 3.1 Defra published the National Standards for SuDS ("NSS") on 19 June 2025. The key principles underpinning the NSS include a natural approach to managing water and an early and integrated design. The proposed SuDS strategy is illustrated in Appendix F and has been prepared in accordance with these key principles. There are 7 core standards set out in the NSS and these are discussed in turn as follows:

Standard 1: runoff destinations.

- 3.2 The NSS hierarchy sets the priority as collecting runoff for non-potable use. Rainwater harvesting (RwH) solutions need to be considered with the architectural and building services design. On residential blocks such as the one proposed, it is difficult to provide integrated greywater system due to metering and building services constraints. Onward discharge must therefore be considered.
- 3.3 The 2nd priority is to infiltrate runoff to ground. The ground conditions discussed in Section 2 indicate that the use of infiltration SuDS at the site is unlikely to be an effective way to solely manage the site runoff, due to the marginal infiltration rates found in the clayey ground. Infiltration features will be maximised where possible; however, it is evident that infiltration SuDS will not be provide a complete surface water management solution and an off-site discharge will be needed.
- 3.4 The 3rd priority is to discharge runoff to an above ground surface water body. There are none available within or at close proximity to the site.
- 3.5 The 4th priority is to discharge to a surface water sewer. The strategy for the development is therefore to discharge runoff to the existing Southern Water surface water sewer within Railway Approach, at an attenuated rate (refer to Standard 3). The new connection will be subject to an indirect S106 agreement with Southern Water, to be obtained in due course.

Standard 2: management of everyday rainfall (interception)

- 3.6 Green roofs have been included and shall be implemented at all intermediate roof levels (refer to architectural plans). These will provide interception benefits, in accordance with the National Standards for SuDS. There is no suitable space on site to provide any other types of above-ground SuDS.
- 3.7 A permeable subbase shall be provided beneath the car park at ground level. As discussed above, this will have an onward outfall to the existing sewer but will remain

unlined to maximise the infiltration benefits of the underlying soil. Unlined permeable surfaces over all soil types are considered compliant with Standard 2 where the additional impermeable area is no greater than the permeable area.

- 3.8 The proposed drainage strategy is therefore compliant with Standard 2.

Standard 3: management of extreme rainfall and flooding

- 3.9 The NSS guidance sets out that the peak allowable discharge rate from the development to the watercourses should be limited to the 1 in 2 (50%) AEP greenfield runoff rate, or 3 l/s/ha (0.237 l/s for 0.079ha), whichever is the greater. As shown in Section 2 above, the 1 in 2 AEP greenfield runoff rate for the site is 0.2 l/s. The peak allowable discharge rate for the development would therefore be 0.237 l/s.
- 3.10 However, achieving such a low discharge rate would require an extremely small orifice size (3mm), which would be susceptible to blockages. To minimise this risk, the orifice size has been set to 20mm and will be protected through a mesh screen. The resulting peak flow rate from the site is 1.0 l/s.
- 3.11 Comparing this to the existing brownfield rates from the site (as per Table 1), it is evident that the runoff rates to the existing surface water sewer will be reduced in all storm events. The calculated proposed discharge volume in the 1 in 100-year +45% climate change, 360-minute storm is 22.8m³ (a 60% reduction). Calculations are included in Appendix G.
- 3.12 Attenuation storage is provided within the porous subbase, at ground floor level. Refer to the drainage strategy layout in Appendix F. Cross-sections through the permeable paving, and long-section through the network model are also included.
- 3.13 Flow control manholes are intentionally designed to restrict discharge to the agreed allowable rate. Because of this restriction, inflow to the chamber during rainfall events will typically exceed the permitted outflow rate. In hydraulic modelling, this is shown as the manhole “surcharging.” However, this is not an indication of system failure — it is the mechanism by which the attenuation system stores water. The temporary rise in water level is necessary to create the hydraulic head required to drive flow through the control and to allow the upstream storage (pipes, tanks, or basins) to fill.
- 3.14 Southern Water have confirmed there is sufficient capacity in the receiving surface water sewer on this basis. Southern Water Capacity Check is included in appendix K.

- 3.15 Hydraulic calculations are included in Appendix G based on FEH22 rainfall data and using a CV value of 1. As the proposals do not include sufficient external private permeable spaces, no urban creep uplift factor was applied.
- 3.16 Exceedance: Overland flow in the event of extreme storm events or failure of the drainage system will flow towards Railway Approach, in line with the existing overland flow from the car park area. Refer to Appendix F.
- 3.17 The proposed outfall is via a new 150mm diameter connection to the existing 225mm diameter storm sewer, at level soffit. The existing storm sewer is at invert level (IL) 3.86mAOD, and the proposed IL is therefore 3.94mAOD. The surcharged level (top of the pipe) would be 4.085mAOD. Calculations in Appendix G now includes this scenario.

Standard 4: water quality

- 3.18 The proposed SuDS strategy includes sufficient treatment to protect water quality in the receiving water environment.
- 3.19 Based on the Simple Index Approach described in CIRIA C753 (The SuDS Manual) the development's pollution hazard indices are outlined in Table 2 below along with the relevant SuDS mitigation indices for the proposed SuDS components.

Table 2: SuDS Treatment Train

Pollutant type	TSS	Metals	Hydrocarbons
Pollution hazard indices			
Residential roofs – Very low	0.2	0.2	0.05
Vehicular areas – Low	0.5	0.4	0.4
SuDS mitigation indices			
Permeable pavement	0.7	0.6	0.7

- 3.20 Table 2 demonstrates that the proposed SuDS treatment train will sufficiently protect the water environment.
- 3.21 The simple index approach is the industry standard for assessing water quality benefits of SuDS management train at this stage of the design (planning submission). The green roofs will provide a first stage of treatment for most roof areas, reducing its hazard levels below that recommended in the CIRIA SuDS manual. The SuDS manual values have conservatively been used within the simple index approach applied to this development. The permeable paving also provides sufficient mitigation for the expected pollution

associated with the parking area.

- 3.22 Notwithstanding the above, it should also be noted that the provision of green roofs and permeable paving will provide a net improvement of water quality to the existing surface water sewer, compared to the existing scenario (runoff from the existing car park area).

Standard 5: amenity

- 3.23 The site is heavily constrained, and the use of permeable surfacing where possible at ground floor level ensure that the SuDS features have been integrated into the landscape proposals to ensure their amenity potential is realised, within the constraints of the site.
- 3.24 The integration of the green roofs within the proposed green infrastructure of the site will ensure a multi-functional landscape proposal.

Standard 6: biodiversity

- 3.25 The integration of green roofs contributes to the delivery of the local biodiversity strategy.

Standard 7: design of drainage for construction, operation, maintenance, decommissioning and structural integrity

- 3.26 Construction and Phasing: These topics are typically addressed by condition with Phasing Plans and Construction Environmental Management Plans (CEMP). Construction of the surface water drainage scheme will be carried out in line with best practice methods and controls
- 3.27 Ownership and maintenance: A draft Drainage Maintenance Plan (DMP) outlining ownership and maintenance responsibilities is included in Appendix H. This is a draft version based on the information currently available at this stage; the DMP will be updated as the design of each phase is developed and will remain a live document over the duration of the project.
- 3.28 The proposed drainage infrastructure will remain under the ownership of the site owner(s).

Foul Drainage Strategy

- 3.29 The proposed foul drainage from the new development shall be connected to the

existing drain crossing the site. The new connection will be subject to an indirect S106 agreement with Southern Water, to be obtained in due course.

- 3.30 A capacity enquiry has been submitted to Southern Water to confirm the existing sewer network has capacity to accommodate the flows from the development. Southern Water have confirmed current capacity within their network is sufficient to accommodate the proposals - refer to Appendix K.

4 Conclusion

- 4.1 The site lies entirely within Flood zone 1 and flood risks from other sources are negligible. The development is therefore appropriate in terms of flood risk.
- 4.2 The proposed SuDS strategy has been developed in line with Defra's National standards for SuDS. The strategy includes on-plot source control, in the form of green roofs and permeable paving, and an attenuated discharge to the existing surface water network. This is a significant improvement over the existing site condition, which drains unrestricted and untreated to the downstream network.
- 4.3 A new foul connection to the existing Southern Water sewer will be required, to the east of the site. There is an existing private drainage route to the sewer network from the adjacent Sandell House, crossing the site, which will be utilised for this purpose. Southern Water have confirmed capacity in their network for both foul and surface water flows"
- 4.4 The development complies with the NPPF and relevant planning practice guidance in terms of flood risk. The proposed SuDS and foul drainage strategies comply with the Local Plan Policies.

Appendix A

Location Plan

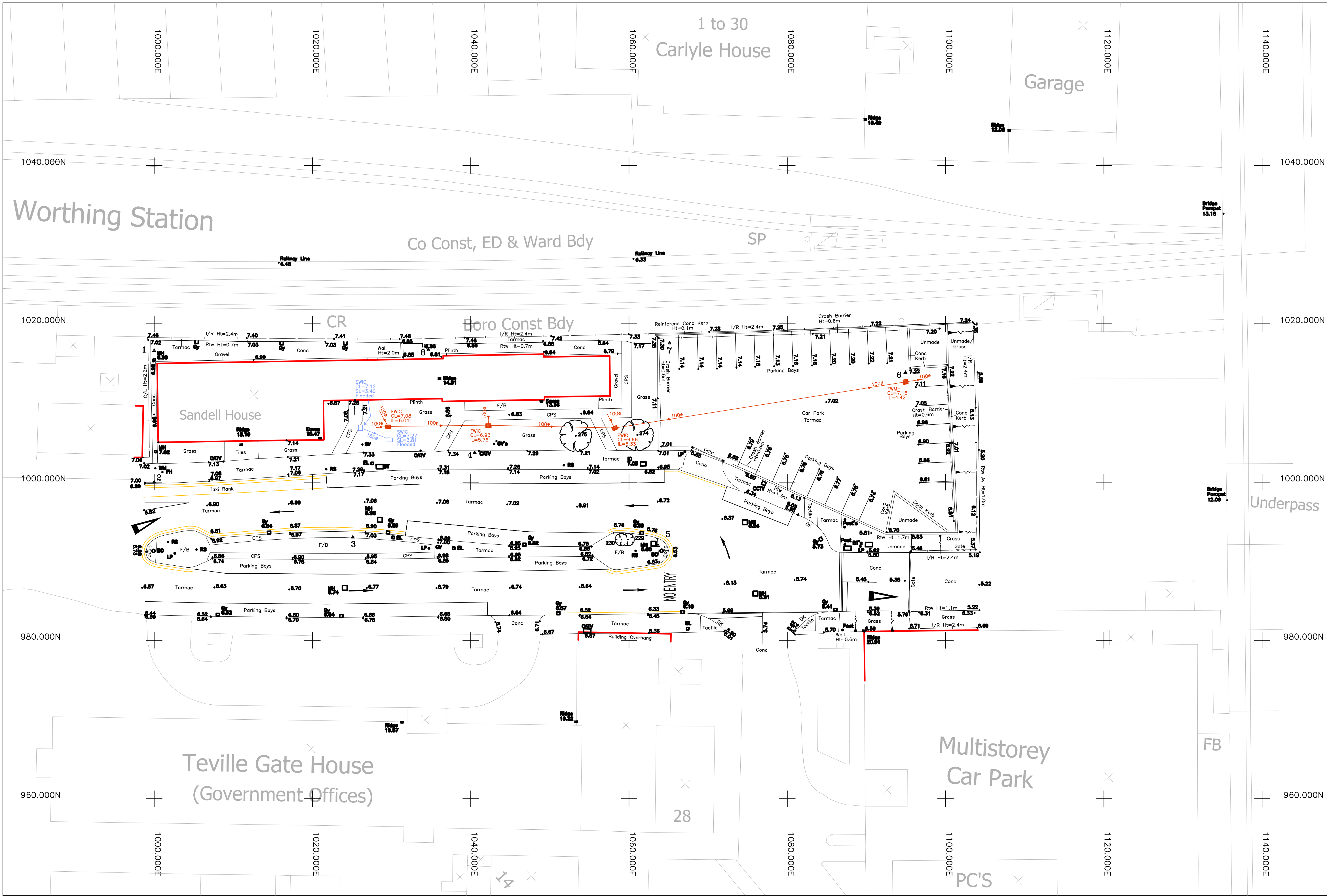


Aerial Photo



Appendix B

Topographic Survey



Notes

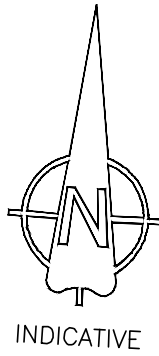
Whilst every effort has been made to correctly identify species of trees on the site, we advise that an arborologist be consulted before any final decisions are made.

Although every effort has been made to confirm type, run and size of drainage it is advisable to check these details against statutory authority records before proceeding with any design.

All information contained in this drawing (including digital data) should be checked and verified prior to any fabrication or construction.

Grid coordinates are based on an arbitrary system.

Detail in half-tone (grey) denotes OS data relating to survey as a 'Best Mean Fit'.



Tree Schedule				
Tree No.	Dia. Spread	Dia. Bole	Height	Species
229	0.00	0.00	0.00	SAPLING 4.0m
230	0.00	0.00	0.00	SAPLING 4.0m
274	4.00	0.15	6.00	SYCAMORE
275	4.00	0.15	6.00	SYCAMORE

Coordinate Table			
Sta	Eastings	Northing	Level
1	1000.000	1016.604	7.007
2	1000.000	1000.000	7.011
3	1025.103	993.034	7.023
4	1040.500	1003.721	7.325
5	1063.699	991.974	6.716
6	1094.933	1013.843	7.178
7	1085.125	1017.566	7.257
8	1034.653	1016.713	6.859

Rev. Suffix	Date	Initial	Revision Details
MLB		AMF	Surveyor AF Date 14.01.04
Approved By			
Levelling	OSBM	Datum	Newlyn
SW Corner of Railway Station Value Used : 7.69m			

Client	
ARCHITECTUS	
Location	
Land at Railway Approach Worthing	
Drawing Title	
Detail Survey	
Job No. 40102	Old Job No.
Drawing Number Arch/40102	Revision Suffix
Scale 1:200m	Date January 2004

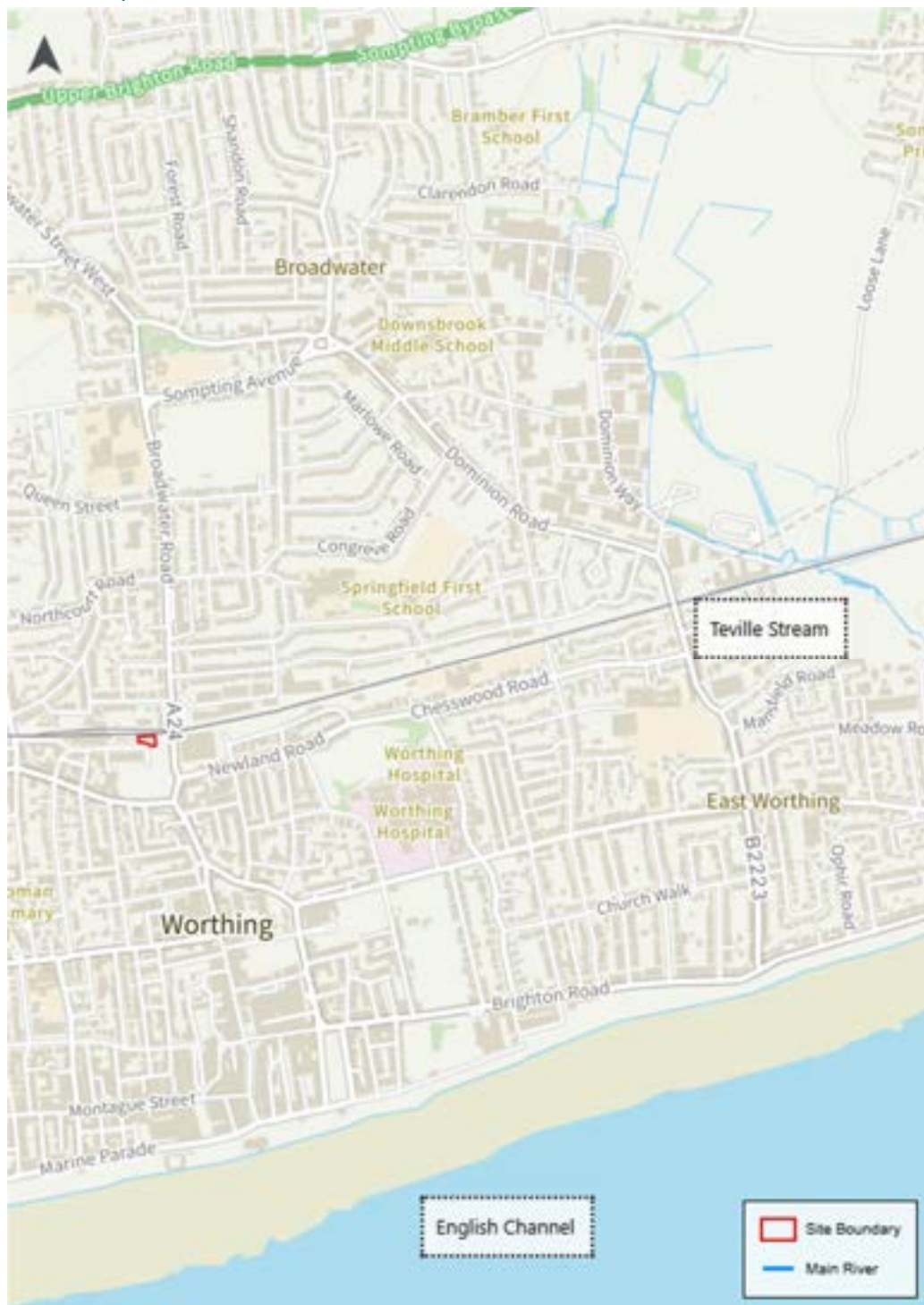
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Appendix C

Flood Maps

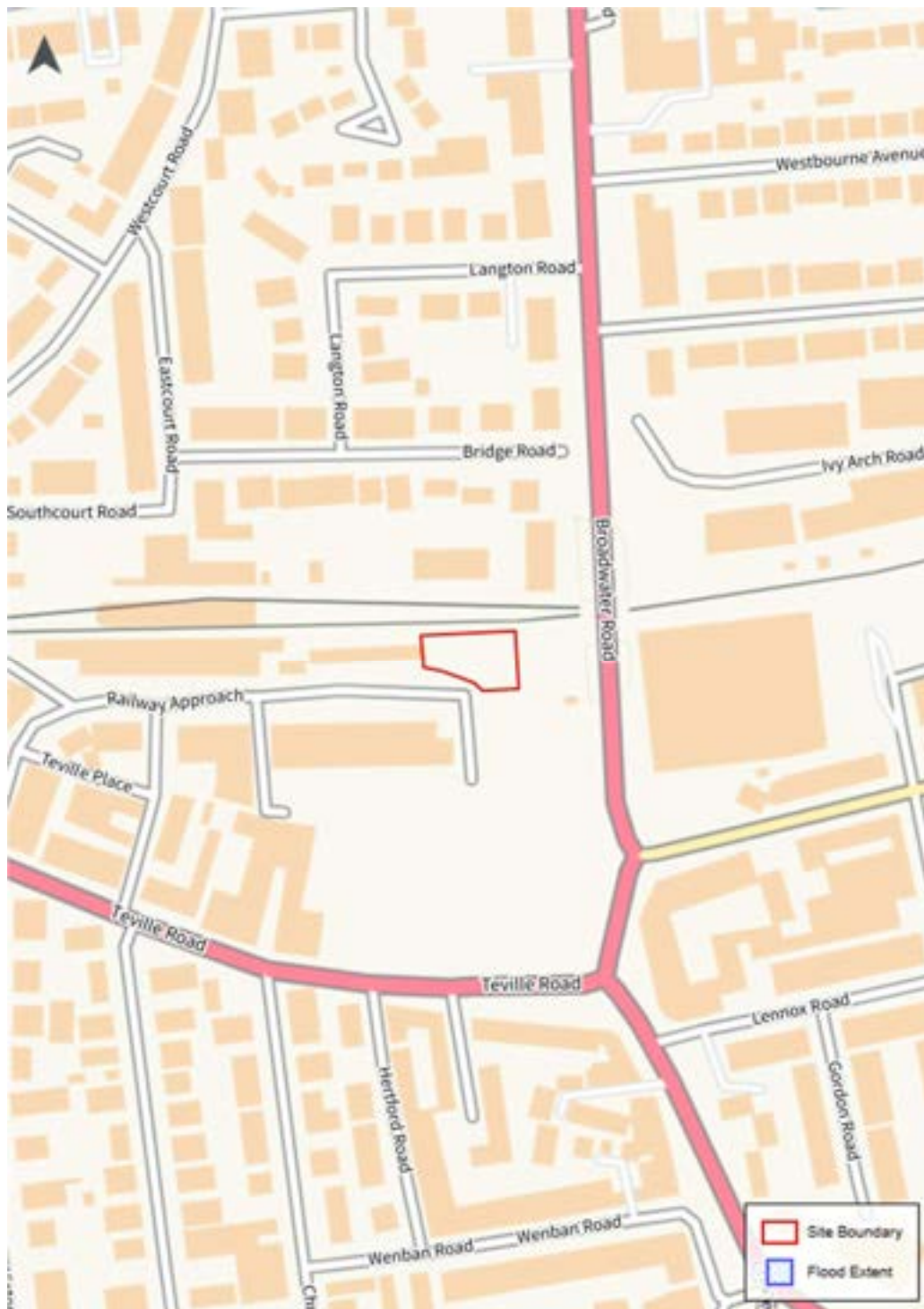


Environment Agency Main Rivers Map



Environment Agency Flood Risk from Reservoirs

The site is clear from the risk of flooding from this source



DEFRA Historical Flooding Map

Neither this site nor anywhere in the vicinity has been affected by flooding in the past



Environment Agency Groundwater Source Protection Zones Map

The site is not situated within a Source Protection Zone

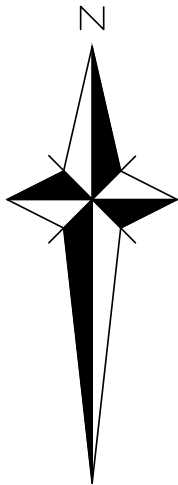
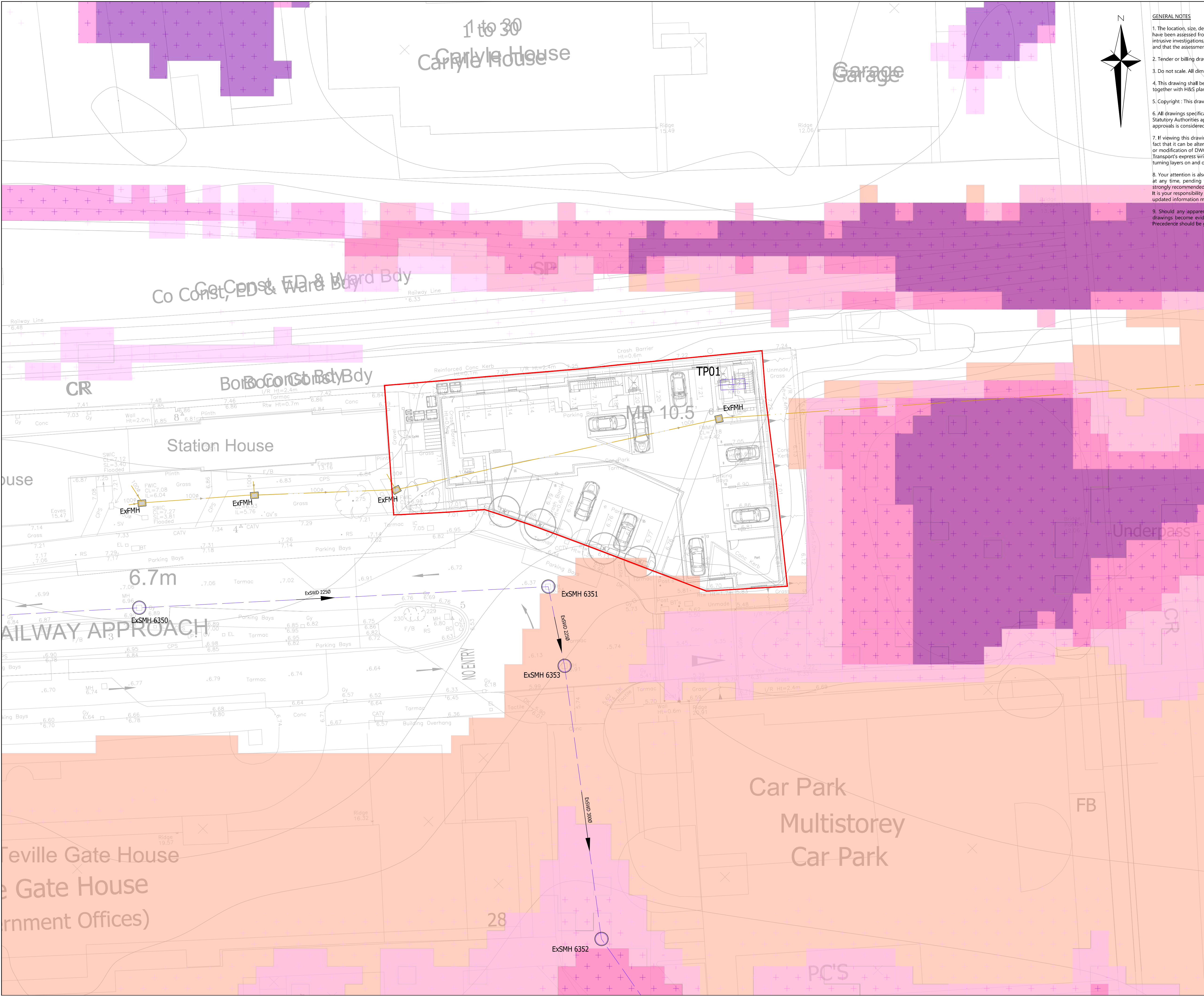


Environment Agency Online Groundwater Vulnerability Zones Map

The site overlies a Low Groundwater Vulnerability Zone with soluble rock risk.

Groundwater Vulnerability Map (England)

-  Local Information
-  Soluble Rock Risk
-  High
-  Medium - High
-  Medium
-  Medium - Low
-  Low
-  Unproductive



- GENERAL NOTES**
- The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
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 - Should any apparent discrepancies between the data contained within the DWG file and the current contract drawings become evident, it must be reported back to GTA Civils & Transport as soon as reasonably practicable. Precedence should be given to the current contract drawings (PDF) unless advised otherwise.

LEGEND

GEOLOGY

Bedrock Geology: London Clay Formation - From British Geological Society records
Superficial Deposits: River Terrace - Sand Silt and Clay - From British Geological Society records

FLUVIAL FLOOD RISK

Flood Zone 2
Flood Zone 3

SURFACE WATER FLOOD RISK

Surface Water Flood Risk - 1 in 30yr
Surface Water Flood Risk - 1 in 100yr
Surface Water Flood Risk - 1 in 1000yr

SURFACE WATER FLOOD RISK - Climate Change

Future Surface Water Flood Risk - 1 in 30yr
Future Surface Water Flood Risk - 1 in 100yr
Future Surface Water Flood Risk - 1 in 1000yr

FLUVIAL FLOOD RISK - Climate Change

Future Fluvial Flood Risk - High
Future Fluvial Flood Risk - Medium
Future Fluvial Flood Risk - Low

FLUVIAL FLOOD RISK - Climate Change

Combined Flood Zone 2&3 extent plus climate change increase

SPECIAL DESIGNATIONS

Site is NOT within a Source Protection Zone
Site Extends Groundwater Vulnerability: Low

SITE

Site Boundary

0.5m Ground Level Contours
(from topographical survey within site)

TP

Trial Pit - Soakage testing conducted
6/08/2025

NOTE

Test failed to soak to 25% effective depth, and therefore a negligible infiltration rate has been assumed

P1	INITIAL ISSUE	11/09/25	NG	P1
Rev	Amendments	Date	Dsn	Cl
Status	PRELIMINARY			
Client	ARCHITECTUS LTD			
Architect				
Project	RAILWAY APPROACH WORTHING			
Title	FLOOD RISK CONSTRAINT PLAN			
Date	SEPTEMBER 2025	Scale @ A1	1:200	
Clients Ref.		Project Ref.	13974	
 Civils & Transport Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD Tel:01444 871444 Web: www.gtacivils.co.uk				
Drawing Number		13974-1000		Rev.
				P1

Appendix D

Soil Soakage Test Report



IN SITU INFILTRATION TEST REPORT

**RAILWAY APPROACH
WORTHING
WEST SUSSEX**

PROJECT REFERENCE: P17323

REPORT REFERENCE: R16818

Report Beneficiary: Architectus Ltd

Document Control			
Issue No.	Status	Issue Date	Notes
1	Final	27 th August 2025	
Report Section		Prepared By	Approved By
In Situ Infiltration Test Report		Adam Cormack HNC FGS	Steven McSwiney BA Mod. Geol. MSc FGS

Limitations

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1. INTRODUCTION

Ashdown Site Investigation Ltd was requested to undertake in situ infiltration testing and groundwater monitoring at Railway Approach, Worthing, West Sussex. The groundwater monitoring standpipes were installed in conjunction with the infiltration testing works, with the monitoring period scheduled to take place between October 2025 and March 2026.

The scope of the works covered by this report, and the terms and conditions under which they were undertaken, were set out within the offer letter Q15236/Rev1, dated 6th August 2025. The instruction to proceed was received from the client, Architectus Ltd.

The specific objectives of the works were to:

- a) Establish the expected geology and hydrogeology at the site;
- b) Investigate the shallow ground and groundwater conditions broadly in the specified areas across the site;
- c) Provide advice/parameters to assist others in undertaking design of soakaways; and
- d) Install standpipes to facilitate future winter groundwater monitoring.

2. SITE CONTEXT

2.1 Site Location

The site is located at Railway Approach, Worthing, West Sussex, and is centred on the approximate Ordnance Survey national grid reference 514658, 103368. A site location plan and site plan are presented as Figure 1 and Figure 2, respectively.

2.2 Geological Setting

The stratigraphic succession that may be expected to underlie the site has been established by reference to British Geological Survey (BGS) mapping and the BGS Lexicon of Named Rock Units. The expected stratigraphy is presented in the following table.

Table 1. Expected Strata and Aquifer Designation

Type	Stratum	Aquifer Designation
Superficial	River Terrace Deposits	Secondary B Aquifer
Bedrock	London Clay Formation	Unproductive Stratum

The River Terrace Deposits generally comprise well graded sandy fine to coarse gravel. Locally sand or gravel strata may predominate. Lenses of clay, silt and localised peat may be present. Gravels normally include a high proportion of subangular flint.

The London Clay Formation forms part of the Thames Group. The formation is of Ypresian age (47.8 to 56 million years old; Early Eocene). The London Clay Formation mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite. It also includes a few thin beds of shells and fine sand

partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occur in places. Glauconite is present in some of the sands and in some clay beds, and white mica occurs at some levels. The formation is recorded by the BGS to range in thickness up to 150m.

2.3 Groundwater Source Protection Zones (SPZ)

The Environment Agency defines SPZs as those areas where groundwater supplies are at risk from potentially polluting activities and accidental releases of pollutants. SPZs are primarily a policy tool used to control activities close to water supplies intended for human consumption.

The site does not lie within a SPZ.

3. SITE WORKS

The intrusive site works comprised the drilling of two boreholes, denoted WS01 and WS02, and the machine excavation of a single trial pit, denoted TP01. The intrusive work was carried out on the 12th August 2025. The exploratory hole locations are shown on Figure 2.

Falling head soakage testing was undertaken within the trial pit in general accordance with the test methodology given by BRE guidance¹, other than the pit was filled only once rather than the three times suggested by the digest due to the slow infiltration of water into the surrounding soils. The results of the testing along with the infiltration rate calculations are included in the appendices to this report.

Groundwater monitoring standpipes were installed to a depth of 4.00m within each of borehole WS01 and WS02. Descriptions of the installations are shown on the exploratory hole records. Dataloggers are due to be installed at a later date to capture the winter groundwater monitoring period between Autumn/Winter 2025 into Spring 2026.

Descriptions of the strata encountered and comments on groundwater conditions are shown in the appended exploratory hole records. Explanatory notes to assist in their interpretation are also appended.

4. GROUND CONDITIONS

4.1 Stratigraphy

4.1.1 Surface Covering

Borehole WS02 and trial pit TP01 were initially excavated through a surface covering of pea shingle, some 30mm to 100mm in thickness. Borehole WS01 was excavated through a 70mm thick layer of topsoil.

4.1.2 Made Ground

Made Ground was encountered in all three exploratory hole positions to depths of between 0.85m and 1.80m below ground level. Generally, coarse-grained sands and gravels were encountered beneath the pea shingle surfacing at exploratory holes WS02 and TP01, to depths of 0.60m and 0.20m respectively,

¹ Section 3.2.3 of Building Research Establishment (BRE) Digest 365, 2016.

with varying amounts of crystalline rock, flint, concrete, charcoal and brick. Beneath the coarse-grained material, and beneath the topsoil at the position of borehole WS01, a gravelly clay was identified persisting to the base of the made ground; the gravel content comprised predominately the same material as that found in the coarse-grained soils, but locally with fragments of chalk.

4.1.3 River Terrace Deposits

Underlying the made ground the investigation progressed into undisturbed clay with varying amounts of gravel and sand, which extended to the base of the trial pit and to depths of 4.00m and 3.85m in boreholes WS01 and WS02, respectively; the gravel content comprised fine to coarse chalk and flint. The boreholes then progressed into a gravelly sand deposit at the base of the clay stratum, which continued to a depth of 4.60m below ground level in each case. The gravel content was made up of flint.

These deposits are considered to represent the River Terrace Deposits indicated to underlie the site on BGS geological maps.

4.1.4 London Clay Formation

Beneath the River Terrace Deposits, boreholes WS01 and WS02 penetrated, a dark grey clay which continued to the full extent of the investigation at 5.00m below ground level.

These deposits are considered to represent the London Clay Formation indicated to underlie the River Terrace Deposits on the BGS geological maps.

4.2 Stability

Both boreholes WS01 and WS02 collapsed to respective depths of 4.18m and 4.10m below ground level on completion of the drilling works; the trial pit remained stable.

4.3 Groundwater Conditions

Groundwater was recorded at a depth of 3.40m only within borehole WS01; exploratory holes WS02 and TP01 remained dry.

It should be noted that water levels within the exploratory holes may not have equilibrated with the groundwater table at the time the readings were recorded and that groundwater levels should be expected to fluctuate seasonally.

5. STORMWATER INFILTRATION SYSTEMS

In-situ infiltration testing² was carried out in trial pit TP01. From the test results a calculation was made to determine the infiltration rate that could be expected for infiltration systems constructed into the underlying Made Ground/River Terrace Deposits.

During the test performed within the trial pit, the water level did not fall below 25% of the initial test depth and calculation of the soil infiltration rate in accordance with the BRE digest was not possible. The soil

² Conducted in general accordance with the requirements of BRE 365, Soakaway Design.

infiltration rate has therefore been calculated by dividing the volume of water lost during the test by the product of the average surface area of the trial pit in contact with water during the test period and the test duration in seconds.

The following infiltration rate was derived from the test:

Table 2. Calculated Infiltration Rates

Exploratory Hole	Top of Response Zone (m bgl)	Bottom of Response Zone (m bgl)	Stratum	Infiltration Rate (f) (m/sec)
TP01	0.34	1.98*	Made Ground / River Terrace Deposits	1.65×10^{-6}

*Average pit depth

The value 'f' is equivalent to the soil infiltration coefficient 'q' quoted in the Construction Industry Research and Information Association (CIRIA) Report 156.

The result from the infiltration test should be provided to engineers responsible for the design of the drainage system.

To comply with building regulations³, point discharging infiltration systems (conventional ring or trench soakaways) are required to be constructed a minimum of 5.0m away from proposed or existing buildings.

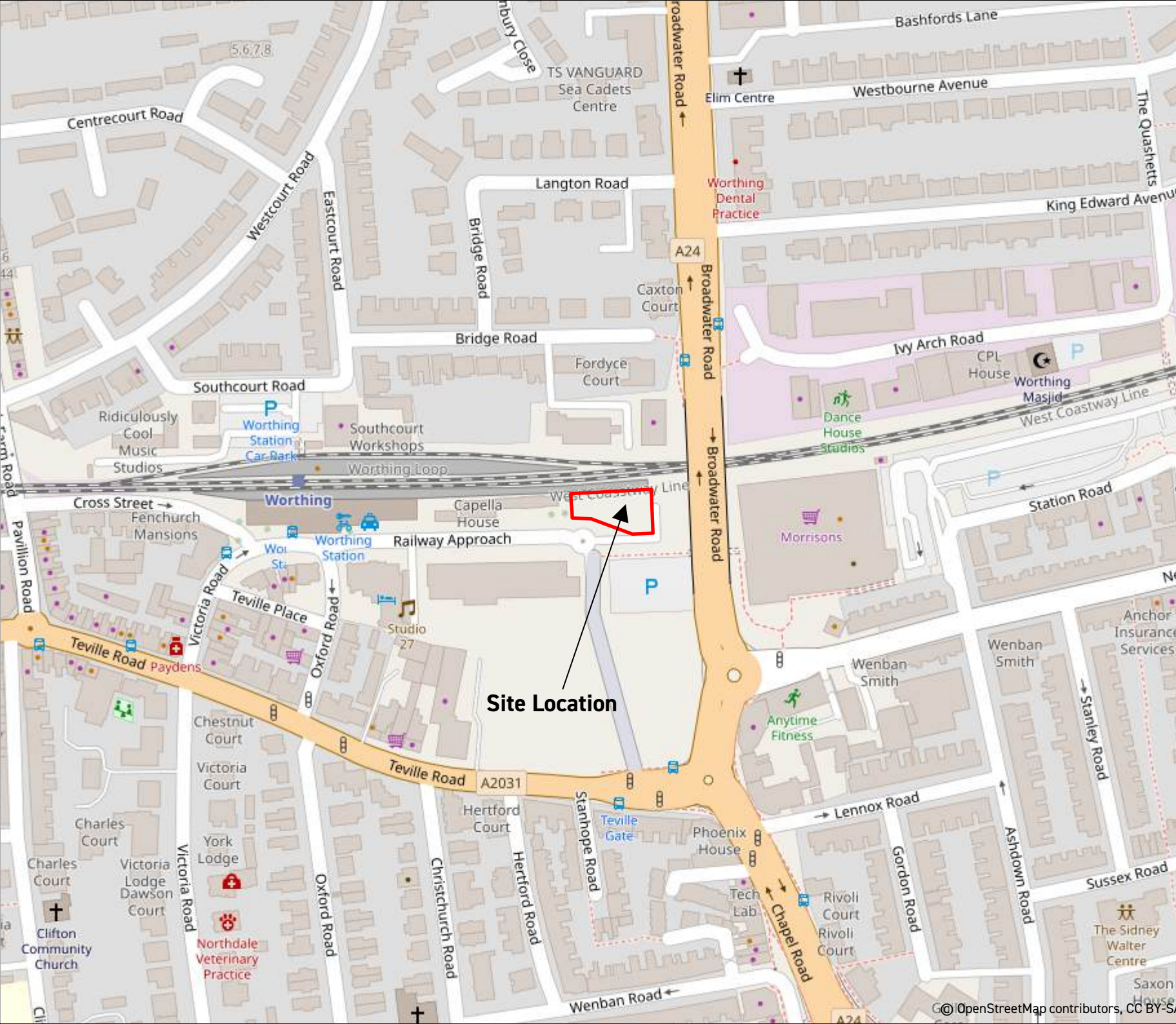
The infiltration testing conducted in the trial pits is intended to provide calculated soil infiltration rates to assist in the preliminary design of infiltration systems at the site. However, it should be noted that Regulators/Local Authorities may require further testing to be undertaken at a later stage in accordance with the BRE365 guidance. This guidance states the testing should be carried out at the locations and depths of the proposed soakaways, which will not be known until preliminary drainage design has been undertaken.

Monitoring of groundwater levels during the worst annual case (winter period) is due to be undertaken as part of the quantum of works and is likely to commence in October 2025 for 6 months. Local Authorities and the BRE365 guidance suggest this should be undertaken prior to finalising design of infiltration systems.

³ The Building Regulations 2010; Part H; Drainage and Waste Disposal

FIGURES & APPENDICES

Figure 1 Site Location Plan
Figure 2 Site Plan
Explanatory Notes
Exploratory Hole Records
Trial Pit In Situ Infiltration Test Result



ASHDOWN
SITE INVESTIGATION

Head Office

Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
East Sussex
BN6 8SG
contact@ashdownsi.co.uk

Site

Railway Approach
Worthing
West Sussex

Project Ref

P17323

Figure No

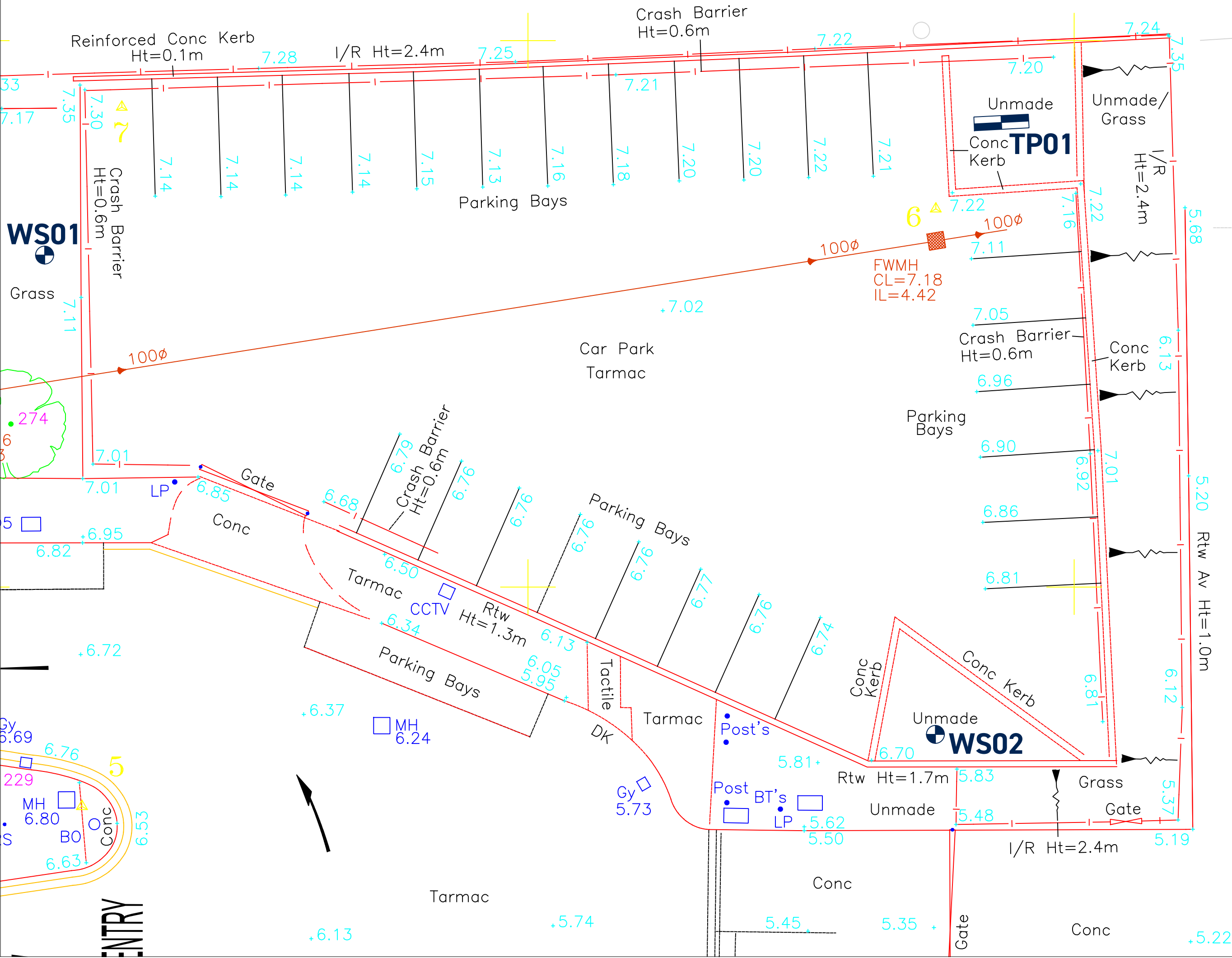
1

Drawing Title

Site Location Plan

Scale

Not To Scale



EXPLANATORY NOTES

Symbols and abbreviations on Exploratory Hole Records

Samples

U	'Undisturbed' Sample: - 100mm diameter by 450mm long. The number of blows to drive in the sampling tube is shown after the test index letter in the SPT column.
L	Liner sample cut to length indicated.
D	Disturbed Sample
B	Bulk Disturbed Sample
W	Water Sample
ES	Environmental Suite (on older records may be referenced J T)

In Situ Testing

SPT	Standard penetration test (SPT): Using the split spoon sampler.
SPT(C)	Standard Penetration Test (SPT): Using a solid cone instead of the sampler – conducted usually in coarse grained soils or weak rocks.
HV	Shear Vane Test: Undrained shear strength (cohesion).
PP	Hand penetrometer Test: Undrained shear strength (cohesion).
P	Perth Penetrometer Test: Number of blows for 300mm penetration shown under remarks section.

Excavation Method

CP	Cable Percussion Borehole
RC/RO	Rotary Cored Borehole/Rotary Open Hole Borehole
WLS	Dynamic Sampler Borehole using windowless sampler tubes
WS	Dynamic Sampler Borehole using window sampler tubes
TP	Trial Pit excavated using mechanic excavator
HP	Trial Pit excavated using hand tools
HA	Hand Auger borehole

Soil Description

Description and classification of soils has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of soil, Part 1 Identification and description (BS EN ISO 14688-1) and Part 2 Principles of classification (BS EN 14688-2) as well as the BS5930 code of Practice for Ground Investigations.

Rock Description

Description and classification of rocks has been carried out using as a general basis the British Standard Geotechnical investigation and testing – Identification and classification of rock, Part 1 Identification and classification (BS EN ISO 14689-1) as well as the BS5930 code of Practice for Ground Investigations. TCR – Total Core Recovery, SCR – Solid Core Recovery, RQD – Rock Quality Designation, NI – Non Intact, If – indicative fracture spacing (min/ave/max), FI – Fracture Index.

Chalk Description

Chalk description is based on BS EN ISO 14688, BS EN ISO 14689 and BS5930. The classification of chalk generally follows the guidance offered by the Construction Industry Research and Information Association (CIRIA) C574, 'Engineering in Chalk'. This is based on assessment of chalk density, discontinuity and aperture spacing, and the proportion of intact chalk to silt of chalk.

In Situ Strength Testing (where undertaken)

Standard penetration testing (SPT) carried out in accordance with BS EN ISO 22476-3:2005.

Continuous dynamic probe testing conducted using a super heavy DPSH-B (As defined by BS EN ISO 22476-2:2005) probing geometry. The DPSH-B configuration is similar to that of the standard penetration test (SPT); the main differences being that the tip comprises a 90° cone, the driving rods are lighter than those used for SPT testing and the blow counts are recorded over 100mm increments rather than 300mm, as is the case for the SPT.

Perth penetrometer tests carried out in accordance with Australian Standard AS 1289:6.3.3-1997, Method of Testing Soils for Engineering Purposes; no equivalent European or British Standard having been published to date.

Undrained shear strength determinations made in-situ using a Geonor hand shear vane or a hand penetrometer.

Testing to determine the in-situ California Bearing Ratio (CBR) of soils conducted at shallow depths using a hand-held Transport Research Laboratory (TRL) cone penetrometer.



Dynamic (Windowless) Sampler

WS01
Sheet 1 of 1

Hole Type WLS	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name Railway Approach, Worthing, West Sussex	Project No. P17323	Start Date 2025-08-12	End Date 2025-08-12	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata	
		Depth (m)	Type/ Ref	Results			Legend	Description
		0.70	D			(0.07) 0.07		Topsoil.
						(1.03)		MADE GROUND: Brown slightly gravelly clay. Gravel is subangular to subrounded fine to coarse brick, chalk, crystalline rock and charcoal-like material.
		1.20	D			1.10 (0.15) 1.25		Orange brown gravelly SAND. Gravel is subangular to subrounded fine to coarse flint. [River Terrace Deposits]
		1.60	D			(0.50)		Brown silty CLAY. [River Terrace Deposits]
		2.70	D			1.75		Light brown and yellow brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse flint and chalk. [River Terrace Deposits]
		3.80	D			(2.25)		Grey brown gravelly medium to coarse SAND. Gravel is subangular to subrounded fine to coarse flint. [River Terrace Deposits]
		4.90	D			4.00 (0.60) 4.60 (0.40) 5.00		Dark grey CLAY. [London Clay Formation]
								with increasing chalk gravel content with depth. (3.00m)
								End of Borehole at 5.00m

Remarks Groundwater recorded at 3.40m depth on completion. Standpipe installed to 4.00m depth; 4.00m to 1.00m slotted pipe with gravel surround; 1.00m to ground level plain pipe with bentonite seal; completed with end cap and security cover conceted flush with ground surface.	Method, Plant, Stability, Dimensions 0.00 - 5.00m WLS Borehole collapsed to 4.18m depth on completion.	Logger GRD
--	--	---------------



Dynamic (Windowless) Sampler

WS02
Sheet 1 of 1

Hole Type WLS	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name Railway Approach, Worthing, West Sussex	Project No. P17323	Start Date 2025-08-12	End Date 2025-08-12	

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata	
		Depth (m)	Type/ Ref	Results			Legend	Description
		0.40	D			(0.03) 0.03 (0.07) 0.10 (0.05) 0.15		Pea shingle gravel.
							MADE GROUND: Dark grey sandy subangular to subrounded fine to coarse gravel of flint, concrete and charcoal-like material.	
							MADE GROUND: Orange brown medium to coarse sand.	
							MADE GROUND: Brown sandy clayey subangular to subrounded fine to coarse gravel of flint, crystalline rock, slate and charcoal-like material.	
						(0.45)		MADE GROUND: Dark brown slightly gravelly clay. Gravel is subangular to subrounded fine to coarse flint with rare chalk and charcoal-like material.
		0.80	D			(0.25)		MADE GROUND: Dark brown slightly gravelly clay. Gravel is subangular to subrounded fine to coarse flint with rare chalk and charcoal-like material.
						0.85		Brown silty CLAY with rare subangular to subrounded fine to medium gravel of flint. [River Terrace Deposits]
								with no gravel content below 1.00m depth. (1.00m)
						(0.85)		
		1.80	D			1.70		Light brown gravelly slightly sandy silty CLAY with occasional orange staining. Gravel is subangular to subrounded fine to coarse chalk and flint. [River Terrace Deposits]
(2.15)								
2.50	D							
3.20	D							
4.30	D			3.85		Brown slightly gravelly medium to coarse SAND. Gravel is subangular to subrounded fine to medium flint. [River Terrace Deposits]		
				(0.75)				
4.80	D			4.60		Dark grey CLAY with rare gravel of flint. [London Clay Formation]		
				(0.40)				
				5.00		End of Borehole at 5.00m		

Remarks Borehole dry on completion. Standpipe installed to 4.00m depth; 4.00m to 1.00m slotted pipe with gravel surround; 1.00m to ground level plain pipe with bentonite seal; completed with end cap and security cover conceted flush with ground surface.	Method, Plant, Stability, Dimensions 0.00 - 5.00m WLS Borehole collapsed to 4.10m depth on completion.	Logger GRD
---	--	---------------



Hole Type TP	Easting	Northing	Ground Level (m)	Scale 1:25
Project Name Railway Approach, Worthing, West Sussex		Project No. P17323	Start Date 2025-08-12	End Date 2025-08-12

Client	Consultant	Contractor
--------	------------	------------

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (thickness) (m)	Strata	
		Depth (m)	Type/ Ref	Results			Legend	Description
		0.35	D			(0.10)		Pea shingle gravel.
						0.10		
						(0.10)		MADE GROUND: Pink grey subangular to subrounded fine to medium gravel of crushed rock.
						0.20		
						(0.20)		MADE GROUND: Dark brown gravelly clay. Gravel is subangular to subrounded fine to medium flint, crushed rock and breeze block.
		1.50	D			(1.40)		MADE GROUND: Light brown and brown gravelly clay. Gravel is subangular to subrounded fine to coarse chalk and flint.
1.90	D					with a cobble of flint at 1.60m depth. (1.60m)		
						with whole bricks between 1.60m and 1.70m depth. (1.60 - 1.70m)		
						1.80		
						(0.18)	Brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium chalk and rare flint.	
						1.98	[River Terrace Deposits]	
							End of Trial Pit at 1.98m	

Remarks
Trial pit depth varied between 1.91m and 2.01, averaging a depth of 1.98m.
Trial pit dry on completion.

Method, Plant, Stability, Dimensions
0.00 - 1.98m TP
 Trial pit stable on completion.

$L = 1.97\text{m}$
 $W = 0.41\text{m}$

Logger
ON

Site: Railway Approach, Worthing, West Sussex

Project Ref: P17323

Test Location Reference	TP01
Test Number	1

Width of Pit	0.41 m	W
Length of Pit	1.97 m	L
Depth of Pit	1.98 m	D
Pit type	Open	

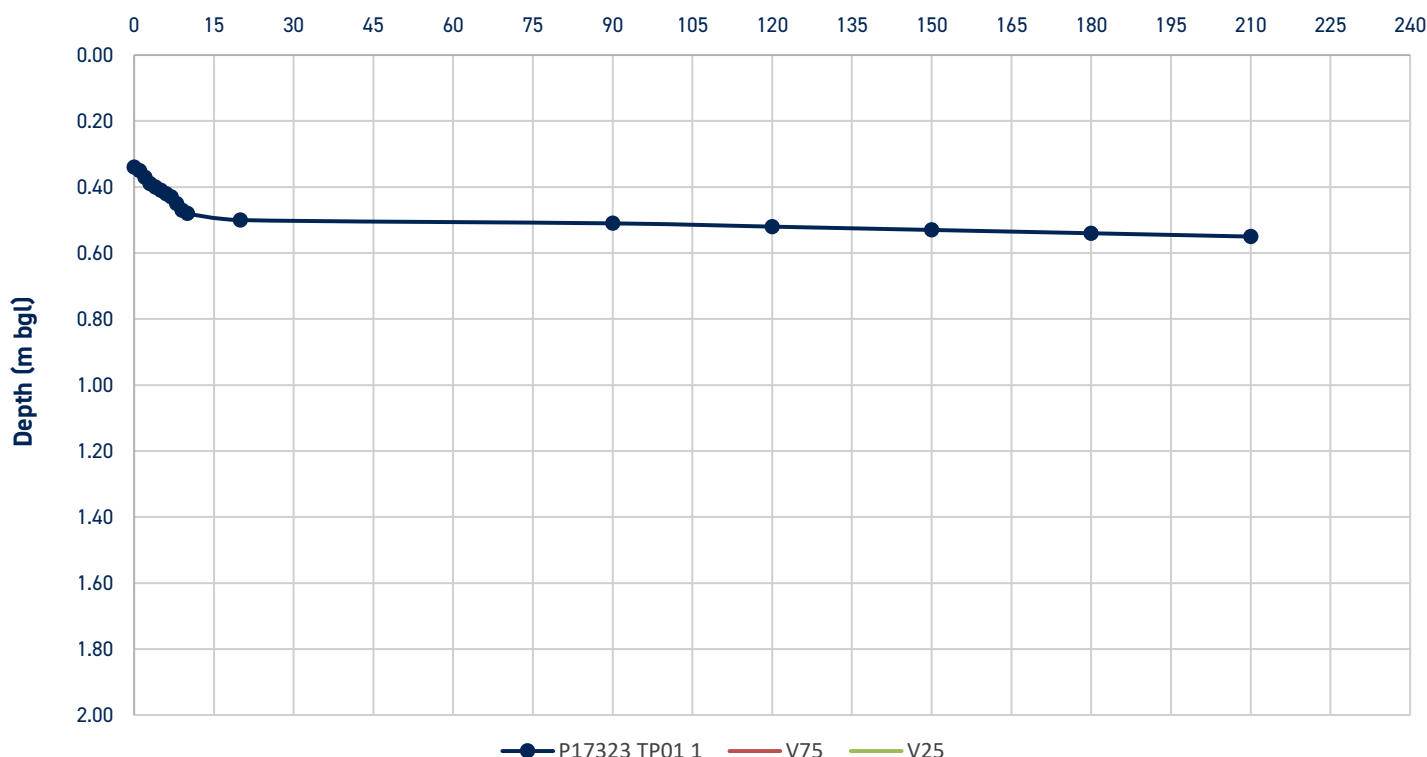
Volume of water introduced into pit	1.301 m ³	
Initial head of water	1.64 m	h_o
Water level at start of test	0.34 m	
Water level at end of test	0.55 m	
Volume of water discharged from pit	0.167 m ³	
Duration of test	210 min	
Average soaked surface area	8.05 m ²	
Time for water level to fall to 75% of initial head	Not reached min	t_{p75}
Time for water level to fall to 25% of initial head	Not reached min	t_{p25}
Depth to water at 75% of initial head	Not reached m	d_{75}
Depth to water at 25% of initial head	Not reached m	d_{25}
Time for the water level to fall from 75% to 25% of initial head	Not reached min	t_{p75-25}
Effective storage volume of water in the soakage trial pit between 75% and 25% of initial head	Not reached m ³	V_{p75-25}
Internal surface area of the soakage trial pit up to 50% of initial head and including the base area	4.67 m ²	a_{s50}

Infiltration rate

1.65E-06 m/sec f

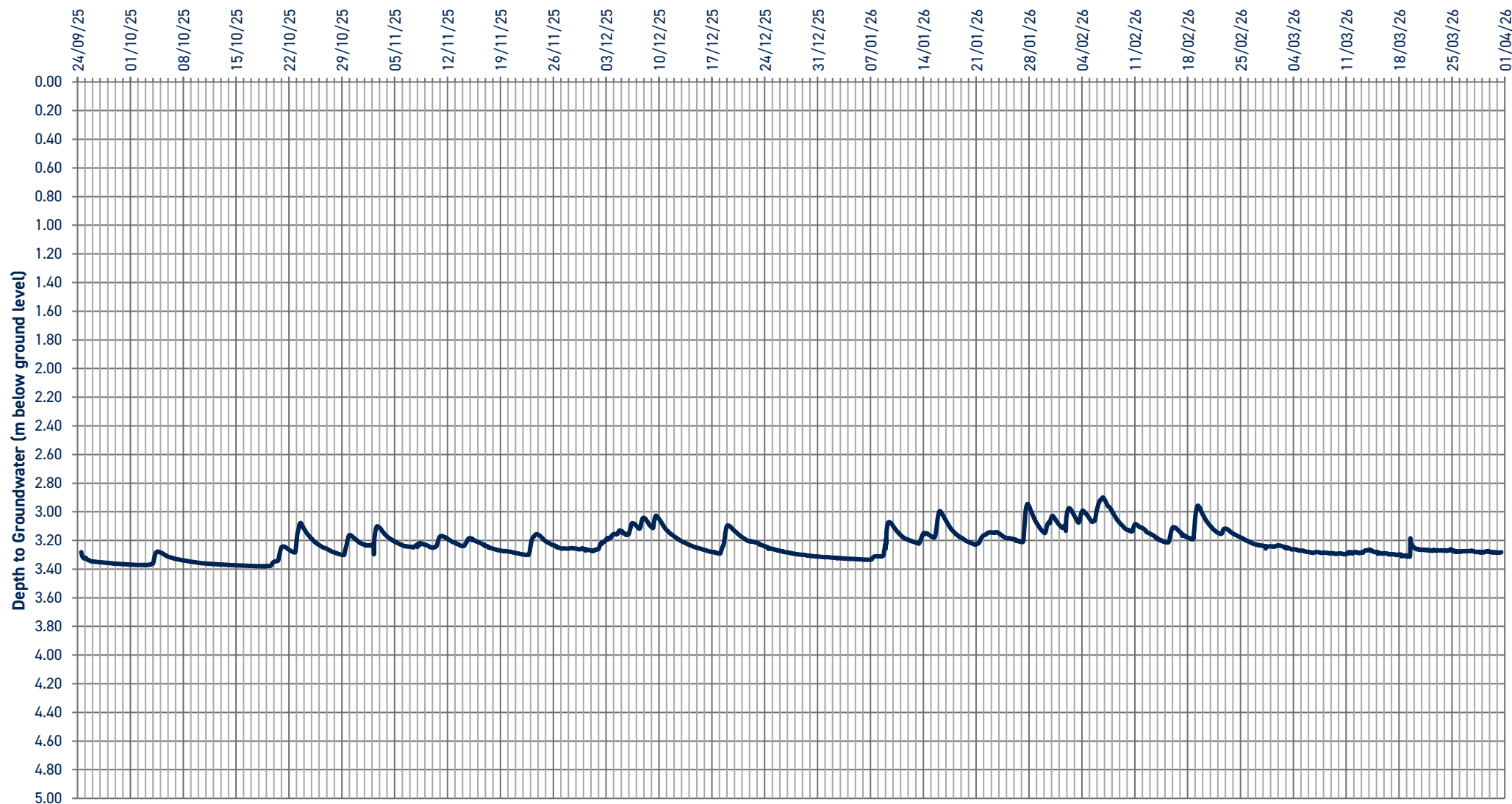
Calculation method: The water level did not fall below 25% of the effective storage depth. 'f' has been calculated by dividing the volume of water lost during the test by the product of the average surface area in contact with water during the test and the test duration.

Elapsed Time (min)



Site: Railway Approach, Worthing, West Sussex

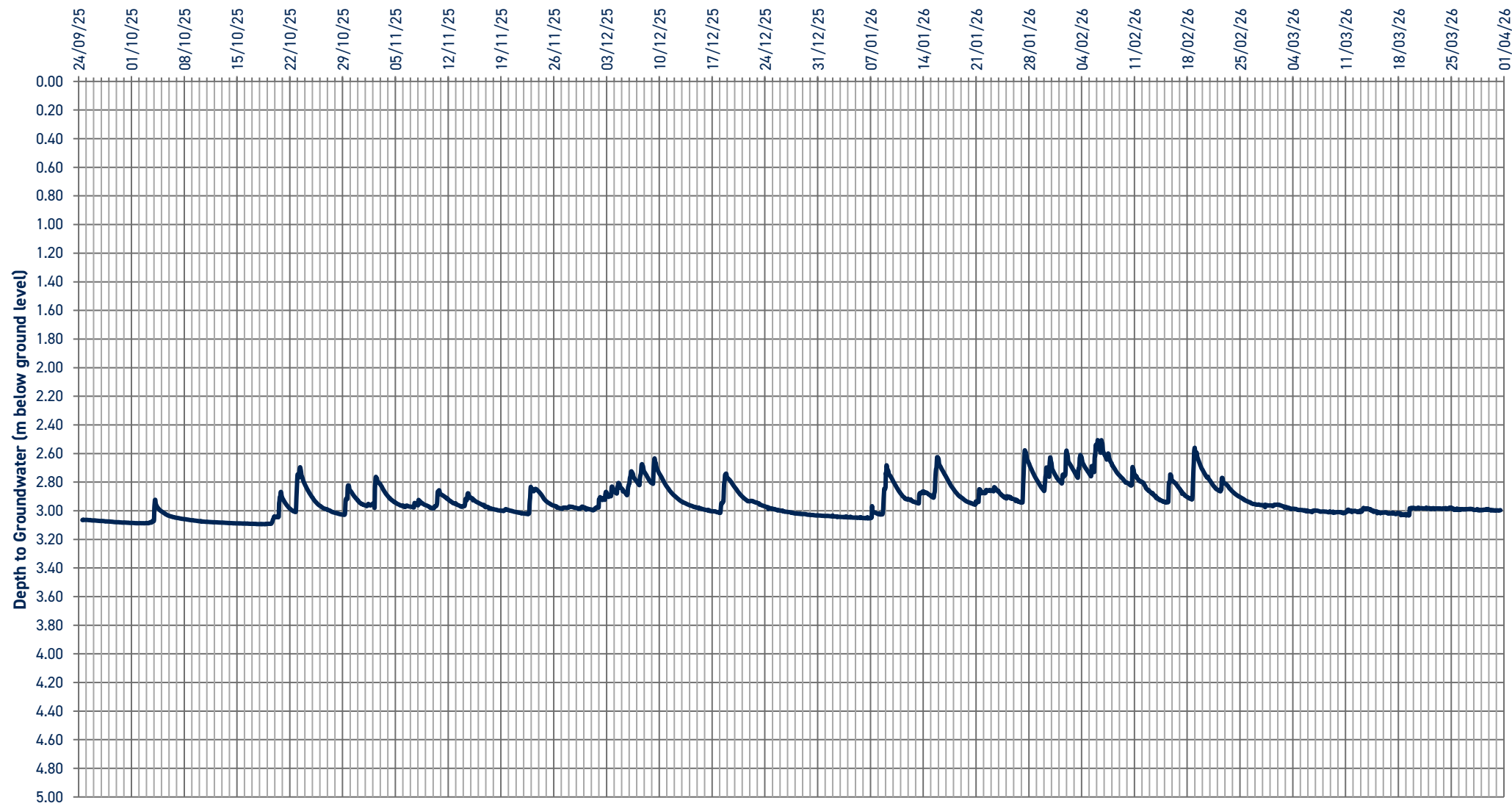
Project Ref: P17323



WS01

Site: Railway Approach, Worthing, West Sussex

Project Ref: P17323



WS02

Appendix E

Sewer Records and CCTV Survey



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 2025 Ordnance Survey AC0000808122. 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.



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CAPELLA HOUSE





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 2025 Ordnance Survey AC0000808122 .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.

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WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

jez.rippon@architectus.co.uk

CAPELLA HOUSE





Project

Project Name: Sandell House

Project Description: CCTV Survey, Trace & Map

Project Status: Complete

Project Date: 21/08/2025

Inspection Standard: MSCC5 Sewers & Drainage GB (SRM5 Scoring)



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Project Information

Project Name
Sandell House

Project Number

Project Date
21/08/2025

Site

Department: Sandell House
Street: Railway Approach
Town or City: Worthing
County: West Sussex
Post Code: BN11 1UR



Contractor

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



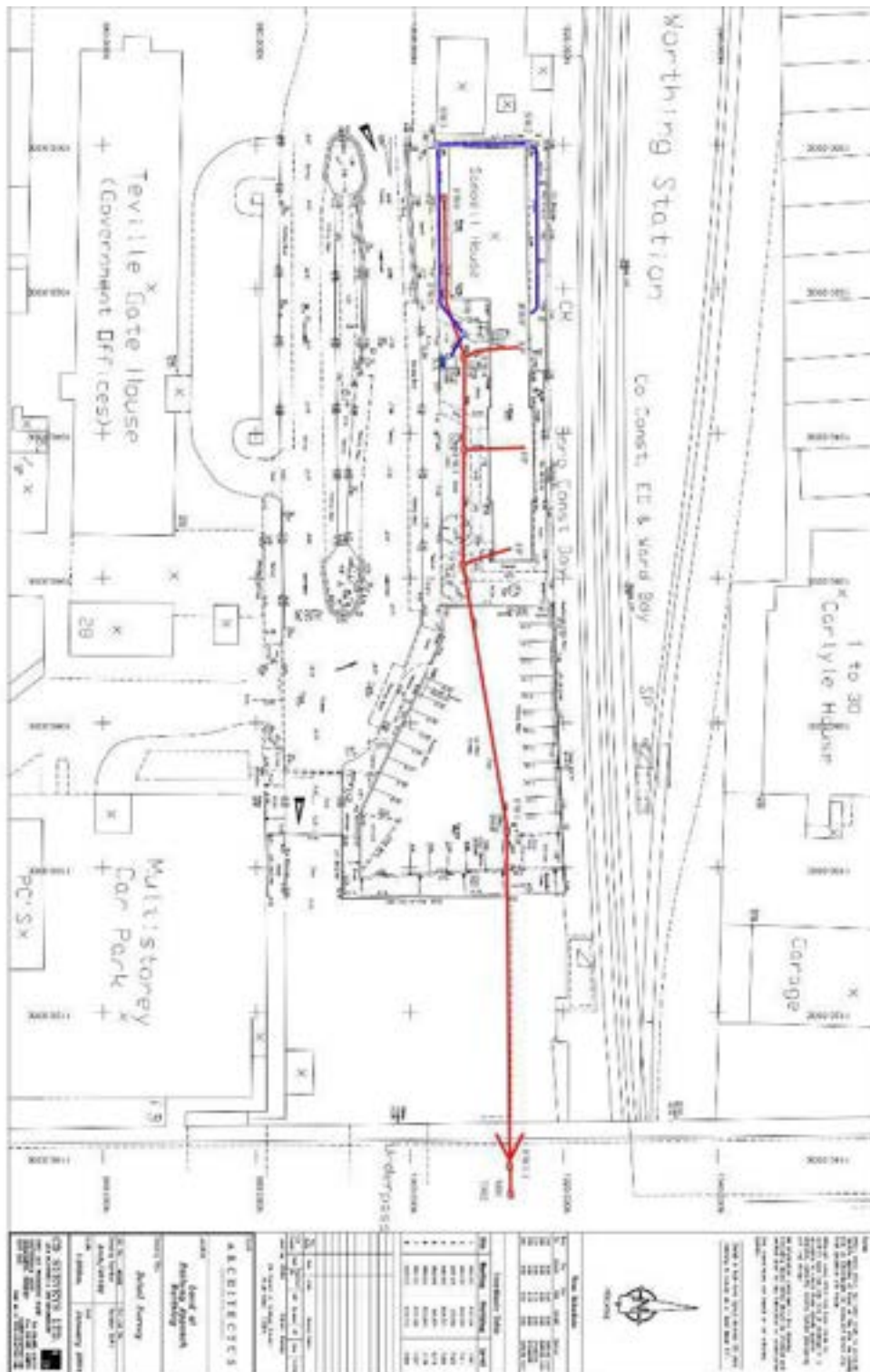
Project Information

Project Name
Sandell House

Project Number

Project Date
21/08/2025

Project Drawing, Page 'Page'



Scoring Summary

Project Name
Sandell House

Project Number

Project Date
21/08/2025

Structural Defects

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

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

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

Item No.	PLR	Grade	Description
8	FPX	3	Joint displaced, 5mm displacement, 5% - 10% of diameter
10	FW2X	3	Multiple defects
14	FW1X	3	Multiple defects

Service / Operational Condition

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

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

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

Item No.	PLR	Grade	Description
4	FW6X	3	Multiple defects
6	FW4X	3	Multiple defects
7	FW3X	3	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, finish
8	FPX	5	Roots, mass, 20% cross-sectional area loss
10	FW2X	3	Multiple defects
11	RWPX	4	Settled deposits, fine, 20% cross-sectional area loss, finish
12	SW2X	3	Settled deposits, fine, 10% cross-sectional area loss, finish
13	SW3X	3	Multiple defects
14	FW1X	3	Multiple defects
15	FW1.1X	3	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, finish

Abandoned Surveys

Item No.	PLR	Description
9	FPX	Survey abandoned

Information

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

Project Pictures

Project Name
 Sandell House

Project Number

Project Date
 21/08/2025



FW1.1



FW1



FW2



FW3



FW4



FW5 Location

Project Pictures

Project Name
Sandell House

Project Number

Project Date
21/08/2025



FW6 Location



IMG_3687



Soakaway



SW1



SW2

Defect Grade Description (Section)

Project Name Sandell House	Project Number	Project Date 21/08/2025
1:	Brick: Minor structural defects. Other: Minor structural defects, i.e. open or displaced joints without additional characteristics. Acceptable structural condition.	
2:	Brick: Circumferential cracking. Single longitudinal crack. Surface mortar loss (depth missing < 15 mm). Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness). Other: Circumferential cracking. Surface damage - spalling slight (breaking away of small fragments from the surface). Surface damage - wear slight (increased roughness). Minimal collapse likelihood in the short term but potential for further deterioration.	
3:	Brick: Total mortar loss (depth missing > 50 mm) without other defects. More than one longitudinal crack (at a single location). Multiple cracking. Single bricks displaced. Deformation < 5%, no fracture and only moderate mortar loss. Surface damage - spalling medium (large areas of chipped brick). Surface damage - wear medium (entire surface of brick is missing). Other: Fracture with no deformation or deformation < 5%. Longitudinal cracking or multiple cracking. Minor loss of level. Severe joint defects i.e. Surface damage - spalling medium. Surface damage - wear medium. Collapse unlikely in the near future but further deterioration likely.	
4:	Brick: Total mortar loss (depth missing > 50mm) with deformation > 10%; deformation up to 10% and fractured; displaced or hanging brickwork; small number of missing bricks; dropped invert (drop > 20mm); moderate loss of level; surface damage - large spalling (entire surface of brick is missing); surface damage - large wear (entire surface of brick is missing). Other: Broken; deformation up to 10% and broken; fracture with deformation 5-10%; multiple fractures; serious loss of level; serious joint defects with voids or soil visible (open joint with > 50mm soil or void visible or joint displacement > 25% of diameter); surface damage - entire area of pipe surface is missing or severely worn. Collapse likely in the foreseeable future.	
5:	Brick: Already collapsed; missing Invert; deformation > 10% and fractured; displaced or hanging brickwork and deformation < 10%; extensive areas of missing brickwork. Other: Already collapsed; deformation > 10% and broken; extensive areas of pipe fabric missing; fractures with deformation > 10% Collapsed or collapse imminent.	

Section Profile - 12/08/2025 - SW1X

Project Name
Sandell House

Project Number

Project Date
21/08/2025

Circular, 100 mm, 0 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
1	SW1	A	12/08/2025	Railway Approach	Vitrified clay	0.00 m	0.00 m
2	SW1	SA	12/08/2025	Railway Approach	Polyvinyl chloride	2.70 m	2.70 m
3	FW5	FW4	12/08/2025	Railway Approach	Polyvinyl chloride	8.50 m	8.50 m
4	FW6	FW5	12/08/2025	Railway Approach	Polyvinyl chloride	11.90 m	11.90 m
5	FP	FW4	12/08/2025	Railway Approach	Polyvinyl chloride	8.50 m	8.50 m
6	FW4	FW3	12/08/2025	Railway Approach	Vitrified clay	11.70 m	11.70 m
7	FW3	FW2	12/08/2025	Railway Approach	Vitrified clay	11.60 m	11.60 m
8	FP	FW3	12/08/2025	Railway Approach	Vitrified clay	9.00 m	9.00 m
9	FP	FW2	12/08/2025	Railway Approach	Vitrified clay	0.90 m	0.90 m
10	FW2	FW1	12/08/2025	Railway Approach	Vitrified clay	34.80 m	34.80 m
11	RWP	SW2	12/08/2025	Railway Approach	Polyvinyl chloride	21.00 m	21.00 m
12	SW2	SW3	12/08/2025	Railway Approach	Polyvinyl chloride	11.20 m	11.20 m
13	SW3	SW1	12/08/2025	Railway Approach	Polyvinyl chloride	25.00 m	25.00 m
14	FW1	FW1.1	12/08/2025	Railway Approach	Vitrified clay	57.90 m	57.90 m
15	FW1.1	MH 7302	12/08/2025	Railway Approach	Vitrified clay	3.10 m	3.10 m

Total: 15 Inspections x Circular 100 mm, 0 mm = 217.80 m Total Length and 217.80 m Inspected Length

Total: 15 Inspections = 217.80 m Total Length and 217.80 m Inspected Length

Section Summary

Project Name Sandell House	Project Number	Project Date 21/08/2025
--------------------------------------	-----------------------	-----------------------------------

Number of sections	15
Total length of sections	217.80 m
Total length of inspected sections	217.80 m
Total length of not inspected sections	0.00 m
Number of abandoned inspections	1
Number of section inspection photos	88
Number of section inspection videos	15
Number of section inspection scans	0
Number of section inclination measurements	0

PLR: SW1X	Upstream Node: SW1
Inspection Direction: Downstream	Downstream Node: A
Inspected Length: 0.00 m	Dia/Height: 100 mm
Total Length:	Material: Vitrified clay

No.	m +	Code	Observation
1	0.00	CP	Start node, catchpit, reference: SW1

PLR: SW1X	Upstream Node: SW1
Inspection Direction: Upstream	Downstream Node: SA
Inspected Length: 2.70 m	Dia/Height: 100 mm
Total Length: 2.70 m	Material: Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	SK	Start node, soakaway, reference: SA
2	0.00	WL	Water level, 0% of the vertical dimension
3	2.70	CPF	Finish node, catchpit, reference: SW1

PLR: FW5X	Upstream Node: FW5
Inspection Direction: Upstream	Downstream Node: FW4
Inspected Length: 8.50 m	Dia/Height: 100 mm
Total Length: 8.50 m	Material: Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW4
2	0.00	WL	Water level, 0% of the vertical dimension
3	3.40	OJM	Open joint, medium
4	8.40	LR	Line deviates right
5	8.50	MHF	Finish node, manhole, reference: FW5

Section Summary

Project Name
Sandell House

Project Number
Project Date
21/08/2025

PLR:	FW6X	Upstream Node:	FW6
Inspection Direction:	Upstream	Downstream Node:	FW5
Inspected Length:	11.90 m	Dia/Height:	100 mm
Total Length:	11.90 m	Material:	Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW5
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DEG	Attached deposits, grease from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, start
4	0.00	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, start
5	1.00	DEG	Attached deposits, grease from 5 o'clock to 7 o'clock, 20% cross-sectional area loss, change
6	2.70	DEG	Attached deposits, grease from 4 o'clock to 8 o'clock, 30% cross-sectional area loss, change
7	3.00	WL	Water level, 20% of the vertical dimension
8	3.00	DEG	Attached deposits, grease from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, change
9	3.60	DEG	Attached deposits, grease from 4 o'clock to 8 o'clock, 10% cross-sectional area loss, change
10	8.70	WL	Water level, 10% of the vertical dimension
11	8.80	WL	Water level, 5% of the vertical dimension
12	8.80	DEG	Attached deposits, grease from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, change
13	9.00	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, finish
14	11.90	DEG	Attached deposits, grease from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, finish
15	11.90	MHF	Finish node, manhole, reference: FW6

PLR:	FPX	Upstream Node:	FP
Inspection Direction:	Upstream	Downstream Node:	FW4
Inspected Length:	8.50 m	Dia/Height:	100 mm
Total Length:	8.50 m	Material:	Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW4
2	0.00	WL	Water level, 0% of the vertical dimension
3	8.00	LU	Line deviates up
4	8.50	OCF	Finish node, other special chamber, reference: FP

PLR:	FW4X	Upstream Node:	FW4
Inspection Direction:	Downstream	Downstream Node:	FW3
Inspected Length:	11.70 m	Dia/Height:	100 mm
Total Length:	11.70 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW4
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.80	WL	Water level, 5% of the vertical dimension
4	1.00	WL	Water level, 15% of the vertical dimension
5	1.10	WL	Water level, 20% of the vertical dimension
6	1.20	CUW	Loss of vision, camera under water, start
7	1.90	CUW	Loss of vision, camera under water, finish
8	2.40	WL	Water level, 15% of the vertical dimension
9	2.50	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, start

Section Summary

Project Name Sandell House	Project Number	Project Date 21/08/2025
--------------------------------------	-----------------------	-----------------------------------

No.	m +	Code	Observation
10	2.90	WL	Water level, 5% of the vertical dimension
11	3.00	JDM	Joint displaced, medium
12	3.00	WL	Water level, 0% of the vertical dimension
13	7.90	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, change
14	11.70	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, finish
15	11.70	MHF	Finish node, manhole, reference: FW3

PLR:	FW3X	Upstream Node:	FW3
Inspection Direction:	Dow nstream	Downstream Node:	FW2
Inspected Length:	11.60 m	Dia/Height:	100 mm
Total Length:	11.60 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW3
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, start
4	11.60	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, finish
5	11.60	MHF	Finish node, manhole, reference: FW2

PLR:	FPX	Upstream Node:	FP
Inspection Direction:	Upstream	Downstream Node:	FW3
Inspected Length:	9.00 m	Dia/Height:	100 mm
Total Length:	9.00 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW3
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.10	LU	Line deviates up
4	0.80	REM	General remark
5	2.40	JD	Joint displaced, 5mm displacement, 5% - 10% of diameter
6	4.20	JDM	Joint displaced, medium
7	4.20	LR	Line deviates right
8	6.20	RM	Roots, mass, 20% cross-sectional area loss
9	8.80	LU	Line deviates up
10	9.00	OCF	Finish node, other special chamber, reference: FP

PLR:	FPX	Upstream Node:	FP
Inspection Direction:	Upstream	Downstream Node:	FW2
Inspected Length:	0.90 m	Dia/Height:	100 mm
Total Length:	0.90 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW2
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.20	LU	Line deviates up
4	0.90	RFJ	Roots, fine at joint
5	0.90	SA	Survey abandoned

Section Summary

Project Name Sandell House	Project Number	Project Date 21/08/2025
--------------------------------------	-----------------------	-----------------------------------

PLR:	FW2X	Upstream Node:	FW2
Inspection Direction:	Downstream	Downstream Node:	FW1
Inspected Length:	34.80 m	Dia/Height:	100 mm
Total Length:	34.80 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW2
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 5% cross-sectional area loss, start
4	2.60	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, change
5	9.60	JD	Joint displaced, 5mm displacement, 5% - 10% of diameter
6	20.60	FLJ	Fracture, longitudinal at joint at 12 o'clock
7	29.80	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 20% cross-sectional area loss, change
8	34.80	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 20% cross-sectional area loss, finish
9	34.80	MHF	Finish node, manhole, reference: FW1

PLR:	RWPX	Upstream Node:	RWP
Inspection Direction:	Upstream	Downstream Node:	SW2
Inspected Length:	21.00 m	Dia/Height:	100 mm
Total Length:	21.00 m	Material:	Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: SW2
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.10	LR	Line deviates right
4	2.00	WL	Water level, 5% of the vertical dimension
5	2.60	WL	Water level, 10% of the vertical dimension
6	4.80	WL	Water level, 5% of the vertical dimension
7	6.90	WL	Water level, 15% of the vertical dimension
8	7.00	DES	Settled deposits, fine, 20% cross-sectional area loss, start
9	13.10	DES	Settled deposits, fine, 20% cross-sectional area loss, finish
10	20.30	LR	Line deviates right
11	20.80	LU	Line deviates up
12	21.00	OCF	Finish node, other special chamber, reference: RWP

PLR:	SW2X	Upstream Node:	SW2
Inspection Direction:	Downstream	Downstream Node:	SW3
Inspected Length:	11.20 m	Dia/Height:	100 mm
Total Length:	11.20 m	Material:	Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: SW2
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DES	Settled deposits, fine, 5% cross-sectional area loss, start
4	0.60	DES	Settled deposits, fine, 10% cross-sectional area loss, change
5	0.80	JN	Junction at 9 o'clock, 100mm dia
6	2.40	DES	Settled deposits, fine, 10% cross-sectional area loss, finish
7	10.20	JN	Junction at 10 o'clock, 100mm dia

Section Summary

Project Name Sandell House	Project Number	Project Date 21/08/2025
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No.	m +	Code	Observation
8	10.90	LL	Line deviates left
9	11.20	MHF	Finish node, manhole, reference: SW3

PLR:	SW3X	Upstream Node:	SW3
Inspection Direction:	Dow nstream	Downstream Node:	SW1
Inspected Length:	25.00 m	Dia/Height:	100 mm
Total Length:	25.00 m	Material:	Polyvinyl chloride

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: SW3
2	0.00	WL	Water level, 0% of the vertical dimension
3	5.90	DER	Settled deposits, coarse, 10% cross-sectional area loss
4	6.60	DES	Settled deposits, fine, 15% cross-sectional area loss, start
5	7.00	DES	Settled deposits, fine, 20% cross-sectional area loss, change
6	9.00	DES	Settled deposits, fine, 20% cross-sectional area loss, finish
7	10.70	DES	Settled deposits, fine, 5% cross-sectional area loss, start
8	12.30	DES	Settled deposits, fine, 5% cross-sectional area loss, finish
9	20.50	LL	Line deviates left
10	22.30	JN	Junction at 10 o'clock, 100mm dia
11	25.00	CPF	Finish node, catchpit, reference: SW1

PLR:	FW1X	Upstream Node:	FW1
Inspection Direction:	Dow nstream	Downstream Node:	FW1.1
Inspected Length:	57.90 m	Dia/Height:	100 mm
Total Length:	57.90 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW1
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 20% cross-sectional area loss, start
4	12.80	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, change
5	13.00	LL	Line deviates left
6	13.00	JD	Joint displaced, 5mm displacement, 5% - 10% of diameter
7	15.70	LR	Line deviates right
8	16.20	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 20% cross-sectional area loss, change
9	19.50	OJM	Open joint, medium
10	24.70	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, change
11	51.50	JD	Joint displaced, 5mm displacement, 5% - 10% of diameter
12	57.90	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, finish
13	57.90	MHF	Finish node, manhole, reference: FW1.1

PLR:	FW1.1X	Upstream Node:	FW1.1
Inspection Direction:	Dow nstream	Downstream Node:	MH 7302
Inspected Length:	3.10 m	Dia/Height:	100 mm
Total Length:	3.10 m	Material:	Vitrified clay

No.	m +	Code	Observation
1	0.00	MH	Start node, manhole, reference: FW1.1



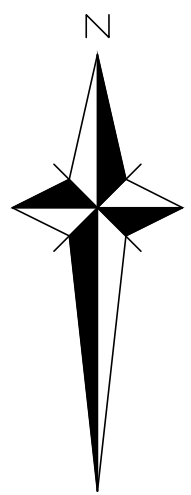
Section Summary

Project Name
Sandell House**Project Number****Project Date**
21/08/2025

No.	m +	Code	Observation
2	0.00	WL	Water level, 0% of the vertical dimension
3	0.00	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, start
4	0.50	LD	Line deviates down
5	3.10	DEE	Attached deposits, encrustation from 5 o'clock to 7 o'clock, 10% cross-sectional area loss, finish
6	3.10	MHF	Finish node, manhole, reference: MH 7302

Appendix F

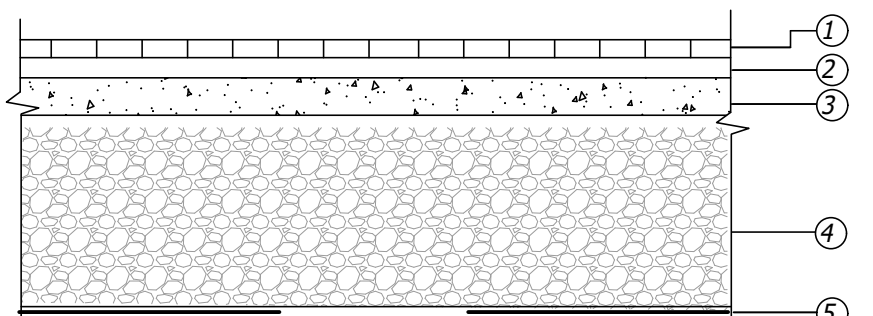
Scheme Drawings



PRIVATE SHARED PARKING
PERMEABLE BLOCK PAVING



Note:
Permeable blocks to be laid in
Herringbone pattern with double
stretcher bond against kerblines.
Permeable stone
specifications as BS
7533 part 13



- 1 60mm thick Marshalls Tegula Priora Permeable paving blocks to architects colour spec
- 2 50mm thick 2-6.3mm laying coarse of clean angular hard stone no fines.
- 3 70mm thick Base, Dense Asphalt Concrete, AC28 Dense Base, 40/60 Pen to BS EN13108-1. Perforated with 75mm dia. holes at 0.75m centres both ways and filled with 2-6.3mm size clean stone
- 4 Sub-base, 4-20mm clean angular hard stone no fines non-degradable aggregate material with very good compressive value and LA co-efficient (30% voids). Sub-base depth 650mm
- 5 Terram Inbix geotextile over compacted Sub-grade

Co Const, ED & Ward Bdy

1 to 30
Carlyle House

Garage

Station House

Capella House

RAILWAY APPROACH

Teville Gate House

Car Park

POROUS SUBBASE STORAGE AREA 1
485m²
Flat Formation
Finished ground level 6.400
Minimum 650mm depth
Porosity 0.3
Min base IL 5.600
Sub-base to remain unlined for interception benefits

All rainwater
downpipes to be
directed into
permeable paving
via diffuser units

New connection to existing
Southern Water sewer
Subject to S106 agreement.
Connection at level softt -
levels to be verified on site
prior to start of works.

Orifice Flow Control
20mm dia with mesh protection.
Design flow 1.0 l/s

Proposed outfall
route and SIC to be
coordinated around
existing services

Green roofs to be provided
on intermediate roof levels
for interception, as shown
in architects roof layout

GENERAL NOTES

- The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
- Tender or billing drawings shall not be used for construction or the ordering of materials.
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KEY

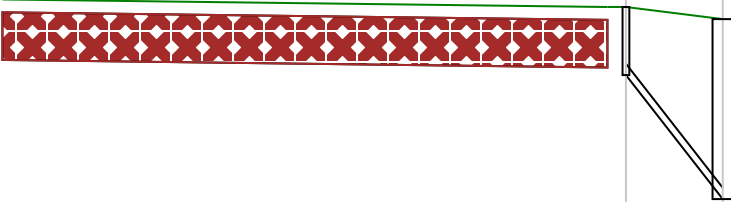
- Existing surface water drain
- Existing surface water drain
- Private surface water drain
- Private foul drain
- FIC Foul Plastic Inspection Chamber
- SIC Surface Water Plastic Inspection Chamber

P4	ARCHITECT'S LAYOUT UPDATED	25/08/26	DT	FW
P3	ARCHITECT'S LAYOUT UPDATED	05/08/26	DT	FW
P2	TO LLFA COMMENTS	12/02/26	RS	FW
P1	INITIAL ISSUE	11/09/25	NG	FW
Rev	Amendments	Date	Dsn	Chk

Status		FOR PLANNING	
Client		ARCHITECTUS LTD	
Architect			
Project		RAILWAY APPROACH WORTHING	
Title		DRAINAGE STRATEGY	
Date	SEPTEMBER 2025	Scale @ A1	1:200
Clients Ref.		Project Ref.	13974
 Civils & Transport Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD Tel.01444 871444 Web: www.gtacivils.co.uk			
Drawing Number		Rev.	
13974-1600		P4	

DESIGN NOTES

- STORAGE DESIGN BASED ON 1 IN 100 YR STORM + 45%.
- DRAIN POINTS AND LOCATIONS TO BE CONFIRMED BY ARCHITECT.
- CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
- EXISTING RETAINED TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE.

Node Name	S1	ExSMH 6351
A4 drawing Hor Scale 500 Ver Scale 100 Datum (m) -1.000 		
Link Name	1.001	
Section Type	150mm	
Slope (1:X)	3.9	
Cover Level (m)	6.400	6.240
Invert Level (m)	5.500	3.860
Length (m)	6.400	



- GENERAL NOTES
1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
 2. Tender or billing drawings shall not be used for construction or the ordering of materials.
 3. Do not scale. All dimensions and levels to be site confirmed.
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 8. Your attention is also drawn to the fact that the information contained within this file may be subject to alteration at any time, pending technical approval from an approving authority or at the client's instruction. It is therefore strongly recommended that multiple and regular cross checks are made against the current contract drawings.
 - It is your responsibility to ensure that the correct issue or revision of the DWG data file is being used and requests for updated information made accordingly.
 9. Should any apparent discrepancies between the data contained within the DWG file and the current contract drawings become evident, it must be reported back to GTA Civils & Transport as soon as reasonably practicable. Precedence should be given to the current contract drawings (PDF) unless advised otherwise.

DRAWING NOT FOR CONSTRUCTION

P3	ARCHITECT'S LAYOUT UPDATED	25.08.26	DT	FW
P2	ARCHITECT'S LAYOUT UPDATED	04.08.26	DT	FW
P1	PRELIMINARY ISSUE - FOR PLANNING	03.02.26	RS	FW
Rev	Amendments	Date	Dsn	Chk
Status				
FOR PLANNING				
Client				
ARCHITECTUS LTD				
Architect				
Project				
RAILWAY APPROACH WORTHING				
Title				
OVER LAND FLOW PLAN				
Date		Scale @ A1	1:200	
FEBRUARY 2026		Project Ref.	13974	
Clients Ref.				
 Civils & Transport Maple House, 192-198 London Road, Burgess Hill, West Sussex, RH15 9RD Tel.01444 871444 Web: www.gtacivils.co.uk				
Drawing Number			Rev.	
13974-1103			P3	

Appendix G

Calculations

GTA Civils Ltd		Page 1
Gloucester House 66a Church Walk Burgess Hill, BN43 6LB	13974 Railway Approach Greenfield Volumes	
Date 12/02/2026 17:28 File	Designed by FVV Checked by MR	
XP Solutions Source Control 2020.1.3		

Greenfield Runoff Volume

FEH Data

Return Period (years)	100
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 514638 103357 TQ 14638 03357
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	0.079
SAAR (mm)	700
CWI	105.000
SPR Host	33.800
URBEXT (1990)	0.0000

Results

Percentage Runoff (%)	33.88
Greenfield Runoff Volume (m³)	19.238

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

Project details

Date	12/09/2025
Calculated by	FVV
Reference	13974
Model version	2.1.2

Location

Site name	Capella House
Site location	Worthing



Site easting (British National Grid)	514666
Site northing (British National Grid)	103358

Site details

Total site area (ha)	0.079	ha
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OK, I AGREE

MORE INFO

Greenfield runoff

Method

Method	FEH statistical
--------	-----------------

FEH statistical

	My value		Map value
SAAR (mm)	715	mm	715
BFIHOST	0.605		
QMed-QBar conversion	1.136		1.136
QMed (l/s)	0.17	l/s	
QBar (FEH statistical) (l/s)	0.19	l/s	

Growth curve factors

	My value		Map value
Hydrological region	7		7
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	FEH statistical	
Flow rate 1 year (l/s)	0.2	l/s
Flow rate 2 year (l/s)	0.2	l/s
Flow rate 10 years (l/s)	0.3	l/s
Flow rate 30 years (l/s)	0.4	l/s
Flow rate 100 years (l/s)	0.6	l/s
Flow rate 200 years (l/s)	0.7	l/s

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

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.1.2) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	240.00	Preferred Cover Depth (m)	1.200
Return Period (years)	1	Maximum Rainfall (mm/hr)	0.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	1.000		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S1	0.077	5.00	6.400	450	514652.706	103357.678	0.900	5.500
ExSMH 6351			6.240	1350	514650.938	103352.793	2.380	3.860

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)
1.001	S1	ExSMH 6351	6.400	0.600	5.500	3.860	1.640	3.9	150	5.02	0.0

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)
1.001	5.137	90.8	0.0	0.750	2.230	0.077	0.0	0	0.000

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Rate(s)	✓	100 year (l/s)	4.2
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	2 year (l/s)	1.3	Check Discharge Volume	✓
Summer CV	1.000	Skip Steady State	x	Starting Level (m)		30 year (l/s)	3.4	100 year 360 minute (m³)	57

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	30	40	0	0	100	45	0	0

Pre-development Discharge Rate

Site Makeup	Brownfield	PIMP (%)	100	Betterment (%)	0	Q 100 year (l/s)	4.2
Brownfield Method	MRM	CV	1.000	Q 2 year (l/s)	1.3		
Contributing Area (ha)	0.079	Time of Concentration (mins)	5.00	Q 30 year (l/s)	3.4		

Pre-development Discharge Volume

Site Makeup	Brownfield	PIMP (%)	100	Climate Change (%)	0	PR	1.000
Brownfield Method	MRM	CV	1.000	Storm Duration (mins)	360	Runoff Volume (m³)	57
Contributing Area (ha)	0.079	Return Period (years)	100	Betterment (%)	0		

Node S1 Online Orifice Control

Flap Valve ☒ | Replaces Downstream Link ☒ | Invert Level (m) 5.500 | Diameter (m) 0.020 | Discharge Coefficient 0.600

Node S1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	10.000	Depth (m)	0.650
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	5.600	Length (m)	48.500	Inf Depth (m)	
Safety Factor	2.0	Time to half empty (mins)		Slope (1:X)	500.0		

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	S1	232	5.745	0.245	3.3	14.1378	0.0000	SURCHARGED
240 minute winter	ExSMH 6351	232	3.867	0.007	0.4	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)
240 minute winter	S1	1.001	ExSMH 6351	0.4	1.281	0.004	0.0020	10.3

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	S1	472	6.014	0.514	5.8	53.2740	0.0000	SURCHARGED
480 minute winter	ExSMH 6351	472	3.869	0.009	0.6	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	S1	1.001	ExSMH 6351	0.6	1.432	0.006	0.0026	21.1

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	S1	585	6.140	0.640	6.2	71.5902	0.0000	FLOOD RISK
600 minute winter	ExSMH 6351	585	3.869	0.009	0.7	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)
600 minute winter	S1	1.001	ExSMH 6351	0.7	1.482	0.007	0.0028	26.6

Node ExSMH6351 Surcharged Outfall

Overrides Design Area x | Overrides Design Additional Inflow x | Depression Storage Area (m²) 0 | Depression Storage Depth (mm) 0 | Evapo-transpiration (mm/day) 0
Applies to All storms

Time (mins)	Level (m)	Time (mins)	Level (m)
0	3.860	1440	3.860

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	S1	232	5.745	0.245	3.3	14.1378	0.0000	SURCHARGED
240 minute winter	ExSMH 6351	232	3.867	0.007	0.4	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)
240 minute winter	S1	1.001	ExSMH 6351	0.4	1.281	0.004	0.0020	10.3

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Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	S1	1.001	ExSMH 6351	0.7	1.482	0.007	0.0028	26.6

Appendix H

Draft Drainage Maintenance Plan

Railway Approach, Worthing Drainage Maintenance Plan

Contents

1	Introduction	2
2	Ownership & Maintenance Responsibilities	3
3	Health and Safety	4
4	Schedule A – Sewers, Manholes & Gullies	5
5	Schedule B – Permeable Pavement	8
6	Contamination or Dilution of Spillage	9

Issue	Issue date	Compiled	Checked
First Draft Issue	12.09.25	FVV	PH

1 Introduction

- 1.1 This report has been prepared by GTA Civils & Transport Ltd for Architectus Ltd in relation to the proposed development at Railway Approach, Worthing. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.2 This Drainage Maintenance Plan (DMP) has been prepared for inclusion as an Appendix to the Flood Risk Assessment (FRA) submitted to Worthing Borough Council in order to support the planning application.
- 1.3 The DMP sets out the framework for the management of the proposed sustainable drainage systems (SuDS) within the development. The DMP remains a draft version during the design stage; it will be updated with final construction information prior to Handover and will remain a live document over the duration of the project. At this stage, what is set out herein is intended to be sufficient to demonstrate the viability of the proposed SuDS maintenance regime for planning purposes.

2 Ownership & Maintenance Responsibilities

- 2.1 A summary of the ownership and maintenance responsibilities for the development is as follows:
- The private drainage will be cared for by a Management Company.
 - The developer will be responsible for maintaining completed SuDS components in advance of transfer to / adoption by the relevant party.
- 2.2 The DMP is intended to comprise a useful handbook for the Management Company to assist with arranging regular and appropriate maintenance activities for the assets under its control. Hence, the DMP only includes the maintenance activities for which the Management Company will be responsible.
- 2.3 The following sections set out schedules detailing the maintenance requirements for each of the main drainage items used within the scheme. The Management Company will undertake the inspections and maintenance activities in accordance with these schedules. Public bodies will maintain adopted features in line with their established procedures.
- 2.4 The Management Company will seek financial contributions (in the form of service charges), at regular intervals, from the leaseholders/owners of the development to include for the regular costs of the maintenance of the site drainage.
- 2.5 Additional reference should be made to currently established best practice and guidance documents such as The SuDS Manual (CIRIA C753, 2015) and other resources available at the susdrain website (www.susdrain.org).
- 2.6 This DMP should be considered a live document. The frequency of maintenance intervals may need to be increased or decreased based on the observed performance of the drainage systems over time. Changes should be agreed with the drainage authority and recorded and dated in the DMP.
- 2.7 Important safety information is set out in the next section.

3 Health and Safety

- 3.1 All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:
- The Health and Safety at Work etc Act 1974
 - The Management of Health and Safety at Work Regulations 1999
 - The Workplace (Health, Safety and Welfare) Regulations 1992
- 3.2 The Building Management Company is responsible for suitable risk assessment and management to ensure safe working conditions and practices. Measures to protect potential visitors also need to be considered.
- 3.3 Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.
- 3.4 Employers have a duty to employees to inform them about the risks of their work environment and to decrease the risk as far as reasonably practicable. Appropriate personal protective equipment (PPE) should be provided and policies implemented based on risk assessment.
- 3.5 Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.
- 3.6 Entry of pipes, chambers, tanks and culverts should be avoided. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.
- 3.7 For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

4 Schedule A – Sewers, Manholes & Gullies

- 4.1 Regular inspection and maintenance is required to ensure the effective long-term operation of private drains, manholes, gullies & channel drains.
- 4.2 Prior to construction: a CCTV survey to be carried out on all receiving existing public sewer systems prior to connection with adopted sewers.
- 4.3 Post Completion: a CCTV survey to be carried out on all new and retained existing drainage systems and any downstream receiving systems, prior to connection with adopted sewers.
- 4.4 The report will be used to prove the integrity of the as-built drainage system prior to issue of practical completion certificate and will be handed over to the Client & Management Company for future reference.
- 4.5 Ongoing maintenance responsibility for all adopted sewers is by the sewerage authority and for adoptable highway drainage is by Worthing Borough Council. All other private gullies and drainage marked on the layouts to be maintained by the Building Management Company. Operation and maintenance requirements for all sewers, manholes and gullies are described in the following table:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	6 Monthly intervals.
	Common yard & car park & other hard standing areas to be swept clear of debris, to prevent possibility of blockages to the receiving drainage systems.	Monthly.
	Debris removal from gullies (where may cause risks to performance).	6 Monthly intervals, after autumn leaf fall, or as required based on specific observations.
	Lift and inspect receiving manholes to check for any blockages.	Monthly.
Remedial Actions	Repair any damaged gully gratings.	As required.
Monitoring	Carry out full CCTV survey to confirm ongoing integrity of all drains. Inspect all gullies and silt pits during the survey.	10-yearly intervals.

4.6 Where appropriate refer also to specialist drainage manufacturer's information and maintenance requirements.

4.7 In all instances, inspection and cleaning should be carried out only by a specialist contractor and in accordance with the guidelines given in 'Safe Working in Sewers and

at Sewage Works' published by National Joint Health and Safety Committee for the Water Services.

4.8 Further information on safety is set out in Section 3.

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5 Schedule B – Permeable Pavement

5.1 Inspection Frequency and Maintenance Requirements: as per table below.

Schedule	Action	Frequency
Regular Maintenance	Machine sweeper (push- or scarab-type).	Annually after autumn leaf fall
Occasional Maintenance	Weed removal	Annually
Remedial Actions	Remediate adjacent landscaping to original levels	As required
	Paving repairs including replenishment of lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required if infiltration is reduced by clogging
Monitoring	Initial inspection	Monthly for first three months
	Inspection for evidence of poor operation and/or weed growth	Quarterly, 48 hrs after large storms in first six months
	Inspection for silt accumulation to establish sweeping frequencies	Annually
	Monitor inspection chambers	Annually

5.2 Further information on safety is set out in Section 3.

6 Contamination or Dilution of Spillage

- 6.1 In the event of a spillage it is the responsibility of the landowner to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of hydrocarbons should be using sand to soak up the leak and prevent any hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

6.2 Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency Incident Hotline is **0800 80 70 60** (Freephone 24hrs).

Appendix A

Site Drainage Layouts

[Refer to the FRA, Appendix F, for Drainage Layouts]

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Appendix I

West Sussex County Council Letter



Louise Prew
Adur & Worthing Councils,
Worthing Town Hall,
Chapel Road, Worthing,
West Sussex,
BN11 1HA

Lead Local Flood Authority
Ground Floor
Northleigh
County Hall
Chichester
West Sussex
PO19 1RH

Date 06 January 2026

Planning Reference: **AWDM/1329/25**

Site Address: **Car Park Adjacent Sandell House Railway Approach, Worthing, West Sussex**

Planning Description: **Erection of a five to seven storey building with 29 self contained residential units (Use Class C3) including undercroft parking and cycle store linked to listed building**

Dear Louise,

Thank you for your consultation on the above site, received on 04 December 2025. For this consultation, we have reviewed the following documents submitted:

- Report: Flood Risk Assessment and Drainage Strategy | prepared by GTA Civils and Transport | October 2025 | Ref: 13974 | Rev: Second Issue

We are concerned with the existing flood risk surrounding the site and how access and egress will be impacted. Alongside this, for discharge into a surface water sewer, we would need to see a pre-development enquiry from Southern Water / engagement which has not been provided at this stage.

We **object** to this planning application in the absence of an acceptable Flood Risk Assessment (FRA) and Drainage Strategy relating to:

- The proposed SuDS are likely to increase the risk of flooding elsewhere.
- The development does not comply with NPPF, PPG or Local Policies (i.e. Level 2 SFRA – Adur and Worthing).

Reason

To prevent flooding in accordance with National Planning Policy Framework paragraph 181, 182 and 187 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

We will consider reviewing this objection if the issues highlighted on the accompanying Planning Application Technical Response document are adequately addressed.

Informative:

Please note if the LPA decide to grant planning permission, we wish to be notified for our records should there be any subsequent surface water flooding that we may be required to investigate as a result of the new development.

Yours sincerely

Flood Risk Management Team

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
All sources of flooding considered?	NPPF Paragraph 170, 181 PPG Paragraph 051 SDNSTS S10 Level 2 SFRA (Adur and Worthing)	Provide updated information within an amended FRA on;	
		☐ Fluvial flooding from the ordinary watercourse.	Included – Low
		☐ Surface water flow path originating offsite.	Included – Low
		☐ Groundwater flooding.	Included – Low
		☐ Rainwater surcharged sewer flooding.	Included – Low
Mitigation not appropriate	NPPF Paragraph 170, 181 and 187 PPG Paragraph 004, 023, 037, 041, 042, 043 and 044 Level 2 SFRA (Adur and Worthing)	☐ Historic flood information.	Included – Appendix D
		☐ Use sequential approach with the following hierarchy. I. how can the development first avoid the risk of flooding II. how will it be mitigated (with evidence) III. how will flood resistance and resilience be employed	Site avoids the risk of flooding – not in an area of surface water flooding / not in Flood Zone 2 / Flood Zone 3.
		☐ The proposal increases the risk of flooding to existing infrastructure, dwellings or property. Mitigation should be reassessed to show how flood risk can be reduced overall.	No - Site is at low risk of flooding from all sources.
		☒ Provide information on safe access and egress as part of an emergency plan. Temporary refuge is no longer acceptable.	Objection: Although the site is at low risk of flooding, the Flood Risk Constraint Plan (prepared by GTA Civils and Transport dated 11 September 2025 Ref: 13974-1000 Rev: P1) shows high surface water flood risk from the access road. Whilst we note that the development is a car park, we would need to ensure that emergency vehicles

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
			could access the site when needed. Further information is required.
Long term sustainability of the development	NPPF Paragraph 181 and 187 PPG Paragraph 004, 036, 061, 068 and 069 Level 2 SFRA (Adur and Worthing)	☐ Provide site specific ordinary watercourse or surface water flow path modelling.	Not required – Low flood risk.
		☐ Demonstrate that any residual risk is managed with appropriate flood resistance and resilience measures.	Not required – Low flood risk.
		☐ Include evidence of appropriate freeboard to finished floor levels from the design flood level.	Included on the drainage drawing.
		☐ Include appropriate climate change allowance for assessment of the lifetime of the development (including the 3.33% AEP design flood event).	Not required – Low flood risk.
		☐ Use up to date FEH2022 rainfall data for all design flood events.	Not required – Low flood risk.
		☐ Provide an easement of 3 m from the top bank of any watercourse is required for maintenance.	Not required – No watercourse with the RLB.
		☐ Identification is required of those structures which require consent for works on an ordinary watercourse (from the LLFA), this extends to works required within 8m from the top of the bank (see West Sussex LLFA website).	Not required – No watercourse with the RLB.
How does the site currently drain?	NPPF Paragraph 182 PPG Paragraph 059 SDNSTS S1, S2, S3, S4, S5, S6	☐ Evidence required on ground conditions / BRE365 or similar infiltration testing / dissolution potential / seasonally high groundwater levels.	Included – Infiltration testing has been provided in Appendix D.

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
	Level 2 SFRA (Adur and Worthing)	☒ Greenfield runoff rates and volumes missing.	Objections: Greenfield Volumes have not been provided. Further information is required.
		☐ Greenfield runoff rates need to be recalculated (incorrect input parameters).	Included – FEH Statistical Method has been used.
		☐ Pre-development brownfield runoff rates missing.	Included
		☐ Pre-development brownfield runoff rates need to be recalculated (incorrect input parameters).	Included
		☐ Drawing required to show where existing drainage network and outfall/s are, plus confirmation if will they be retained or removed.	Included
		☒ Drainage survey required to provide evidence of existing discharge rate and condition (may include detailed asset or CCTV survey).	Objection: Not provided. Further information is required.
Where will the site drain to?	NPPF Paragraph 182 PPG Paragraph 055, 056, 059, 060, 061, 062 and 063 SDNSTS S12, 13 and S14	Drainage location hierarchy has not been followed, further information is required on; ☐ Evidence why rainwater reuse can't be included.	Included – Justification provided as to why not proposed.
	Level 2 SFRA (Adur and Worthing)	☐ Interception has not been calculated and/or provided.	Informative: The LLFA cannot locate information on interception. Further information is requested.

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
		☐ Infiltration proposals – re Groundwater Source Protection Zone I restrictions.	Justification provided as to why infiltration is not viable.
		☐ Surface watercourse – does it connect to the wider network and is there permission and agreed access locations for proposed outfalls?	Included – No waterbodies within the vicinity.
		☒ Surface water sewer – no in principle agreement from owner of the asset.	Objection: For discharge into a surface water sewer, we would need to see a pre-development enquiry from Southern Water / engagement which has not been provided at this stage. Further information is required.
		☐ Combined sewer – no in principle agreement from owner of the asset.	Included – Not proposed.
		☐ Full impact assessment of failure and emergency procedures required if a pump is part of the design.	Included – Not proposed.
		☐ Justification is required as to why a deep bore infiltration feature has been proposed prior to shallow infiltration or connection to a surface watercourse.	Included – Not proposed.
		☐ In principle objection - proposing to connect surface water runoff to foul sewer.	Included – Not proposed.
		☐ Detailed justification required why the application cannot be drained via gravity and a pump is required.	Included – Not proposed.

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
Are the 4 pillars of SuDS provided and are they multifunctional?	NPPF Paragraph 182 PPG Paragraph 036, 055, 056, 059, 060, 061, 062 and 063 Level 2 SFRA (Adur and Worthing)	☒ The application must provide water quantity benefits in open, at the surface or above ground SuDS.	Objection: The proposals do not include any information on above ground SuDS. We would need further justification as to why these cannot be included. Further information is required.
		☒ The application must provide water quality benefits.	Objection: Simple Index Approach seems very light touch. Further information is required.
		☒ Appropriate water quality assessment is absent / incorrect.	Objection: Simple Index Approach seems very light touch. Further information is required.
		☐ Additional water quality treatment using surface SuDS is required due to the sensitivity of the discharge location (including groundwater, designated surface watercourses or deep infiltration features).	Not required – Not a sensitive discharge location.
		☐ The application must provide biodiversity benefits or demonstrate why this is not achievable (lack of space will not be accepted).	Informative: Further information is required on biodiversity.
		☐ The application must provide amenity benefits or demonstrate why this is not achievable (lack of space will not be accepted).	Informative: Further information is required on amenity.
How will the site drain without adversely effecting flood risk elsewhere?	NPPF Paragraph 181, 182 SDNSTS S2, S3, S4, S5, S6 Level 2 SFRA (Adur and Worthing)	☐ The most precautionary infiltration rate should be used in the design of the attenuation feature.	Justification provided as to why infiltration is not viable.
		☐ Infiltration rates are shown to be favourable and should be used in the drainage design (where appropriate).	Justification provided as to why infiltration is not viable.

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
		☐ Infiltration storage drainage design should be recalculated to either only discharge through the sides of the structure or apply the appropriate factor of safety.	Justification provided as to why infiltration is not viable.
		☐ Infiltration drainage storage has half drain down time greater than 24 hours and an alternative design or mitigation is required.	Justification provided as to why infiltration is not viable.
		☐ The post development 100% AEP (or 1 in 1 year) rainfall event runoff rate should also be controlled to the equivalent pre-development rate.	Provided
		☐ Proposed discharge rates and volumes are greater than greenfield with no justification.	Provided
		☐ Proposed discharge rates include future allowances for climate change and / or urban creep. These must be removed, and all calculations resubmitted.	Provided
		☐ Require justification and supporting calculations for brownfield % betterment and why this can't be closer to the predevelopment greenfield scenario.	Provided
		☐ Proposed discharged rates would increase flood risk elsewhere and need to be re-assessed.	Provided
		☐ A minimum runoff rate of 1 to 2 l/s/ha should be applied in groundwater dominated areas.	Provided

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
		☐ How will the development not increase the volume of runoff as only pre and post calculations of greenfield runoff rate have been provided?	Provided
		☐ A complex control for runoff rate with long term storage provided, is required, if the drainage proposal is not limiting runoff to QBAR or 2 l/s/ha.	Provided
		☐ Include appropriate climate change allowance for the lifetime of the development (including 3.33% AEP design) for storage volumes.	Included – Climate change allowance on the 3.33% AEP and the 1% AEP events.
		☐ Calculations should be resubmitted and demonstrate how 10% urban creep has been included in the volume of SuDS storage required.	Not required – Not residential development.
		☐ Use up to date FEH2022 rainfall parameters in any modelling scenarios.	Included – FEH22 has been used for supporting calculations.
Location of SuDS		☐ Drawings need to show all the drainage features (storage and conveyance) with labels the same as those in supporting calculations.	Included – CL / IL and Volumes have been provided.
		☒ Drawings need to show the final design (but not construction issue or preliminary issue).	Objection: Drawings are still preliminary status. At this stage we would expect detailed drainage drawings. Further information is required.
		☒ Cross sections and long sections of all the network and structures such as ponds, basins and swales.	Objection: No cross sections have been provided. Further information is required.

Planning Application Technical Response

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FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
What is the impact of flood risk on the development?	NPPF Paragraph 182 SDNSTS S7, S8, S9, S10 and S11 Level 2 SFRA (Adur and Worthing)	Updated supporting calculations required to show;	
		☒ 50% AEP rainfall event does not surcharge in the drainage network.	Objection: Surcharging is shown in the 50% AEP event.
		☐ 3.33% AEP rainfall event plus climate change does not flood outside the drainage network which is designed to hold water.	Included – No flooding in the 3.33% AEP plus climate change event.
		☐ 1% AEP rainfall event plus climate change does not leave the application boundary or flood any part of a building, utility plant susceptible to water (e.g. pumping station or substation) within the development boundary.	Included – No flooding in the 1% AEP plus climate change event.
		☐ the appropriate climate change allowance must be included.	Included – Climate change allowance on the 3.33% AEP and the 1% AEP events.
		Additional information is required showing; ☐ above ground flooding (extent and depth) at the 1% AEP rainfall event plus climate change must be shown on a drawing with proposed external ground levels and proposed finished floor levels of buildings	Not required – No above ground flooding.
		☐ above ground flooding (extent and depth) at the 1% AEP rainfall event plus climate change should be designed to be held in the least vulnerable areas of the site e.g. open space.	Not required – No above ground flooding.

Planning Application Technical Response

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FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
		☐ Flood resistance and resilience must be shown to be included in the design. A minimum of 300mm must be provided between the design flood event and the finished floor level.	Included – Freeboard has been included on the drainage layout drawing.
		☐ A minimum of 150mm above external ground levels and show that they are sloping away from vulnerable areas such as doorways.	Included – Freeboard has been included on the drainage layout drawing.
		☒ Exceedance of the design 1% AEP rainfall event plus climate change (or failure of the drainage network) must be shown on a drawing, minimising impacts to people and property. This drawing will include proposed external ground levels, finished floor levels and any designed slopes on impermeable surfaces such as highways or car parks	Objection: Exceedance flow routes have not been provided. Further information is required.
		☐ ½ drain down times need to be submitted and show that they are within 24 hours (or within 48 hours for features that are lined e.g. lined tanks or lined basins).	Included – Under 24 / 48 hours.
		☐ Any drainage network showing storage features with ½ drain down time greater than the 24 hours (or 48 hours for lined structures) must be redesigned to show how it can meet this standard or be increased in size to accommodate a subsequent storm event of 3.33% plus climate change allowance.	Included – Under 24 / 48 hours.
		☒ The drainage calculations must be shown to include a surcharged outfall to a watercourse or sewer. This surcharge level must be the 1% AEP flood event of the receiving watercourse if known or bank full if not already hydraulically modelled.	Objection: Not provided.

Planning Application Technical Response

Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026



FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
How will the drainage and watercourse features be managed and maintained?	NPPF Paragraph 182 PPG Paragraph 055, 057 and 058 SDNSTS S10, S11, S12, S13 and S14	☐ Details of required maintenance of any SuDS features and structures and who will be adopting these features for the lifetime of the development.	Included – Site Specific (i.e. includes action, frequency and responsibility of maintenance).
		☒ A high-level assessment of how water quantity and water quality will be managed during the construction phase is required. Identifying high level assumptions such as need to discharge to a sewer or watercourse will appropriate pollution measures.	Objection: Not provided. This can be conditioned once the above has been rectified.
		☐ Appropriate easements (to the adopting authority standard) to SuDS features should be shown on a drawing, this will be a minimum of 3m.	Not required – No easements required.
		☐ Vehicular access route and off-road parking needs to be provided to ponds, basins and swales.	Not required – No vehicular access required.
		☐ Provide an easement of a minimum of 3 m from the top bank of any watercourse is required for maintenance of the watercourse. This should be on both banks but justification should be provided if access is proposed from only one side of the bank or less than 3m (e.g. 2.5 times the width of any plant likely to be used (from the top of bank with maintenance plant parallel to the watercourse)).	Not required – No easement required for the watercourse.

Planning Application Technical Response



Site:	Car Park Adjacent Sandell House, Railway Approach, Worthing, West Sussex
LPA Reference:	AWDM/1329/25
Date Assessed:	06 January 2026

FULL APPLICATION	Related Policy or Standard	Applicant Action Required	LLFA Specific Comment
		☐ Due to the likely long duration build out time (including phased development proposals), a construction management plan and supporting calculations and drawings are required to show a timeline of how temporary measures will be put in place to protect the water environment and any newly built SuDS features. This will include any temporary water quality and flow control devices	Not required – Not phased.
Other		☐ Bespoke advice	

Appendix J

EA Surface Water Hazard Mapping and Safe Access to Site

EA Surface Water Hazard Mapping and Safe Access to Site

Dataset obtained from the Environment Agency (last updated 16 January 2026).

This hazard dataset shows the likelihood of a flood occurring with a given flood hazard rating (or higher). There are separate layers for hazard ratings of 0 (i.e. flooding extent), 0.25, 0.5, 0.75, 1.25 and 2.

Risk is displayed as one of three likelihood bandings:

High - greater than or equal to 3.3% (1 in 30) chance in any given year; Medium - less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year; Low - less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1000) chance in any given year.

Note that all locations outside of mapped extents should be considered at 'Very Low' risk. 'Very Low' extents in the dataset have been explicitly modelled as below 1 in 1000 chance.

- High
- Medium
- Low
- Unavailable

Hazard Rating of 0.25 or less – 'Very Low' Hazard Rating



Hazard Rating of 0.50 or less – ‘Very Low’ Hazard Rating



Hazard Rating of 0.75 or less – ‘Danger for Some’ Hazard Rating – with emergency route shown



Hazard Rating of 1.25 or less – ‘Danger for Most’ Hazard Rating



Appendix K

Southern Water Capacity Check



Martin Roberts
GTA Civils & Transport Ltd
GTA Civils & Transport Ltd, Maple House, 192-198 London Road
Burgess Hill
West Sussex
RH15 9RD

Your ref
22401

Our ref
DSA000047437

Date
18th of February 2026

Contact
Tel 0330 303 0119

Dear Mr Roberts,
Level 1 Capacity Check Enquiry: Railway Approach, Worthing

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

Foul Water

The enquiry has been assessed to determine the capacity available for **0.26 l/s** at manhole reference **TQ14037302 (514734, 103385)**.

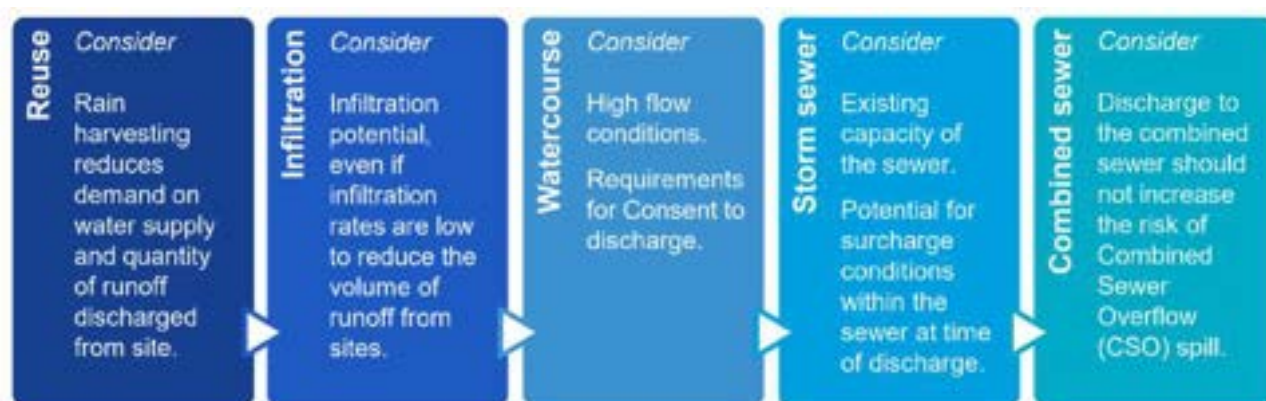
There is currently adequate capacity in the local sewerage network to accommodate a foul flow of **0.26 l/s** for the above development at manhole reference **TQ14037302 (514734, 103385)**. Southern Water will not permit a surface water connection into the foul network. Please refer to our surface water management policy.

Surface Water

The enquiry has been assessed to determine the capacity available for **1.0 l/s** at manhole reference **TQ14036351 (514653, 103351)**.

There is currently adequate capacity in the local surface water/foul sewerage network to accommodate a surface water flow of **1.0 l/s** for the above development at manhole reference **TQ14036351 (514653, 103351)**.

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.



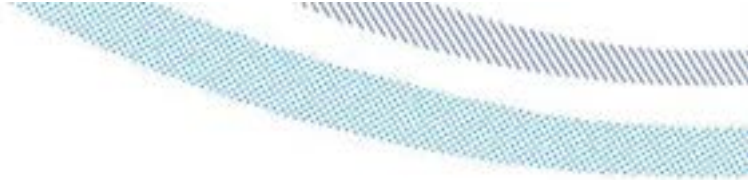
Guidance on Building Regulations is here: [gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h](https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h)

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

The results quoted above are only valid for 12 months from the date of issue of this letter. **Any revisions in flow rate or alternative point of connection will require a new Pre-Planning Application to be submitted.**

Please get in touch via the Get Connected customer dashboard if you have any queries.

Yours sincerely,

Future Growth Planning Team
Developer Services

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



Civil Engineering - Transport Planning - Flood Risk

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