

**Boorley Green Gateway
Winchester Road
Botley
Southampton
SO32 2UA**

Vistry Southern

Our Ref: CP/RP/0000/6663

7th May 2026

Planning Ref: F/19/86233

Land to the North and East of Boorley Green, Winchester Road, Botley, SO32 2UA

Demolition of existing buildings and dwelling with the construction of a mixed-use retail and residential development comprising an A1 retail convenience store and flexible retail floorspace (A1 and A2 Use Class), and 67 residential units (C3 Use Class) with associated access, parking, landscaping, drainage, and ancillary infrastructure including pedestrian and cycle links.

BOORLEY GREEN GATEWAY - DRAINAGE SUDS VERIFICATION REPORT

1.0 Scope

The purpose of this report is to confirm that the surface water drainage system installed for the Boorley Green residential development has been constructed in accordance with the approved drainage strategy, as permitted by Eastleigh Borough Council under Planning Application F/19/86233.

This report is submitted in order to discharge Condition 10 of the associated decision notice.

1.1 Condition No.10

'The sustainable drainage scheme with landscaping shall be fully implemented prior to the first occupation of the development hereby permitted unless otherwise agreed in writing by the Local Planning Authority and thereafter retained, maintained and managed in accordance with the approved management and maintenance proposals. Written verification of completion of the approved works shall be provided by an appropriately qualified professional within 3 months of first occupation of the development.'

Reason: To ensure satisfactory drainage for the development and to prevent flooding and pollution.'

2.0 Details of Reviewing Engineer

This review has been undertaken by Chris Pendle of MJA Consulting Ltd.

Chris Pendle, BSc (Hons) in Civil Engineering, has over 20 years of experience in drainage design and civil engineering.

3.0 Drainage Strategy

The approved drainage strategy for the development comprises two separate, dedicated gravity surface water drainage systems, serving the northern and southern catchments, respectively.

- 3.1 The drainage system serving both catchments comprises a combination of below-ground piped networks, geocellular storage tanks, and permeable block paving SuDS features, designed to accommodate surface water runoff for events up to and including the 1:100year rainfall event, with a 40% allowance for climate change.
- 3.2 The peak discharge rate is restricted to the existing greenfield runoff rate (Qbar). For the northern catchment, discharge is directed to an existing open ditch to the northeast of the site, while for the southern catchment, discharge is made to an existing public storm sewer.
- 3.3 Surface water runoff from roofs and garages is collected via traditional rainwater pipes and discharged either directly into the surface water piped network or into the aggregate sub-base of permeable paved areas, from where it subsequently drains into the piped system.
- 3.4 Private driveways and parking areas are surfaced with permeable block paving over an aggregate sub-base, from which runoff subsequently drains into the piped system.
- 3.5 Access roads and main roads are surfaced with macadam or impermeable block paving and drain via trapped road gullies, yard gullies or linear channels, which convey runoff through the piped system to the downstream cellular attenuation tanks.

4.0 Information Reviewed

4.1 Drainage Layouts

The approved surface water drainage strategy, including discharge rates and points of outfall from the development, as submitted as part of the application, is as follows:

- Drawing B717/03 Rev H – Gateway Centre Proposed Surface Drainage Strategy (PFA Consulting Ltd, June 2021).
- Report B717-DOC01 Gateway Centre, Boorley Green, Flood Risk Assessment, Boorley Green Consortium, Issue 2 (PFA Consulting Ltd, June 2020).

- 4.2 The approved strategy has been developed to a detailed design stage and is presented in the following MJA Consulting drawings:

- 6663-MJA-SW-XX-DR-C-001_C10 Engineering Layout (Sheet 1)
- 6663-MJA-SW-XX-DR-C-002_C11 Engineering Layout (Sheet 2)

4.3 Variations

The approved drainage strategy specified discharge rates of 5.6 l/s and 5.0 l/s for the northern and southern catchments, respectively.

- 4.4 The detailed design maintains an overall combined discharge rate of 10.6 l/s, with a distribution of 8.6 l/s and 2.0 l/s for the northern and southern catchments, respectively. This is considered acceptable as the total discharge rate remains unchanged from the approved drainage strategy, and the revised split between catchments does not result in any increase in peak runoff to the receiving systems or exceedance of the approved greenfield runoff rate (Qbar).

- 4.5 The peak discharge rate of 2.0 l/s for the southern catchment, discharging into the public sewer, has been agreed with Southern Water.
- 4.6 Although the location and extent of the SuDS features have been refined at the detailed design stage, the overall SuDS type and principles remain consistent with those set out in the approved drainage strategy at planning.

4.7 **CCTV Survey**

The following CCTV survey has been reviewed.

- Report - Gateway CCTV Drainage (10.04.25, Ultraflow Drainage LTD).

- 4.8 The above CCTV survey report details the inspection of four lengths of as-built stormwater pipework at the site, as indicated on the detailed engineering drawings 6663-MJA-SW-XX-DR-C-001_C10 Engineering Layout (Sheet 1) and 6663-MJA-SW-XX-DR-C-002_C11 Engineering Layout (Sheet 2).

The condition of the pipework has been assessed and recorded in accordance with MSCC Sewers & Drainage GB (SRM5 Scoring) as follows:

MSCC5/SRM5 Condition Grades:

Grade 1 (Minor): Cosmetic or light wear, no action needed.

Grade 2 (Slight): Slight deterioration, monitor over time.

Grade 3 (Moderate): Moderate defect, consider maintenance/repair in medium term (6–12 months).

Grade 4 (Serious): Serious defect, repair soon (3–6 months) to avoid failure/blockage.

Grade 5 (Severe): Severe damage or collapse imminent/high risk of flooding, urgent action required.

- SW2-04 to SW2-05 - No defects
- SW3-02 to SW2-05 - No defects
- SW3-01 to SW3-02 - No defects
- SW2-03 to SW2-04 – Grade 4 defect identified: hole in drain located at 21.64m.
The defect is positioned at the 1 o'clock orientation within the sewer and does not present an immediate operational concern, however, remedial repairs are recommended within the next six months.

- 4.9 It is recommended that the pipework not surveyed during the CCTV inspection be surveyed as soon as practicable to confirm its structural integrity.

4.10 **As-Built Survey**

The following As-built survey information has been reviewed.

- Drawing Ref: 3258 S1 As-Built Survey (June 2025, Encompass Geospatial Ltd).

4.11 **Variations**

A review of the as-built drainage survey was undertaken, including the locations and levels of manhole covers and inverts, gullies, outfalls, flow controls and other ancillary drainage features, against the approved design as detailed on the engineering drawings 6663-MJA-SW-XX-DR-C-001_C10 Engineering Layout (Sheet 1) and 6663-MJA-SW-XX-DR-C-002_C11 Engineering Layout (Sheet 2).

- 4.12 There are minor variations in manhole cover levels and pipe invert levels across the stormwater system, however, these are considered acceptable and within standard construction-related tolerances. The minor differences in invert levels do not significantly affect the gradients or flow capacity of the network.
- 4.13 In terms of the overall design, it is our opinion that the minor variations in invert levels and pipe gradients will have a negligible impact on the hydraulic capacity and operational performance of the drainage system.
The as-built pipe gradients remain within the acceptable range for each respective pipe diameter and are sufficient to achieve the minimum self-cleansing velocities of 1.0m/s for stormwater pipes.
- 4.14 The locations of all drainage features, together with the pipe diameters and manhole sizes, have been constructed in accordance with the approved design.
- 4.15 The exception to this is SW1-09, which has been constructed approximately 8m further west within the carriageway than indicated on the engineering layout.
- 4.16 Site Inspection and Photography**
A site inspection was undertaken by Alistair McShane on the 6th May 2026.
- 4.17 Stage of Construction**
As of the date of inspection (6th May 2026), all Plots No's. 1 to 67 have been fully completed, including all surface water drainage connections, SuDS and external surfacing.

5.0 **Geocellular Attenuation**

There are three cellular attenuation tanks incorporated within the drainage system, manufactured and supplied by SDS Ltd, forming a key component of the site's surface water attenuation infrastructure.

The tanks are designed to provide temporary storage of stormwater runoff and regulate discharge rates in accordance with the approved drainage strategy.

At the time of the site inspection, the excavations associated with all three cellular attenuation tanks had been fully backfilled, with the final surface finishes completed above the installation areas.

As a result, direct visual inspection of the tank structures was not possible during the assessment.

- 5.1 Installation QA sign-off sheets completed by SDS Ltd during the construction phase, dated 28.10.22 and 13.02.23, were reviewed as part of this assessment. The records confirm that all three attenuation tanks were installed in accordance with the approved engineering design and the manufacturer's detailed specification requirements. This includes confirmation of the following:

- Overall tank plan dimensions and installed depth;
- Installation of the geomembrane and associated protection layers;
- Tank configuration and cellular storage arrangement;
- Venting and access provisions;
- Pipe connections and interface details; and
- Compliance with the required attenuation storage volumes.

- 5.2 The QA documentation also confirms that installation procedures were undertaken in accordance with the manufacturer's recommended construction methodology, including formation preparation, membrane integrity measures, and backfilling requirements.

- 5.3 A review of the installation QA records, together with the as-built drainage information and corresponding upstream and downstream chamber locations, indicates that the attenuation tanks have been constructed in accordance with the approved engineering design. The recorded tank dimensions, plan areas, and depths correspond with the design requirements and support the specified storage volumes detailed within the drainage strategy.

- 5.4 Based on the information reviewed, including the manufacturer's installation certification and as-built survey data, I am satisfied that the attenuation tanks have been installed in accordance with the approved design intent and are capable of providing the required attenuation storage volume and hydraulic performance for the development.

5.5 Permeable Block Paving

At the time of inspection, all permeable block paved areas across the site had been fully installed.

During the inspection, it was confirmed that the correct specifications of permeable block paving had been installed throughout the development. This comprised 80mm thick blocks within shared surface areas and 60mm thick blocks within private driveways, both installed in accordance with typical design requirements for anticipated loading conditions.

- 5.6 The jointing material was confirmed as 2/6mm grit, appropriately applied to facilitate permeability and promote effective surface water infiltration.
- 5.7 The overall quality of workmanship associated with the permeable block paving is considered to be of a high standard. The installation exhibited good construction practice throughout, with consistent laying patterns and well-aligned blocks.
There was no visible evidence of damage to individual blocks, failure or loss of jointing material, or any signs of structural distress such as rutting, differential settlement, or deformation.
- 5.8 The surface condition at the time of inspection showed no evidence of weed growth, sediment build-up and no areas of surface water ponding were observed, indicating effective infiltration performance.
- 5.10 It should be noted that the as-built construction details relating to sub-base depths and underlying formation layers could not be directly verified during the inspection. As such, confirmation of compliance with the detailed design build-up, including any specific attenuation storage layers within the sub-base, is outside the scope of this visual assessment. However, based on the design information available, the permeable paving areas are not intended to contribute towards the primary site-wide attenuation storage requirement.
- 5.11 In light of the above observations, I am satisfied that the permeable block paved driveways have been installed in general accordance with the design intent and are considered suitable for their intended function. Subject to ongoing maintenance, the systems are expected to provide the required level of surface water management, including localised attenuation and water quality treatment, as part of the wider drainage strategy for the site.

5.13 Linear Channels and Yard Gullies

At the time of inspection, the linear drainage channels and yard gullies serving the impermeable areas of the site were observed to have been constructed generally in accordance with the approved drainage layout drawings and specification requirements.

- 5.14 The finished levels and falls on the impermeable surfaces have been formed to ensure effective surface water runoff, directing flow towards the designed collection points, including yard gullies and linear drainage channels. This indicates that the site grading has been implemented in line with the intended drainage strategy to promote positive drainage and reduce the risk of surface water accumulation.
- 5.15 All inspected channels and yard gullies were found to be clear of debris, sediment, and obstructions at the time of inspection. In addition, no visible defects such as cracking, displacement, or structural damage were observed within the drainage components. The condition of the system suggests that it is currently functioning as intended and has been adequately maintained during the construction phase.
- 5.16 No evidence of surface water ponding was identified across the impermeable areas during the inspection. The absence of ponding indicates that the constructed falls and drainage infrastructure are effectively conveying runoff to the appropriate discharge points, in accordance with the approved drainage design.

5.17 Manholes and Pipelines

The location of the as-built surface water manholes, generally corresponds with the drainage layout.

The exception to this is SW1-09, which has been constructed approximately 8m further west within the carriageway than indicated on the engineering layout.

All covers and frames are BS EN124-2 compliant and D400 rated.

- 5.18 The diameters of all as-built manholes and pipes accord with the approved design, and all lateral connections from adjacent plots have been constructed in accordance with the approved drainage strategy.
- 5.19 No construction debris or significant siltation was observed within the manholes during the inspection. The drainage infrastructure was generally found to be in a clean and serviceable condition at the time of assessment. However, it is recommended that a programme of routine inspection and maintenance be implemented for the manholes and associated pipe network as part of the site's long-term management and maintenance regime. This will help ensure the continued efficient operation of the surface water drainage system, reduce the risk of future blockages or performance issues, and support the ongoing integrity and reliability of the system over its design life.
- 5.20 It is recommended that the pipework not surveyed during the CCTV inspection be surveyed as soon as practicable to confirm its structural integrity.

5.21 Road Gullies

The location of all road gullies is in accordance with the approved drainage layout and are located at suitable low points on the highway.

All gullies are 450mm dia x 900mm deep with silt bucket with covers and frames D400 rated.

All road gullies are suitably free from construction debris and siltation, with no signs of structural damage.

5.22 RWP roof drainage

All plot drainage including the location of roof RWP's and associated inspection chambers generally accords with the engineering layout.

- 5.23 The quality of workmanship on all the installed drainage apparatus is of a high standard. I am therefore satisfied that all plots have a suitable means of surface water drainage disposal from the curtilage of the property in accordance with the approved design and will not cause any issues of flood risk to the residents.

5.24 Flow Control Chambers

Three vortex flow control chambers are incorporated within the drainage system and form a key component of the site's surface water management infrastructure.

- SW1-01 – 2.0 l/s
- SW1-03 – 1.5 l/s
- Control – 8.6 l/s

- 5.25 At the time of inspection, the vortex flow control devices were observed to be correctly installed within their respective chambers, with all components appearing to be in satisfactory condition. Each chamber was fitted with appropriately formed sumps, providing effective sediment collection and contributing to the long-term operational efficiency of the system.
- 5.26 Water levels within the chambers were recorded at the invert level of the control structures, indicating that the devices were functioning as intended. This suggests that flows are being appropriately controlled without evidence of blockage or restriction.
- 5.27 Furthermore, no debris, detritus, or siltation was observed within any of the chambers at the time of inspection. The absence of accumulated material indicates that maintenance regimes are either being effectively implemented or that the system is performing well under current conditions, with no immediate signs of impairment to hydraulic performance.

5.28 Outfall from site

The precast concrete headwall outfall from the northern storm drainage system into the existing watercourse has been constructed in accordance with the approved engineering layout and associated design details. The structure is considered to be correctly positioned and set out, with its location and level corresponding to that shown on the approved drawings.

No structural defects were observed at the time of inspection.

5.29 Landscaping

During the inspection, it was observed that no trees or shrubs had been planted in locations that could adversely affect the drainage infrastructure.

5.30 SuDS Management and Maintenance

The SuDS installed at this development will be managed and maintained in perpetuity by Gateway - Everything Property.

Gateway Property Management Ltd. Company no.04371782.

Gateway House, 10 Coopers Way, Southend-on-Sea SS2 5TE

Tel: 01702 443 555

5.31 **Surface Finishes**

All surfaces across the site have been constructed in accordance with the approved surface finishing plans produced by PFA Consulting Ltd:

- B717/04 Surface Finishes & Street Lighting Plan.

6.0 **Conclusion**

Following a site inspection carried out by MJA Consulting on 6 May 2026, together with a review of the as-built and CCTV drainage survey information, it is our opinion that the constructed surface water drainage system serving the development has been installed in accordance with the approved engineering design and consistent with the overarching principles established and agreed at the planning stage.

- 6.1 The minor deviations in invert levels of the as-built drainage network from the approved drawings, as identified, are not considered to adversely affect the hydraulic performance, capacity, or overall functionality of the surface water drainage system. The system continues to operate in accordance with its intended design principles and is deemed to provide satisfactory conveyance of surface water flows.
- 6.2 This assessment confirms that all plots are provided with an adequate, compliant, and functional means of surface water drainage. The system is considered suitable to support occupation, with no material constraints identified that would preclude its effective operation or long-term performance.

7.0 **Remedial Works Required**

Although not directly affecting the operation of the surface water drainage system, it is recommended that the defect identified between manholes SW2-03 and SW2-04 (Grade 4 defect comprising a hole in the drain at a recorded level of 21.64m) be repaired. Remedial works should be undertaken within the next six months to prevent potential deterioration of the asset and to maintain the long-term integrity and performance of the drainage network.

- 7.1 It is also recommended that the sections of stormwater pipework not surveyed during the CCTV inspection be surveyed as soon as practicable to verify their condition and confirm their structural integrity

8.0 **National Grid Reference of Key Drainage Elements**

Outfall Headwall	- E:450470.910, N:115198.064
Control Chamber	- E:450451.094, N:115187.011
SW1-01	- E:450494.888, N:114929.750
SW1-03	- E:450484.867, N:114967.036

Statement by

Chris Pendle

For MJA Consulting

T: 01235 555173

E: chrisp@mjaconsulting.co.uk

Disclaimer and Scope of Limitations

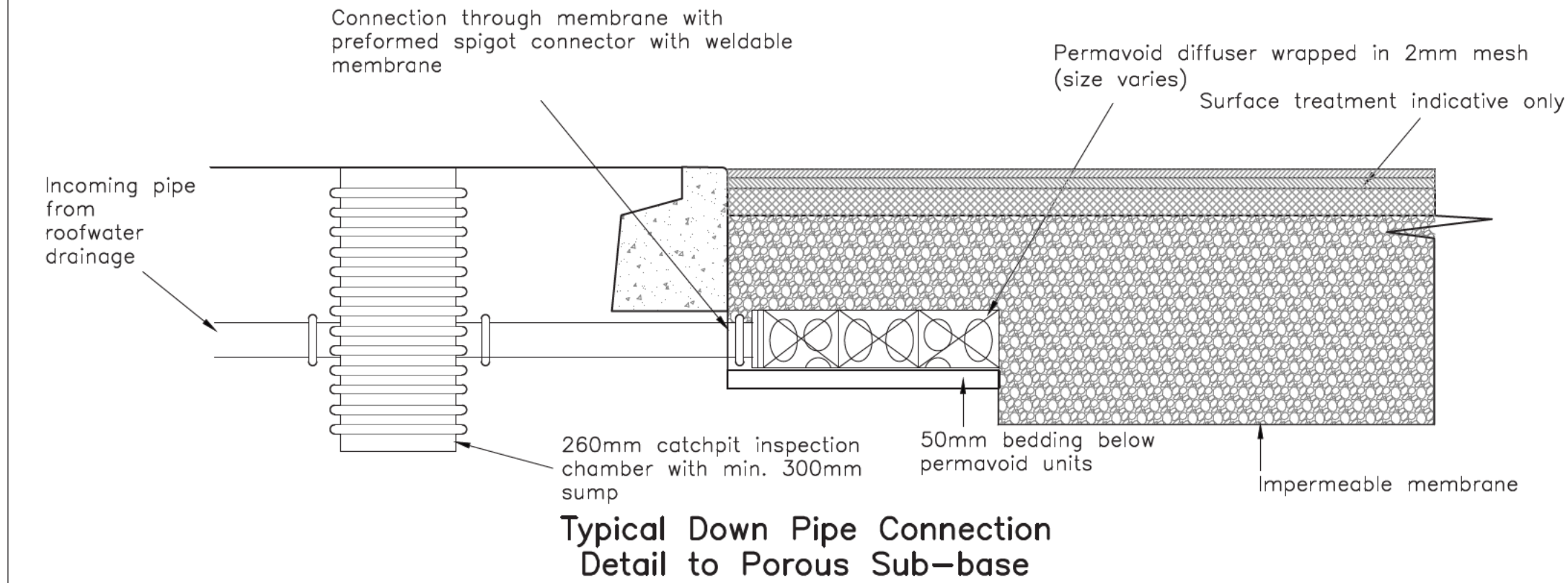
Site inspections undertaken by an engineer from MJA Consulting were limited to areas and drainage components that were accessible and visible at the time of inspection. MJA Consulting accepts no responsibility or liability for any omissions arising from elements that were not accessible or visible during the inspection.

Any sections of the drainage network or Sustainable Drainage Systems (SuDS) features that were not visible at the time of inspection are assumed to be in general compliance with the approved design and specifications. This assumption is made on the basis of professional engineering judgement and the observed condition of the accessible as-built drainage and SuDS components.

This verification report reflects site conditions as observed on the date of inspection only. MJA Consulting cannot be held liable for any future deterioration, malfunction, or requirement for repair or replacement of drainage or SuDS components occurring after the date of this report.

Appendix A

- Drawing Ref: 3258 S1 As-Built Survey (June 2025, Encompass Geospatial Ltd).
- Drawing B717/03 Rev H – Gateway Centre Proposed Surface Drainage Strategy (PFA Consulting Ltd, June 2021).
- 6663-MJA-SW-XX-DR-C-001_C10 Engineering Layout (Sheet 1)
- 6663-MJA-SW-XX-DR-C-002_C11 Engineering Layout (Sheet 2)
- Report - Gateway CCTV Drainage (10.04.25, Ultraflow Drainage LTD.
- B717/04 Surface Finishes & Street Lighting Plan.
- SDS Ltd Attenuation Tank 1,2 & 3 Sign off QA sheets



Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

Website
www.pfaplc.com

For Planning
These drawings are produced for the purposes of supporting a planning application and should not be relied upon for tender, pricing, or construction purposes.

NOTES

1. This drawing is based on topographical survey information supplied by Sterling Surveys - Job No. S11542.
2. Parcel layout based on thrive's Planning Site Layout - Master Layout Drawing, Job No. CONS160808 - Drg. No. SL01_GC rev. O.
3. The southern catchment utilises baffles and orifices within the porous sub-base to maximise storage potential, these would be required to be spaced approximately at 6-15m depending on the gradient of the road surface. All sub-base to be constructed using a Type 3 (10-63mm) stone providing a 30% void ratio.
4. Sub-base to receive flow from road gully via a diffuser unit such as permavoid or similar.

Shallow pipe protection to have 150mm Type Z/Class Z concrete surround. Concrete to be GEN3 to BS8500, 20mm max size aggregate, Class S2 consistence.

Porous Sub-base (lined with impermeable membrane)

Permeable Block Paving (Lined with impermeable membrane)

Geocellular Crates

Rev	Date	Description	Drawn	Check
#	03/05/19	First Issue.	DAB	DRM
A	13/05/19	Invert and pipe gradients added.	DRM	RMH
B	17/06/19	Storage tanks resized and addition of WQD	DAB	CI
C	26/06/19	Southern catchment storage amended to suit changed architect layout	DRM	RMH
D	31/07/19	Revised Strategy, addition of porous sub-base and permeable paving.	DAB	CI
E	07/04/20	Revised to suit changed architects layout	DRM	CI
F	15/03/21	Plan updated in response to EBC letter dated 25/02/21	TLH	CI
G	14/05/21	Indicative filter drain removed	DAB	CI
H	18/05/21	Permeable paving added to driveways and parking bays with key updated	RMH	CI

Status

FOR PLANNING

Client

**Linden Homes
Bovis Homes
Bloor Homes**

Project

Boorley Green

Drawing Title

**Gateway Centre Proposed
Surface Drainage Strategy**

Drawing No. **B717/03** Rev H

Date: June 2019 Scale: 1:500 @ A1

E-Mail: dmorgan@pfaplc.com



Drawing Notes:

- This drawing is to be read in conjunction with all other relevant documents and specifications, including architectural layouts and developer house type information.
Any discrepancies should be reported to MJA Consulting.
- Do not scale from this drawing.
- All levels relate to Ordnance Datum; all dimensions in metres unless otherwise specified. Site survey grid & co-ordinates to be checked on site prior to commencement of any works.
- The level & location of all existing services shall be verified and marked on site by the Contractor prior to commencing any construction works.
- All highway works should be built to an adoptable standard and carried out in accordance with the MCHW Specification for Highway Works and the requirements of the Local Highway Authority.
- All adoptable foul & surface manholes, pipework and associated structures shall be constructed in accordance with current form of Sewers for Adoption latest 'Design & Construction Guidance (DCG)' and any relevant Water Authority specification or Addendum.
- All highway drainage and associated structures to be constructed in accordance with Sewers Adoption guidance and any relevant specification issued by the Local Highway Authority.
- Engineering layouts show below ground drainage only. All soil pipes, stub stacks, WC outlets and rainwater downpipe locations are indicative only. Details should be cross checked against latest development Architect's drawings to ensure compatibility. All stub stacks to be fitted with air admittance valve where branch drain exceeds 12m, except head of run. Lintels or sleeves to be used for passing through foundation brickwork.
- Rainwater downpipes to be connected directly to drains via removable adaptor to permit access for rodding.
- All foul & storm water building drainage not offered for adoption shall be constructed using clay, uPVC or structural wall plastic pipework laid in accordance with manufacturer's specification, Building Regulations Part H, BS EN 752 and to NHBC Standards.
- Building drainage. Foul drainage to be DN100 laid at a minimum gradient of 1 in 40 where serving less than 1 WC. 1 in 80 otherwise or as specified. Minimum gradient for surface water to be 1 in 80 or as specified.
Minimum depth of cover to unprotected gravity pipework should be:
 - Domestic gardens without vehicle access - 0.6m
 - Domestic driveways and parking courts - 0.9m
 - All access roads and main parking areas - 1.2m
- Private inspection chambers shall be non-access structural wall plastic. Chamber sizes to accord with manufacturers specifications, Building Regulations Part H, BS EN 752 and to NHBC Standards.
- Sewers of different diameters to be laid soffit to soffit.
- All gully connections other than at manholes to be 'Y' junctions
- All finished floor levels shown are for guidance only and may need to be adjusted on site where required. However, any amendments or deviation are subject to Engineer's approval. Levels shown within rear gardens are indicative only and subject to landscaping proposals.
- Requirement for raised DPC / Tanking as follows (refer to standard details):
 - Standard DPC where ground level is 150mm below FFL
 - Raised DPC where external ground level is between -150 & level with FFL
 - Where ground level is above the FFL then tanking will be required, specified by structural engineer.
- Position of driveway or parking area gullies and manholes are nominal and should be adjusted to suit, linear drains to be installed where private areas fall towards adjacent to public highway. All covers and gully grates to be suitable for vehicle loading.
- All drainage chambers to be inspected and runs to be flushed through to remove any building material and debris prior to final tests by Building Inspector.

KEY:

Externals:

Step Cavity Tray/Raised DPC - SCT/RDPC
External ground level is level or 0.15m below finished floor level.

Stepped Cavity Tray or Raised DPC to Structural engineer / Architect's specification.

Tanking -
External level is above finished floor level, specified by structural engineer.

DPC where ground level is 0.15m below finished floor level.

Exposed Brickwork -
<0.15m below finished floor level

Retaining Wall -
Refer to structural engineer details

Fall Arrows

Finished floor levels shown thus:
Proposed Levels

Primary Access

Secondary Access

In accordance with Part-M of the Building Regulations -
Every flight of steps with three or more risers (approach to primary access point to have a suitable grippable handrail on one side of the flight (or both sides where the flight is wider than 1000mm). This grippable handrail is 850-1000mm above the pitch line of the flight and extends at least 300mm beyond the top and bottom nosings.

Proposed Adoptable Sewers:

Foul sewer
Storm sewer
Highway Gully

Proposed Private Drainage:

Foul drain
Storm drain
Rodding eye
Yard gully
Linear drain
Permavoid -
Surface Water Collector & Distribution Cell
Size and specification, site specific.

Private inspection chambers shall be non-access structural wall plastic. Chamber sizes to accord with manufacturers specifications, Building Regulations Part H, BS EN 752 and to NHBC Standards.

Invert levels shown thus: F10.00 S10.00

SDS Attenuation tank, as shown on drawing:
6663-MJA-SW-XX-DR-C-202.

Full height concrete baffle

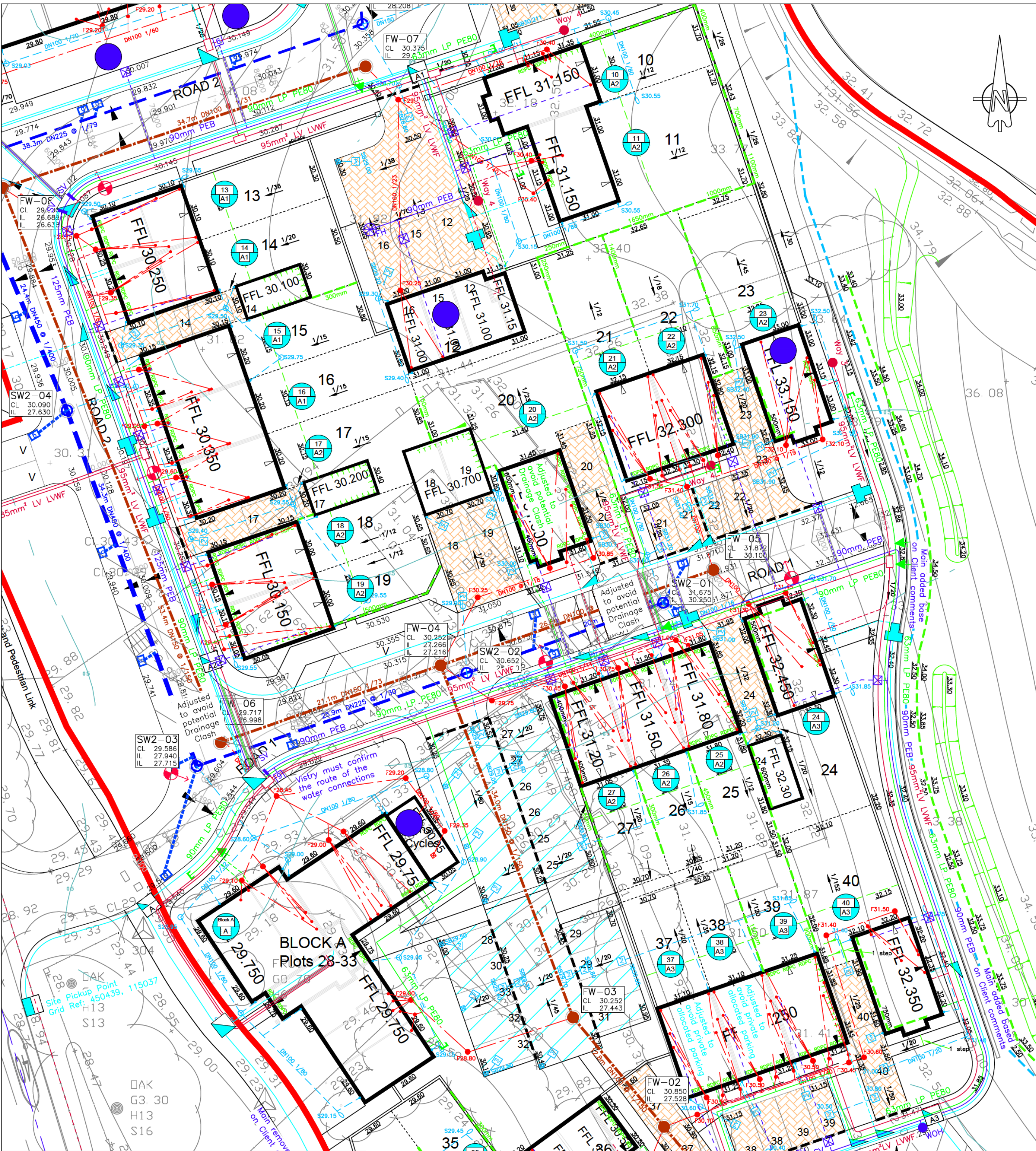
C10	07.03.24	Updated notes for flow control chambers	SR	AKD
REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED
Client				
Project				
Boorley Green Gateway				
Title				
Engineering Layout Sheet 1				
Scale: 1:250 @ A1				
Status: CONSTRUCTION				
Drawn: JS	Project Engineer: RF	MJA Project No: 6663	Date: 11/02/2022	
Drawing Number: 6663-MJA-SW-XX-DR-C-001			Rev: C10	

Vistry Group

MJA CONSULTING
CIVIL & STRUCTURAL ENGINEERS

Ipsium Court, 24 The Quadrant,
Abingdon Science Park, Abingdon
Oxon, OX14 3YS
Tel: 01235 555173
Email: mail@mjaconsulting.co.uk





Drawing Notes:

1. This drawing is to be read in conjunction with all other relevant documents and specifications, including architectural layouts and developer house type information.
Any discrepancies should be reported to MJA Consulting.
2. Do not scale from this drawing.
3. All levels relate to Ordnance Datum; all dimensions in metres unless otherwise specified. Site survey grid & co-ordinates to be checked on site prior to commencement of any works.
4. The level & location of all existing services shall be verified and marked on site by the Contractor prior to commencing any construction works.
5. All highway works should be built to an adoptable standard and carried out in accordance with the MCHW Specification for Highway Works and the requirements of the Local Highway Authority.
6. All adoptable foul & surface manholes, pipework and associated structures shall be constructed in accordance with current form of Sewers for Adoption latest 'Design & Construction Guidance (DCG)' and any relevant Water Authority specification or Addendum.
7. All highway drainage and associated structures to be constructed in accordance with Sewers Adoption guidance and any relevant specification issued by the Local Highway Authority.
8. Engineering layouts show below ground drainage only. All soil pipes, stub stacks, WC outlets and rainwater downpipe locations are indicative only. Details should be cross checked against latest development Architect's drawings to ensure compatibility. All stub stacks to be fitted with air admittance valve where branch drain exceeds 12m, except head of run. Lintels or sleeves to be used for passing through foundation brickwork.
9. Rainwater downpipes to be connected directly to drains via removable adaptor to permit access for rodding.
10. All foul & storm water building drainage not offered for adoption shall be constructed using clay, uPVC or structural wall plastic pipework laid in accordance with manufacturer's specification, Building Regulations Part H, BS EN 752 and to NHBC Standards.
11. Building drainage. Foul drainage to be DN100 laid at a minimum gradient of 1 in 40 where serving less than 1 WC. 1 in 80 otherwise or as specified.
Minimum gradient for surface water to be 1 in 80 or as specified.
Minimum depth of cover to unprotected gravity pipework should be:
 - Domestic gardens without vehicle access – 0.6m
 - Domestic driveways and parking courts – 0.9m
 - All access roads and main parking areas – 1.2m
12. Private inspection chambers shall be non-access structural wall plastic. Chamber sizes to accord with manufacturers specifications, Building Regulations Part H, BS EN 752 and to NHBC Standards.
13. Sewers of different diameters to be laid soffit to soffit.
14. All gully connections other than at manholes to be 'Y' junctions
15. All finished floor levels shown are for guidance only and may need to be adjusted on site where required. However, any amendments or deviation are subject to Engineer's approval. Levels shown within rear gardens are indicative only and subject to landscaping proposals.
16. Requirement for raised DPC / Tanking as follows (refer to standard details):
 - Standard DPC where ground level is 150mm below FFL
 - Raised DPC where external ground level is between -150 & level with FFL
 - Where ground level is above the FFL then tanking will be required, specified by structural engineer.
17. Position of driveway or parking area gullies and manholes are nominal and should be adjusted to suit, linear drains to be installed where private areas fall towards adjacent to public highway. All covers and gully grates to be suitable for vehicle loading.
18. All drainage chambers to be inspected and runs to be flushed through to remove any building material and debris prior to final tests by Building Inspector.

KEY:

Externals:

Step Cavity Tray/Raised DPC – SCT/RDPC
External ground level is level or 0.15m below finished floor level.

Stepped Cavity Tray or Raised DPC to Structural engineer /Architect's specification.

Tanking –
External level is above finished floor level, specified by structural engineer.

DPC where ground level is 0.15m below finished floor level.

Exposed Brickwork –
<0.150m below finished floor level

Retaining Wall –
Refer to structural engineer details

Fall Arrows

Finished floor levels shown thus:

Proposed Levels

Primary Access

Secondary Access

In accordance with Part-M of the Building Regulations – Every flight of steps with three or more risers (approach to primary access point to have a suitable grippable handrail on one side of the flight (or both sides where the flight is wider than 1000mm). This grippable handrail is 850–1000mm above the pitch line of the flight and extends at least 300mm beyond the top and bottom nosings.

Proposed Adoptable Sewers:

Foul sewer

Storm sewer

Highway Gully

Proposed Private Drainage:

Foul drain

Storm drain

Rodding eye

Yard gully

Linear drain

Permavoid –
Surface Water Collector & Distribution Cell
Size and specification, site specific.

Private inspection chambers shall be non-access structural wall plastic. Chamber sizes to accord with manufacturers specifications, Building Regulations Part H, BS EN 752 and to NHBC Standards.

Invert levels shown thus:

Full height concrete baffle

C11	11.04.24	Storm outfall updated to agreed layout	JS	AKD
C10	07.03.24	Updated notes for flow control chambers	SR	AKD
C9	07.07.23	Additional Details added to land drainage	JS	AMC
REV. No.	DATE	DESCRIPTION	DRAWN	CHECKED
Client				
Vistry Group				
Project				
Boorley Green Gateway				
Title				
Engineering Layout Sheet 2				
Scale: 1:250 @ A1				
Status: CONSTRUCTION				
Drawn: JS	Project Engineer: RF	MJA Project No: 6663	Date: 11/02/2022	
Drawing Number: 6663-MJA-SW-XX-DR-C-002	Rev: C11			

MJA CONSULTING
CIVIL & STRUCTURAL ENGINEERS

Ipsium Court, 24 The Quadrant,
Abingdon Science Park, Abingdon
Oxon, OX14 3YS
Tel: 01235 555173
Email: mail@mjaconsulting.co.uk



Completed section inspection

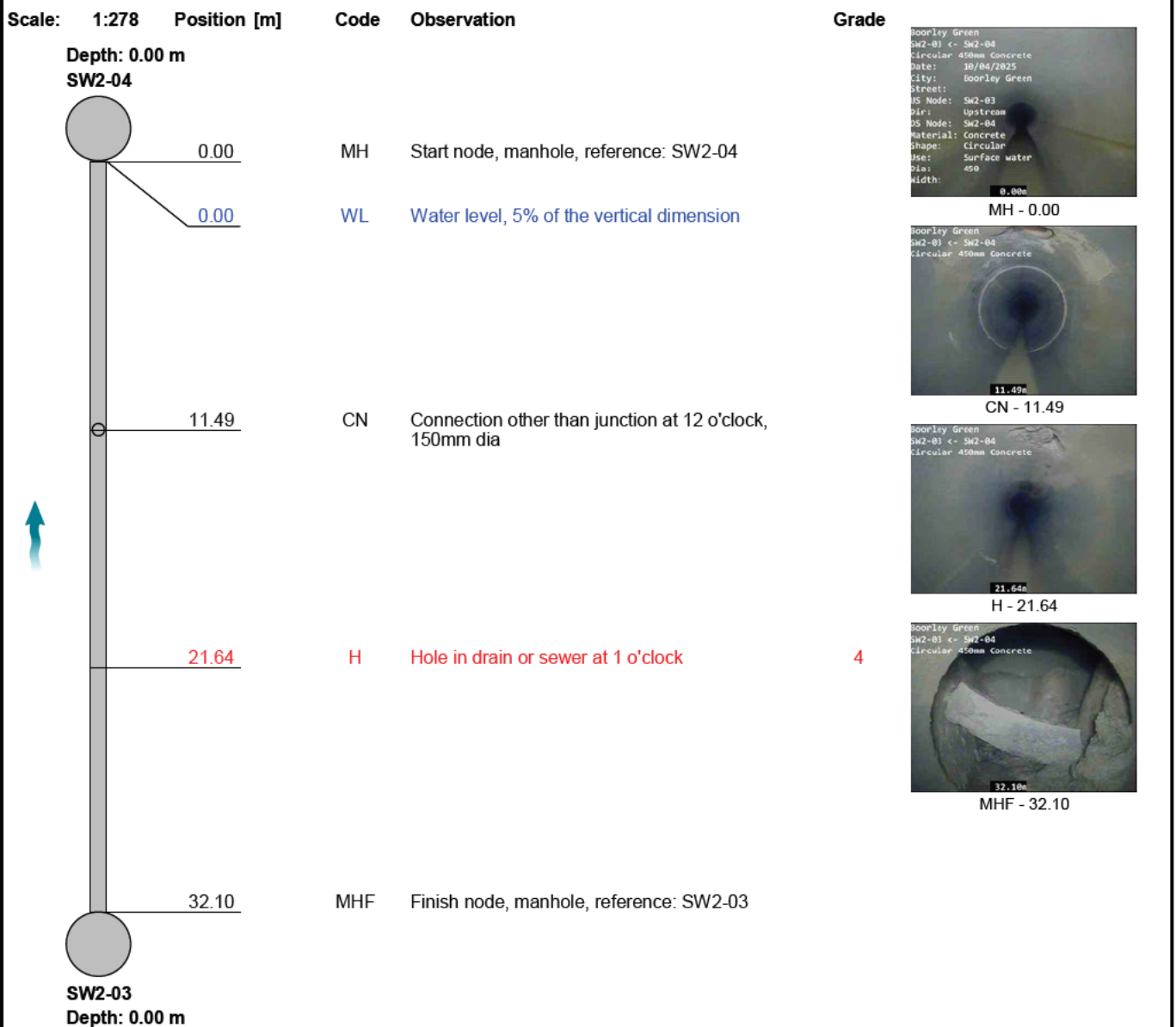


Item No. 1	Insp. No. 1	Date 10/04/25	Time 11:07	Client's Job Ref .	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SW2-03X
Operator A Fox		Vehicle YV21 BXM		Camera Crawler	Preset Length 0.80 m	Legal Status Highways Drainage	Alternative ID Not Specified

Town or Village:	Boorley Green	Inspection Direction:	Upstream	Upstream Node:	SW2-03
Road:		Inspected Length:	32.10 m	Upstream Pipe Depth:	0.000 m
Location:	Road	Total Length:	32.10 m	Downstream Node:	SW2-04
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.000 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	450 mm		
Flow Control:	No flow control	Material:	Concrete		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:

Recommendations:



Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	80.0	0.0	80.0	4.0	0	0.0	0.0	0.0	1.0

Completed section inspection

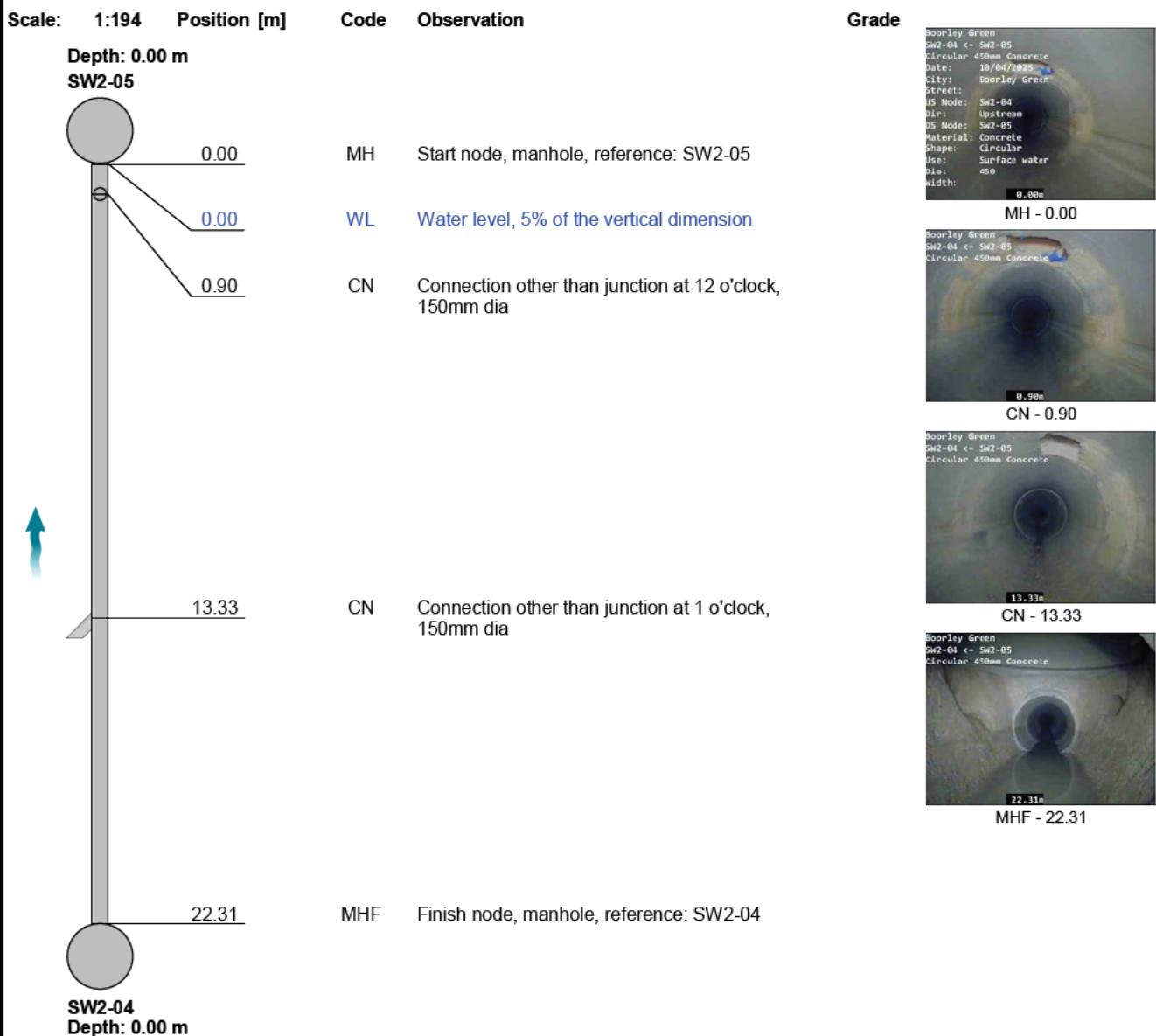


Item No. 2	Insp. No. 1	Date 10/04/25	Time 11:04	Client's Job Ref .	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SW2-04X
Operator A Fox		Vehicle YV21 BXM		Camera Crawler	Preset Length 0.80 m	Legal Status Highways Drainage	Alternative ID Not Specified

Town or Village:	Boorley Green	Inspection Direction:	Upstream	Upstream Node:	SW2-04
Road:		Inspected Length:	22.31 m	Upstream Pipe Depth:	0.000 m
Location:	Road	Total Length:	22.31 m	Downstream Node:	SW2-05
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.000 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	450 mm		
Flow Control:	No flow control	Material:	Concrete		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:

Recommendations:



Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

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

Completed section inspection

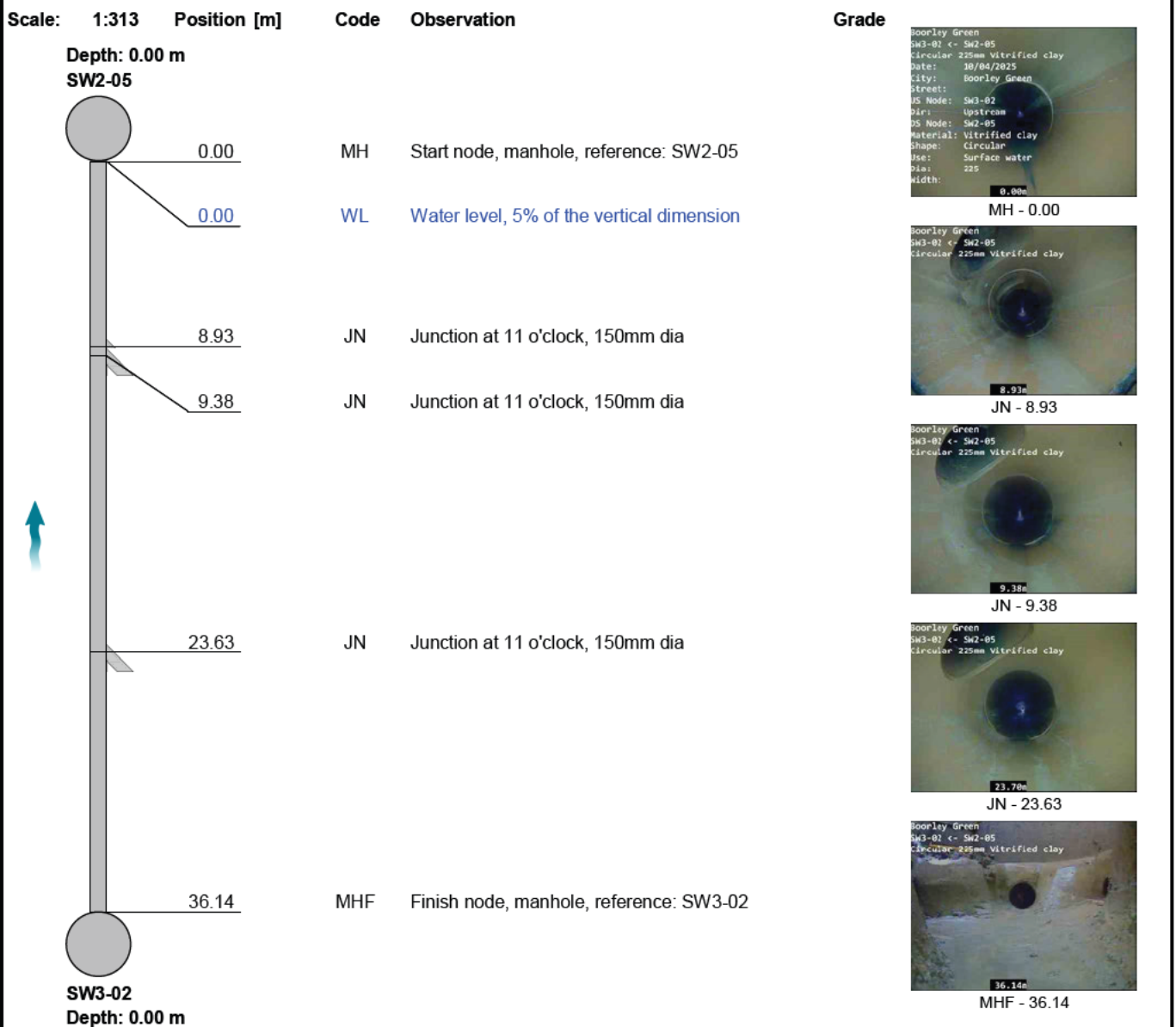


Item No. 3	Insp. No. 1	Date 10/04/25	Time 13:21	Client's Job Ref .	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SW3-02X
Operator A Fox		Vehicle YV21 BXM		Camera Crawler	Preset Length 0.80 m	Legal Status Highways Drainage	Alternative ID Not Specified

Town or Village:	Boorley Green	Inspection Direction:	Upstream	Upstream Node:	SW3-02
Road:		Inspected Length:	36.14 m	Upstream Pipe Depth:	0.000 m
Location:	Road	Total Length:	36.14 m	Downstream Node:	SW2-05
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.000 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:

Recommendations:



Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

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

Completed section inspection

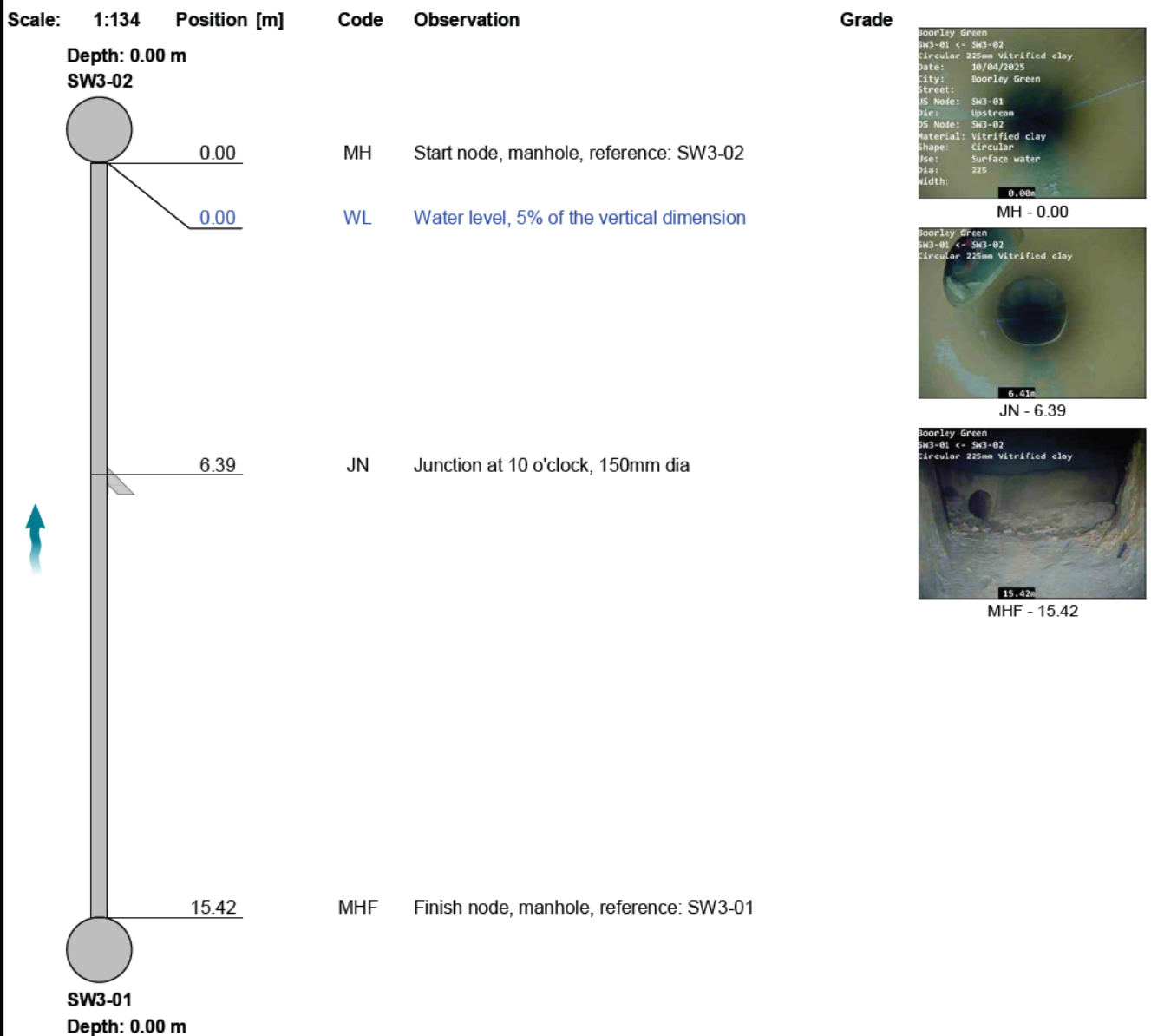


Item No. 4	Insp. No. 1	Date 10/04/25	Time 13:26	Client's Job Ref .	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SW3-01X
Operator A Fox		Vehicle YV21 BXM		Camera Crawler	Preset Length 0.60 m	Legal Status Highways Drainage	Alternative ID Not Specified

Town or Village:	Boorley Green	Inspection Direction:	Upstream	Upstream Node:	SW3-01
Road:		Inspected Length:	15.42 m	Upstream Pipe Depth:	0.000 m
Location:	Road	Total Length:	15.42 m	Downstream Node:	SW3-02
Surface Type:		Joint Length:		Downstream Pipe Depth:	0.000 m
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	225 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Routine inspection	Lining Material:	No Lining		

Comments:

Recommendations:



Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

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



Stratton Park House, Wanborough Road
Swindon, SN3 4HG

Telephone
01793 828000

Website
www.pfapl.com

For Planning
These drawings are produced for the purposes of supporting a planning application and should not be relied upon for tender, pricing, or construction purposes.

SURFACE FINISHES

- Asphalt Concrete Carriageway (Spine Road Construction)
- Asphalt Concrete Carriageway (Residential Road Construction)
- Asphalt Concrete Carriageway with porous sub base (Residential Road Construction)
- Asphalt Concrete Footway Construction (Footway Type 1A)
- Asphalt Concrete Vehicular Crossover (Footway Type 5)
- Block Paved Shared Surface. Colour: Burnt Ochre
- Block Paved Surface. Colour: Burnt Ochre with porous sub base
- Verge
- Proposed Street Light. 6m Column with Philips LED BGP615 Micro Luminaire
- Change in construction type from Spine Road to residential road
- 1.8m Brick Screen Wall
- 1.8m Larchlap Fence
- 1.8m Closeboard Fence

Rev	Date	Description	Drawn	Check
#	02/05/19	First Issue.	DRM	CI
A	26/06/19	Updated to suit new architects layout	DRM	RMH
B	01/07/19	North car park/delivery area updated to suit new architects layout.	DRM	CI
C	15/06/20	Revised to suit new architects layout, surfacing updated to match surface water drainage strategy	DRM	CI

Status

FOR PLANNING

Client

Linden Homes
Bovis Homes
Bloor Homes

Project

Boorley Green

Drawing Title

Gateway Centre
Surface Finishes & Street
Light Plan

Drawing No. **B717/04** Rev. C

Date: May 2019 Scale: 1:500 @ A1

E-Mail: dmorgan@pfapl.com

0m 10m 20m 30m 40m 50m
Scale 1:500

SDS Ltd Sign off QA Sheet

ATTENUATION TANK		ATT: 1	DATE: 28-10-22
SITE:	Boorley Green		TANK VOLUME: 405m ³
LOCATION:	Southampton		DIMENSIONS: 54x5x1 (m)
DRAINAGE:	ATTENUATION		JOB NO: 923-22

SECTION 1 AND 7 TO BE SIGNED BY CLIENTS ENGINEER

CHECK	DATE	COMMENT	SDS	
1. SETTING OUT and FORMATION		Engineer to sign and date prior to laying of materials		
2. TANK BASE		Installed as per manufacturers recommendations		
3. EXTERNAL PROTECTIVE COVERINGS:		Installed as per manufacturers recommendations		
a. Base of Tank		Installed as per manufacturers recommendations		
b. Vertical sides		Installed as per manufacturers recommendations		
c. Top of tank		Installed as per manufacturers recommendations		
4. WELDED GEOMEMBRANE		Installed as per manufacturers recommendations		
a. Welded joint		Installed as per manufacturers recommendations		
b. Base of Tank		Installed as per manufacturers recommendations		
c. Vertical sides		Installed as per manufacturers recommendations		
d. Top of Tank		Installed as per manufacturers recommendations		
5. GEOLIGHT UNITS		Installed as per manufacturers recommendations		
6. GEOTEXTILE PIPE TRENCH		Installed as per manufacturers recommendations		
7. PIPEWORK: mm		Installed as per manufacturers recommendations		
a. Invert levels		Engineer to sign and date prior to laying of materials	N/A	
b. position		Engineer to sign and date prior to laying of materials	N/A	
c. diameter		Engineer to sign and date prior to laying of materials	N/A	
d. penetrations sealed		Installed as per manufacturers recommendations		
8. VENT SYSTEM		Installed as per manufacturers recommendations		
9. BACKFILLING				

PLEASE NOTE: Only back fill around pipe after the connection between tank and manhole is complete so that the pipe is not compromised in any way with an open end. Failure to comply may result in the pipe being damaged. It may be necessary to put stone over pipe when filling pipe trench but make sure enough pipe is protruding so that stone is not directly on open end. SDS will not accept responsibility.

In signing this document, you are in agreement that the above work meets your specifications. Please note that changes to any project elements after sign-off may be subject to additional charges.

SUB CONTRACTOR	SUSTAINABLE DRAINAGE SYSTEMS LTD	Signed	
		Printed	
MAIN CONTRACTOR	Stokam Group	Signed	
		Printed	

SDS Ltd Sign off QA Sheet

ATTENUATION TANK	ATT: 2	DATE:	28-10-22
SITE:	Boorley Green	TANK VOLUME:	135m ³
LOCATION:	Southampton	DIMENSIONS:	18x5x1 (m)
DRAINAGE:	ATTENUATION	JOB NO:	923-22

SECTION 1 AND 7 TO BE SIGNED BY CLIENTS ENGINEER

CHECK	DATE	COMMENT	SDS	
1. SETTING OUT and FORMATION		Engineer to sign and date prior to laying of materials		
2. TANK BASE		Installed as per manufacturers recommendations		
3. EXTERNAL PROTECTIVE COVERINGS:		Installed as per manufacturers recommendations		
a. Base of Tank		Installed as per manufacturers recommendations		
b. Vertical sides		Installed as per manufacturers recommendations		
c. Top of tank		Installed as per manufacturers recommendations		
4. WELDED GEOMEMBRANE		Installed as per manufacturers recommendations		
a. Welded joint		Installed as per manufacturers recommendations		
b. Base of Tank		Installed as per manufacturers recommendations		
c. Vertical sides		Installed as per manufacturers recommendations		
d. Top of Tank		Installed as per manufacturers recommendations		
5. GEOLIGHT UNITS		Installed as per manufacturers recommendations		
6. GEOTEXTILE PIPE TRENCH		Installed as per manufacturers recommendations		
7. PIPEWORK: mm		Installed as per manufacturers recommendations		
a. Invert levels		Engineer to sign and date prior to laying of materials	N/A	
b. position		Engineer to sign and date prior to laying of materials	N/A	
c. diameter		Engineer to sign and date prior to laying of materials	N/A	
d. penetrations sealed		Installed as per manufacturers recommendations		
8. VENT SYSTEM		Installed as per manufacturers recommendations		
9. BACKFILLING				

PLEASE NOTE: Only back fill around pipe after the connection between tank and manhole is complete so that the pipe is not compromised in any way with an open end. Failure to comply may result in the pipe being damaged. It may be necessary to put stone over pipe when filling pipe trench but make sure enough pipe is protruding so that stone is not directly on open end. SDS will not accept responsibility.

In signing this document, you are in agreement that the above work meets your specifications. Please note that changes to any project elements after sign-off may be subject to additional charges.

SUB CONTRACTOR	SUSTAINABLE DRAINAGE SYSTEMS LTD	Signed	
		Printed	Max Morris
MAIN CONTRACTOR	Statom Group	Signed	
		Printed	

SDS Ltd Sign off QA Sheet

ATTENUATION TANK	ATT:	3	DATE:	13-2-23
SITE:	Gateway Centre		TANK VOLUME:	273.75
LOCATION:	Boorley Green		DIMENSIONS:	Varia
DRAINAGE:	ATTENUATION		JOB NO:	923-22

SECTION 1 AND 7 TO BE SIGNED BY CLIENTS ENGINEER

CHECK	DATE	COMMENT	SDS	
1. SETTING OUT and FORMATION		Engineer to sign and date prior to laying of materials		
2. TANK BASE		Installed as per manufacturers recommendations		
3. EXTERNAL PROTECTIVE COVERINGS:		Installed as per manufacturers recommendations		
a. Base of Tank		Installed as per manufacturers recommendations		
b. Vertical sides		Installed as per manufacturers recommendations		
c. Top of tank		Installed as per manufacturers recommendations		
4. WELDED GEOMEMBRANE		Installed as per manufacturers recommendations		
a. Welded joint		Installed as per manufacturers recommendations		
b. Base of Tank		Installed as per manufacturers recommendations		
c. Vertical sides		Installed as per manufacturers recommendations		
d. Top of Tank		Installed as per manufacturers recommendations		
5. GEOLIGHT UNITS		Installed as per manufacturers recommendations		
6. GEOTEXTILE PIPE TRENCH		Installed as per manufacturers recommendations		
7. PIPEWORK: mm		Installed as per manufacturers recommendations		
a. Invert levels		Engineer to sign and date prior to laying of materials	N/A	
b. position		Engineer to sign and date prior to laying of materials	N/A	
c. diameter		Engineer to sign and date prior to laying of materials	N/A	
d. penetrations sealed		Installed as per manufacturers recommendations		
8. VENT SYSTEM		Installed as per manufacturers recommendations		
9. BACKFILLING				

PLEASE NOTE: Only back fill around pipe after the connection between tank and manhole is complete so that the pipe is not compromised in any way with an open end. Failure to comply may result in the pipe being damaged. It may be necessary to put stone over pipe when filling pipe trench but make sure enough pipe is protruding so that stone is not directly on open end. SDS will not accept responsibility.

In signing this document, you are in agreement that the above work meets your specifications. Please note that changes to any project elements after sign-off may be subject to additional charges.

SUB CONTRACTOR	SUSTAINABLE DRAINAGE SYSTEMS LTD	Signed	BS
		Printed	
MAIN CONTRACTOR	Statom group LTD	Signed	
		Printed	



Appendix B

Photographs Ref 1 to 5

Photo 1: View onto typical permeable block paved parking area.



Photo 2: View onto typical macadam surfaced area with gully.



Photo 3: View onto typical permeable block paved driveway



Photo 4: View onto typical macadam parking court and permeable block paving parking spaces.



Photo 5: View onto typical impermeable block paving falling towards permeable block paving parking spaces.





MJA CONSULTING

Civil & Structural Engineers

www.mjaconsulting.co.uk

Ipsium Court
24 The Quadrant
Abingdon Science Park
Abingdon
Oxfordshire
OX14 3YS