

**Storm Drainage, Site Inspection
& Verification Report**

**Hamble Wood
Heath House Lane,
Hedge End**

**Prepared for
Bargate Homes Limited**

by

**Stuart Michael
Associates Limited**

March 2023



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1.0 INTRODUCTION

1.1 Stuart Michael Associates (SMA) Limited, Consulting Engineers, has prepared this Flood Risk Assessment and Drainage Statement (FRA&DS), hereafter referred to as the 'Report', on behalf of Bargate Homes Limited, hereafter referred to as the 'Client'. The development site is situated within the area administered by Eastleigh Borough Council, Hampshire.

1.2 This Report supports a Full planning application for the demolition of the existing farmhouse and associated former farm buildings, the creation of a new access onto Heath House Lane, the erection of 123 dwellings together with internal roads, landscaping and drainage provision, hereafter referred to as the 'Site'.

Scope of Report

1.3 The scope of this report is limited to the verification of the drainage construction work.

1.4 The Planning Decision includes condition number 6, included below which :

"Prior to first occupation of each phase of the development, the drainage system shall be constructed in accordance with the Flood Risk Assessment and Drainage Strategy; Ref: 6351/FRA. Surface water discharge to the existing pipe shall be limited to 9.5 l/s. Any changes to the approved documentation must be submitted to and approved in writing by Local Planning Authority and Lead Local Flood Authority. Any revised details submitted for approval must include a technical summary highlighting any changes, updated detailed drainage drawings and detailed drainage calculations. The drainage system shall thereafter be retained, maintained and managed in accordance with Local Planning Authority 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 provision of surface water drainage.*"

1.5 The last sentence highlighted in italics outlines the need for verification of the drainage works to ensure the drainage strategy has been followed and requires a written statement of verification.



1.6 An appropriately qualified professional under the terms of Planning Condition number 6 is presented as :-

Name of signing engineer: Mark A. Smyth,

Company: Stuart Michael Associates Limited, of Thatcham

Qualifications / Experience

- C.Eng Chartered Civil Engineer with the Engineering Council
- MICE Member of Institute of Civil Engineer
- B.Eng Environmental, Bachelor of Environmental Engineering, Southampton
- Practising Civil Engineer with 24 years industry experience



2.0 THE SITE

Location

2.1 The Site is located on the south eastern outskirts of Hedge End. The National Grid Reference for the centre of the Site is OS 449452, 111696.

2.2 The Site is 3.55 hectares in area and previously consisted of farm buildings with paddock land.

2.3 The Site is bound by Hoe Moor Creek to the south, Heath House Lane to the west, Tanhouse Lane to the north and farm buildings with associated land to the east.

Topography

2.4 Topographic Survey information, undertaken by Encompass Surveys in August 2018, indicates that levels vary between 40m AOD and 28m AOD across the Site, and falls in a south easterly direction.



3.0 INSPECTIONS

3.1 Site inspection have been undertaken by the verification engineer at regular intervals during the construction period

3.2 No.1 13th December 2021

3.3 No.2 31st January 2022

3.4 No.3 11th May 2022

3.5 No.4 6th March 2023

3.6 The sewer records are presented as **Appendix E**.



4.0 SUMMARY AND CONCLUSIONS

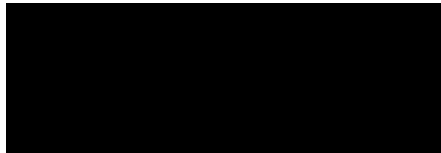
Verification Statement

4.1 I, Mark Smyth, Chartered Engineer, of Stuart Michael Associates limited have visited the site over the course of the construction period to inspect the drainage works.

4.2 I confirm that the private surface water drainage connects onto the adoptable network and that the adoptable network is sufficiently complete to convey the surface water to the private outfall in the pond.

4.3 The construction work and drainage features inspected during my visits are therefore verified in accordance with the approved information.

Signed



Date

23rd March 2023

Print

MARK A. SMYTH

Qualification

Chartered Civil Engineer

Engineering Council No.

563858

Conclusion

4.4 This report verifies the drainage features (as per inspection contained within the appendices of this document) are in compliance with the approved drainage information.



Inspection Number 1

Appendix A

Site Inspection Record 1.

Project Number	6351
Project Name	Heath House Lane, Hedge End
Date, time	13 th December 2021 (13.30 site attendance)
Weather	Fine dry, some standing water on site from recent heavy rain in the preceding days

Record

The early groundworks have commenced on the site.

The construction team are working through the deep drainage first, and the pond has been installed

The side slope batters to the pond are correctly formed

The liner has been wrapped in a geotextile protection membrane underneath and over the liner.

The erosion matting has commenced installation to the headwall base areas

Queries / Requests for Information

Query raised on the pond liner which was only partially visible during the inspection due to the geotextile fabric protection installed over.

Query later confirmed that the pond liner was not as per approved drawing and a heavy duty EDPM pond liner was not used

The pond liner is therefore condemned, and must be replaced with the approved EDPM liner.

Statement

The record information and photographic evidence contained herein is considered to be a true and accurate reflection of the inspection

Work inspected on the day is 'deemed satisfactory and fit for purpose'

(except pond liner, which was condemned and must be replaced)

Print : MARK A SMYTH

Title : Director

Signed :



Qualification : Chartered Engineer (MICE)

Photos

Date 13th December 2021



Photograph 1 : pond stilling upper basin installation, view south west



Photograph 2 : Pond looking north east, outfall matting visible as in the liner within the geotextile



Photograph 3 : Pond looking north, transition weir to foreground



Photograph 4 : Excavation of the pond channel system, view west



Inspection Number 2

Appendix B

Site Inspection Record 2.

Project Number	6351
Project Name	Heath House Lane, Hedge End
Date, time	31 st January 2022 (12.00 site attendance)
Weather	Fine dry, preceding day was dry
Record Work has progressed since inception number 1 The incorrect pond liner noted in inspection number 1, has been removed and replaced with the specialist heavy duty EDPM pond liner. (as per approved pond drawings) The pond liner was confirmed as appropriately installed with a geotextile membrane installed underneath and over to prevent damage during earthworks Appropriate depth of kentledge over liner has been installed as per the approved plans. The control chamber was inspected partway through installation, and the hydrobrake device is noted in photograph number 1 Early installation for the porous paving has comments, and the impermeable liner, and 'no fines' stone material was recorded as per approved drawings.	
Queries / Requests for Information The delivery tickets were requested for the type 3 (no fines stone) used on the porous paving. The delivery tickets for the week were made available for inspection and we can confirm material sheets are present confirming the imported stone grade used is suitable for the porous paving infill Clarification was sort on the concrete base plug of the control chamber, and adequate sized base plug was presented by the construction team, and the following was reiterated: concrete cover slab and encasement thickness to be controlled on site to ensure resistance to floatation is provided to the control chamber. Also mechanism for the emergency activation (visible in photo) to be installed so that manual operation can be made without descending into the chamber.	

Statement

The record information and photographic evidence contained herein is considered to be a true and accurate reflection of the inspection

Work inspected on the day is 'deemed satisfactory and fit for purpose'

Print : MARK A SMYTH

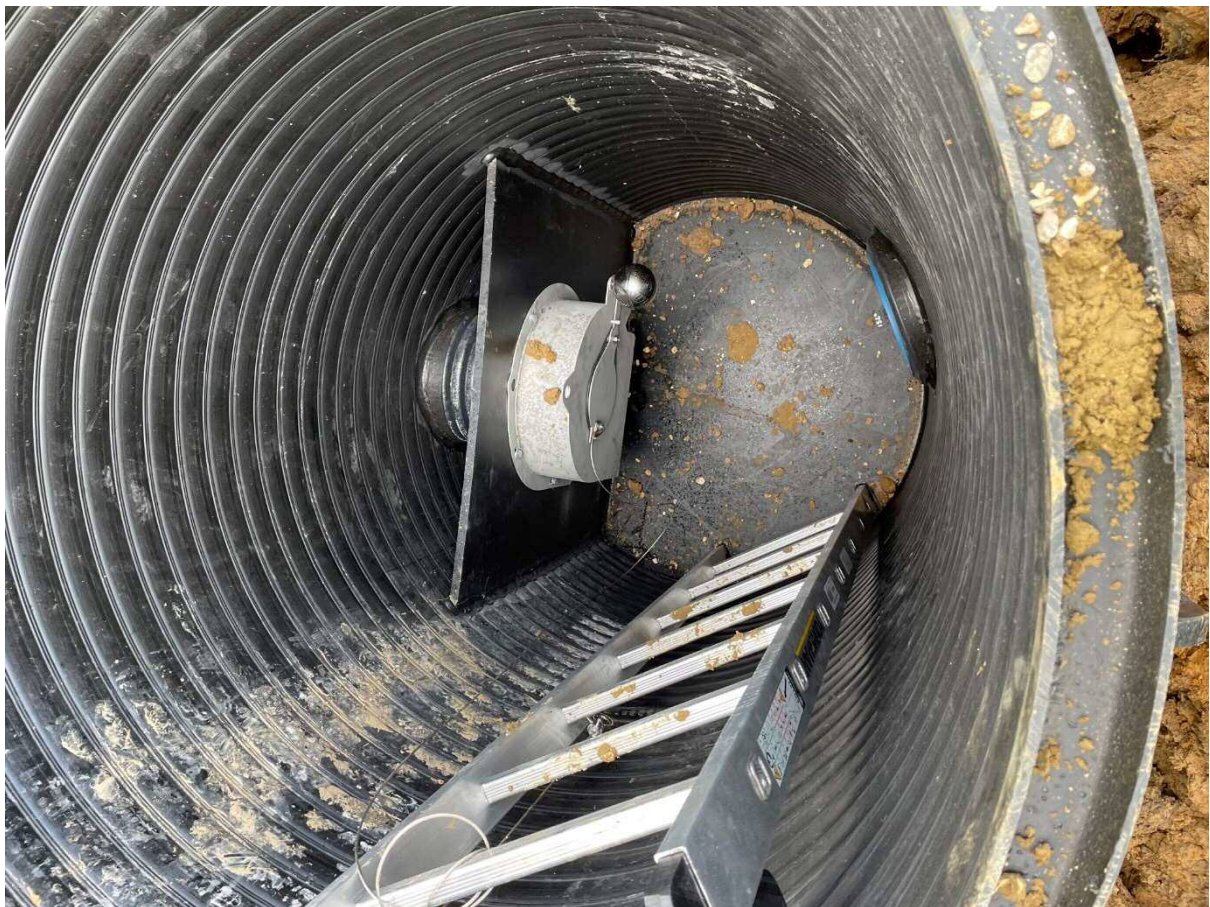
Title : Director

Signed : 

Qualification : Chartered Engineer (MICE)

Photos

Date: 31 Jan 2022



Photograph 1: Control Chamber during installation, hydrobrake control feature visible



Photograph 2, pond looking west



Photograph 3: pond looking north, outfall and pond liner visible



Photograph 4 : Early installation of the porous paving, liner and 'no fines' stone material recorded



Inspection Number 3

Appendix C

Site Inspection Record 3.

Project Number	6351
Project Name	Heath House Lane, Hedge End
Date, time	11 th May 2022 (15.15 site attendance)
Weather	Fine dry, preceding day was dry
Record Work has progressed since inception number 2 Pond has been completed and all headwall structures have been constructed and appear satisfactory Tree planting has also been completed to the pond open space area. Porous paving areas used as construction working platforms are now protected by a layer of macadam	
Queries / Requests for Information The delivery tickets were requested for the type 3 (no fines stone) used on the porous paving. The delivery tickets for the week were made available for inspection and we can confirm material sheets are present confirming the imported stone grade used is suitable for the porous paving infill A sweeping regime is important to ensure the performance of the porous during the construction period and the open graded macadam material	
Statement The record information and photographic evidence contained herein is considered to be a true and accurate reflection of the inspection Work inspected on the day is 'deemed satisfactory and fit for purpose' Print : MARK A SMYTH	

Title : Director

Signed : 

Qualification : Chartered Engineer (MICE)

Photos

Date: 11 May 2022



Photograph 1: Porous private road, note liner and no fines stone infill, temporary macadam open graded material laid over as construction running surface



Photograph 2, Macadam surface over porous paving



Photograph 3: pond looking south, finished masonry outfall and mattress visible



Photograph 4 : pond looking south west, tree planting to banks installed, masonry headwalls to channel system visible



Photograph 5 : pond looking, tree planting to banks installed, upper wall also installed to serve perimeter footpath



Inspection Number 4

Appendix D

Site Inspection Record 4.

Project Number	6351
Project Name	Heath House Lane, Hedge End
Date, time	6 th March 2023 (10.00 site attendance)
Weather	Fine dry, preceding day was wet
Record Work has progressed since inception number 3, and the site is preparing for first occupations. Pond has been completed and all landscaping measures are now taking root around the pond area. Tree planting has also been completed to the pond open space area. The basin outfall is yet to receive the headwall grill, and this is recommended for installation prior to occupations to prevent inadvertent access to the outfall pipe. A straw bale arrangement was also noted around the outfall, this provides a temporary additional measure and should be retained while construction is ongoing, bales need replacement Porous paving areas used as construction working platforms are now protected by a layer of macadam During inspection, there was a section of potable water main that was undergoing diversion works, and as such the porous paving had been excavated to the rear of	
Queries / Requests for Information A sweeping regime is important to ensure the performance of the porous during the construction period and the open graded macadam material The contractor was reminded of the need to adequately tape and joint the porous paving membrane once the water main works have completed to ensure that the porous maintains the installed tanking	

Statement
The record information and photographic evidence contained herein is considered to be a true and accurate reflection of the inspection Work inspected on the day is 'deemed satisfactory and fit for purpose' Print : MARK A SMYTH Title : Director Signed : Qualification : Chartered Engineer (MICE)

Photos

Date: 6th March 2023

Photograph 1: Porous private road, currently excavated to expose and divert a potable water main. The porous stone, (Type 3 no fines material) was clearly noted in the excavated material confirming the porous paving was constructed correctly and in accordance with the approved plans.



Photograph 2, Porous paving, excavated for potable water diversion

Note the presence of the liner at the base of the porous paving



Photograph 3: pond looking south, finished masonry outfall and landscaping visible



Photograph 4 : pond looking north, tree planting and landscaping clearly visible. Note the masonry outfall requires a safety grill



Photograph 5 : pond closer view of the pond outfall, noting the straw bales used as a temporary silt control, suggest these are replaced and maintained during the construction works

