



**ARCH
ASSOCIATES**

SUDS VERIFICATION REPORT



PHASE 1 - LAND AT MADDOXFORD LANE,
BOORLEY GREEN

SUDS VERIFICATION REPORT

for

PHASE 1 – LAND AT MADDOXFORD LANE
BOORLEY GREEN

Client:

Foreman Homes Ltd.
1300 Parkway
Solent Business Park
Whiteley
PO15 7AE

ISSUE		A	B	C
Issued By	C Hendry			
Date	April 2024			
Purpose	Information			
Approved By	CH			

Project No. FHL017



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1.0 Introduction

Arch Associates Limited has been commissioned by Foreman Homes Ltd. to prepare a Surface Water Drainage Verification Report for the development at Phase 1 – Maddoxford Lane, Boorley Green. Reserved Matters planning reference: RM/18/83875.

A pre-occupation planning condition has been applied, which is worded as follows:

Condition 15

The sustainable drainage system including shall be fully implemented and written verification by an appropriate drainage consultant of its implementation in accordance with the approved plans and supporting drainage statements shall be provided to the Local Planning Authority prior to the first occupation of the 25th dwelling unit. At the same time written confirmation shall also be provided of the company or body responsible for the ongoing management and maintenance and the sustainable drainage scheme shall thereafter be retained, maintained and managed in accordance with the approved management and maintenance details set out in Paul Basham Associates' Drainage Strategy dated October 2019. Any changes to the proposed management and maintenance details will need to be first approved in writing by the Local Planning Authority.

Reason: To prevent flooding and pollution, ensure satisfactory drainage from the development and to ensure no impact on the Solent Complex from pollution or changes in flow within the operational phase.

This report has been prepared in consideration of the wording of planning condition 15 as noted above.

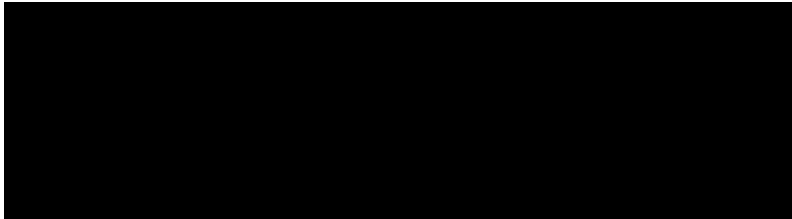
2.0 Drainage Verification

- 2.1 The surface water drainage on site was designed by Paul Basham Associates Ltd. and the construction issue drawings can be found in Appendix 1.
- 2.2 Given the natural fall of the site, the drainage is routed to the watercourse at the southeast of the site at the appropriate greenfield rate for the storm return periods.
- 2.3 The drainage system is based on the greenfield rates to not be exceeded. The system collects water from the rooftops via guttering and downpipes, and hardstanding paved areas via a series of gullies. Catchpits are used to reduce sediment build-up before the surface water is discharged into a staged attenuation basin at the southwest end of the site that routes the water into the existing watercourse utilising a pumping station due to the change in levels.
- 2.4 Treatment of the surface water is provided via the staged attenuation basin and a full retention Class 1 separator.
- 2.5 Arch Associates Limited have inspected the drainage installations.

3.0 Conclusion

- 3.1 Arch Associates Limited have reviewed the as-built drainage and compared it to the design intent.
- 3.2 The system has been functioning effectively over winter since completion of the works, with homes being occupied.
- 3.3 The ground worker has provided confirmation that the drainage installation is in accordance with the design drawings from Paul Basham Associates.
- 3.4 No trees appear to have been placed in positions that would be detrimental to the drainage arrangement
- 3.5 We have seen no evidence of unauthorised raising or watercourse infilling, culverting, or alterations.

- 3.6 Based on the record information provided, as well as our own inspections on site, we are satisfied that the drainage has been installed in accordance with the design.



Chris Hendry MSc CEng MStructE
Director
For and on behalf of Arch Associates Limited



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APPENDIX 1

Drainage Design Drawings



FOR CONTINUATION REFER TO SHEET 2 - DRG No 19-3368-2 102

NOTES:

1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED WITHOUT APPROVAL.

2. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS DRAWINGS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF BOTH PARTIES IMMEDIATELY.

3. ANY DIMENSIONS/LEVELS INDICATED 'tht.' REFER TO ASSUMED/EXISTING DIMENSIONS WHICH ARE TO BE SITE CHECKED PRIOR TO THE COMMENCEMENT OF ANY WORK.

DRAINAGE NOTES:

D1. INVERT LEVELS AND POSITIONS OF EXISTING DRAINS /CHAMBERS /SEWERS WHERE NEW CONNECTIONS ARE TO BE MADE MUST BE CHECKED AND CONFIRMED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORKS.

D2. ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY, ENVIRONMENT AGENCY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'SEWERS FOR ADOPTION' AS APPROPRIATE.

D3. ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DETAILS AND THE REQUIREMENTS OF BS EN 752.

D4. REFER TO MANHOLE SCHEDULE OR DRAWINGS FOR MANHOLE TYPES, SIZE, DEPTHS AND SPECIFIC REQUIREMENTS.

D5. FOR SETTING OUT DIMENSIONS OF SWP'S, RWP'S ETC. REFER TO ARCHITECT'S DRAWINGS.

D6. ALL PIPES UP TO 300mm DIAMETER TO BE VITRIFIED CLAY, EXTRA STRENGTH TO BS EN 295 OR BS 65 WITH PLAN ENDED SLEEVES OR SOCKETED FLEXIBLE JOINTS. ALL PIPES OF 375mm DIAMETER AND OVER, TO BE SULPHATE RESISTING CONCRETE CLASS M WITH SOCKETED FLEXIBLE JOINTS.

D7. INVERTS OF INCOMING BRANCHES SHALL BE AT SPRINGING LEVEL TO THE MAIN PIPE AND FORMED GENERALLY USING CHANNEL PIPES AND SLIPPER BENDS, CUT TO SUIT.

DRAINAGE NOTES (CONTINUED):

D8. ALL GULLY AND DRAINAGE CHANNEL CONNECTIONS SHALL BE 150mm DIAMETER AND TRAPPED UNLESS OTHERWISE SPECIFIED.

D9. ALL FOUL AND RWP CONNECTIONS SHALL BE 100mm DIAMETER UNLESS OTHERWISE SPECIFIED.

D10. ALL PRE-CAST CONCRETE UNITS IN THE DRAINAGE WORKS SHALL BE MANUFACTURED USING SULPHATE RESISTING CEMENT.

D11. MANHOLE COVERS AND FRAMES SHALL BE TO BS EN 124 AND KITEMARKED. COVER AND FRAMES SHALL BE HEAVY DUTY D400 IN CARPAGESWAYS AND VEHICULAR AREAS AND MEDIUM DUTY B125 IN FOOTWAYS AND SOFT LANDSCAPING. IN BLOCK PAVED AREAS COVERS SHALL BE RECESSED FABRICATED STEEL.

D12. REFER TO STRUCTURAL DRAWINGS FOR DETAILS OF MANHOLES AND DRAINS CONSTRUCTED WITHIN FLOOR SLABS AND FOUNDATIONS.

D13. COVER LEVELS ARE TO BE ADJUSTED LOCALLY TO SUIT FINISHED GROUND LEVELS.

D14. HEALTH & SAFETY: THE WORKS SHALL BE CARRIED OUT BY SPECIALIST COMPETENT AND EXPERIENCED CONTRACTORS WHO ARE MEMBERS OF A RECOGNISED NATIONAL ORGANISATION. OPERATIVES SHALL HAVE RECEIVED FULL AND APPROPRIATE TRAINING FOR THE OPERATION THEY ARE TO UNDERTAKE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH ALL PERTINENT HEALTH AND SAFETY REGULATIONS.

D15. PIPES TO BE LAD TO A MINIMUM GRADIENT OF 1:150 UNLESS NOTED OTHERWISE.

EXISTING DRAINAGE KEY:	
	EXISTING SURFACE WATER MANHOLE/DRAINAGE.
	EXISTING FOUL WATER MANHOLE/DRAINAGE.

DRAINAGE KEY:	
	FOUL WATER MANHOLE/DRAINAGE 150mm U.N.O.
	SOIL & VENT PIPE (100mm/140 MIN) / INSPECTION CHAMBER.
	FOUL WATER RISING MAIN.
	SURFACE WATER MANHOLE/DRAINAGE 150mm U.N.O.
	RAINWATER PIPE (100mm/160 MIN) / INSPECTION CHAMBER.
	RODDING EYE (100mm).
	HIGHWAY GULLY.
	PETROL INTERCEPTOR.
	SURFACE WATER RISING MAIN.
	ACID DRAIN.

FOR MANHOLE SCHEDULES REFER TO DRG No 19-3368-2151 & 2161.

CONSTRUCTION			
C6	ACD DRAINS ADDED	HDL/02.21	HDL/02.21
C5	REVISED AS CLOUDED	HDL/12.20	HDL/12.20
C4	REVISED AS CLOUDED	HDL/06.20	HDL/06.20
C3	REVISED AS CLOUDED	HDL/04.20	HDL/04.20
C2	MANHOLE SETTING-OUT ADDED	HDL/03.20	HDL/03.20
C1	CONSTRUCTION	HDL/03.20	HDL/03.20

Version	Amendment	Revised By	Checked By	Approved By
1	ORIGINAL DRAWING SIZE - A0			

CAD REF:		X-REFS:	

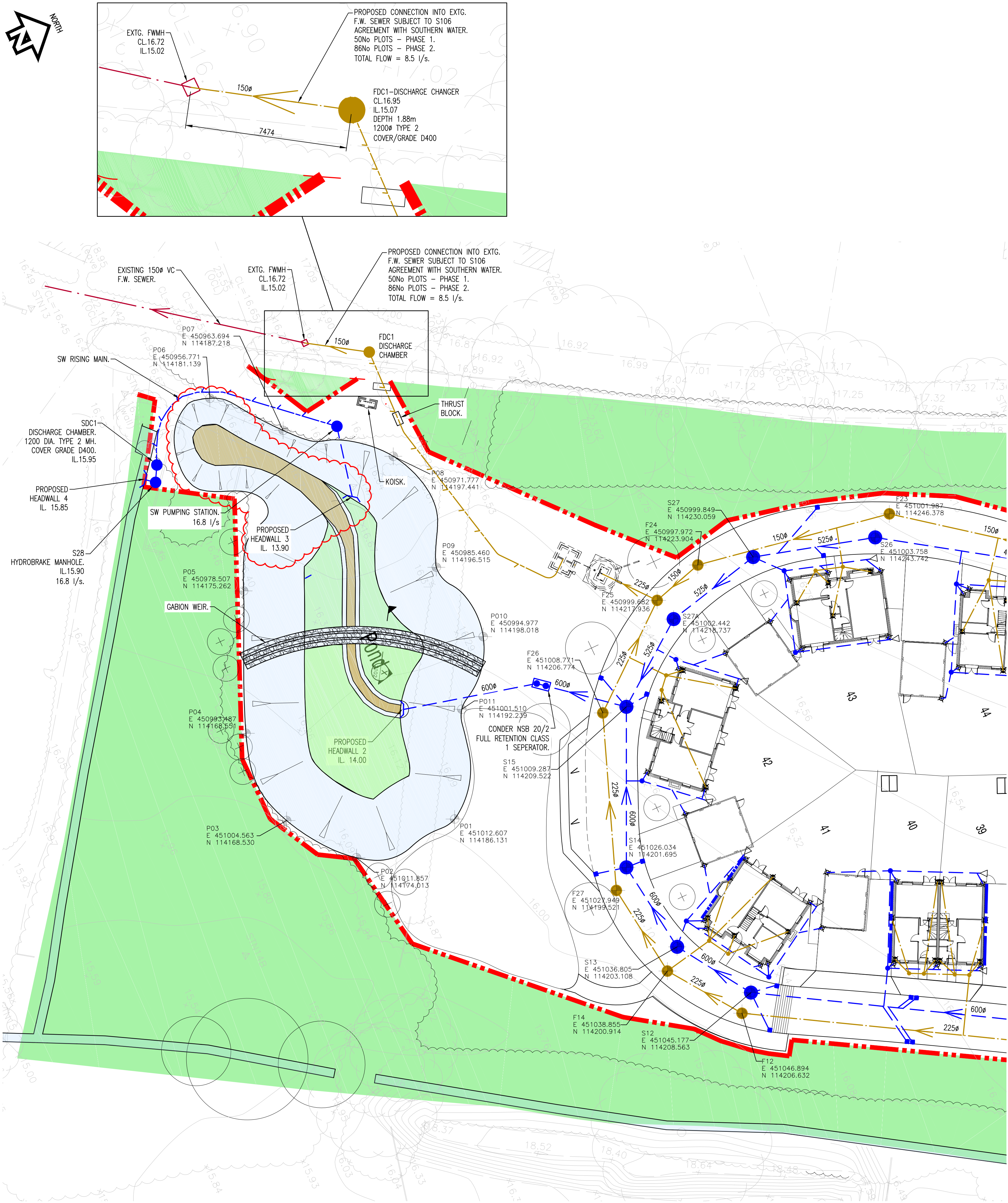
HAMIL DAVIES LIMITED
Consulting Civil and Structural Engineers

Client: FOREMAN HOMES LIMITED
Project: MADDOXFORD LANE, BOORLEY GREEN
Drawing No: COMBINED DRAINAGE LAYOUT
Sheet: 1

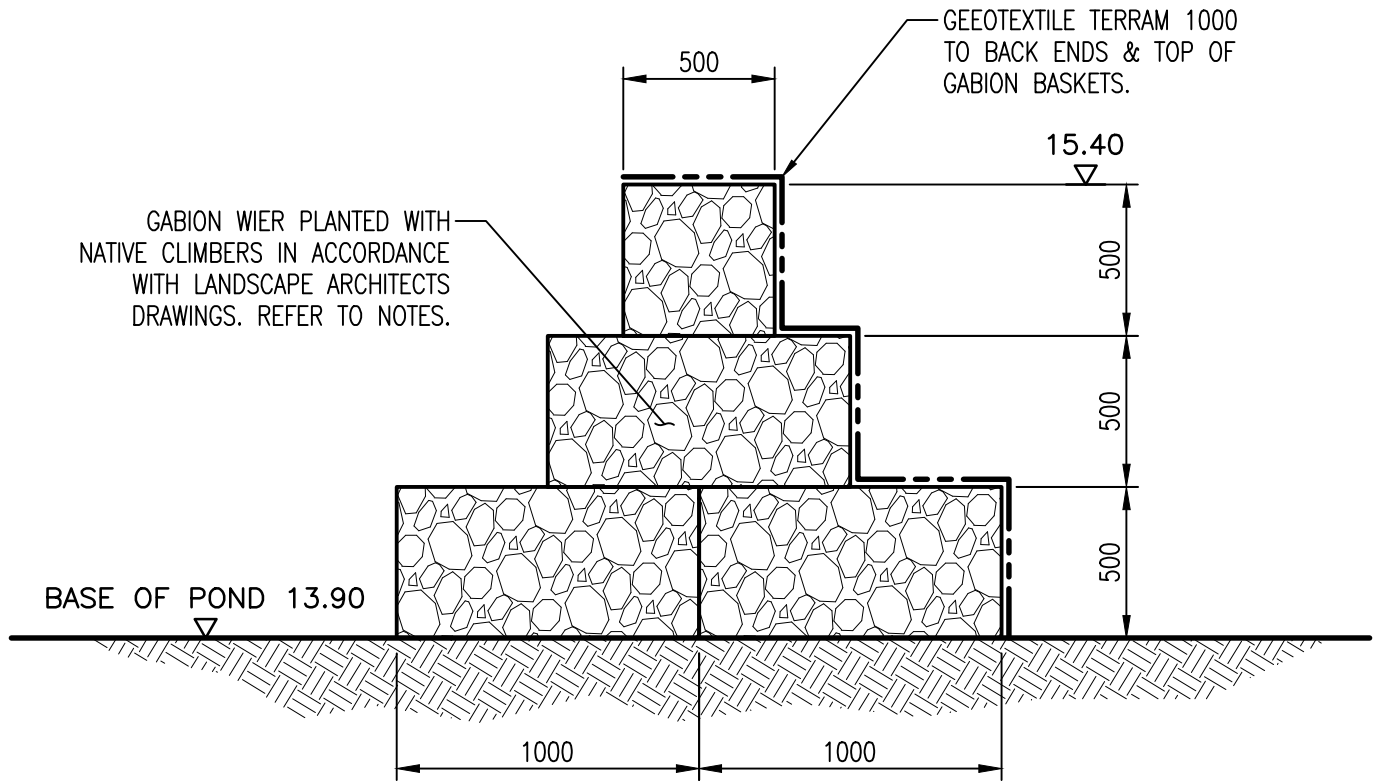
Type	Drawn	Scale
CONSTRUCTION	HDL	1:250 @ A0

Design	Checked	Approved
Design	Design	Design

19-3368-2101



FOR CONTINUATION REFER TO SHEET 1 - DRG No 19-3368-2101



SECTION X-X.
TYPICAL SECTION THROUGH GABION WEIR.
SCALE 1:25

POND FINISHED LEVELS:	
	FGL 13.90m
	FLG 13.70m
	FGL 15.00m

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GABION WEIR - PVC COATED GABION NOTES:

G1. THE GABIONS SHALL BE TO THE SIZES SHOWN WITH FIXED DIAPHRAGMS AT 1.0m CENTRES. THE GABION SHALL BE MANUFACTURED FROM STEEL WIRE TO BS 1052 OF 2.7mm DIAMETER AND GALVANISED TO BS 443 WITH A BONDED GREY PVC COATING OF MEAN THICKNESS OF 0.5mm TO GIVE OVERALL DIAMETER OF 3.7mm. THE MESH FABRIC SHALL BE FORMED FROM FLEXIBLE DOUBLE TWIST HEXAGONAL WOVEN WIRE MESH OF 80mm OPENING SIZE. ALL MESH EDGES SHALL BE REINFORCED WITH A GALVANISED PVC COATED SELVEDGE WIRE OF 3.4mm CORE DIAMETER, OVERALL 4.4mm DIAMETER. ALL JOINTS AND CONNECTIONS OF GABION UNITS ARE TO BE FORMED USING CONTINUOUS LACING WIRES AND/OR HIGH TENSILE STEEL "C" RINGS FROM 3.0mm WIRE, ATTACHED WITH A PNEUMATIC ASSEMBLY TOOL. PVC COATED LACING WIRE SHALL BE 2.2mm CORE DIAMETER AND BE TO THE SAME SPECIFICATION AS THE BODY MESH. BBA CERTIFICATION IS REQUIRED FOR THIS PRODUCT FOR UP TO 120 YEARS LIFE EXPECTANCY.

G2. FILLING IS TO BE CARRIED OUT BY MECHANICAL MEANS USING INTERLOCKING GRANITE QUARRY STONE OF SIZE 150-200mm.

EXISTING DRAINAGE KEY:	
	EXISTING SURFACE WATER MANHOLE/DRAINAGE.
	EXISTING FOUL WATER MANHOLE/DRAINAGE.
DRAINAGE KEY:	
	F1 FOUL WATER MANHOLE/DRAINAGE 150mm U.N.O.
	SOIL & VENT PIPE (100mm/1:40 MIN.) / INSPECTION CHAMBER.
	FOUL WATER RISING MAIN.
	S1 SURFACE WATER MANHOLE/DRAINAGE 150mm U.N.O.
	RAINWATER PIPE (100mm/1:60 MIN.) / INSPECTION CHAMBER.
	RODDING EYE (100mm).
	HIGHWAY GULLY.
	PETROL INTERCEPTOR.
	SURFACE WATER RISING MAIN.

FOR DRAINAGE NOTES REFER TO DRG No 19-3368-2101.

FOR MANHOLE SCHEDULES REFER TO DRG No 19-3368-2151 & 2161.

REFER TO LANDSCAPE ARCHITECTS DRG No DD222L19 FOR POND FINISHING DETAILS.

CONSTRUCTION

Version	Amendment	Revised by and date	Checked by and date	Approved by and date
C8	ACO DRAINS ADDED	HDL/02.21	HDL/02.21	HDL/02.21
C7	REVISED AS CLOUDED	HDL/12.20	HDL/12.20	HDL/12.20
C6	REVISED AS CLOUDED	HDL/12.20	HDL/12.20	HDL/12.20
C5	REVISED AS CLOUDED	HDL/07.20	HDL/07.20	HDL/07.20
C4	REVISED AS CLOUDED	HDL/06.20	HDL/06.20	HDL/06.20
C3	REVISED AS CLOUDED	HDL/06.20	HDL/06.20	HDL/06.20
C2	MANHOLE SETTING-OUT ADDED	HDL/03.20	HDL/03.20	HDL/03.20
C1	CONSTRUCTION	HDL/03.20	HDL/03.20	HDL/03.20
ORIGINAL DRAWING SIZE - A1		X-REFS:		
CAD REF.				

HDL
HAMILL DAVIES
LIMITED
Consulting Civil
and
Structural Engineers

Client
FOREMAN HOMES LIMITED

Project
MADDOXFORD LANE, BOORLEY GREEN

Drawing Title
**COMBINED DRAINAGE LAYOUT
SHEET 2**

Purpose
CONSTRUCTION

Issuing Office
SWANMORE

Telephone
01489 893 596

Scale
1:250 @ A1

Drawn
HDL

Designed
HDL

Drawing Number
19-3368-2102

Version
C8



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APPENDIX 2

Site Photographs

Detention Basin During Construction – View south



Completed outfall to watercourse showing clean water run-off from site



Completed attenuation – View south



Completed attenuation – View east



Pumping station and control kiosk



Completed attenuation – View east



View north looking up western flank of site showing completed roads and drainage gullies with no evidence of ponding



View looking east across completed block paved parking and road area outside plots 48-50 and 28-32



View looking south down the eastern flank road of the site. Road surface course still to be applied. Gullies and drainage generally appear to be functioning correctly, with no evidence of ponding

