WALLER GRAY CONSULTING

SEASIDE PRIMARY SCHOOL

SPORTS HALL

DRAINAGE VERIFICATION REPORT

JOB REF: WG1275

SEPTEMBER 2023

DRAINAGE VERIFICATION REPORT

Project: Seaside Primary School Sports Hall

Client: New Horizon Academy

Ref: WG1275

Author: ..... Initials: LG Date: 28.09.2023

Checked By: ..... Initials: GW Date: 28.09.2023

Approved By: ..... Initials: GW Date: 28.09.2023

REVISION	DATE	STATUS	ISSUED BY
A	28.09.2023	First Issue	LG
B			
C			
D			
E			

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Waller Gray Consulting Ltd were instructed by New Horizons Trust to undertake the Drainage design for the proposed Sports Hall at Seaside School Lancing under Planning Application AWDM/0930/22. Following the completion of the construction onsite and as part of Planning Condition requirements we have undertaken a review of all as-built information.

Our review of the drainage extends to review of as-built information provided by Pilbeam Construction along.

Within the Decision Notice (Ref: AWDM/0930/22), Planning Condition 10 is stated as follows:

'' Condition 10 of approval to application AWDM/0930/22 states: The building shall not be brought into use until full details of the maintenance and management of the verified surface water drainage system is set out in a site-specific maintenance manual and submitted to, and approved in writing, by the Local Planning Authority. The manual is to include details of financial management and arrangements for the replacement of major components at the end of the manufacturer's recommended design life. Upon completed construction and verification of the surface water drainage system, the owner or management company shall strictly adhere to and implement the recommendations contained within the manual.''

From review of all the information, we confirm the surface water drainage system has been built in accordance with our Drainage Layout drawing, and where alterations have been made onsite by the contractor these have been in agreement with ourselves.

The Appendices to this report contain the as-built drawing records based on the Contractors records.

As the drainage has been installed in accordance with our drawings our original design submitted and approved under the Planning Condition, by Arun District Council and West Sussex County Council SUD's team will remain unaltered from its original modelling.

DRAWING/S

201 Drainage Layout (AS BUILT)

COLOURED DRAWING
REQUEST A COLOURED COPY IF THIS STAMP IS NOT RED

RESIDUAL HAZARDS

In addition to the hazards/risks normally associated with the type of work detailed on this drawing, note the following:

1. Unknown services/depths within work zone. Contractor to undertake necessary precautions and investigation prior to excavating.
2. Existing Overhead Power and Telecoms Cables. Contractor is to prepare a method statement to ensure operatives are familiar and competent with the dangers of working near overhead cable.
3. The works will involve the movement of plant and machinery within a school playground. There is a risk of potential conflict between plant/machinery and the school personnel / children. Contractor to undertake necessary precautions and ensure suitable traffic management is in place prior to commencement.
4. Working in live sewers. Contractor to ensure operatives are familiar and competent with the dangers of working in live sewers.
5. Excavations within existing tree root zones. Contractor is to seek advice from an Arboriculturalist and work to the methodology and requirements set out in the Arboriculturalist's report.
6. Deep excavations associated with the drainage installation of soakaways & manholes. Contractor is to ensure suitable temporary works are in place to ensure the safety of operatives and the public (where necessary). Contractor to ensure operatives are familiar and competent with the dangers of working in deep excavations.

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved risk assessment and method statement

DRAWING LEGEND

SURFACE WATER DRAINAGE		FOUL WATER DRAINAGE	
	EXISTING SURFACE WATER DRAINAGE		EXISTING FOUL WATER SEWER
	PROPOSED SURFACE WATER DRAINAGE		PROPOSED FOUL WATER DRAINAGE
SW# CL ##.## IL ##.## (450/600Ø/CP)	TYPE 3 INSPECTION CHAMBER (Max 3m depth to invert, CP denotes Catchpit) Chambers deeper than 1.2m to be non-entry.		PROPOSED FOUL WATER PUMPED MAIN (Size to be confirmed by Manufacturer)
RE IL ##.##	RODDING EYE	Pump Station CL ##.## IL ##.## (####Ø)	PUMPING CHAMBER (See specialist details for size and other information)
	CELLULAR SOAKAWAY (Vented)	MISC	
Vent	CELLULAR STORAGE TANK VENT (To be positioned in non-trafficed location)	FFL ##.###	PROPOSED BUILDING FINISHED FLOOR LEVEL
Channel	CHANNEL DRAIN (100mm wide, Heelguard grating, trapped gully outlet) TD - Threshold Drain	##.##	PROPOSED SPOT LEVEL
		##.##	EXISTING SPOT LEVEL
		1:80	GRADIENT OF FALL

AS BUILT

Ex.FWMH
CL 5.37
IL 4.94
(Measured onsite)

From the site visit this manhole was measured at only 0.4m deep.

FW
Packaged Pump Station
TT Pumps 'Venus' Dual Pump (or similar)
Encased in a minimum of 300mm thick concrete.
CL 5.300
Incoming IL 4.950
Base Level 3.000 (Based on 2.3m Dp unit)
Volume of storage below incoming IL would equate to 1.53m³ (1530 litres).
Therefore, at 10litres per toilet flush this would equate to 153 flushes for the 24hr storage period.
Estimated usage for this single toilet would only be in the region of 30-50 flushes per day. Therefore way below the avaliable storage.
(1000Ø)

PUMPED MAIN

Final position of Pumped Main to be adjusted onsite by Contractor as to co-ordinate with existing drainage / services.

Level difference of approx. 800mm between proposed / existing levels.
If existing seating area is removed, area is to be graded (1 in 3 max).
If existing seating area is to remain a retaining wall would be required.
Client / Architect to confirm final arrangement.

RWP indiacted as 150mm diameter on Architectural Layout.
Below ground pipework to be to a minimum of 150mm to connect RWP's.

NOTE:
SERVICE ROUTES INDICATIVELY SHOWN.
FOR FINAL LAYOUT AND DESIGN INFORMATION PLEASE REFER TO DELTA GREENS DRAWINGS AND INFORMATION

Tie in with existing levels

Existing Wall shortened to allow for proposed layout.

Level difference between existing Concrete Hardstanding / Proposed path levels to be reviewed onsite. If nesscary a HB2 kerb to be installed along hardstanding edge.

Existing Concrete Hardstanding to remain

FW
CL 6.300
IL 5.200
(450Ø)

100Ø 8.58m 1:24

1:40 (Min.)

RB
IL 5.350

FFL 6.300

RE
CL 5.700
IL 5.200

SW
CL 6.250
IL 5.100
(450Ø/CP)

2.001 - 150Ø 9.96m 1:80

1.000 - 150Ø 9.37m 1:94

TD

RE
IL 5.700

1.000 - 150Ø 12.08m 1:81
ACO Hexdrain
(B125)

SW
CL 6.350
IL 5.500
(450Ø/CP)

1.001 - 150Ø 10.61m 1:35

IL 5.000

IL 5.200

Soakaway to be postioned a minimum of 10m away from existing / proposed buildings. Proposed Soakaway to be positioned a minimum of 10m away from existing soakaway

CELLULAR SOAKAWAY
Wavin Aquacell 'CORE-R' or similar
3.0m (w) x 16.5m (l) x 1.2m (dp)
Base Level - 4.40
(Min. cover 0.6m)
(Vehicle Loading - Pedestrian / Grass Cutting Only)

EXISTING SOAKAWAY FOR PREVIOUS SCHOOL EXTENSION.
Soakaway Size - 5m (w)x 20m(l) x 2m(dp)
Top Level - 4.50
Base Level - 2.50

NOTE:
SERVICE ROUTES INDICATIVELY SHOWN.
FOR FINAL LAYOUT AND DESIGN INFORMATION PLEASE REFER TO DELTA GREENS DRAWINGS AND INFORMATION

1:125 @ A1
1:250 @ A3
0 2 4 6 8 10 12 m

Notes: A1

1. This drawing is to be read in conjunction with all other WGC drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
2. WGC accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
3. Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.
4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
5. All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. WGC logos and company information must be removed from copies if information is re-used.
7. The main contractor is responsible for the design of all temporary works, and is also responsible for the safe maintenance and stability of existing buildings at all times.
8. The main contractor is responsible for dealing with all occurrences of ground water during the construction period.
9. The contractor must comply with all current legislation relating to health & safety.
10. All products specified shall be installed in strict accordance with the manufacturers recommendations and instructions. If there are discrepancies between that information and the details on any WGC drawings, the manufacturers instructions must be used.
11. All Earthworks in accordance with the Specification for Highway Works.

DRAINAGE NOTES:

1. All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Sewers for Adoption, BS8301 & BSEN.752-1.
2. For location and setting out of building drainage points refer to architects drawings.
3. All pipe runs near buildings to comply with the Building Regulations 2002 part h1. Where a pipe is within 1m of a foundation the trench shall be filled with class gen3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class gen3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
4. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
5. Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
6. In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. compressible boards (fibreboard or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. a board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.
7. All private building drainage shall be constructed in strict accordance with BS EN.752-1. unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of (<1l/s = 1 in 40/>1l/s = 1 in 80) for foul drains and 1 in 80 for surface water drains. all building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
8. All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4660 and BS5481 as appropriate and shall be laid in accordance with the manufacturer's specification. All pipes, bends and junction materials for adoptable drainage shall be vitrified clay, extra strength or super strength to BSEN295, with flexible joints and kitemark certified
9. All back inlet gullies to be roddable or connected to inspection chambers.
10. All gully connections other than at manholes to be 'y' junctions.
11. All road gully connections to be 150mm diameter.
12. All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
13. All connections to be soffit to soffit unless otherwise noted.
14. All concrete and concrete products to be in accordance with BRE 363 for sulphates.
15. The locations of all svps and rwps shall be cross referenced against the architects drawings during setting out.
16. Before connections are made to existing public sewers an application under 106 must be made to relevant sewerage undertaker.
17. The precise depth and location and size of existing pipes or manholes where connections or diversion are proposed must be confirmed and reported to the engineer at the earliest opportunity.
18. Where inspection covers are located in areas of block paving or paving slabs they shall be fitted with recessed covers and infilled with the adjacent material.
19. Existing drains - any existing drains to be abandoned to be decommissioned in view of building regulations by either building out, infilled or sealed.

Rev	Date	Revisons	Drwn	Chk

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Client:
Seaside Primary School

Project:
New Sports Hall
Seaside Primary School, Lancing

Drawing Title:
Drainage and Levels Layout

Scale:	Date:	Drawn:	Checked:
1:125	MAY 22	LG	GW

Drawing No: WG1275/201 Rev: AB

APPENDICES

Appendix A Photographs



Formation / base level of soakaway



Soakaway Installation



Soakaway Installation / final covering

Appendix B Material Data Sheets

Polystorm-R Modular Cell

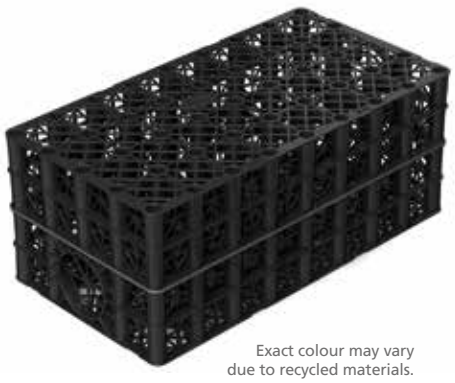
Data Sheet

PRODUCT INFORMATION **P1** **ISSUE 4 - SEPT 2017**

Product code: PSM1A

The Polystorm-R modular cell is ideally suited for loaded applications at greater depths, such as housing, commercial and infrastructure projects and has a compressive strength of up to 61 tonnes/m². It offers all the proven performance of the Polystorm cell, with the added benefits of being manufactured from over 90% recycled material content.

Wherever performance criteria and standards allow, we will always maximise the sustainability of our products by using post consumer plastics in their manufacture. By sourcing and carefully controlling the quality of the recycled material we use our precision injection moulding. Therefore we are able to guarantee consistent quality in our recycled plastic, giving you the confidence and the performance levels you expect from the market leader.



Exact colour may vary due to recycled materials.

Key Benefits

- Made from specially selected and controlled recycled materials
- Environmentally friendly, sustainable solution
- Has undergone stringent testing to ensure product performance
- Compressive strength of 61 tonnes/m²
- Ideal for retention, attenuation and infiltration applications with a suitable geomembrane or geotextile
- BBA approved
- Allow flexibility of shape - ideal for shallow excavation systems, narrow strips or use in restricted areas
- Can be used as part of a value engineered hybrid system with Polystorm, Polystorm Lite and Polystorm Xtra
- Integrated inlet and outlet
- 3D flow throughout the structure
- 95% void ratio
- Light weight yet robust - excellent Health and Safety and installation benefits
- 60 years creep limited life expectancy

Technical Support

Detailed guidance and assistance is available.
For further information, please contact our Technical Team on **+44 (0) 1509 615100** or email **civils@polypipe.com**

BBA BRITISH BOARD OF AGREMENT
CERTIFICATE No. 06/4297

ELEMENT	VALUE
PHYSICAL PROPERTIES	
Length	1m
Width	0.5m
Depth	0.4m
Total volume	0.2m³
Unit weight	9kg (approx)
Unit storage volume	0.19m³ (190 litres)
Void ratio	95%
SHORT TERM COMPRESSIVE STRENGTH	
Vertical	610 kN/m² **
Lateral	63 kN/m² **
SHORT TERM DEFLECTION	
Short-term vertical deflection	60 kN/m² per mm
LONG TERM DEFLECTION	
Estimated long term vertical deflection (creep)	0.2798 Ln (design life in hrs) +0.485 [Based on an applied test load = 162 kN/m²] Creep data limit 60 years
Estimated long term lateral deflection (creep)	1.0192 Ln (design life in hrs) -3.864 [Based on an applied test load = 30.8 kN/m²] Creep data limit 60 years

Note: Polystorm-R is ideal for use in trafficked and pedestrian applications subject to a structural design check and suitable installation conditions

* Each unit includes 4 Clips and 2 Shear Connectors.

** Compressive strength at yield, maximum recommended value for design purposes.

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Polypipe

Polystorm-R Modular Cell

Data Sheet

RECOMMENDED MAXIMUM DEPTH OF INSTALLATION (to cell invert) [m]

TYPICAL SOIL TYPE	TYPICAL ANGLE OF SHEAR RESISTANCE	SOIL WEIGHT kN/m³	WITHOUT GROUNDWATER (below base of cells) NORMAL CASE		WITH GROUNDWATER AT 1M BELOW GROUND LEVEL AND UNITS WRAPPED IN GEOMEMBRANE	
			Pedestrian	Trafficked (cars) <3000kg GVW	Pedestrian	Trafficked (cars) <3000kg GVW
Stiff over consolidated clay e.g. London clay	24	20.0	2.2	1.9	1.8	1.6
Normally consolidated silty sandy clay e.g. alluvium, made ground	26	19.0	2.4	2.2	1.9	1.7
Loose sand and gravel	30	18.0	3.0	2.7	2.0	1.9
Medium dense sand and gravel	33	19.0	3.2	2.9	2.0	1.9
Dense sand and gravel	38	20.0	3.7	3.5	2.1	2.0

Note:
1) Stated depths based on the calculation methodology detailed within CIRIA C680 (2008)
2) Assuming water density = 10.0kN/m³
3) Assumed ultimate limit state (ULS) partial factor of safety applied to: Material = 2.75 Lateral pressure = 1.35

Durability

The polymer material used in the manufacture of the Polystorm-R unit has an adequate resistance to attack from the type and quantities of chemicals that may be expected to naturally occur in uncontaminated soils and rainwater runoff. When installed in accordance with our recommendations, it is expected that the Polystorm-R unit will have a design life in excess of 60 years*. The installer of a proposed geocellular structure should ensure that an appropriate design check has been undertaken, in accordance with the recommended methodology and factors of safety given in CIRIA C680 (2008), Structural Design of Modular Geocellular Drainage Tanks, prior to the commencement of construction activities.

* Derived from long term extrapolated creep testing

Notes

1. Unless stated, all values are nominal and may vary within normal production tolerances.
2. The characteristic unit parameters stated have been based on Polypipe BBA certificate N° 06/4297, sheet 3.
3. Polypipe reserve the right to change product specifications without prior notice.
4. This document is uncontrolled and updates will not be issued automatically.

RECOMMENDED MINIMUM COVER LEVELS [m]

LIVE LOAD CONDITIONS	PEDESTRIAN	LIGHT TRAFFICKED	
		Car park with vehicle mass <GVW	
Minimum cover depth required (m)	0.50	<3000kg 0.50	<9000kg 0.65

Note
1) Stated depths based on the calculation methodology detailed within CIRIA C680 (2008)
2) Assumed serviceability limit state (SLS) partial factor of safety applied to: Material = 1.5 Live load = 1.0 Dead load = 1.0
3) Shallower minimum burial depths may be applicable subject to an assessment of the specific site conditions. For further details please consult our Technical Team on 01509 615100.

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Berry

0338
DECLARATION OF PERFORMANCE

No: 0338-CPR-0074-2018

T1500

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Harmonised technical specification	Intended uses
EN 13249: 2016 Geotextiles for roads and other trafficked areas	f/f+S
EN 13250: 2016 Geotextiles for railways	f/f+S
EN 13251: 2016 Geotextiles for earthworks, foundations and retaining structures	f/f+S
EN 13252: 2016 Geotextiles for drainage systems	f/f+S
EN 13253: 2016 Geotextiles for erosion control works	f/f+S
EN 13254: 2016 Geotextiles for reservoirs and dams	f/f+S
EN 13255: 2016 Geotextiles for canals	f/f+S
EN 13257: 2016 Geotextiles for solid waste disposal	f/f+S
EN 13265: 2016 Geotextiles for liquid waste containment	f

Essential characteristics		Performance
Tensile Strength	EN ISO 10319	MD 12.5kN/m (-1.25kNm) CMD 12.5kN/m (-1.25kN/m)
Tensile Elongation	EN ISO 10319	MD 60% (± 20%) CMD 60% (± 20%)
Dynamic Perforation	EN ISO 13433	32mm (+6mm)
Resistance to static puncture	EN ISO 12236	2.25kN (-0.225kN)
Opening size	EN ISO 12956	65µm (± 20µm)
Water Permeability	EN ISO 11058	65.10^{-3}m/s (-20.10^{-3}m/s)
Dangerous Substances		Less than required by national regulations within EU member states

Durability

To be covered within 1 month after installation
Predicted to be durable for 100 years in natural soils with 4 ≤ pH ≤ 9 and soil temperatures ≤25ºC on the basis of the results of test method EN ISO 13438 Procedure A for 112 days

System: 2+
In case of the declaration of performance concerning a construction product covered by a harmonised standard: Notified factory production control certification body No. 0338 BTTG performed the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control and issued the certificate of the factory production control.

Authorised Representative:

Mia Browning—Quality and Compliance Manager