

Our Ref: FS0728.LT.001

08th August 2023

Dear Hillingdon Borough Council, Lead Local Flood Authority

Grangewood School, Fore Street, Eastcote, Pinner HA5 2JQ

Local Planning Authority Reference: 2145/APP/2022/3543

Thank you for your comments regarding the above planning application. Please see our responses below regarding the proposed drainage condition 9 of your planning application response.

Condition 9

Prior to commencement of the development hereby approved (excluding demolition), a scheme for the provision of sustainable water management shall be submitted to, and approved in writing by the Local Planning Authority. The scheme shall clearly demonstrate how water is managed and demonstrate ways of controlling the surface water on site by providing information on:

a) Sustainable Drainage

i. Surface water discharge - the submitted drainage strategy must confirm the proposed method and location of discharging collected surface water from the site in accordance with the hierarchy set out in the London Plan. Where the proposal does not utilise the most sustainable solution, justification must be provided. Any proposal that includes an off-site connection through a private sewer network should provide details of the condition and ownership of the entire drainage route to a public sewer or ordinary watercourse.

ii. SuDS - the submitted drainage strategy should incorporate Sustainable Drainage System (SuDS) elements that are embedded, where practicable, within the landscaping plan for the development. Preference should be given to above-ground SuDS elements that provide wider biodiversity, water quality and amenity benefits.

iii. Infiltration drainage - where infiltration drainage is proposed, a ground investigation must be provided to establish the level of groundwater on the site; to demonstrate the suitability of infiltration techniques proposed on the site by providing the results of infiltration testing in line with BRE Digest 365; and to confirm the suitability of infiltration drainage based on any encountered ground contamination.

iv. Runoff rates - surface water discharge from the site must be no greater than greenfield runoff rates at a variety of return periods including 1 in 1 year, 1 in 30, 1 in 100, and 1 in 100 plus 40% climate change. Any increases above greenfield rates must be adequately justified and may be subject to developer contributions.

v. Drainage calculations - include calculations to demonstrate the volume of storage and size of drainage features provided is adequate to control surface water for a range of storm duration and rainfall intensities for events up to and including the critical 1 in 100 plus 40% climate change rainfall event.



vi. Exceedance routes - provide a plan showing the route surface water will take through the development for rainfall events exceeding the 1 in 100 year event. Where it is intended to store water on the ground surface, the maximum extent of overland flooding should be mapped and include details on flow paths, depths and velocities. Safe access and egress for the site must be demonstrated.

b) Long-term management and maintenance of the drainage system.

i. Provide a Management and Maintenance Plan for the drainage system that includes clear plans showing all of the drainage network above and below ground, and identifies the responsibility of different parties for each component of the drainage network.

ii. Include details of the necessary inspection regimes, maintenance frequencies and responsible authority (Private Management Company, homeowner, etc.).

iii. Where managed flooding of the ground surface is proposed, the plan should include the appropriate actions for those areas and document the actions required to ensure the safety of the users of the site during a rainfall event.

c) Minimise water use.

i. incorporate water saving measures and equipment.

ii. provide details of how rain and/or grey water will be recycled and reused in the development.

Comment a) i. *Surface water discharge - the submitted drainage strategy must confirm the proposed method and location of discharging collected surface water from the site in accordance with the hierarchy set out in the London Plan. Where the proposal does not utilise the most sustainable solution, justification must be provided. Any proposal that includes an off-site connection through a private sewer network should provide details of the condition and ownership of the entire drainage route to a public sewer or ordinary watercourse.*

Curtins Response

The table provided below provides justification for the proposed discharge and attenuation methods as per the London Plan hierarchy.

Table 5-1: Discharge Opportunities

London Sustainable Drainage Hierarchy	Site Specific Application
Store rainwater for later use	Due to the spatial constraints and nature of the development, rainwater harvesting measures have not been proposed on this development.
Use infiltration techniques, such as porous surfaces in non-clay areas	Geological data obtained from site investigations indicates that the site is underlain by London Clay. Infiltration testing has been carried out in two locations on the site. During the 5 days of site investigations there was insufficient change in water level in the trial pits for soakage rates to be calculated. The geology of the entire site is therefore expected to have a low permeability rate and to not be suitable for infiltration



London Sustainable Drainage Hierarchy	Site Specific Application
Attenuate rainwater in ponds or open water features for gradual release	There is limited open space available on site for a pond or open water feature. Furthermore, the utilisation of open water features would reduce the available land for play space, which is deemed a necessary amenity of the site. There is also the issue of the proposed development being a school and the possible safety risks of including ponds or open water features in the design. Hence deeming them inappropriate for the majority of the site.
Attenuate rainwater by storing in tanks or sealed water features for gradual release	A below ground geocellular attenuation tank is proposed and will provide 487.9m³ of storage volume. Above the tank it is proposed for permeable surfacing to be used for the proposed MUGA. The permeable paving is to discharge directly into the attenuation tank via a deepened section of porous sub base. Both the attenuation tank and the permeable paving are to be sealed system and are not to infiltrate.
Discharge rainwater direct to a water course	The nearest watercourse is the River Pinn located approximately 500m away to the south of the site. Discharging to the watercourse under gravity is not considered feasible due to the distance and third-party land involved. A minor unnamed watercourse has also been identified nearby to the site, located within the London green belt. Discharging into this minor watercourse has been considered unfeasible due to the requirement to construct within the London green belt and the density of established trees on the route.
Discharge rainwater to a surface water sewer/drain	There are public surface water sewers that serve the immediate area, including the previous Grangewood school. It is proposed that the site discharges to the surface water sewer located adjacent to the site boundary. Surface water will be discharged at a maximum rate of 2.9 l/s. The sewer directly downstream of the proposed connection is private and is owned by the neighboring school. The sewer runs through the land to the southeast of the site and neighboring school before discharging into a Thames Water surface Water sewer.
Discharge rainwater to a combined sewer	There are no public combined sewer networks that serve the immediate area. It is therefore not feasible to discharge to a public combined sewer network.

Table 5-3: SuDS Opportunities

SuDS Technique	Site Specific Analysis
Rainwater Harvesting	As discussed in Table 5-1, a rainwater harvesting system has not been proposed on this site due to the nature of the development and spatial requirements.
Living Roofs/Areas	As discussed in Table 5-1, living roofs have not been included on this scheme due to the implication of increased loading on the proposed structure.



Basins and Ponds	Due to the spatial requirements of ponds and basins, they have not been incorporated into this scheme.
Filter Strips and Swales	Due to the limited amount of soft landscaping and unused open space included in the proposed design swales and filter strips have been deemed unsuitable for this development.
Infiltration Devices	Infiltration, as discussed previously in Table 5-1, is not appropriate for this scheme.
Permeable Surfaces	The MUGA is proposed to be a permeable construction and is to discharge directly into the attenuation tank below. Due to the poor infiltration rates on site permeable paving has not been proposed in other areas of the site.
Tanked Systems	A below ground attenuation tank is proposed to manage flood risk on site.

It is proposed to connect into the existing private network currently serving the existing school building and the neighbouring school building. The existing network flows to the east of the site where it then connects into the nearby Thames Water sewer. The existing drainage has been CCTV surveyed to confirm the location and condition up to the connections to the Thames Water sewers. Following the CCTV survey it is proposed to retain and remediate the existing drainage as per the remediation plan sketches appended to this letter.

Comment a) ii. *SuDS - the submitted drainage strategy should incorporate Sustainable Drainage System (SuDS) elements that are embedded, where practicable, within the landscaping plan for the development. Preference should be given to above-ground SuDS elements that provide wider biodiversity, water quality and amenity benefits.*

Curtins Response

Please see the drainage drawings appended to this letter to see the location, dimensions and arrangement of the proposed SuDS systems incorporated in the design.

Also please refer to Table 5-1 and Table 5-3 above for information on the proposed SuDS included in the drainage design. As described in the previous comment due to spatial constraints on the site and the need for outdoor play space and equipment for the school, the suitability for above ground SuDS elements is limited.

Comment a) iii. *Infiltration drainage - where infiltration drainage is proposed, a ground investigation must be provided to establish the level of groundwater on the site; to demonstrate the suitability of infiltration techniques proposed on the site by providing the results of infiltration testing in line with BRE Digest 365; and to confirm the suitability of infiltration drainage based on any encountered ground contamination.*

Curtins Response

Infiltration is not proposed for this development. Soakage testing was carried out on site to determine the feasibility of introducing further permeable paving throughout the development. During the 5 day site investigation period there was little to no change in the water levels of the trial pits used for the infiltration testing. Following the investigation it was deemed that infiltration is not suitable for the site.

Comment a) iv. *Runoff rates - surface water discharge from the site must be no greater than greenfield runoff rates at a variety of return periods including 1 in 1 year, 1 in 30, 1 in 100, and 1 in 100 plus 40% climate change. Any increases above greenfield rates must be adequately justified and may be subject to developer contributions.*

**Curtins Response**

Please refer to the Flow drainage calculations appended to this letter. The calculations show the discharge rate to be 2.9l/s (equivalent to the 1in1 year greenfield rate) in all storm events up to and including the 1 in 100 year plus 40% climate change.

Comment a) v. *Drainage calculations - include calculations to demonstrate the volume of storage and size of drainage features provided is adequate to control surface water for a range of storm duration and rainfall intensities for events up to and including the critical 1 in 100 plus 40% climate change rainfall event.*

Curtins Response

Please refer to the Flow drainage calculations appended to this letter. The calculations show no flooding to occur in the proposed network in all storm events up to and including the 1 in 100 year plus 40% climate change.

Comment a) vi. *Exceedance routes - provide a plan showing the route surface water will take through the development for rainfall events exceeding the 1 in 100 year event. Where it is intended to store water on the ground surface, the maximum extent of overland flooding should be mapped and include details on flow paths, depths and velocities. Safe access and egress for the site must be demonstrated.*

Curtins Response

Please refer to the exceedance plan (ref. FS0728-CUR-XX-XX-DR-C-0504) appended to this letter.

Comment b) i. *Provide a Management and Maintenance Plan for the drainage system that includes clear plans showing all of the drainage network above and below ground, and identifies the responsibility of different parties for each component of the drainage network.*

Curtins Response

Please refer to the Operations and Maintenance Manual appended to this letter.

Comment b) ii. *Include details of the necessary inspection regimes, maintenance frequencies and responsible authority (Private Management Company, homeowner, etc.).*

Curtins Response

Please refer to the Operations and Maintenance Manual appended to this letter.

Comment b) iii. *Where managed flooding of the ground surface is proposed, the plan should include the appropriate actions for those areas and document the actions required to ensure the safety of the users of the site during a rainfall event.*

Curtins Response

No flooding of the ground surface is proposed.

Comment c) i. *incorporate water saving measures and equipment.*

Curtins Response

Water saving tap fittings are proposed internally as a saving measure.

Comments c) ii. *provide details of how rain and/or grey water will be recycled and reused in the development.*

Curtins Response



There are currently no grey water recycling measures included in the design. The inclusion of grey water recycling has been considered however due to the need for a storage tank there is insufficient space for this to be included in the design.

Yours faithfully

Charlie Ryder Richardson
Civil Engineer
For and on behalf of
Curtins Consulting Ltd

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
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Where appropriate the residual risks are indicated on the drawing with the symbol and reference to the note number	
Construction	C1: CONSTRUCTION WORKS TO TAKE PLACE ADJACENT TO A LIVE SITE OCCUPIED BY VULNERABLE PERSONS. C2: WORKS TAKING PLACE ADJACENT TO THE LONDON GREEN BELT, SSSI, GRADE 1 NATURE CONSERVED AREA. C3: EXISTING UNDERGROUND SERVICES LOCATED ON SITE; ALL EXISTING DRAINAGE SERVICES TO BE TIED BACK TO SITE BOUNDARY PRIOR TO CONSTRUCTION WORKS. EXISTING M&E SERVICES STRATEGY TO BE AGREED UPON WITH THE M&E ENGINEER PRIOR TO CONSTRUCTION. C4: WORKS REQUIRE CONNECTION INTO LIVE SEWERS. SEWERS TO BE INACTIVE PRIOR TO ANY WORKS TAKING PLACE. C5: CARE TO BE TAKEN TO AVOID CROSS CONTAMINATION BETWEEN SURFACE WATER AND FOUL WATER SERVICES. C6: RISK OF DISEASE WHEN WORKING WITH EXISTING SEWERS. APPROPRIATE PPE TO BE WORN AT ALL TIMES. WORKS TO BE UNDERTAKEN ONLY BY TRAINED AND COMPETENT PERSONNEL. C7: EXCAVATION WORKS: - TRENCHES AND EXCAVATIONS ARE TO BE SHORED UP OR BATTERED BACK TO ENSURE ANY RISK OF THE SIDES COLLAPSING IS MITIGATED. - EXISTING UTILITIES ARE TO BE IDENTIFIED AND PROTECTED DURING EXCAVATIONS WORKS. IT IS POSSIBLE THERE ARE UNIDENTIFIED UTILITIES. CARE TO BE TAKEN DURING EXCAVATION TO AVOID AND IDENTIFY THESE. C8: VENTILATION PIPES TO BE INSTALLED ON FOUL MANHOLES TO PREVENT A BUILD-UP OF TOXIC GAS.
Operation	O1: WHERE WET RISERS ARE PROPOSED FOR USE, TESTING TO BE CARRIED OUT OUTSIDE PEAK FOUL DRAINAGE HOURS O2: MANHOLES ARE PROPOSED WITHIN THE PLAYGROUND AND MUGA PITCHES. MANHOLES LOCATED WITHIN SCHOOL GROUNDS TO BE LOCKED TO PREVENT CHILDREN FROM ACCESSING THEM.
Maintenance	M1: SILENTLY PROPOSED MANHOLES HAVE DEPTHS EXCEEDING 2m. CARE TO BE TAKEN WHEN UNDERTAKING MAINTENANCE TASKS ON DEEP MANHOLES. MAINTENANCE TO ONLY BE UNDERTAKEN BY TRAINED AND COMPETENT PERSONNEL. M2: ACCESS TO THE ATTENUATION TANK IS LIMITED. REFER TO CURTINS' O&M MANUAL AND THE MANUFACTURE'S RECOMMENDATIONS FOR MAINTENANCE PROCEDURES FOR THE ATTENUATION TANK.
Demolition	D1: AN ASBESTOS SURVEY MUST BE UNDERTAKEN PRIOR TO ANY DEMOLITION OR CONSTRUCTION WORKS TAKING PLACE ON SITE. D2: DEMOLITION WORKS MAY REQUIRE THE REMOVAL OF THE PROPOSED ATTENUATION TANK. CRATES TO BE DISPOSED OF LEGALLY AND IN LINE WITH THE MANUFACTURE'S RECOMMENDATIONS. WHERE POSSIBLE, ATTENUATION CRATES SHOULD BE REUSED, REPURPOSED FOR USE OR RECYCLED.

GENERAL NOTES:			
1.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.		
2.	DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.		
3.	ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.		
4.	EXISTING SITE SERVICES TO BE DIVERTED AS REQUIRED. PROPOSED SERVICE DIVERSIONS TO BE PROVIDED BY MEP ENGINEER. DESIGN SUBJECT TO CHANGE FOLLOWING RECEIPT OF EXTERNAL SERVICES DRAWINGS.		
5.	CCTV AND GPR SURVEYS REQUIRED TO CONFIRM LOCATION OF EXISTING UTILITIES ACROSS THE SITE AND THE CONDITION OF EXISTING DRAINAGE STRUCTURES AND PIPES ACROSS THE SITE.		
6.	SURFACE WATER DISCHARGE RATE LIMITED AT THE GREENFIELD RUNOFF RATE OF 2.9 L/S, AS PREVIOUSLY AGREED UPON WITH THAMES WATER. REFER TO THE THAMES WATER PRE-DEVELOPMENT ENQUIRY FOR FURTHER INFORMATION.		
7.	PROPOSED DISCHARGE RATE TO BE AGREED UPON WITH THE LLFA.		
8.	MUGA SURFACING TO BE USED ATOP MANHOLES LOCATED WITHIN THE MUGA PITCH TO MINIMISE THE IMPACT OF MANHOLES BEING LOCATED WITHIN THE TENNIS COURT. DETAIL TO BE COORDINATED WITH LANDSCAPE ARCHITECT AT A LATER DESIGN STAGE.		
9.	PROPOSED FOUL OUTFALL (FW23 OUTFALL) TO BE RETAINED.		
10.	CCTV SURVEY TO CONFIRM WHERE EXISTING SURFACE WATER AND Foul WATER PIPES DISCHARGE TO.		
11.	CCTV SURVEY TO CONFIRM THE UPSTREAM PIPEWORK IS NOT SERVING ADDITIONAL PROPERTIES OUTSIDE OF GRANGEWOOD SCHOOL. UPSTREAM PIPEWORK TO BE REMOVED FOLLOWING CONFIRMATION.		
12.	SITE BOUNDARY EXTENSION OR THIRD PARTY WORKS AGREEMENT WILL BE REQUIRED TO ADEQUATELY DRAIN THE SITE DUE TO REQUIRED PROPOSED MANHOLE LOCATIONS.		
13.	GROUNDWATER LEVEL TO BE CONFIRMED FOLLOWING FULL SITE INVESTIGATION (S/I) REPORT. DRAINAGE STRATEGY TO BE UPDATED FOLLOWING CONFIRMATION OF GROUNDWATER LEVEL.		
14.	PERMEABLE PAVING REQUIRED ABOVE MUGA PITCH IN ORDER TO ADEQUATELY DRAIN THE SITE. EXTENTS OF PERMEABLE PAVING TO BE CONFIRMED AT A LATER DESIGN STAGE.		
15.	ALL RWPS AND SVPS TO BE 100mmØ UNLESS NOTED OTHERWISE.		

40 Seven CCTV Survey drainage mark up.
TO BE READ IN CONJUNCTURE WITH CCTV SURVEY INFORMATION DATED 01/06/23.

SURFACE WATER DRAINAGE TO BE REMEDIATED

FOUL WATER DRAINAGE TO BE REMEDIATED

P06	FOUL GULLIES ADDED TO B		MCS
P05	UPDATED FOLLOWING DESIGN MEETING AND	27.04.23	CRR MCS
P04	ALL EXISTING DRAINAGE TO BE RETAINED UNLESS SHOWN AS ABANDONED ON BELOW GROUND DRAINAGE DRAWING, FS0728-CUR-XX-XX-DR-C-0500		ICS
P03			ICS
P02			ICS
P01			ICS
Rev			hkd:

Status:

SUITABLE FOR INTERNAL REVIEW / COMMENT

S3

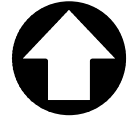
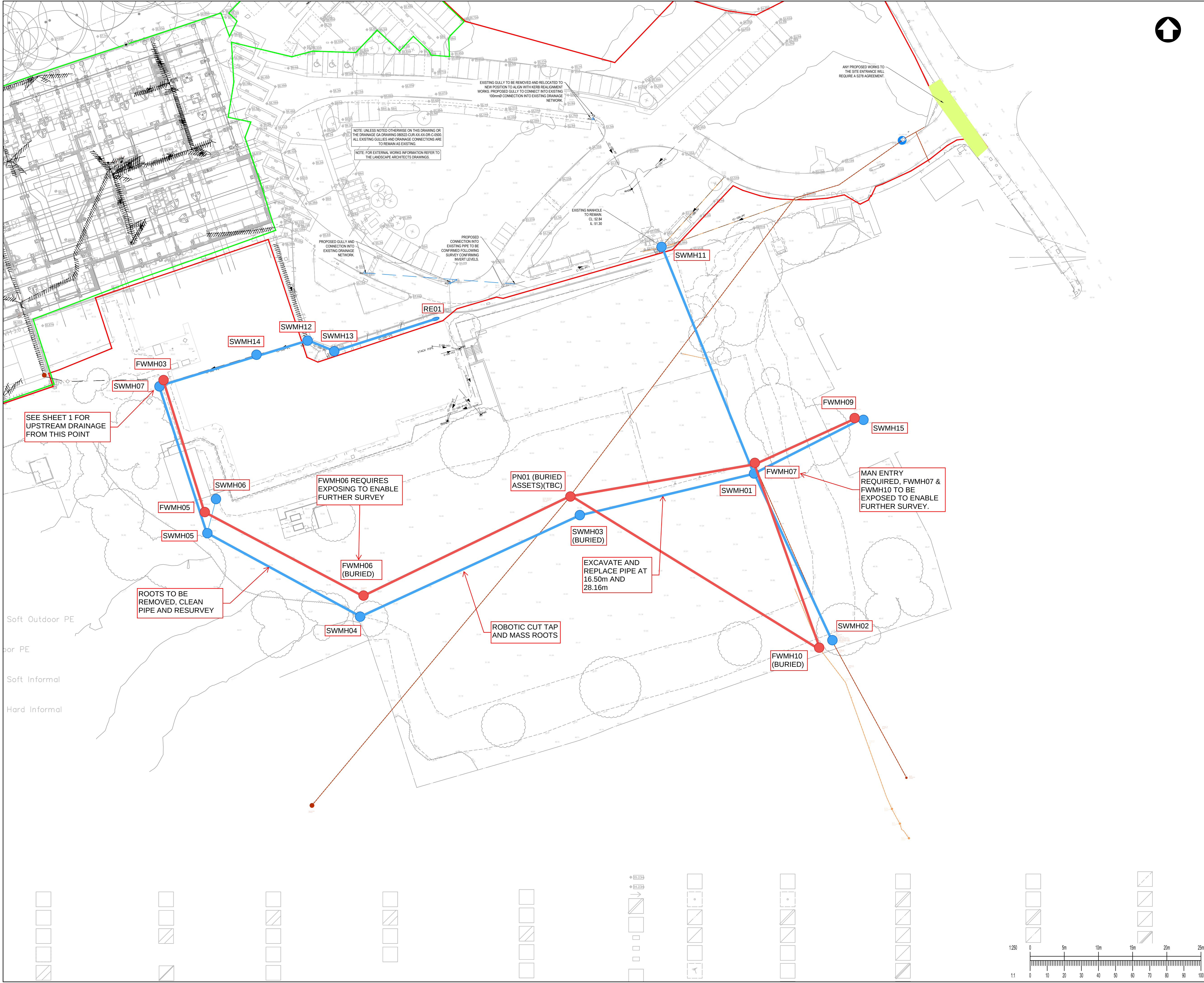
Project:

PINN RIVER SCHOOL

Drg Title:

PROPOSED DRAINAGE STRATEGY

Drawn By	Designed By	Checked By	
BPC	BPC	MCS	
	Date	Scales @ A1	
	26.10.2022	1:250	
Project No - Originator - Function - Spatial - Form - Discipline - Number			Revision
FS0728 - CUR - XX - XX - DR - C - 0500			P06



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40 Seven CCTV Survey
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TO BE READ IN
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01/06/23.

KEY

- SURFACE WATER DRAINAGE TO BE REMEDIATED
- FOUL WATER DRAINAGE TO BE REMEDIATED

ALL EXISTING
DRAINAGE TO BE
RETAINED UNLESS
SHOWN AS
ABANDONED ON
BELOW GROUND
DRAINAGE DRAWING,
FS0728-CUR-XX-XX-DR-
C-0500

Status: SUITABLE FOR INTERNAL REVIEW / COMMENT S3

Project: PINN RIVER SCHOOL

Orig Title: PROPOSED DRAINAGE STRATEGY - CAR PARK

Drawn By CRR	Designed By CRR	Checked By MCS
Date 17.03.2023	Scales @ A1 1:250	Revision
Project No - Originator - Function - Spatial - Form - Discipline - Number FS0728 - CUR-XX-XX-DR-C-0501		
P01		

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O3: BACKWASH DRAIN FROM HYDROTHERAPY POOL TO BE USED OUTSIDE OF PEAK FOUL DRAINAGE HOURS ONLY.

Maintenance

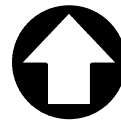
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- EXISTING DRAINAGE DOWNSTREAM OF PROPOSED DEVELOPMENT TO BE REMEDIATED IN LINE WITH 40 SEVEN CCTV SURVEY.
- SURFACE WATER DISCHARGE RATE LIMITED AT THE GREENFIELD RUNOFF RATE OF 2.9 L/S, AS PREVIOUSLY AGREED UPON WITH THAMES WATER. REFER TO THE THAMES WATER PRE-DEVELOPMENT ENQUIRY FOR FURTHER INFORMATION.
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- MUGA SURFACING TO BE USED ATOP MANHOLES LOCATED WITHIN THE MUGA PITCH TO MINIMISE THE IMPACT OF MANHOLES BEING LOCATED WITHIN THE TENNIS COURT. DETAIL TO BE COORDINATED WITH LANDSCAPE ARCHITECT AT A LATER DESIGN STAGE.
- PROPOSED FOUL OUTFALL (FW40 OUTFALL) TO BE RETAINED.
- CCTV SURVEY TO CONFIRM WHERE EXISTING SURFACE WATER AND FOUL WATER PIPES DISCHARGE TO.
- CCTV SURVEY TO CONFIRM THE UPSTREAM PIPEWORK IS NOT SERVING ADDITIONAL PROPERTIES OUTSIDE OF GRANGEWOOD SCHOOL. UPSTREAM PIPEWORK TO BE REMOVED FOLLOWING CONFIRMATION.
- SITE BOUNDARY EXTENSION OR THIRD PARTY WORKS AGREEMENT WILL BE REQUIRED TO ADEQUATELY DRAIN THE SITE DUE TO REQUIRED PROPOSED MANHOLE LOCATIONS.
- GROUNDWATER LEVEL TO BE CONFIRMED FOLLOWING FULL SITE INVESTIGATION (S.I) REPORT. DRAINAGE STRATEGY TO BE UPDATED FOLLOWING CONFIRMATION OF GROUNDWATER LEVEL.
- PERMEABLE PAVING REQUIRED ABOVE MUGA PITCH IN ORDER TO ADEQUATELY DRAIN THE SITE. EXTENTS OF PERMEABLE PAVING TO BE CONFIRMED AT A LATER DESIGN STAGE.
- ALL RWPS AND SVP'S TO BE 100mmØ UNLESS NOTED OTHERWISE.



ALL EXISTING DRAINAGE COLLECTING RUN-OFF FROM WITHIN THE PROPOSED DRAINAGE AREA TO BE STOPPED UP OR REMOVED. PROPOSED AREA TO BE DRAINED USING NEW GULLIES AND CHANNELS

UPSTREAM CONNECTIONS OF EXISTING DRAINAGE RUNS TO BE CONFIRMED. PREVIOUS CCTV SURVEY WAS ABANDONED DUE TO A CHANGE IN PIPE SIZE



C3
INCREASED MAINTENANCE OF CHANNEL DRAINS REQUIRED DUE TO ADJACENT BANK. TO BE REGULARLY CHECKED AND CLEARED OF SILT AND DEBRIS.

AREAS OF NEW HARDSTANDING TO BE DRAINED INTO EXISTING DRAINAGE SYSTEM AND DISCHARGED FROM SITE UNRESTRICTED TO COMPENSATE. AN AREA OF EXISTING CAR PARK TO THE NORTH HAS BEEN INCLUDED IN THE PROPOSED NETWORK'S CATCHMENT AREA. THE AREA DRAINING UN-RESTRICTED IS marginally LESS THAN IN THE PRE-DEVELOPMENT CASE.

KEY:

- PROPOSED REDLINE PLANNING BOUNDARY
- PROPOSED DRAINAGE AREA
- PROPOSED BELOW GROUND SURFACE WATER ATTENUATION STORAGE TANK SDS GEOLIGHT 400 OR SIMILAR APPROVED
- EXISTING FOUL DRAINAGE
- EXISTING SURFACE WATER DRAINAGE
- EXISTING FOUL MANHOLE
- SURFACE WATER DRAIN.
- SURFACE WATER CHAMBER.
- SURFACE WATER PPIC.
- PETROL INTERCEPTOR: KLARGESTER AQUILA OIL PRODUCT REF: NSBP003 OR SIMILAR APPROVED.
- ACO MONODRAIN PD100D 0.0, OR SIMILAR APPROVED. CHANNEL DRAIN AND SUMP/GULLY UNIT.
- GATIC FACADESLOT SLOT DRAIN AND SUMP/GULLY UNIT.
- ROAD GULLY, 1500Ø OUTLET.
- YARD GULLY, 1000Ø OUTLET.
- FOUL WATER DRAIN.
- FOUL WATER CHAMBER.
- FOUL WATER CHAMBER.
- TRAPPED FOUL GULLY, 1000Ø OUTLET.
- SOIL AND VENT PIPE.
- OVERFLOW DRAIN FROM HYDROTHERAPY POOL BALANCE TANK.
- PIPE TO BE CONCRETE ENCASED.
- SURFACE WATER DRAIN TO BE ABANDONED AND FILLED WITH PFA CEMENT GROUT.
- FOUL WATER DRAIN TO BE ABANDONED AND FILLED WITH PFA CEMENT GROUT.
- ROUTE OF EXISTING SURFACE WATER DRAIN
- EXISTING SURFACE WATER MANHOLE
- RAINWATER PIPE (RWP)
- PERMEABLE PAVING
- UNKNOWN UTILITY PATH
- ROOT PROTECTION ZONE

FW23 OUTFALL
CL: 56.35
IL: 54.30

SW01
CL: 56.35
IL: 55.15

SW01
CL: 56.35
IL: 55.15

FW01
CL: 56.35
IL: 55.31

FW01
CL: 56.35
IL: 55.31

FW01
CL: 56.35
IL: 55.31

FW01
CL: 56.35
IL: 55.31

FW01
CL: 56.35
IL: 55.31

FW01
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IL: 55.31

FW01
CL: 56.35
IL: 55.31

FW01
CL: 56.35
IL: 55.31

FW01
CL: 56.35
IL: 55.31

PROPOSED ATTENUATION TANK TO BE PLACED UNDERNEATH THE PROPOSED PERMEABLE MUGA PITCH.
CRATE SPECIFICATION - SDS GEOLIGHT 400
APPROXIMATE STORAGE VOLUME - 487.9m³
AREA - 456.5m²
DEPTH - 1.125m
POROSITY - 95%

C.L: 56.100
TOP OF TANK: 55.265
BOTTOM OF TANK: 54.140

EXISTING SURFACE WATER MANHOLE TO BE RELOCATED TO SW34 OUTFALL

CONTRACTOR TO CONFIRM EXISTING MANHOLE LEVEL FOLLOWING VARYING SURVEY RESULTS IDENTIFIED BY CURTINS

VORTEX FLOW CONTROL MANHOLE (SW34 OUTFALL):
DESIGN HEAD - 1.9m
DESIGN FLOW - 2.9L/S
HYDRO-BRAKE SHE-0070-2900-1900-2900 (OR SIMILAR APPROVED)

PROPOSED MANHOLE TO BE CONSTRUCTED OVER EXISTING SW OUTFALL. GPR AND CCTV SURVEY REQUIRED TO IDENTIFY LOCATION OF EXISTING SEWER.

EXISTING FOUL MANHOLE. MANHOLE TO BE RETAINED WITH NEW RECESSED LID PROPOSED.

BACKWASH DRAIN PIPE FROM HYDROTHERAPY POOL. PIPED CONNECTION TO PROPOSED FOUL DRAINAGE NETWORK. FLOW RATE 12.6L/S. POOL BACKWASH TO BE USED AT TIMES OF LOW SCHOOL DRAINAGE USAGE.

PERMEABLE MUGA SURFACING PROPOSED FOR THE PITCH AND SURROUNDING AREAS WHERE VIABLE. TO BE DESIGNED BY A SPECIALIST MUGA SURFACING ENGINEER.
TYPE 3 SUB BASE TO EXTEND TO TOP OF TANK TO ALLOW FOR SURFACE WATER TO DRAIN THROUGH TO TANK.

P07	UPDATED TO SUIT REVISED HYDROTHERAPY POOL LAYOUT, MEP LAYOUTS & STRUCTURAL LAYOUTS	21.06.23	CRR	LG
P06	FOUL GULLIES ADDED TO BIN STORE	15.05.23	CRR	MCS
P05	UPDATED FOLLOWING DESIGN MEETING AND REVISED RWP LOCATIONS	27.04.23	CRR	MCS
P04	STAGE 4a ISSUE	17.03.23	CRR	MCS
P03	PRE-APPLICATION SUBMISSION	26.10.22	BPC	MCS
P02	ITT SUBMISSION	15.09.22	BPC	MCS
P01	FIRST ISSUE	09.09.22	BPC	MCS
Rev:	Description:	Date:	By:	Chkd:

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Civils & Structures - Transport Planning - Environmental - Infrastructure - Geotechnical - Conservation & Heritage - Principal Designer
Birmingham - Bristol - Cambridge - Cardiff - Douglas - Dublin - Edinburgh - Glasgow - Karsal - Leeds - Liverpool - London - Manchester - Nottingham

Status:

SUITABLE FOR AUTHORIZATION **S4**

Project:

PINN RIVER SCHOOL

Orig Title:

PROPOSED DRAINAGE STRATEGY

Drawn By	Designed By	Checked By
BPC	BPC	MCS
Date	26.10.2022	Scales @ A1
1:250		
Project No - Originator - Function - Spatial - Form - Discipline - Number	Revision	

FS0728 - CUR - XX - XX - DR - C - 0500 P07