

**DAME ALICE OWENS SCHOOL,
POTTERS BAR,
EN6 2DU**

**(Ref. Planning Reference 15/1851/OUT
Condition 04
Pre-commencement)**

form...function...solution...

17th October 2016

 **PURESTRUCTURES**
Unit 5C Church End Little Hadham Herts SG11 2DY

Tel: 01279 771918 info@purestructures.co.uk www.purestructures.co.uk

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1.0 INTRODUCTION

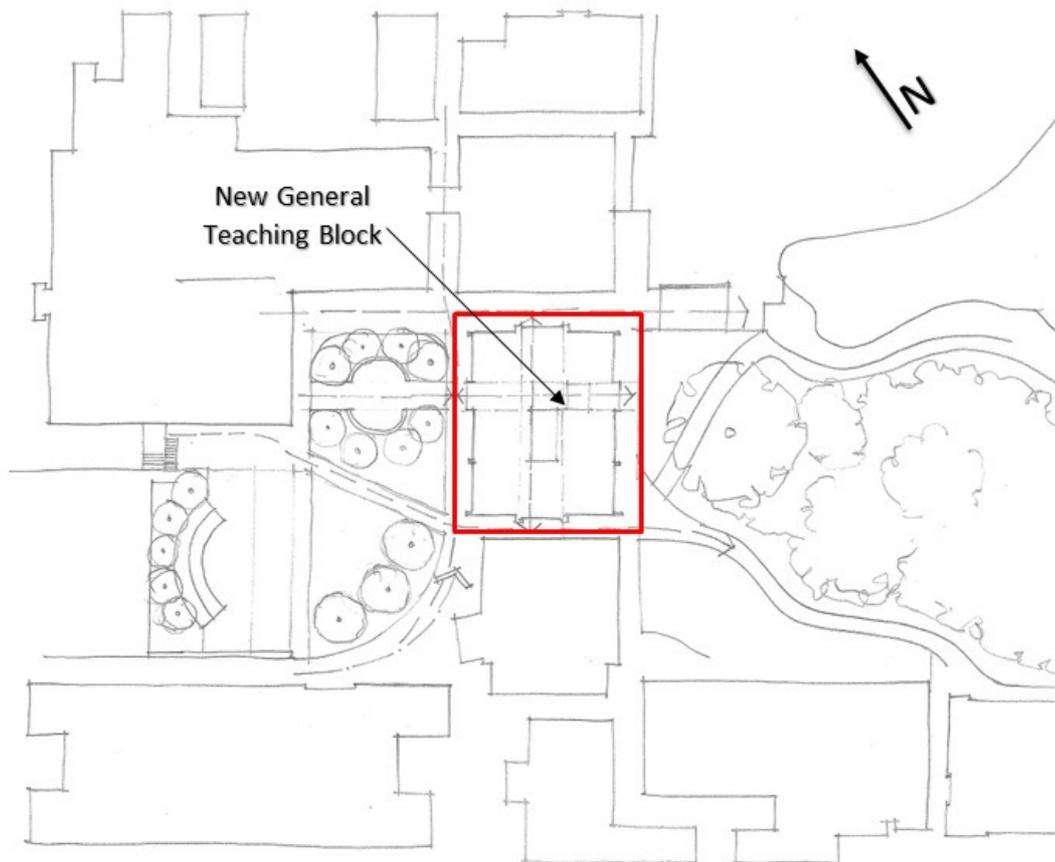
This report has been provided with the purpose of discharging Condition 04 (Pre-commencement) of consented planning application reference 15/1851/OUT for the erection of a new three storey General Teaching Block building following the demolition of an existing three storey building at Dame Alice Owens School, Potters Bar.

Condition 04 states the following:

“NO DEVELOPMENT SHALL TAKE PLACE BEFORE a Drainage Impact Study, a surface water drainage scheme for the site (based on sustainable drainage principles SUDS) and an assessment of the hydrological and hydro geological context of the development, has been submitted to and approved in writing by the Local Planning Authority. The surface water scheme shall be implemented before the first occupation and/or use of the development and be constructed in accordance with the approved details.”

2.0 DRAINAGE IMPACT STUDY

- 2.0.1 This report addresses the impact of the proposed development on the existing drainage system at the school.
- 2.0.2 The proposals are for a three storey General Teaching Block along with redeveloped landscaped and hardstanding areas, as indicated on site plan below.



Site Plan

2.1 Surface Water Drainage

2.1.1 Existing Arrangement

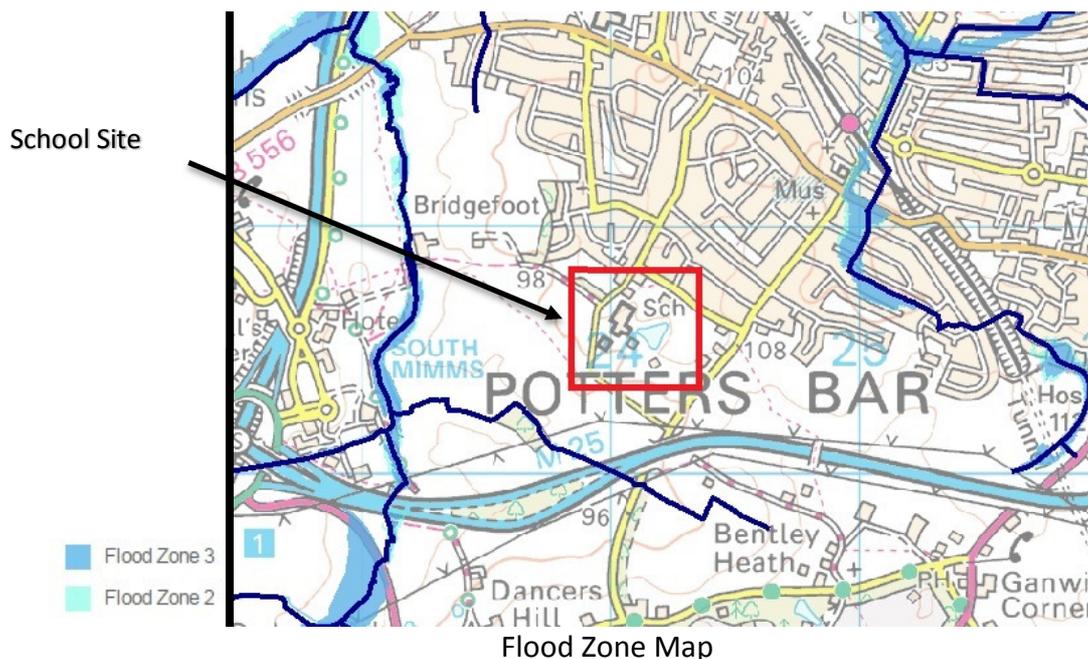
2.1.1.1 The existing surface run-off from the school discharges to a main public surface water sewer running along Sawyers Lane.

2.1.2 Proposed Arrangement

2.1.2.1 Reflecting SUDS requirements, the basis of the drainage proposals is to provide an environmentally sensitive/SUDS drainage arrangement for the proposed development.

2.1.2.2 The on-site surface water system will be designed to accommodate run-off during all events up to and including a 1 in 100 year storm event plus 30% allowance for increases in rainfall intensity due to climate change.

2.1.2.3 The proposed development site has been identified as lying within Flood Zone 1, see Flood Zone Map below, i.e. having low probability of flooding.



2.1.2.4 SUDS

The philosophy of SUDS is to mimic as closely as possible the natural drainage from a site before development and to treat runoff to remove pollutants. SUDS provide a flexible approach to drainage, with a wide range of components from living roofs to soakaways and large-scale basins or ponds.

2.1.2.4.1 Generally it is accepted that the implementation of the SUDS approach, as opposed to conventional drainage systems, provides several benefits and appropriately designed, constructed and maintained SUDS will improve the sustainable management of water on a site.

2.1.2.4.2 For instance suitable SUDS will reduce peak discharge flows from site to watercourses or sewers, therefore potentially reducing the risk of flooding downstream. SUDS will also improve water quality over conventional surface water sewers by removing pollutants. In addition they may enhance amenity through the provision of public open space and wildlife habitat.

2.1.2.4.3 Maintenance requirements for SUDS will differ from those for conventional systems, but this should not be a barrier to their selection. Advantages in flood control, pollution control and groundwater recharge may have benefits, both locally and more widely in the environment, which should offset changes in management practices.

2.1.2.4.4 It is intended to use the SUDS Hierarchy Matrix, below, in order to choose the appropriate SUDS measures for this site.

The SUDS Hierarchy

<i>Most Sustainable</i>	<i>SUDS technique</i>	<i>Flood Reduction</i>	<i>Pollution Reduction</i>	<i>Landscape & Wildlife Benefit</i>
	Living roofs	✓	✓	✓
	Basins and ponds - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds	✓	✓	✓
	Filter strips and swales	✓	✓	✓
	Infiltration devices - soakaways - infiltration trenches and basins	✓	✓	✓
	Permeable surfaces and filter drains - gravelled areas - solid paving blocks - porous paviers	✓	✓	
	Tanked systems - over-sized pipes/tanks - storms cells	✓		
<i>Least Sustainable</i>				

2.1.2.4.5 Due to the presence of natural clay soils on this site, it is advised that infiltration devices will not be appropriate and therefore we have proposed the provision of a living roof.

2.1.2.4.6 The provision of a living roof will result in a reduction in total surface water run-off and peak flow. The living roof will act as attenuation with the substrate absorbing the surface water and releasing it over time thus acting as a buffer and evening out the flow after heavy storms.

2.1.2.5 The proposed development will therefore result in an increase in soft landscaping comprising the use of a living roof on the new general teaching block and additional soft landscaped areas.

2.1.2.6 Catchment Areas

Existing Area	Description	Effective Area
Area 1)	Impermeable	Total 2270m ²
Area 2)	Soft Landscaping	Total 1110m²
TOTAL		3380m ²

Proposed Area	Description	Effective Area
Area 1)	Impermeable	
	- Hardstanding	1280m ²
	- Roof	70m ²
		Total 1350m ²
Area 2)	Soft Landscaping	
	- Living Roof	605m ²
	- Soft Landscaping	1425m ²
		Total 2030m²
TOTAL		3380m ²

2.1.2.7 The proposed and existing catchment areas above show that there is a total increase in soft landscaping of 920m² associated with the proposed development.

2.1.2.8 It is proposed to gravity discharge surface drainage associated with the new General Teaching Block into the existing surface water drainage within the site which discharges to the main public surface water sewer along Sawyers Lane. As indicated above the total surface run-off from the proposed development will be less than the existing arrangement and will result in a betterment to the current positively drained system.

2.2 Foul Water Drainage

2.2.1 Existing Arrangement

2.2.1.1 Foul discharge from the school is collected within the foul sewer which eventually outflows to a main public foul water sewer along Sawyers Lane.

2.2.1.2 It is proposed to gravity discharge foul drainage associated with the new General Teaching Block into the existing foul water drainage which previously served the old science block.

2.2.1.4 An additional average foul drainage outflow of 0.31l/s associated with the General Teaching Block will run into the existing foul drainage arrangement on-site and in turn discharge as part of the overall site effluent into the public sewer system. As this system previously served the old science block it will be adequate for the proposed development.

3.0 CONCLUSION

- 3.1 The development at Dame Alice Owens School comprises a new three storey General Teaching Block building along with additional soft landscaping.
- 3.2 This drainage design strategy is based on a gravity drainage system discharging into the main public sewers with on-site attenuation provided in the form of a living roof.
- 3.3 The proposal for a living roof is in line with the SUDS hierarchy and minimises storm-water run-off from site. We envisage the use of a living roof as a viable and sustainable method of water management on this site.



D Donnellan BE(Hons) MIEI

PS1499/PlanningCon/DD
17th October

APPENDIX I**PROPOSED DRAINAGE SCHEME LAYOUT**



Drainage Scheme
1 : 200

LEGEND	
Proposed Surface Water	--- (Blue dashed line)
Proposed Foul Water	--- (Orange dashed line)
Existing Surface Water Pipe	— (Blue solid line)
Existing Foul Water Pipe	— (Red solid line)
EXMH	Existing Manhole

Notes:
Green roof
Saturated Load= 2.5kPa (w)

- GENERAL NOTES:**
- This drawing is copyright (C) .
 - This drawing is to be read in conjunction with all relevant drawings and specifications.
 - This drawing shall not be scaled; use only figured dimensions. All dimensions are shown in millimetres and levels in metres above OS Datum.
 - Dimensions and conditions shall be verified on site. Any discrepancies between this drawing and site conditions shall be brought to the attention of the Engineer for resolution prior to placing orders or construction.
 - All work shall comply with the Building Regulations and the requirements of the Local Authority, current Codes of practice and British Standards.
 - Dimensions indicated thus: *are to be confirmed on site.
 - For remainder of notes see dig ncPS1499/01

CDM REGULATIONS 2015	
CONSTRUCTION RISKS	
IDENTIFIED HAZARD RELATING TO WORKS	RISK ASSESSMENT & SHEET

Revision Schedule			
Revision Number	Revision Description	Revision Date	Issued by

PRELIMINARY

PURESTRUCTURES
Unit 5C Church End Little Hadham Herts SG11 9DY
Tel: 01979 771918 info@purestructures.co.uk www.purestructures.co.uk

PROJECT
Dame Alice Owens School,
Potters Bar

DRAWING DESCRIPTION
DRAINAGE SCHEME

CLIENT
Barker Associates

SCALE	DATE	DRAWN	CHECKED	DRAWING NO.	REV
1 : 200	SEPT 2016	JL	DD	PS1499/SK11	