DESIGN NOTE		engenuiti
Project no: **615**	Date: **01/07/2016**	
Project name: **18-20 Elsworthy Road**		
Subject: **Planning Condition No. 10**		
Produced by: **Sarah Curran**		
Reference: **Planning Decision Ref:2014/5413/P**		

1 INTRODUCTION

1.1 In response to the decision to grant planning for the redevelopment of No. 18-20 Elsworthy Road, London NW3 3DJ by Camden Council, dated 30th March 2015, we have put together the following design note with a view to discharging condition No. 10 which states:

'Prior to commencement of development details of the sustainable urban drainage systems shall be submitted to and approved in writing by the local planning authority. Such system shall be based on a 1:100 year event with 30% provision for climate change demonstrating at least 50% attenuation of all runoff. The system shall be implemented as part of the development and therefore retained and maintained.'

2 DRAINAGE STATEGY

2.1 The design of the new drainage works is undertaken in accordance with:

- BS EN 752:2008 Drain and sewer systems outside buildings
- Sewers for Adoption 7th Edition
- Building Regulations Part H (Drainage and waste disposal)
- London Borough Of Camden Local Development Framework Core Strategy policies CS13 & CS16
- London Borough Of Camden Local Development Framework Development policies DP22, DP23 and DP32

2.2 In accordance with best practice requirements Sustainable urban Drainage Systems (SuDS) proposals have been considered for the development.

2.3 A concept known as SuDS Management train (also known as the treatment train) is shown on Figure 1. Drainage techniques similar to the way natural catchments function can be used to alter the flow and quality characteristics of the flow. This is achieved at different stages:

- Source Control: Managing the site could increase the quality (by minimising the use of de-icing products and garden chemicals, keeping paved areas clean to reduce first-flush pollution) and quantity problems (by reducing the paved areas)
- Site Control: Water should be returned to the natural drainage system as near to the source as possible.
- Regional Control: For large public areas storage could be shared between a number of sites.

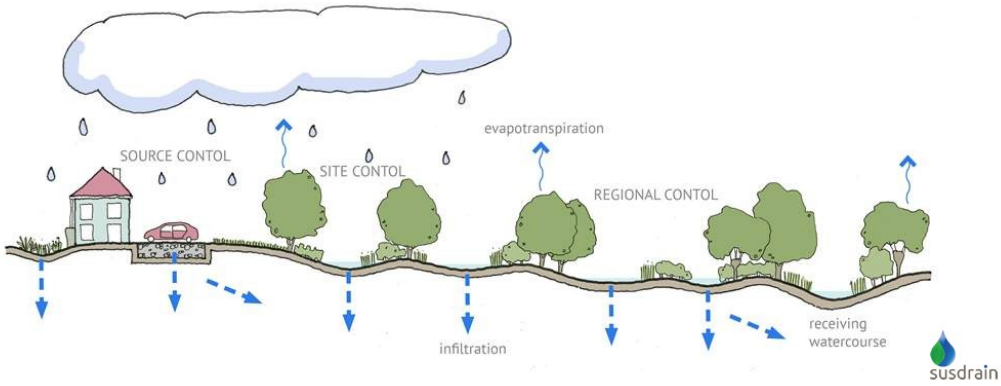

Figure 1 SuDS Management Train (Susdrain)

2.4 There are many SuDS technologies available to improve the quality and decrease the quantity of the storm water run-off from a development. The measures proposed for the site were selected to suit the particular circumstances of the development.

2.5 Table 1 details the SuDS measures will be considered for the proposed development:

	Proposed	**Comment**
Filter Drains	X	The site is confined and on London Clay therefore this measure was not proposed for the site.
Swales	X	The site is confined and on London Clay therefore this measure was not proposed for the site.
Infiltration Basins	X	The site is confined and on London Clay therefore this measure was not proposed for the site.
Soakaways	X	The site is on London Clay therefore this measure was not proposed for the site.
Ponds	X	The site is confined therefore this measure was not proposed for the site.
Retention / Detention Basins	X	The site is confined therefore this measure was not proposed for the site.
Wetlands	X	The site is confined therefore this measure was not proposed for the site.
Trees	✓	New trees will be planted on the site as part of the landscaping plans along with an increase in soft landscaping.
Pervious Surfaces	✓	Footpaths will be permeable or drain to areas of soft landscaping

Attenuation Tank	✓	Below ground attenuation tanks are proposed to store water in the event of an extreme storm event. The SW leaving this tank will be limited through the use of a 100mm pipe
Brown/Green Roofs	✓	Green roofs will be placed on flat roofs
Rainwater Harvesting	✓	Rainwater will be reused to maintain landscaping areas through the use of water butts eg. Garantia 2 in 1 Water collector with plant cup

Table 1 – SuDS Measures Considered

2.6 In accordance with government guidelines and Environment Agency's policies an allowance for the predicted increase in rainfall intensities was considered. For this development, the proposed surface water (SW) drainage network has been designed not to flood for up to a 6 hr, 1 in 100 year storm event with a 30% allowance made for climate change.

2.7 A new separate foul and surface water drainage network is proposed for the site. This network combines at the last manhole within the site prior to discharge into the public network using the existing outfall drain.

2.8 We have compared the existing and proposed hardstanding areas have summarized the results below:

	Existing	**Proposed**	**Reduction**
Total Hardstanding	606m^2	478m^2	**21%**
Hardstanding entering the drainage network	574m^2	426m^2	**26%**
Hardstanding entering the drainage network (minus green roofs and roofs draining to water butts)	574 m^2	371 m^2	**35%**

2.9 Through the use of water butts, green roofs and below ground attenuation, the runoff from the site will be reduced in both volume and velocity. For the majority of small storm events the runoff from the site will be reduced by up to 35%. In designing the below ground drainage network however we have allowed for the green roofs being saturated and water butts being full.

2.10 Sumps and pumps are proposed within all the lightwells, below basement level. These sumps will provide 24hr storage in the event of pump failure.

2.11 We are also aware that the public drainage network around Elsworthy Road surcharges during extreme rainfall events therefore we are providing a 12m^3 below ground drainage attenuation tank to accommodate the volume of SW discharge from the site for a 6hr 1 in 100 year event + cc in the event that SW cannot leave the site during this period. A non return will be placed on the outfall from the tank to prevent water backing up into the system.

3 CONCLUSION

3.1 Given the site is located in an urban area and is situated over London Clay the number of SuDS options available are limited.

3.2 Taking this on board a drainage strategy for the site was developed that suited the particular circumstances of the development site. The SuDS measures proposed include:

Trees
Pervious Surfaces
Attenuation Tank
Green Roofs
Rainwater Harvesting

3.3 Through the use of these measures the surface water runoff for the site can be reduced by up to 35%.

3.4 The proposed SW drainage network has been designed not to flood for up to a 6 hr, 1 in 100 year storm event with a 30% allowance made for climate change.

3.5 An attenuation tank is proposed to accommodate the sw discharge for a 6hr 1 in 100 year event + cc in the event that SW cannot leave the site during this period. The use of a non return will prevent water backing up into the system.

3.6 Refer to Engenuiti drawings 615-C-010, C-011, C-400, C-401, C-402, C-403, C-404 and C-405 for details of the proposed drainage design. Also refer to architects drawing 18-20-ELS-409 – Green Roof Details