Project:	AEG4678_N13_Enfield_06		
Author:	Jack Allen	Checked by:	ОН
Revision: -	First Issue	Date:	12 April 2024

Introduction

Aegaea were commissioned by Jason Harree to undertake a Surface Water Drainage Strategy for the development at 5 Palmerston Crescent, Enfield, London, N13 4UE.

It is understood that the proposed development is for the conversion of single family dwelling house into 3x self-contained flats, with bicycle and refuse storage. We understand that planning permission was granted after appeal (Ref. Enfield 23/04067/CND) subject to a number of conditions include Condition 8 (SuDS).

Details have been submitted for Condition 8 (Ref. Enfield 23/04067/CND)., the following comments were made by the Enfield SuDS Officer;

SuDS comments:

According to our DMD Policy, all minor developments must achieve as close to Greenfield runoff rates for 1 in 1 year and 1 in 100 year (plus climate change) year events and maximise the use of SuDS in accordance to the London Plan Drainage Hierarchy and the principles of a SuDS Management Train. This means that source control SuDS measures such as green roofs, rain gardens and permeable paving must be used extensively across the site.

No source control SuDS have been proposed. Installing a rainwater butt/rain planter would be sufficient for this development.

This condition cannot be discharged

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This report and associated appendices are intended to supplement the current details to discharge Condition 8 (Ref. Enfield 23/04067/CND).

Surface Water Drainage Strategy

Brownfield Runoff Rate

The total impermeable area associated with the dwelling is approximately 100m². The whole building area has been included in the InfoDrainage 2024.4 calculations. These calculations are included in this report as Appendix B.

Calculations have been carried out to estimate the existing unrestricted surface water flows only, from the site, into the foul sewer.

Based on the impermeable area of 100m², the unrestricted flow rate during the 1 in 100 year (+40% climate change) is 8l/s.

It is proposed to discharge surface water from the dwelling at 5.71/s for all storms up to and including the 1 in 100 year (+40% climate change). Any additional surface water will be attenuated onsite. A discharge rate of 5.7 represents a 28.75% betterment compared to the 81/s brownfield runoff rate.

Onsite Attenuation will be provided by a single 'Large' SuDS Planter, which has a mazimum capacity of 0.5m³.

It is proposed to utilise a 46mm orifice plater on the outlet of the rainwater planter to restrict flows to 5.7l/s. Surface water is to be discharged into the existing drainage system, ultimately discharging to a public sewer adjacent to the site.

A Surface Water Drainage Layout is included in this report as Appendix A.

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InfoDrainage SuDS Modelling Results

The full calculation outputs for the proposed drainage strategy can be found in Appendix D of this report although the 1 in 100-year +40% climate change results have been summarised below:

- The maximum resident volume in the Large SuDS Planter is a 1 in 100-year plus 40% climate change critical storm (15 mins summer) is 0.434m³.
- The maximum flow rate from the Large SuDS Planter is 5.71/s during the 1 in 100-year plus 40% climate change critical storm (15 mins summer).

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Appendix A - Surface Water Drainage Layout

This report has been prepared for the exclusive use of the commissioning party and may not be reproduced without prior written permission from Aegaea Limited. All work has been carried out within the terms of the brief using all reasonable skill, care, and diligence. No liability is accepted by Aegaea Limited for the accuracy of data or opinions provided by others in the preparation of this report, or for any use of this report other than for the purpose for which it was produced. Where reference has been made to probability events, or risk probability, it does not ensure that there is no risk or that there is no residual risk from an extreme, unlikely, or unforeseen flood event over the lifetime of the development.



Appendix B – InfoDrainage Calculations

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Project:		Date:			
		11/04/2024	Checked	Approved Des	
		Designed by:	Unecked by:	Approved By:	
Report Details		Company Address			
Type: Stormwater Controls		Company Address:			
Storm Phase: Phase					DRN
		+			
Cellular Storage	_				Type : Cellular Storage
Dimensions					
Exceedance Level (m)		10.000			
Depth (m)		1.000			
Base Level (m)		8.000			
Number of Crates Long		1			
Number of Crates Wide		1			
Number of Crates High		1			
Porosity (%)		30			
Crate Length (m)		1.5			
Crate Width (m)		1.5			
Crate Height (m)		1			
Total Volume (m ³)		1.675			
Inlets					
	I				
Inlet					
Inlet Type	Point Inflow				
Incoming Item(s)	Catchment Area				
Bypass Destination	(None)				
Capacity Type	No Restriction				
Outlete	-				
Oullets					
Outlet					
Outgoing Connection	(None)				
Outlet Type	Orifice				
Diameter (m)		0.046			
Coefficient of Discharge		1.000			
Invert Level (m)		8.000			

Project:			D 1	Date: 11/04/20	024					
			D	Designed	by: 0	Checked by:		Approved By:		
			C	Chris						
Report Details:			C	Company	Address:		-			
Type: Inflow S	Summary									DN
Storm Phase:	Phase									IKIN
Inflow Label	Connected To	Flow (L/s)	Runc Metho	off od	Area (ha	a)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Cellular Storage		Time of Concent	tration	C	0.01	10	0 10	110	0.011
TOTAL		0.0			0	0.01				0.011

Project:	Date:	Date:				_
	11/04/2024	11/04/2024				
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Title:	Company Address:				DDN	
Rainfall Analysis Criteria					DRN	

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	10
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	

Project:	Date:					
	11/04/2024					
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.8	0.804

Project:	Date:					
	11/04/2024					
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +0 %: 15 mins: Summer	0.01	4.4	1.978

Project:	Date:					
	11/04/2024					
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +0 %: 15 mins: Summer	0.01	5.7	2.575

Project:	Date:					
	11/04/2024					
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +35 %: 15 mins: Summer	0.01	5.9	2.671

Project:	Date:					
	11/04/2024				1	
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +40 %: 15 mins: Summer	0.01	8.0	3.598

Project:	Date:				-	
	11/04/2024					
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Stormwater Controls Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwat er Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Reside nt Volume (m³)	Max. Flood ed Volu me (m ³)	Max. Outflo w (L/s)	Total Lost Volume (m³)	Total Dischar ge Volume (m³)	Percentag e Available (%)	Status
Cellular Storage	FSR: 1 years: +0 %: 15 mins: Summer	8.072	8.072	0.072	0.072	1.8	0.048	0.000	1.6	0.000	0.804	97.113	ок

Project:	Date:				-	
	11/04/2024					
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Stormwater Controls Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwat er Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Reside nt Volume (m³)	Max. Flood ed Volu me (m ³)	Max. Outflo w (L/s)	Total Lost Volume (m³)	Total Dischar ge Volume (m³)	Percentag e Available (%)	Status
Cellular Storage	FSR: 30 years: +0 %: 15 mins: Summer	8.258	8.258	0.258	0.258	4.4	0.174	0.000	3.5	0.000	1.978	89.590	ок

Project:	Date:				-	
	11/04/2024					
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Stormwater Controls Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwat er Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Reside nt Volume (m³)	Max. Flood ed Volu me (m ³)	Max. Outflo w (L/s)	Total Lost Volume (m³)	Total Dischar ge Volume (m³)	Percentag e Available (%)	Status
Cellular Storage	FSR: 100 years: +0 %: 15 mins: Summer	8.386	8.386	0.386	0.386	5.7	0.261	0.000	4.4	0.000	2.575	84.441	ОК

Project:	Date:				-	
	11/04/2024					
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Stormwater Controls Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwat er Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Reside nt Volume (m³)	Max. Flood ed Volu me (m ³)	Max. Outflo w (L/s)	Total Lost Volume (m³)	Total Dischar ge Volume (m³)	Percentag e Available (%)	Status
Cellular Storage	FSR: 30 years: +35 %: 15 mins: Summer	8.408	8.408	0.408	0.408	5.9	0.276	0.000	4.5	0.000	2.671	83.549	ок

Project:	Date:				-	
	11/04/2024					
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Stormwater Controls Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwat er Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Reside nt Volume (m³)	Max. Flood ed Volu me (m ³)	Max. Outflo w (L/s)	Total Lost Volume (m³)	Total Dischar ge Volume (m³)	Percentag e Available (%)	Status
Cellular Storage	FSR: 100 years: +40 %: 15 mins: Summer	8.643	8.643	0.643	0.643	8.0	0.434	0.000	5.7	0.000	3.598	74.086	ок

Project:	Date:				
	11/04/2024		1		
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	



Phase FSR: 1 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

	(L/s)	Volume (m ³)	(L/s)	Volume (m ³)
Cellular Storage			1.6	0.804
TOTAL	1.8	0.804	1.6	0.804

Graphs

Flow Graph



Project:	Date:				
	11/04/2024				
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

Phase FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m ³)	Max. Outflow (L/s)	Total Outflow Volume (m ³)
Cellular Storage			3.5	1.978
TOTAL	4.5	1.978	3.6	1.978

Graphs

Flow Graph



Project:	Date:				
	11/04/2024				
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

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Phase FSR: 100 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m ³)
Cellular Storage			4.4	2.575
TOTAL	5.8	2.575	4.5	2.575

Graphs









Project:	Date:				
	11/04/2024				
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

Phase FSR: 30 years: Increase Rainfall (%): +35: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Cellular Storage			4.5	2.671
TOTAL	6.1	2.671	4.6	2.671





Time (mins)







Project:	Date:				
	11/04/2024				
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

Phase FSR: 100 years: Increase Rainfall (%): +40: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m ³)	Max. Outflow (L/s)	Total Outflow Volume (m ³)
Cellular Storage			5.7	3.598
TOTAL	8.2	3.598	5.9	3.598













Project:	Date:				
	11/04/2024		1		
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Inflows				DDN	
Storm Phase: Phase				DRN	



Catchment Area

Area (ha)	0.01

Dynamic Sizing	<u> </u>
Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100
Runoff Method Summer Volumetric Runoff Winter Volumetric Runoff Time of Concentration (mins) Percentage Impervious (%)	Time of Concentratio 0.90 0.84 10

Type : Catchment Area

Project:			Date: 11/04/2024						-	
				Designed	by:	Check	ed by:	Approved By:		
		(Chris							
Report Details:		Company Address:								
Type: Inflow Summary										DN
Storm Phase: Phase										JKN
Inflow Label	Connected To	Flow (L/s)	Run Meth	off nod	Area (ha	a)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area			Time of Concent	tration	(0.01	10	00 10	0 110	0.011
TOTAL		0.0			(0.01				0.011

Project:	Date:					
	11/04/2024					1
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.8	0.804

Project:	Date:					
	11/04/2024					
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +0 %: 15 mins: Summer	0.01	4.4	1.977

Project:	Date:					
	11/04/2024					1
	Designed by:	Checked by:	Approved By:	1		
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +0 %: 15 mins: Summer	0.01	5.7	2.574

Project:	Date:					
	11/04/2024					1
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +35 %: 15 mins: Summer	0.01	5.9	2.670

Project:	Date:					
	11/04/2024					1
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Inflows Summary					DDN	
Storm Phase: Phase					DRN	



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +40 %: 15 mins: Summer	0.01	8.0	3.597

Project:	Date:				
	11/04/2024				1
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

Flow Graph



Phase

FSR: 1 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m ³)	Max. Outflow (L/s)	Total Outflow Volume (m ³)
TOTAL	1.8	0.804	1.8	0.804







Project:	Date:				
	11/04/2024				
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

Phase FSR: 30 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow	Total Inflow	Max. Outflow	Total Outflow
	(L/s)	Volume (m ³)	(L/s)	Volume (m ³)
TOTAL	4.4	1.977	4.4	1.977





Project:	Date: 11/04/2024					
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:	-		1		
Type: Phase Management					DDN	
Storm Phase: Phase					DRN	

Flow Graph

Phase FSR: 100 years: Increase Rainfall (%): +0: 15 mins: Summer

Tables

Name	Max. Inflow	Total Inflow	Max. Outflow	Total Outflow
	(L/s)	Volume (m³)	(L/s)	Volume (m ³)
TOTAL	5.7	2.574	5.7	2.574





Time (mins) Total Resident Volume — Outflow Volume —— Lost Volume —— Flooded Volume Inflow Volume —

Project:	Date:					
	11/04/2024					1
	Designed by:	Checked by:	Approved By:			
	Chris					
Report Details:	Company Address:					
Type: Phase Management				- T	DDN	
Storm Phase: Phase					DRN	

Phase FSR: 30 years: Increase Rainfall (%): +35: 15 mins: Summer

Tables

Name	Max. Inflow	Total Inflow	Max. Outflow	Total Outflow
	(L/s)	Volume (m ³)	(L/s)	Volume (m ³)
TOTAL	5.9	2.670	5.9	2.670





Project:	Date:				
	11/04/2024				1
	Designed by:	Checked by:	Approved By:		
	Chris				
Report Details:	Company Address:				
Type: Phase Management				DDN	
Storm Phase: Phase				DRN	

Phase FSR: 100 years: Increase Rainfall (%): +40: 15 mins: Summer

Tables

Flow (L/s)

Name	Max. Inflow	Total Inflow	Max. Outflow	Total Outflow
	(L/s)	Volume (m ³)	(L/s)	Volume (m ³)
TOTAL	8.0	3.597	8.0	3.597





30