

Design note

Project	Date	By	Reference
Roundhouse	01.02.2022	dp	2796 DNT 620
Title			
SuDS Proposals			

Input

Description		IMP area allowing for natural losses
Current site		
Total redline boundary area	3330 m²	
Area undrained to sewer	288 m²	
Area drained to sewer	3042 m²	(90% IMP) 2738 m²
Campus Development		
Total roof area	571 m²	
Normal roof	439 m²	(95% IMP) 417 m²
Green roof	132 m²	(50% IMP) 66 m²
External paving	467 m²	50 % impermeable draining as existing 50% permeable draining to ground
Part of existing Admin building	350 m²	(95% IMP) 333 m²
Total Area		816 m²
Attenuation storage		
Discharge rate	2 l/s	
IMP catchment area	816 m²	
Railside Development		
Developed Area	288 m²	(95% IMP) 274 m²
Attenuation storage		
Discharge rate	2 l/s	
IMP catchment area	274 m²	
Remainder of impermeable site		
Yard + part of Existing Admin building + paving to upper terrace	1654 m²	(90% IMP) 1698 m²

Storage

Description		
Campus Development storage		
Attenuation storage		
Volume required	41.1 m³	
Free volume of tank	95%	
Tank provided	10 m x 4 m x 1.2 m dp.	45.6 m³ free volume
External paving		
Depth of Type 3 gravel provided below paving	300 mm	
Free void ratio of gravel	25%	
Volume of storage provided by gravel		17.5 m³ free volume
Green roof		
Free void ratio soil	10%	
Volume of storage provided by soil		13.2 m³ free volume

Discharge

Existing Peak Runoff for 2738 m ² No climate change allowance			
	1 in 1 year	1 in 30 year	1 in 100 year
10 min	29.2 l/s	71.4 l/s	91.6 l/s
1 hour	9.7 l/s	23.4 l/s	30.9 l/s
6 hour	2.8 l/s	6.1 l/s	7.9 l/s

Peak Runoff for 2738 m ² ie: NO DEVELOPMENT OF SITE with 40 % climate change allowance			
	1 in 1 year	1 in 30 year	1 in 100 year
10 min	41.4 l/s	102.1 l/s	132.7 l/s
1 hour	14.3 l/s	32.3 l/s	42.3 l/s
6 hour	4.0 l/s	8.2 l/s	10.5 l/s

Proposed Peak Runoff for 1489 m ² plus Campus and Railside with 40 % climate change allowance						
	1 in 1 year		1 in 30 year		1 in 100 year	
10 min	25.7 l/s + 4 l/s	29.7 l/s	63.3 l/s + 4 l/s	67.3 l/s	82.3 l/s + 4 l/s	86.3 l/s
1 hour	8.9 l/s + 4 l/s	12.9 l/s	20.1 l/s + 4 l/s	24.1 l/s	26.2 l/s + 4 l/s	30.2 l/s
6 hour	2.5 l/s + 4 l/s	6.5 l/s *	5.1 l/s + 4 l/s	9.1 l/s *	6.5 l/s + 4 l/s	10.5 l/s

* Greater than discharge in 'NO DEVELOPMENT OF SITE' table therefore not a valid discharge.

Betterment

Comparison between developed site and no development of site with 40 % climate change allowance			
	From	To	Betterment
10 min / 1 in 1 year	41.4 l/s	29.7 l/s	Minus 28%
10 min / 1 in 30 year	102.1 l/s	67.3 l/s	Minus 34%
10 min / 1 in 100 year	132.7 l/s	86.3 l/s	Minus 35%

Summary

Development of the site as proposed will provide a peak discharge betterment into the existing public sewer of circa 35%.

To achieve this the following is proposed :

Green roof to part of the proposed Campus Building reducing runoff will be used.

Use of permeable paving to the external works adjacent to the proposed Campus Building allowing for infiltration of this area into the ground.

Removal of part of the existing Administration roof from the unattenuated existing network and attenuate / flow control along side the normal roof area of the proposed Campus building.

Refer to Drawing 2796-609 attached.



