PRELIMINARY DRAINAGE CALCULATIONS

06/10/2025

EXISTING SURFACE WATER

2504820 - Wythenshawe Park Hub

ARDENT CONSULTING ENGINEERS

Existing site information:

Site Boundary Area	550	m2
Developable Area	0.055	ha
Impermeable Area	0.0550	ha

no of MHs in road	3
imp area per MH	0.0183333

Modified Rational Method Equation:

$$Q_n = 2.78\ CiA$$

where:

C *Runoff Coeffic* = 1 (in this case 1 as using impermeable area)

i_n *Rainfall Intensity for n return period (mm/hr)*

A *Impermeable Area (Ha)*

Q_n *Runoff for n return period (l/s)*

Rainfall Intensity:

The rainfall intensities for various return periods were extracted from FLOW hydraulic modelling software for the 15 min duration.

i_1	29.6	mm/hr
i_{30}	75.108	mm/hr
i_{100}	95.22	mm/hr

Existing Surface Water Runoff:

Therefore:

			C		i_n		A		Q_n		**50% Brownfield**
Q_1	2.78	x	1	x	29.6	x	0.055	=	**4.53**	**l/s**	2.3 **l/s**
Q_{30}	2.78	x	1	x	75.1	x	0.055	=	**11.48**	**l/s**	5.7 **l/s**
Q_{100}	2.78	x	1	x	95.2	x	0.055	=	**14.56**	**l/s**	7.3 **l/s**

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	104.606	29.600	30 year 15 minute winter	186.269	75.108
2 year 15 minute winter	73.408	29.600	100 year 15 minute summer	336.516	95.222
30 year 15 minute summer	265.433	75.108	100 year 15 minute winter	236.152	95.222