

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

This form identifies the information required by Oxfordshire County Council LLFA to enable technical assessment of flows and volumes determined as part of drainage / SuDS calculations.

Note : * means delete as appropriate; Numbers in brackets refer to accompanying notes.

SITE DETAILS

- 1.1 Planning application reference 19/02550/F
- 1.2 Site name Proposed Great Wolf lodge Chesterton, Bicester
- 1.3 Total application site area (1) ...186000.....m²18.6...ha
- 1.4 Is the site located in a CDA or LFRZ Y/N
- 1.5 Is the site located in a SPZ Y/N

VOLUME AND FLOW DESIGN INPUTS

- 2.1 Site area which is positively drained by SuDS (2) 72000 m²
- 2.2 Impermeable area drained pre development (3) 0 m² extensive land drainage
- 2.3 Impermeable area drained post development (3) 72000 m²
- 2.4 Additional impermeable area (2.3 minus 2.2) 72000 m²
- 2.5 Predevelopment use (4) Greenfield / Brownfield / Mixed* enhanced greenfield
- 2.6 Method of discharge (5) Infiltration / waterbody / storm sewer/ combined sewer*
- 2.7 Infiltration rate (where applicable)m/hr
- 2.8 Influencing factors on infiltration high ground water
- 2.9 Depth to highest known ground water table...0.3-0.5...m AOD Non-intrusive survey
- 2.10 Coefficient of runoff (Cv) (6) 0.75
- 2.11 Justification for Cv used $C_v = \frac{(0.829 \times PIMP + 25 \times SOIL + 0.078 \times UCW1 - 27)}{PIMP}$
- 2.12 FEH rainfall data used (Note that FSR is no longer the preferred rainfall calculation method) Y/N
- 2.13 Will storage be subject to surcharge by elevated water levels in watercourse/ sewer Y/N
- 2.14 Invert level at outlet (invert level of final flow control) 78.595 m AOD
- 2.15 Design level used for surcharge water level at point of discharge (14) 0 m AOD

PIMP = 100%
 SOIL = 0.45
 UCW1 = 60
 Cv = 0.72

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CALCULATION OUTPUTS

Sections 3 and 4 refer to site where storage is provided by attenuation and/or partial infiltration. Where all flows are infiltrated to ground omit Sections 3-5 and complete Section 6.

3.0 Defining rate of runoff from the site

- 3.2 Max. discharge for 1 in 1 year rainfall 4.2 l/s/ha, 30.5 l/s for the site (N/A not available with FEH) ← for 1 in 2 year event
- 3.2 Max. discharge for Q_{med} rainfall 2.5 l/s/ha, 18.3 l/s for the site (advised to use Q_{bar})
 Q_{bar} 4.3 31.3
- 3.3 Max. discharge for 1 in 30 year rainfall 4.3 l/s/ha, 31.2 l/s for the site
- 3.4 Max. discharge for 1 in 100 year rainfall 4.3 l/s/ha, 31.3 l/s for the site
- 3.5 Max. discharge for 1 in 100 year plus 40% CC 4.3 l/s/ha, 31.3 l/s for the site

4.0 Attenuation storage to manage peak runoff rates from the site

- 4.1 Storage - 1 in ² year 1242 m³ 0.17 m³/m² (of developed impermeable area)
- 4.2 Storage - 1 in 30 year (7) 2748 m³ 0.38 m³/m²
- 4.3 Storage - 1 in 100 year (8) 3582 m³ 0.50 m³/m²
- 4.4 Storage - 1 in 100 year plus 40% CC (9) 5200 m³ 0.72 m³/m²
- } Conservative estimate using Source Control due to complex attenuation arrangement

5.0 Controlling volume of runoff from the site

- 5.1 Pre development runoff volume (b) 5564 m³ for the site Q_{bar} 100 6hr (Conservative)
- 5.2 Post development runoff volume (unmitigated) (b) 4086 m³ for the site 340 m³ for undeveloped site area
 676 m³ for developed site @ Q_{bar}
- 5.3 Volume to be controlled/does not leave site (5.2-5.1) $*$ m³ for the site
- 5.4 Volume control provided by
 Interception losses (11) 360 m³
 Rain harvesting (12) $*$ m³
 Infiltration (even at very low rates) 0 m³
 Separate area designated as long term storage (13) $---$ m³
- * Rainwater harvesting offers 13.86 million litres reduction Per annum
- 5.5 Total volume control (sum of inputs for 5.4) $*$ m³ (15)

6.0 Site storage volumes (full infiltration only) N/A

- 6.1 Storage - 1 in 30 year (7) m³ m³/m² (of developed impermeable area)
- 6.2 Storage - 1 in 100 year plus CC (9) m³ m³/m²