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Table 1. Value of parameters for the two-stage physically-based (2SPB) model.

	Parameter	Conventional Green Roof	Innovative Green Roof
System configuration	Length	5 m	6.1 m
	System slope	2%	2%
Substrate layer	θ_s	0.552 ^a	0.513 ^b
	θ_r	0.042 ^a	0.119 ^b
	α_1	0.304 ^a	0.108 ^b
	n_1	2.820 ^a	2.344 ^b
	α_2	5.094E-04 ^a	0.002b
	n_1	1.926 ^a	2.834 ^b
	w_1	0.622 ^a	0.579 ^b
	K_s	166.4 mm/min ^a	14.7 mm/min ^b
	θ_1	0.23 ^a	-
	θ_2	0.33 ^a	-
	γ_1	-1.5495 ^a	-
	γ_2	-10.33 ^a	-
	γ_3	-23.339 ^a	-
	β_1	5.019 ^a	-
	β_2	31.66 ^a	-
	β_3	88.2267 ^a	-
		Initial moisture content (θ_{FC})	0.33 ^a
	Depth	100 mm	50 mm
Drainage/detention layer	Manning's n	0.0012^b	0.017^b
	Initial water storage	0	0

^a Values for MCS substrate, as proposed in Peng et al. (2020).

^b Values from independent material characterisation tests described in this paper.

Table 2. Value of parameters for the SWMM green roof LID control (SWMM-GR) model.

	Parameter	Conventional Green Roof	Innovative Green Roof
System Configuration	W_1	1 m	1.1 m
	A_1	5 m ²	6.71 m ²
	S_1	0.02	0.02
Surface layer	\emptyset_1	0	0
	D_1	0	0
	n_s	0.1	0.1
	φ_2	50	50
Substrate layer	K_s	166.4 mm/min ^a	14.7 mm/min ^b
	D_2	100 mm	50 mm
	Soil wilting point	0.01	0.01
	\emptyset_2	0.552 ^a	0.513 ^b
	θ_{FC}	0.34 ^a	0.38 ^b
	HCO	20 ^b	25.59 ^b
	Initial substrate saturation	64.10%	72.55%
Drainage/detention layer	n_3	0.0578^b	0.952^b
	\emptyset_3	0.5	0.5
	D_3	25 mm	55 mm
	Initial water storage	0	0

^a Values for MCS substrate, as proposed in Peng et al. (2020).

^b Values from independent material characterisation tests described in this paper.

Table 3. Identified Manning's n and Roughness Coefficient for the FD-25 drainage layer.

Slope	Drainage Length	Manning's n	Roughness Coefficient
2%	2 m	0.0022	0.1090
2%	5 m	0.0012	0.0578
17.60%	2 m	0.0025	0.1542
17.60%	5 m	0.0018	0.0914