SUPPLEMENTARY INFORMATION

S.1 Additional Information from the Wastewater Sampling Campaign

Figure S1. shows photographs taken of the sampling equipment and set up described in Section 2.3.2 of the manuscript.

a) b) c)

Figure S1. Photographs of wastewater sampling installation on Prinseneiland. From left to right, **a**) Automatic sampling cabinet with 24 sample bottles, **b**) Portable toilet that housed the sampling cabinet with sampling hose leading through the manhole cover to wet well below, **c**) View of sampling location once the installation of the sampler was completed.

S.2 Raw Data from the Wastewater Sampling Campaign

Figure S2 and Figure S3 show the complete concentration data set collected in chronological order starting at 11 am on 22/08/2019 (Thursday) and ending at 11 am on 29/08/2019 (Thursday).

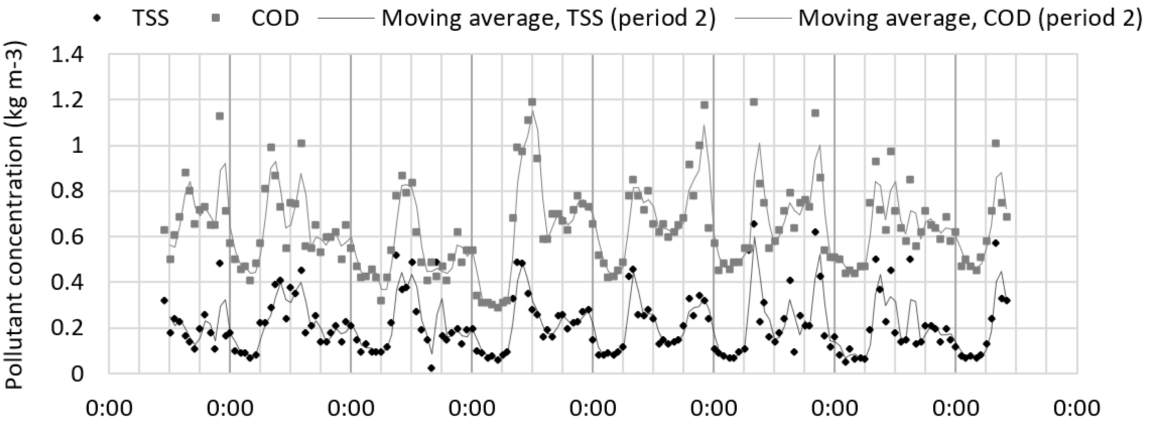

Figure S2. Complete COD and TSS concentration data set obtained from wastewater quality campaign.

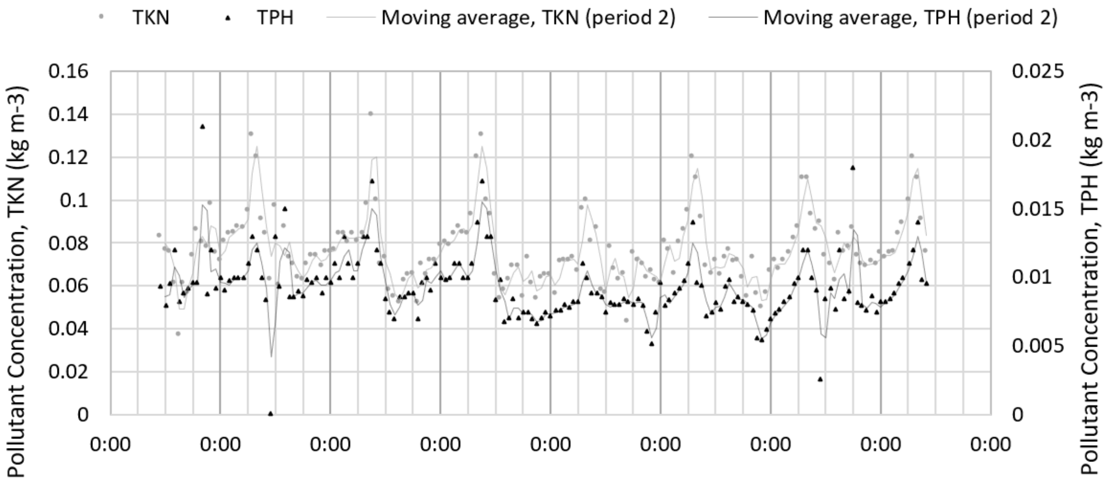

Figure S3. Complete TKN and TPH concentration data set obtained from wastewater quality campaign.

S.3 Monitoring Wastewater Temperature

S.3.1 Methodology for Wastewater Temperature Sampling

The temperature of the wastewater stream entering the pumping station was recorded every minute. The temperature sensor was of the Minilog type with accuracy ± 0.25% (www.endress.com). This is a battery-powered meter that was placed in the wet well and secured to the manhole cover. The temperature reading was checked daily using a calibrated field temperature meter. The temperature readings taken by AWS were confirmed by installation of an additional temperature sensor, Cera-Diver (www.vanessen.com), that recorded the temperature every 5 minutes over a two-week period. This diver had a typical measurement accuracy of ± 0.1 °C.

S.3.2 Results of Wastewater Temperature Monitoring and Modelling Attempts

Figure S4 shows wastewater temperature over the sampling week (AWS), and the additional week monitored with the confirmation analysis, via the Cera-Divers.

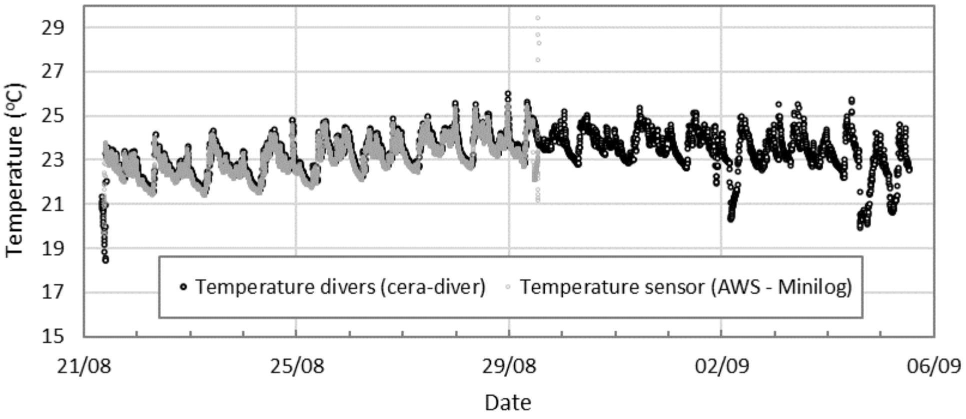

Figure S4. Wastewater temperature data collected at the entrance to the wet well at the end of the studied catchment.

Figure S5 shows the predicted temperature compared with the daily-averaged measured data. The latter is the average temperature for each of the 5-minute intervals over the two-week measurement period. Temperature modelling within InfoWorks® ICM is very basic and can only be calibrated by two parameters: a single heat transfer coefficient at the water surface, and the equilibrium temperature (or air temperature). There was therefore limited ability to calibrate the temperature model. The heat transfer coefficient was set to 4 × 10^{-5} m s^{-1}, and the equilibrium water temperature was set to 23 °C to align with the warm weather at the time of sampling. The model predicted a temperature profile in the appropriate range but the temperature modelling capabilities of InfoWorks® ICM are not as detailed as with other hydraulic software. A better model for temperature-based modelling is the model implemented by Elias-Maxil (2017) using SOBEK®.

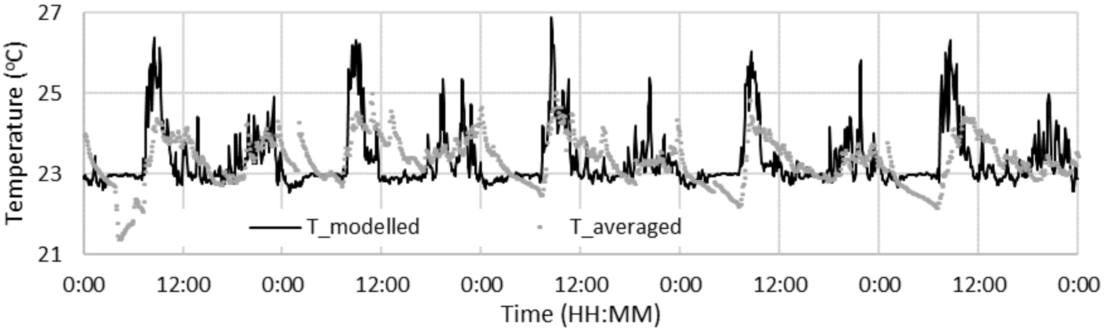

Figure S5. Predicted wastewater temperature compared with the measured and two-week averaged temperature.

S.4 Non-potable feed water composition

The greywater composition profile used here was derived from Penn et al (2012). The rainwater pollutant concentration was taken from Ward et al. (2010) and Farreny et al. (2011). The greywater and rainwater feed compositions were originally described in terms of concentration, so these data were translated into mass discharge per appliance use. To do this, the average water use (per capita) for each appliance and the average number of uses per day (from Penn et al (2012)) were considered, together with the concentration data listed in Table S1. The toilet and washing machine were considered to use 37.7 L cap^{-1} day^{-1} and 16.6 L cap^{-1} day^{-1}, and they were assumed to be used 5.9 and 0.16 times per day, respectively.

Table S1. Greywater and Rainwater feed composition utilised in this work (Greywater derived from [2], rainwater derived from [3,4]).

Pollutant	GW effluent concentration (mg L^{-1})	Greywater feed per appliance (g use^{-1})		Rainwater feed per appliance (g use^{-1})	
		Toilet	Washing Machine	Toilet	Washing Machine
COD	40.0	0.26	4.15	0.06	1.04
BOD	1.8	0.01	0.19	0.02	0.31
TSS	7.5	0.05	0.78	0.04	0.62
TKN	1.0	0.01	0.10	0.01	0.18
NH3	0.1	0.00	0.01	0.00	0.05
TPH	2.0	0.01	0.21	0.00	0.00

S.5 References for Supplementary Information

1. Elías-Maxil, J.A.; Hofman, J.; Wols, B.; Clemens, F.; Van Der Hoek, J.P.; Rietveld, L. Development and performance of a parsimonious model to estimate temperature in sewer networks. *Urban Water J.* **2017**, *14*, 829–838, doi:10.1080/1573062x.2016.1276811.
2. Penn, R.; Hadari, M.; Friedler, E. Evaluation of the effects of greywater reuse on domestic wastewater quality and quantity. *Urban Water J.* **2012**, *9*, 137–148, doi:10.1080/1573062x.2011.652132.
3. Ward, S.; Memon, F.A.; Butler, D. Harvested rainwater quality: the importance of appropriate design. *Water Sci. Technol.* **2010**, *61*, 1707–1714, doi:10.2166/wst.2010.102.
4. Farreny, R.; Morales-Pinzón, T.; Guisasola, A.; Tayà, C.; Rieradevall, J.; Gabarrell, X. Roof selection for rainwater harvesting: Quantity and quality assessments in Spain. *Water Res.* **2011**, *45*, 3245–3254, doi:10.1016/j.watres.2011.03.036.