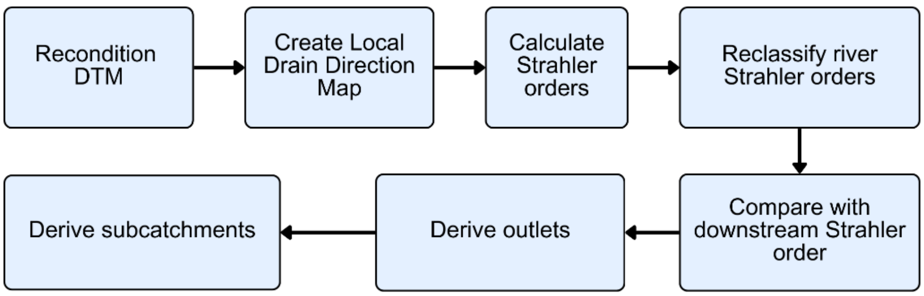
Supplementary Material

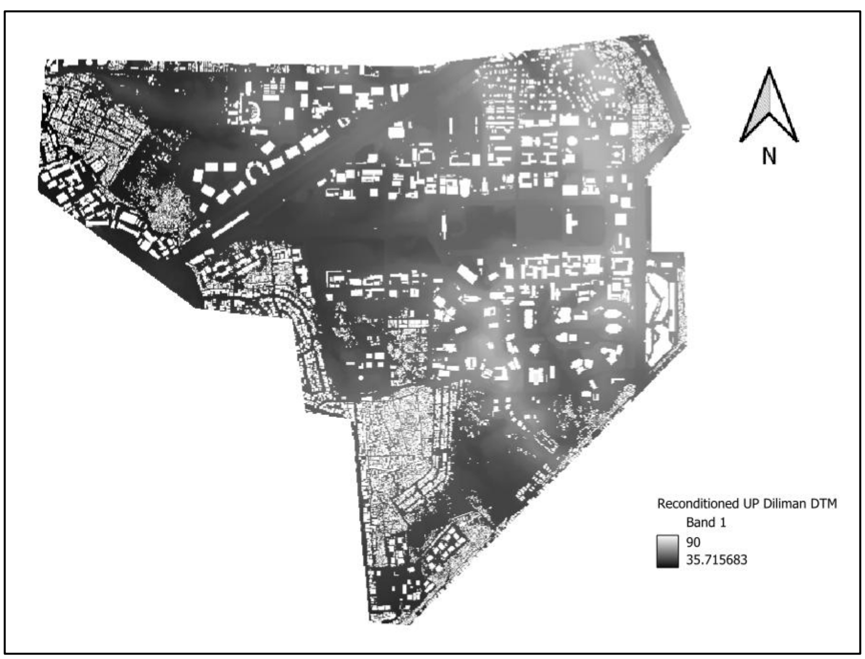
1 Subcatchment Delineation

Subcatchment delineation was performed in QGIS using the built-in delineation tools from the *PCRaster* plugin. The Digital Terrain Model (DTM) and building footprints of UP Diliman were used as the primary input files in delineation. Supplementary Figure 1 shows the steps followed in delineating the subcatchments.



Supplementary Figure 1. Steps in Subcatchment Delineation using PCRaster in QGIS

In urban catchments, it is crucial to reflect the building footprints and locations in the DTM as building perimeters do not permit the flow of stormwater inside the building (Lumbera, 2018). As a result, this has been reflected by uniformly raising the pixels from the DTM that intersected with the building footprints using the raster calculator tool. In theory, this reflects how water does not enter the building. Shown in Supplementary Figure 2 is the reconditioned DTM.



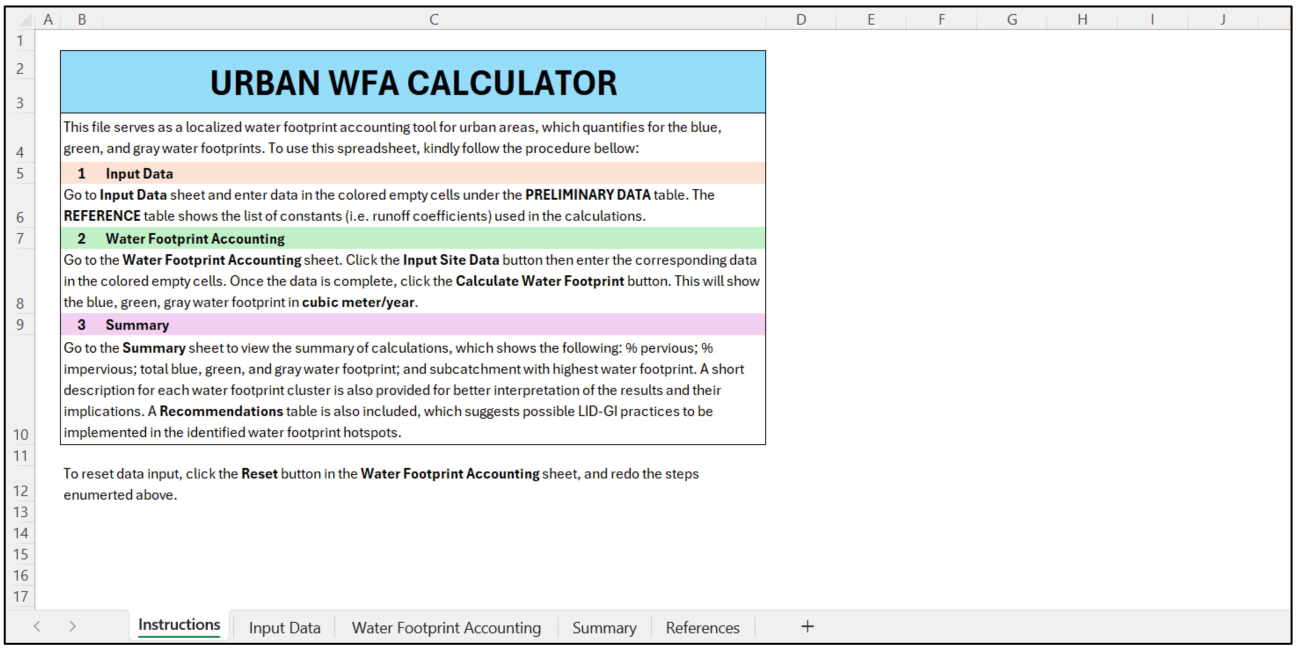
Supplementary Figure 2. Reconditioned DTM of UP Diliman.

Following this, the local drain direction map was then created with the reconditioned DTM as input. This step fills all sinks and creates the flow direction map. The Strahler orders were then calculated from the local drain direction map, which classifies the hierarchy of streams. Strahler orders were reclassified to calibrate which orders are considered streams. The Strahler orders of the downstream were then derived, then compared with the Strahler orders of the stream. From this, the junctions and outlets were identified. With known locations of the outlets, the subcatchments were derived.

2 Water Footprint Accounting Spreadsheet Tool

The following supplementary figures show the interface of the generated WFA spreadsheet tool. The developed tool is in the form of an Excel spreadsheet, which consists of five sheets: (1) Instructions, (2) Input Data, (3) Water Footprint Accounting, (4) Summary, and (5) References.

The first sheet (Supplementary Figure 3) is the instructions sheet, which briefs the user on how to use the spreadsheet tool (i.e., colored empty cells are user data input). It introduces the user to the tool and provides an overview for each of the succeeding sheets.

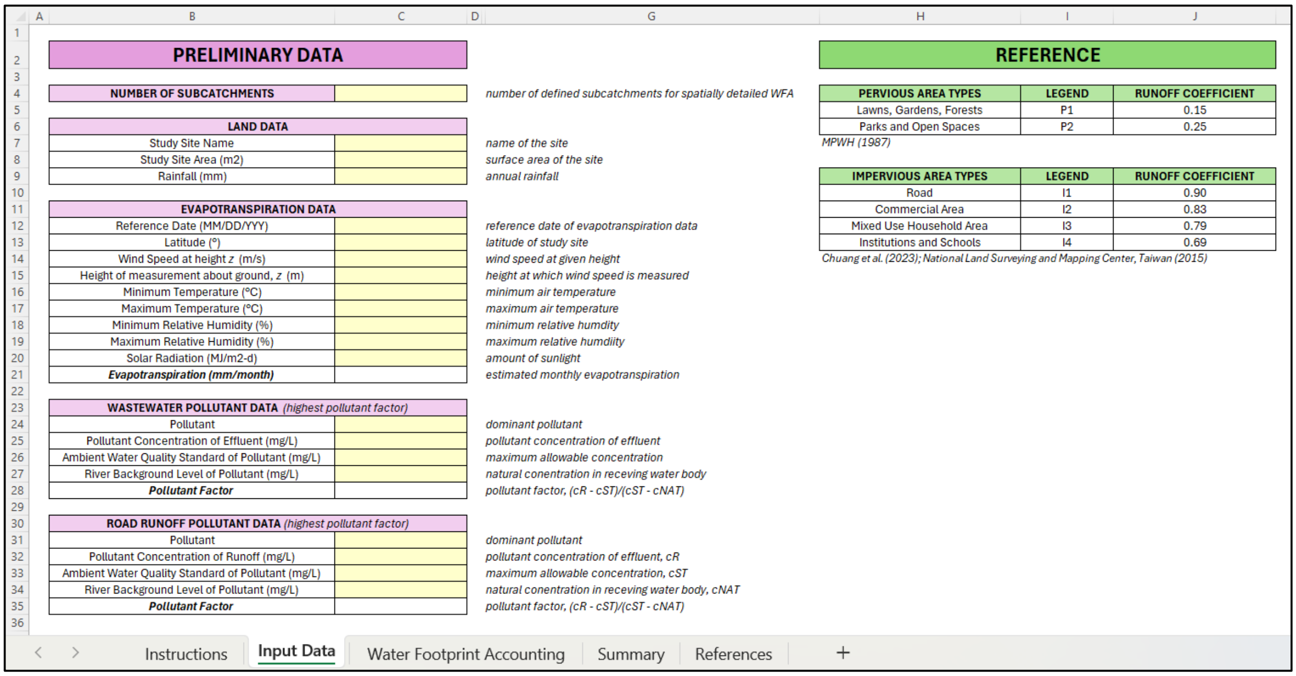


Supplementary Figure 3. Sheet 1 interface.

The next sheet (Supplementary Figure 4) is the input data sheet where the user will enter preliminary data on the following: number of subcatchments, land area, evapotranspiration data, wastewater pollutant data, and road runoff pollutant data. A brief description for each cell of data input is included in the sheet, placed beside the input cell.

The number of subcatchments is based on the output from subcatchment delineation. Land data is the basic information of the study site, specifically, the name of the study site, total area, and annual rainfall amount based on a reference year. The evapotranspiration data requires wind, temperature, humidity, and solar radiation data specific to the site. Wastewater and road runoff pollutant data are based on water quality reports that show the concentration of pollutants in the wastewater and road runoff, water quality standard of the pollutant, and the concentration of the pollutant in the receiving water body. Upon inputting the parameters in the spreadsheet, it immediately shows the resulting pollutant factor. The maximum pollutant factor must be the final input.

Moreover, this sheet also contains a reference table of the runoff coefficients for different pervious and impervious area types that the spreadsheet will use in water footprint accounting. Since there are different land cover types, it is important to categorize pervious and impervious area types of the study site accordingly as different runoff coefficients are applied.

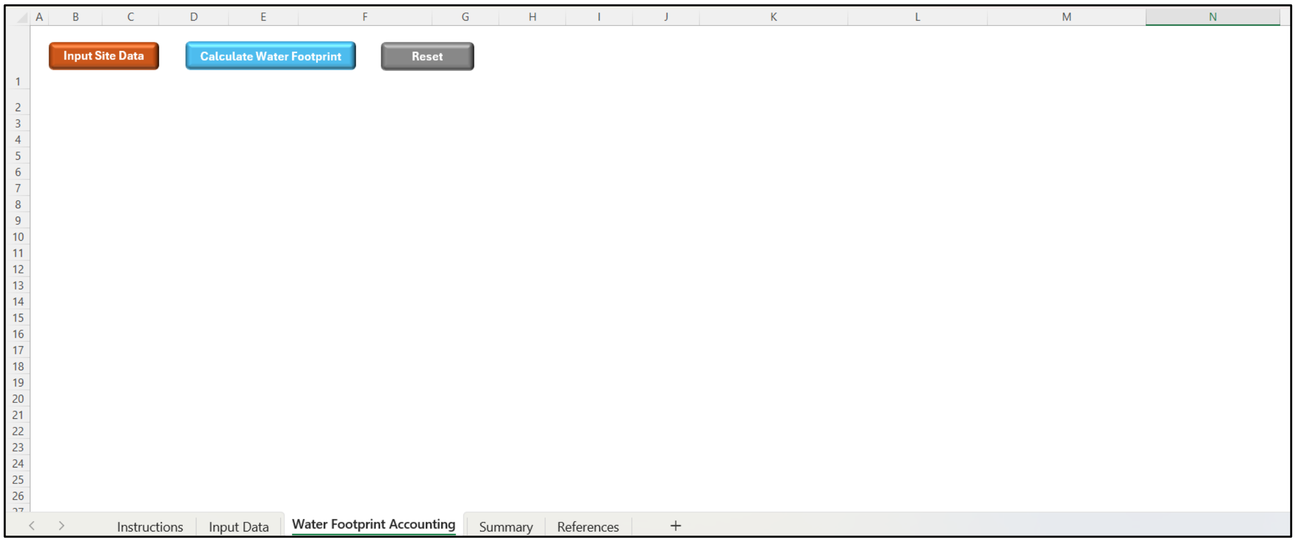


Supplementary Figure 4. Sheet 2 interface.

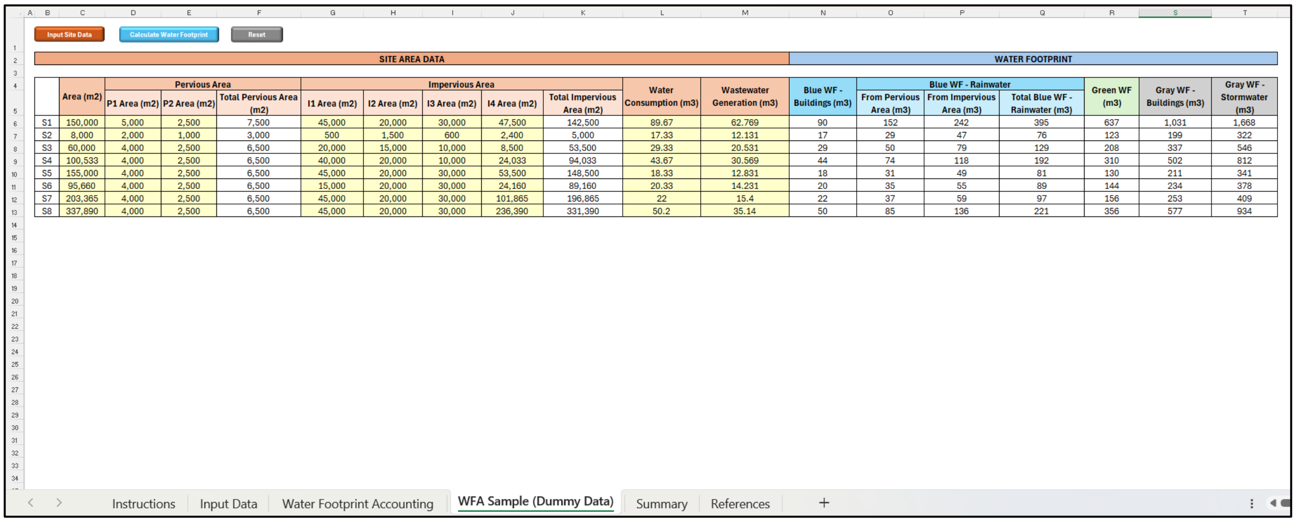
The third sheet (Supplementary Figure 5) is the water footprint accounting sheet, which includes another set of data input and where the results of water footprint accounting would be presented.

Users will first see a blank sheet with 3 buttons, as shown in Supplementary Figure 5. Upon clicking the *Input Site Data button*, it would show the *Site Area Data* table with a number of rows corresponding to the number of subcatchments that have been defined. In this table, the user would input subcatchment-specific data: the pervious area, impervious area, water consumption, and wastewater generation. The pervious and impervious area are further divided into different types, as specified in the reference table from the second sheet. The first column in the *Site Area Data* table also shows the subcatchment number with format "S#", referring to the unique ID code assigned to each subcatchment after delineation in GIS software.

After data input is complete, the user may now click the *Calculate Water Footprint* button to show the resulting amounts of the blue WF of buildings, blue WF of rainwater, green WF, gray WF of buildings, and gray WF of stormwater. This would create an additional table beside the *Site Area Data* table that would present the resulting water footprint per cluster. Supplementary Figure 6 shows a sample table interface for eight subcatchments.



Supplementary Figure 5. Sheet 3 interface.

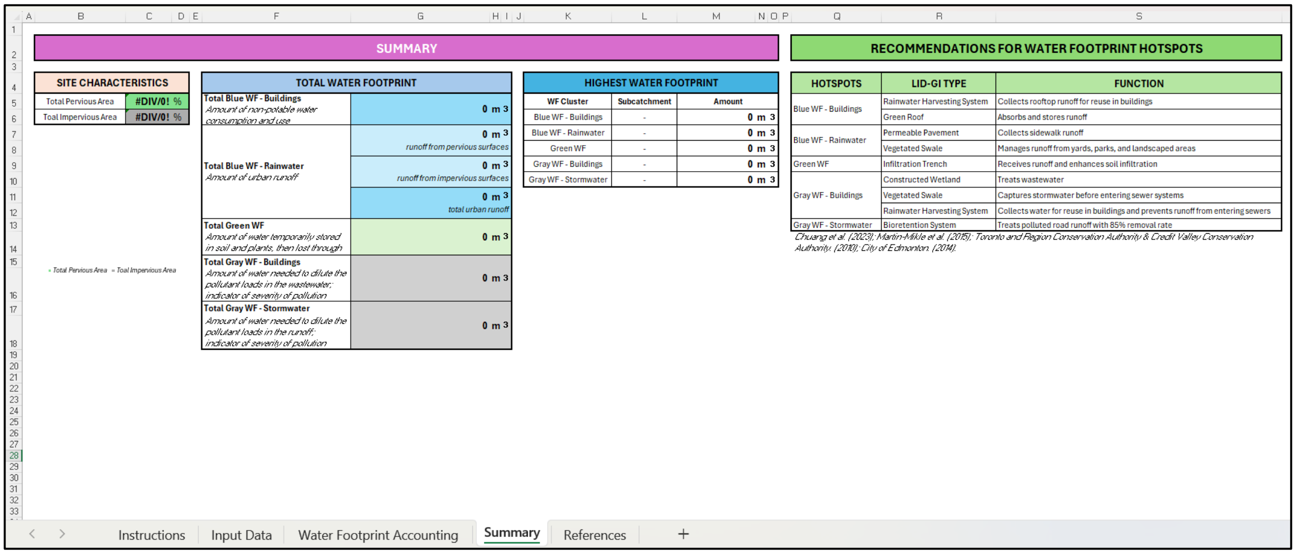


	SITE AREA DATA											WATER FOOTPRINT						
	Area (m2)	Pervious Area			Impervious Area					Water Consumption (m3)	Wastewater Generation (m3)	Blue WF - Buildings (m3)	Blue WF - Rainwater			Green WF (m3)	Gray WF - Buildings (m3)	Gray WF - Stormwater (m3)
		P1 Area (m2)	P2 Area (m2)	Total Pervious Area (m2)	I1 Area (m2)	I2 Area (m2)	I3 Area (m2)	I4 Area (m2)	Total Impervious Area (m2)				From Pervious Area (m3)	From Impervious Area (m3)	Total Blue WF - Rainwater (m3)			
S1	150,000	5,000	2,500	7,500	45,000	20,000	30,000	47,500	142,500	89.67	62.769	90	152	242	395	637	1,031	1,668
S2	8,000	2,000	1,000	3,000	500	1,500	600	2,400	5,000	17.33	12.131	17	29	47	76	123	199	322
S3	60,000	4,000	2,500	6,500	20,000	15,000	10,000	8,500	53,500	29.33	20.531	29	50	79	129	208	337	546
S4	100,533	4,000	2,500	6,500	40,000	20,000	10,000	24,033	94,033	43.67	30.569	44	74	118	192	310	502	812
S5	155,000	4,000	2,500	6,500	45,000	20,000	30,000	53,500	148,500	18.33	12.831	18	31	49	81	130	211	341
S6	95,660	4,000	2,500	6,500	15,000	20,000	30,000	24,160	89,160	20.33	14.231	20	35	55	89	144	234	378
S7	203,365	4,000	2,500	6,500	45,000	20,000	30,000	101,865	196,865	22	15.4	22	37	59	97	156	253	409
S8	337,890	4,000	2,500	6,500	45,000	20,000	30,000	236,390	331,390	50.2	35.14	50	85	136	221	356	577	934

Supplementary Figure 6. Sample Sheet 3 interface with dummy input data.

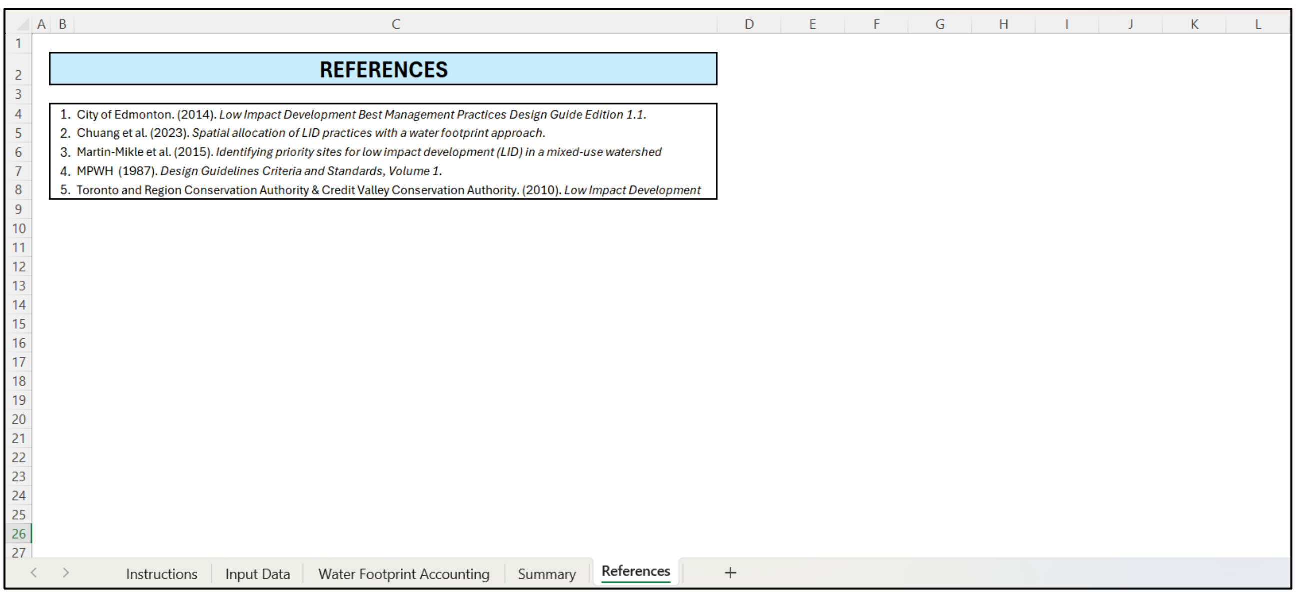
The next sheet (Supplementary Figure 7) is the summary sheet, which provides an overview of the results from the WFA. It shows the total pervious and impervious area, total water footprint per cluster, and the subcatchment with the highest water footprint per cluster. The total pervious and impervious areas will be shown in percent with a supporting pie chart. The total water footprint is summed per cluster instead of obtaining the overall sum of all WF clusters. They cannot be added to get a representative water footprint for the study site as each cluster represents different uses of water (e.g., water consumed, water available for reuse). Lastly, the highest water footprint per cluster is shown by returning the subcatchment number and the subcatchment's corresponding water footprint.

The summary sheet also includes a table of recommendations that provides a list of suggested LID-GI types to be allocated in identified water footprint hotspots, each with at least one recommended LID-GI type. A column is also provided for a brief description for each LID-GI's function.



Supplementary Figure 7. Sheet 4 interface.

The last sheet contains a list of references for the information indicated in the spreadsheet. Supplementary Figure 8 shows the interface of the reference sheet.



Supplementary Figure 8. Sheet 5 interface.