

### 6.3.4 Building standards to minimize water use

Alexandria University is keen to minimize water use according to the target identified to the strategic plan of 2030. The university is carrying out projects to install water faucet equipment for this purpose and at the same time hold awareness workshops for students to spread knowledge on water conservation and minimum usage among them. Such projects are annually monitored and adapted to existing conditions.

- Under the Water Conservation Program, Alexandria University has implemented a wide range of high-efficiency fixtures, including sensor-activated faucets, low-flow toilets, and bidets, resulting in an estimated 50% reduction in potable water consumption across its faculties. A proactive leak detection and preventive maintenance program helps minimize losses associated with aging infrastructure. To further reduce demand, the University utilizes innovative irrigation technologies such as drip systems and soil moisture sensors across its landscaped areas, complemented by the introduction of drought-tolerant plant species. Comprehensive awareness campaigns, organized in collaboration with the *Alexandria Drinking Water Company* and the *Holding Company for Water and Wastewater*, engage students, faculty, and staff in adopting sustainable water-use practices.
- The *Water Recycling Program* demonstrates significant progress in non-potable water reuse and resource recovery. Treated sewage effluent (TSE) from the *Campus*, totaling approximately 1.12 million m<sup>3</sup> annually, is utilized for landscape irrigation. At the *Faculty of Pharmacy*, a greywater pilot system treats hand-wash wastewater for toilet flushing, while air-conditioning condensate recovery systems in select buildings supply irrigation and flushing operations. Rainwater is harvested into a central retention lake, providing an additional source for green-area irrigation. The *Faculty of Agriculture's* aquaculture facility recycles nutrient-rich effluent from its eight-pond fish farm to irrigate adjacent crops, enhancing soil fertility and yield. The University also operates a 100 m<sup>3</sup>/day solar-powered desalination unit at *Wadi El-Natroun*. It has developed an innovative renewable energy-driven multi-stage flash desalination system (RE-NF-MSF) with nanofiltration pre-treatment, demonstrating leadership in sustainable water technologies.
- Implementation of *Water-Efficient Appliances* has expanded substantially, with 80.1% of all fixtures on campus now classified as water-saving devices. These include 90.97% of bathroom faucets, 50.48% of toilets, and 57.69% of urinals that have been retrofitted with flow-control mechanisms. The University enforces institutional policies mandating water-efficient design standards in all new buildings and major renovations. The *Abis Campus* exemplifies these efforts, with green infrastructure now covering 52% of its total site area, integrating sustainability principles into the built environment.
- In relation to *Treated Water Consumption*, Alexandria University channels the entirety of its wastewater 1,116,625.26 m<sup>3</sup> annually, through the *Alexandria Sanitation Company* for secondary and tertiary treatment. A substantial portion of this treated water supports Egypt's *New Delta* agricultural reclamation project, thereby contributing to the country's national food security objectives. Treated water is reused for irrigation, aquaculture, and experimental research, establishing a closed-loop water management model that exemplifies the University's commitment to sustainable resource utilization.
- Also, faculty of Pharmacy is seriously seeking to implement a grey water (wastewater) recycling system that depends on reusing wastewater from sewage basins only (without using wastewater from laboratory basins) by re-pumping it into the flushing bins in the toilets after work. Filtration and primary treatment and taking advantage of rainwater for use in irrigation and regulatory operations. The grey water recycling initiative has a significant impact on rationalizing water use and thus saving the college's monthly water bills, which constitute a burden on the budget.



**Adopting a mechanism to maintain water pipes to prevent waste resulting from leaks (Alexandria University, Egypt)**



**Supplying water taps with water conservation units (Alexandria University, Egypt)**



**Supplying water taps with water conservation units (Alexandria University, Egypt)**





**Air conditioning water collection and reuse unit - Faculty of Engineering**



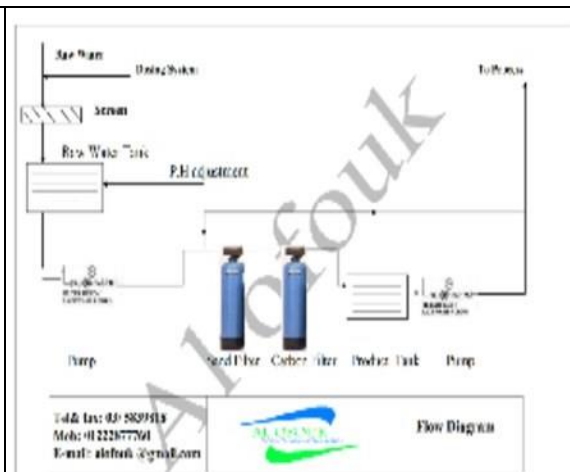
**Wastewater treatment unit at the Faculty of Engineering**



**The sewage water will be treated and reused in the irrigation of green areas in the project (Alexandria University)**



**Raising awareness among university staff about water conservation through seminars and workshops organized in collaboration with Alexandria Drinking Water Company at the Faculty of Science.**



Grey water recycling system organized by Faculty of Pharmacy (Alexandria University)

## Smart Building in Alexandria University

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m²)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
1	University Alexandria; Abis Campus, Buildings 1-11	Alexandria, Egypt			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	667,730.988
2	University administration building	Alexandria, Egypt		x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	1940
3	Faculty of Physical Education for Boys	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	113311.93
4	Faculty of Physical Education for Girls	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	2891
5	The medical complex	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	91216
6	Faculty of Science in Horia Street	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	22197
7	Faculty of Science in Moharram Bek	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	5485
8	Faculty of Engineering	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	111034
9	Campus of Humanities and Social Sciences	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	80707
10	Faculty of fine Arts	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	2569
11	Faculty of Specific Education	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	1194
12	Faculty of Early Childhood Education	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	1407
13	Medical Research Institute (Horia Street - Smouha)	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	2500

[illegible]