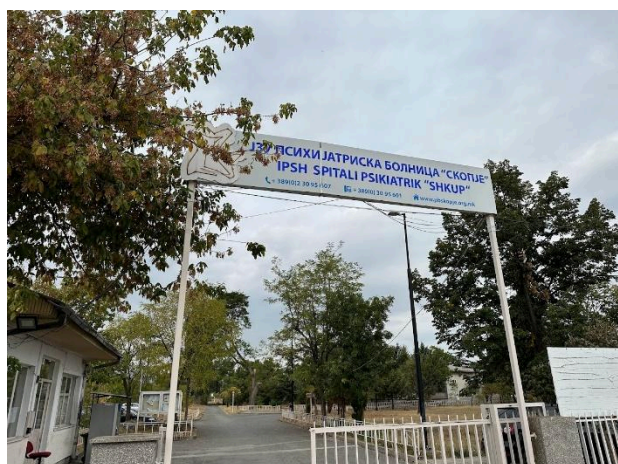


<u>Site visit assessment report</u>
<u>Psychiatric hospital</u>
<u>Location: Skopje</u>
<u>Date of visit: 06.10.2023</u>
<u>Prepared by: Petar Grncarovski, Darko Todorovic</u>

The facility of the psychiatric hospital is located in a complex of several hectares. There are 20 buildings of different purposes distributed throughout the complex. Roughly 500 patients have been allocated within the facilities in question.



The buildings are more than 5 decades old, in poor condition without facade insulation and new windows. The hospital administration is implementing a gradual revitalization of the facilities in steps.

Within the complex, in the lower part of the plot, there is a boiler room equipped with two hot water boilers and one steam boiler. The steam one has a capacity of 2.36MV of the Slovenian production Emo Celje, while the two hot water capacity of 700kV each are of the Serbian producer Podvis Knjaževac. There are two buried tanks of 200 tons of oil each. Oil consumption depends on the weather and roughly amounts to an

average of 40 t per month.

There is a distribution of underground pipeline that delivers hot water to all buildings, i.e. to buildings a. Workshop, born Laundromat, c. Occupational therapy and d. Kitchen is a underground steam pipe that delivers steam. Problem with loss of hot water from the distribution pipeline was frequent in the past but now it has been resolved.

Some buildings have solar collectors for the preparation of sanitary hot water.

In each of the facilities, except for those that use steam, mini direct heating substations with a set of valves and a circulation pump were installed, which enabled balanced operation of the system on the primary side.

From the initially planned measures, it is recommended to replace radiator valves with new ones that have the possibility of installing thermostatic heads in an anti-vandal version, new radiator screws, replacement of insulation on pipelines within boiler rooms, replacement of circulation pumps with new frequency-regulated ones (with a variable flow) within boiler rooms, reconstruction of the existing building of the boiler house (which is in a very bad condition) in such a way as to meet the requirements for the installation of LPG boilers, installation of new burners on two hot water boilers. It is also recommended actions on automatic controls in connection with the regulation of the temperature of the supply heating water in accordance with the outside air temperature.

It is proposed to expel steam as a medium for heating purposes and to install a smaller boiler for the production of steam that will be used only for the needs of the kitchen and laundry.

It is strongly recommended in terms of massive energy savings installation of solar collector for domestic hot water production on all buildings which currently do not have that option.

OBJECT	7-SK cor	BARDOVCI		
Location:		Skopje	Date visited:	06/10/2023
Activity:	HTH	Psychiatric Hospital	By:	Petar Grncharovski
No. of objects within:	4			Darko Todorovic
Area, TOTAL [m2]:	11540		Property list:	
Dist. from gas network:	1000m		Estim. cost:	85000
Dist. from district heating:	2500m		Estim. cost:	225000
Estim. heat demand [kW]:	1846			
Contact:		Dafina Popovska, in charge for the project	075/427-915;	
		Dragan, heating system operator	076/493-174;	
CURRENT CONDITION				
General:	Old facade w/o insulation; windows in bad condition (excl. objects no. 4, 6, 7 and 9 - new facade + windows)			
Heating system:				
- Boiler room position:	ground level, separate object, hot water boilers - 2 pcs. + steam boiler - 1 pcs.			
- Neighbouring facade:	available (for possible installation of outdoor gas boilers)			
- Boiler:	year	manufacturer	capacity [kW]	burner
unit 1	2018	Podvig GU-1000t, Knjazevac, Srbija	1000	Weishaupt RL 9
unit 2	2018	Podvig GU-700t, Knjazevac, Srbija	700	Weishaupt n/a
unit 3	1987	EMO TPV 3.6, Celje, Slovenia - STEAM	2360	Baltur BT180DSG Italy, 60-180kg/h
- Fuel/Consumption [l/y]:	light oil (EL) / 360000-550000			
- Regulation:	manual			
- Heating units/ number:	cast iron radiators / 960, apx			
- Heating units valves:	standard - manual (w/o temperature regulation)			
Altern. energy source:	CNG / space for CNG supply station in the yard			
Remarks:	Objects no. 13, 15 and 18 steam heating, to all other objects hot water distribution by means of underground pipes and balanced by balancing valve.			
RECOMMENDATIONS				
General:	Energy efficiency measures on the facade, roof, windows and DHW production (not part of this project)			
Heating system:				
Option 1				
- Boiler room measures				
- Boiler room position:	remains same			
- Boiler room installation:	complete refurbishment of installation with implementation of frequent regulated pumps, new valves and temperature/pressure measuring devices, balancing and control valves, pipes insulation			
- Regulation:	automatic depending on external/internal temperatures			
- Preparational works for new boilers installation:	connections for new boilers to be implemented in the boiler room design in case of outdoor boiler type; existing light oil (EL) boilers remain as main heating source until new boilers are installed			
Option 2				
- Secondary heating network measures				
- Heating units:	dismantle from pipe network, adequately clean and install back			
	existing manual radiator valves to be replaced with thermostatic valves			
- Raiser:	valves replacement, balancing and drainage valves to be implemented			
- Pipe network:	spaces where heating not necessary, pipes to be adequately insulated			
Option 3				
- New boiler installation measures				
- New boiler:	installation of gas boilers with dual burner gas/oil alternatively outdoor gas boilers on facade wall			
- Back-up heating:	existing light oil (EL) boilers remain as spare			
Remarks:	possibility if existing boiler room fulfills the condition for usage as gas boiler room to be checked, altern. outdoor gas boilers that are to be installed on outdoor wall are recommended and existing light oil boilers are to be utilized in exceptional cases ex. gas supply interruption, failure on the gas boilers etc.			

Психијатриска болница „Скопје“

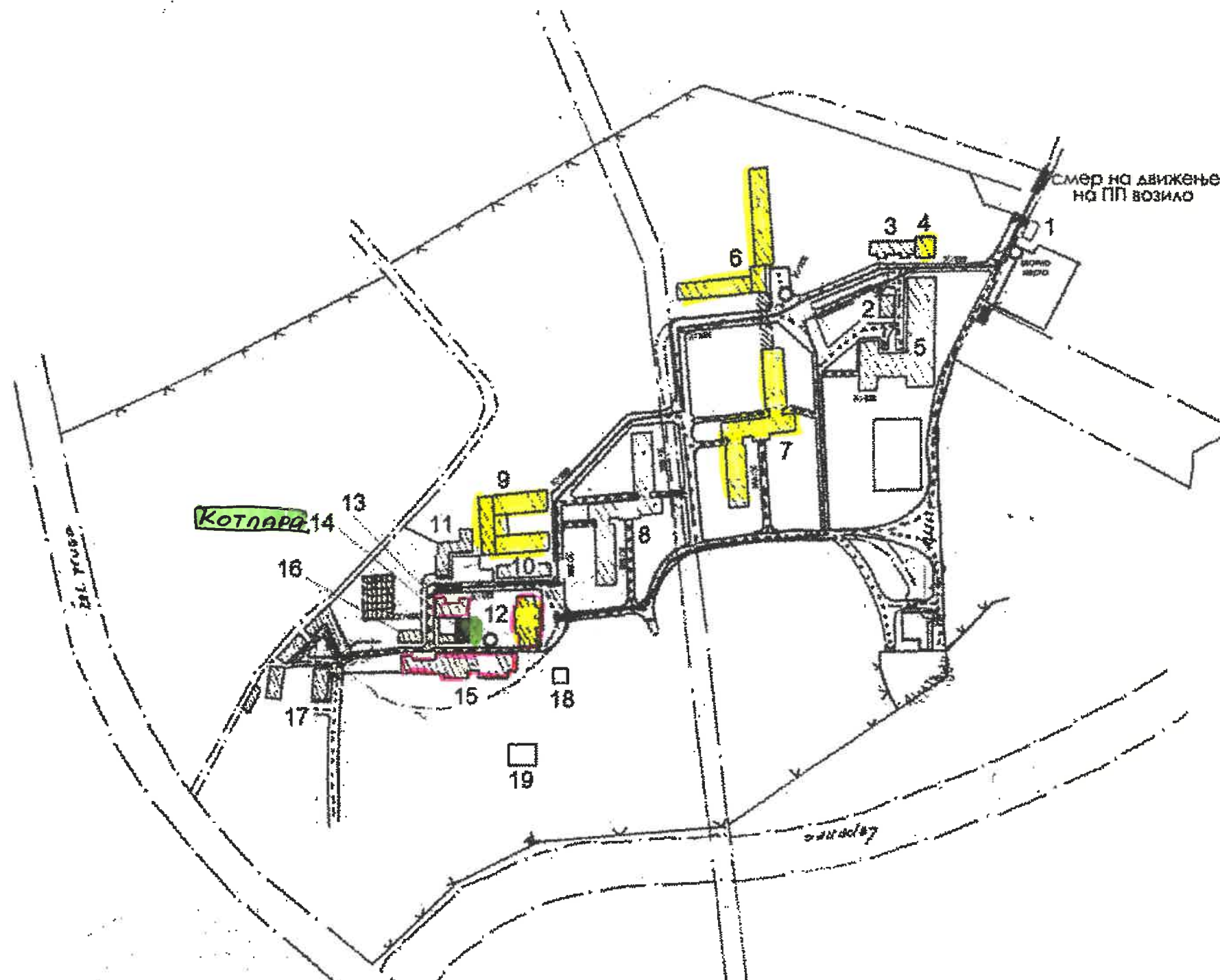
- ОБЈЕКТИ СО НОВА ФАСАДА/ПРОЗОРИ -

- ОБЈЕКТИ ПОВРВАНИ НА ПАРКА

(СИТЕ ОСТАНАТИ НА ТОПЛА ВОДА)

ЛЕГЕНДА:

1. Портирница
2. Дирекција
3. Заеднички служби, аптека
4. Приемна амбуланта *во фаза на изведба*
5. Алкохолно, Интензивна, III-машко, кабинети
6. Акутно и Психогеријатрија
7. II-машко, Судско, IV-машко, V-машко
8. II-женско, Хостел, III-женско
9. Нов рехабилитационен центар
10. Магацини
11. Гаражи
12. Кујна *само нови прозори - ПАРКА*
13. Одделение за работна терапија, рехабилитација и ресоцијализација - ПАРКА
14. Котлара
15. Работилници, Фискултурна сала, Перална - ПАРКА
16. Резарвоар за нафта
17. Економија
18. Трафостаница
19. Бунар



Комплекс ЈЗУ СКОПЈЕ - Скопје
СИТУАЦИЈА - РАСПОРЕД НА ОБЈЕКТИ

цртеж бр.
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