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ANALYSIS OF THE STATE OF PRESERVATION WHITE BARRACKS OF THE OWCZA GÓRA FORTRESS IN KLODZKO

This article discusses the state of preservation of one of the military facilities of the Klodzko Fortress. Fort Owcza Góra, was built in the 18th century on the opposite shore of the Nysa Klodzka River. The White Barracks, which are part of Owcza Góra Fort, were built at the turn of the 18th and 19th centuries. Over the years they changed their function and use. In the second half of the 20th century, the facility was abandoned and was subject to a process of degradation over the next few decades. In 2018, the barracks underwent a detailed inventory and technical condition assessment. The documentation allowed a precise estimation of the scale of damage and the location of the damage, making it possible to plan appropriate conservation and repair measures. In the next stage, a project was developed to revalue the White Barracks for service purposes, while preserving the historic form and character of the building. The project was carried out by the ARCHI-S design studio. The investment was completed and the building was put into use in 2023.

Keywords: fortress, fort, defensive structure, military heritage, state of preservation, technical assessment, degradation, research, change of use, revitalisation

1. INTRODUCTION – HISTORY

Klodzko played an important role in military activities due to its strategic location. It often became an arena for military action, which influenced the intensive development of its defence infrastructure. Throughout the centuries, Klodzko was ruled by several countries, including the Czech Republic, Prussia, Austria and Poland. After the end of World War II, the city was finally incorporated into the Polish borders.

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During its history, the fortification was repeatedly modernised and adapted to meet changing military needs and developments in warfare technology. Modernisation work most often involved adapting structures to new forms of weaponry and adjusting them to current defence strategies.

1.1. Wooden castle / 10th-12th century

The Klodzko Fortress was first mentioned in Kosmas's Chronicle of Bohemia in 981 [Podruczny 2023]. It was described as a wooden defence structure, surrounded by stone and earth ramparts with a wooden palisade. However, given the town's location, along the 'amber route', and the fact that Roman coins were found during archaeological work, it can be assumed that the beginnings of settlement in the area date back to an earlier period. Due to its location, the castle was the cause of numerous disputes between the Polish and Czech princes [Bednarek 2013]. As a result of armed conflicts, the castle was destroyed in 1114. It was rebuilt by Bohemian Duke Sobieslaus, and in an agreement with Boleslaus the Wrymouth in 1137, the area remained within the borders of the Bohemian state [Podruczny 2023].

Fig. 1. The oldest preserved view of Klodzko, Matthias Gerung
[A collection of Universitätsbibliothek Würzburg]

1.2. Walled castle / 13th-16th century

A chronicle dating from 1300 reveals that a walled castle was built on the hill at the end of the 13th century [Bednarek 2013]. In the following centuries the castle was the seat of royal officials, burgraves and castellans.

Fig. 2. Klodzko from 1532
[*Monographien deutscher Städte* 1928]

In 1557 the architect Lorenz Krischke designed the Lower Castle, surrounded by ramparts. By 1620 it had been extended to form the Upper Castle, Lower Castle, ramparts and bastions.

1.3. Fortress defence / 17th-19th century

In the years 1620-1622, due to the threat of siege by the Austrians, fortification work began, building the Small and Large Ramparts and converting the Upper Castle into military barracks, which marked the beginning of modern fortification [Kielar 2007: 97-104]. In 1622, during the Thirty Years' War, the castle was burnt down. Walenty Saebisch the Younger prepared an inventory of the losses, which initiated intensive expansion. After 1627, the fortifications were modernised due to the

Swedish threat, and by 1741 the bastions Bell Tower and New Ramparts with their curtains and the curtains of Tumska with the Eagle half-bastion had been built. The Prussians, who took over the fortress in 1742, played an important role in its development. General Gerhard Cornelius de Wallrave drew up a project to extend the ramparts and ticker fortifications.

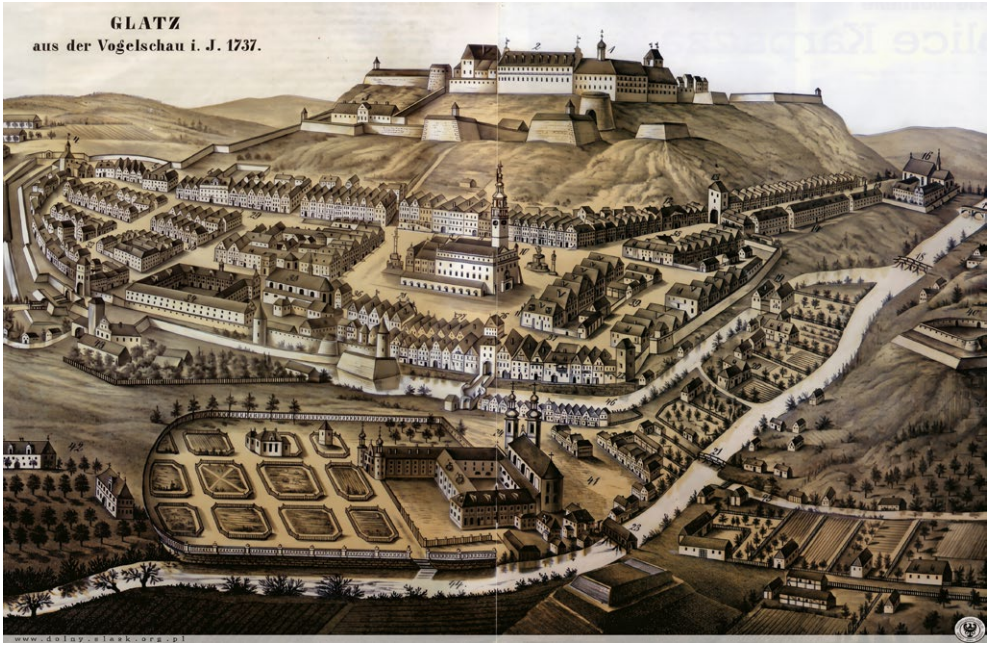


Fig. 3. View of the castle and bailey from 1737 [kresy.org 2023]

In 1743, construction began on the Owcza Góra auxiliary fort, located on the other side of the Nysa Kłodzka River. After Wallrave was ousted, the work was continued by Christian Friedrich von Wrede, with modifications. Fort Owcza Góra was connected to the Main Fortress by a rampart and deep passages.

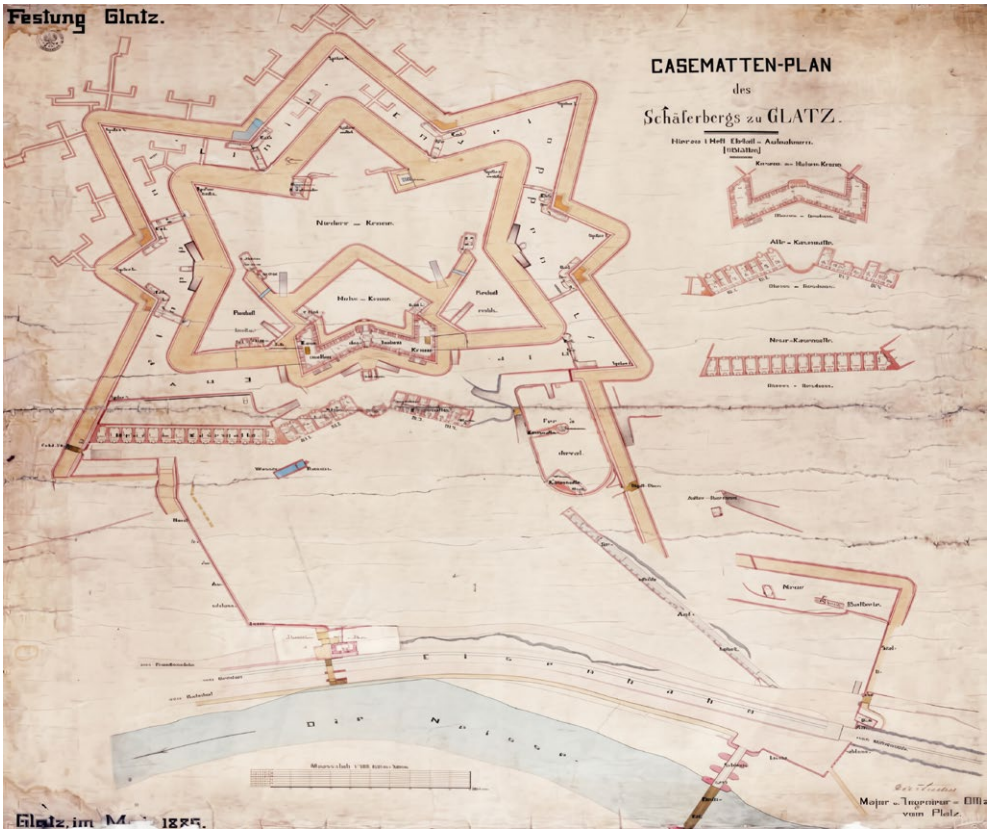


Fig. 4. Original plan of the Owcza Góra Fort [Berlin Archives]

During the Second Silesian War of 1760, the fortress came under Austrian rule, but was returned to Prussia in 1763. Under the direction of Colonel Ludwig von Regeler, a reconstruction was carried out that gave the fortress its present-day form. The Gothic castle was replaced by the polygonal Middle-Donjon, the View and High bastions were built and Fort Owcza Góra was upgraded with the addition of barracks, moats and lunettes. The Prussian-French War of 1806-1807 highlighted the importance of the fortress, which, together with the Fortress of Silver Mountain, remained unconquered. At that time, a system of mine pavements was developed and a fortified camp was established. The French only succeeded in capturing the camp, but the Fortress was never taken. The last modernisations were carried out between 1808 and 1811, building a ring of ramparts around the fort. In 1874, a ramp with poterns was built to heavy equipment. Three years later, by cabinet order, the Fortress lost its status. By gradually converting the premises into warehouses and a prison, the Fortress changed its function to economic use [Bednarek 2013].

1.4. Prison and factory / 20th century

The Klodzko fortification system was not modernised in the 20th century, but construction activity within the fortifications was not completely halted. A particular intensification of activities took place within the Owcza Góra Fort, where the casemates served as barracks facilities. Therefore, regular repair and maintenance work was carried out, the existing infrastructure was modernised and new utility buildings were constructed to meet the needs of the functioning garrison [Podruczny 2023].

Fig. 5. Panorama of Klodzko from 1930 [polska.org 2014]

The fortress held prisoners of war, deserters from the German army and those suspected of acting against the Reich from 1940 to 1943. There was a heavy prison for political prisoners, a place of execution and a labour camp. Russians, French, Italians, Belgians, Czechs, Finns and English were imprisoned here. At the end of the Second World War, between 1944 and 1945, the AEG factories evacuated from Lodz were set up within the fortress, producing parts for V-1 missiles and electrical apparatus for submarines and aviation.

In 1957, the Klodzko City Council took over the Fortress from the army, planning to use it for economic purposes. It was decided to locate a prefabricated reinforced concrete plant and a cheap wine factory.

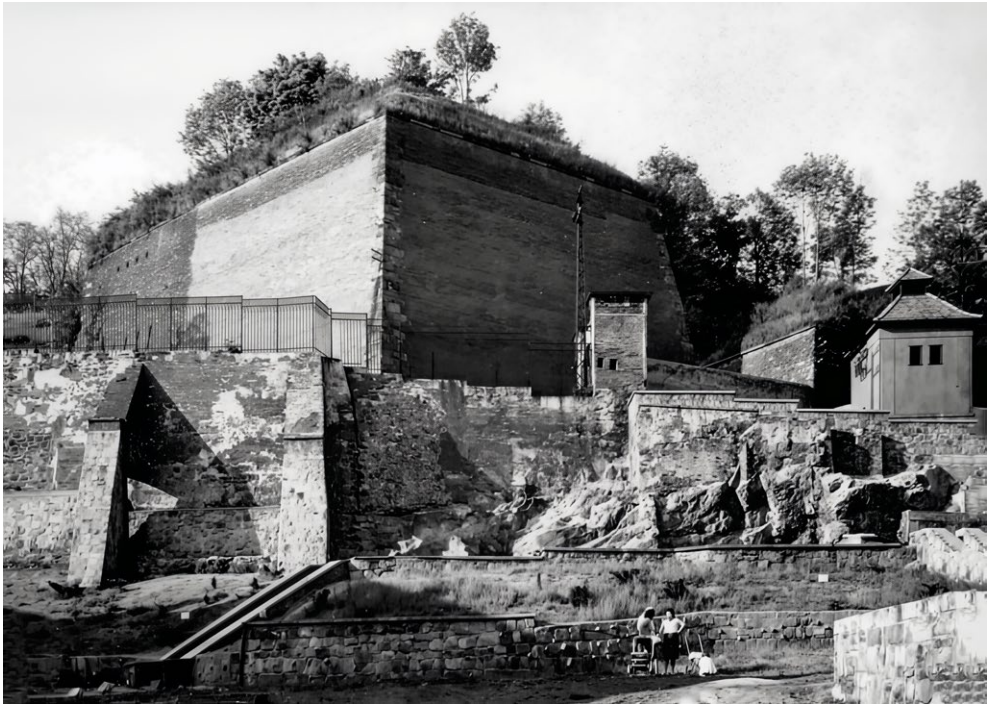


Fig. 6. Photograph from 1960-1970 [Bednarek 2013]

For a short time, the barracks of Fort Owcza Góra were used as warehouses by the horticultural cooperative [Kielar 2007: 97-104].

1.5. Present day / Second half of the 20th century – 21st century

In 1960 the Klodzko Fortress was officially recognised as a monument and partially opened to tourists. However, the industrial production going on there limited the tour to a small part of the southern part of the fortress. In the following years, the condition of both the Main Fortress and the Owcza Góra Fortress deteriorated significantly due to neglect and lack of conservation activities. Unused parts of the fortress became overgrown with wild vegetation, and the central part of the Main Fortress was used by the 'Rosvin Wine Cellars', adapting the building without regard to conservation requirements.

In 2000, a concept for a Fortress Cultural Park, integrating the protection of the monument with its development, was presented by academics from the Warsaw University of Technology. Very soon afterwards, the industrial plant operating in the Main Fortress declared bankruptcy, which created an opportunity to take over its premises. In addition, the Nature Academy association organised reconstruction activities, including work on the historic drawbridge. In the following years,

important steps were taken to protect the fortress, including the inclusion of Fort Owcza Góra in the register of historical monuments and an update of the Main Fortress entry. The Klodzko Branch of the Society of Friends of Fortifications was established, which supported efforts to take over the post-industrial parts of the fortress. In 2005, the Town Council passed a resolution establishing a Fortress Cultural Park, defining its boundaries and method of protection. The resolution was amended later that year, being implemented in 2006. Activities included the conservation and restoration of the monument, the establishment of a Consultative and Scientific Council and the development of a protection plan. Revitalisation of the Klodzko Fortress and Fort Owcza Góra continues to this day, restoring their historical significance and attractiveness [Kielar 2007: 97-104].

Currently, the fortress is open for tourism and museum purposes. Renovation work is still underway to restore the fortress to its former form and splendour, thus contributing to the development of tourism in the Klodzko area.

Fig. 7. View of the Main Fortress (A); view of Fort Owcza Góra (B)
[Archives of the Department of Conservation of Monuments]

2. OWCZA GÓRA FORT

Fort Owcza Góra was built between 1745 and 1750, designed by Major General Gerhard Cornelius Walrave, head of the Prussian army's engineer corps, while the work was led by Lieutenant Colonel von Wrede. It has been rebuilt and extended several times over the centuries.

2.1. Location

The defensive complex of Twierdza Klodzko is located in south-western Poland, in the Lower Silesian province, in the town of Klodzko. Fort Owcza Góra is situated on the opposite shore of the Nysa Klodzka River, distant in a straight line from the Main Fortress by approximately 600 m. It is situated on a hill above the town buildings.

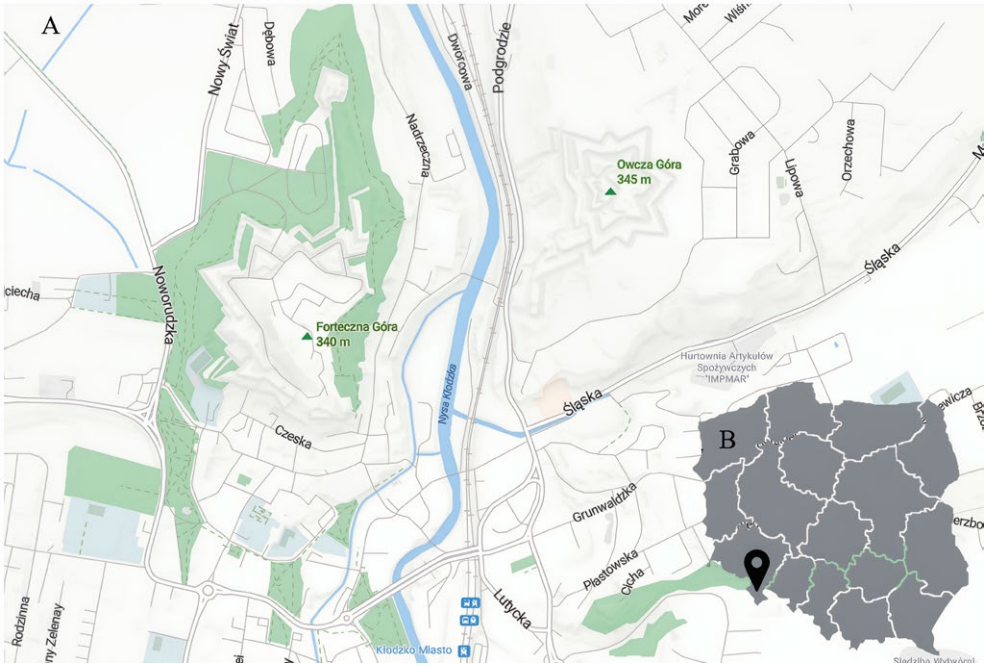


Fig. 8. Location of the fortification: on a map of Klodzko (A); on a national scale (B)

2.2. Elements of the Fortification Owcza Góra

The focal point of Sheep Mountain Fort is the High Crown (1), a small defensive work that includes a residential and defensive casemate and an earthen rampart. The High Crown is surrounded on three sides by the Low Crown (2), which has a tick-bastion shape. It consists of a bastion and four corners (Right Redoubt: 5, Left Redoubt: 27), equipped with artillery positions and casemated traverses. The entire fortification is surrounded by a dry moat (3), in front of which an enwelp (4) extends. In front of it is another moat that encircles the entire defensive complex. From this moat there are counter-mine corridors, connecting it with rifle pens (28, 30), allowing defensive fire. To the north and south-east are the remnants of the Goszycka Moat (29) and the Wojciechowska Moat (33). To the east of the High Crown are located the barracks (Red Barracks: 6, White Barracks: 22), and to the south of these is the defensive Horseshoe (8). Still further south is a rampart with two gates, behind which is located a defensive structure known as the New Battery (13). The furthest and surviving defensive feature is the Theresian Bastion (21) [Podruczny 2023].

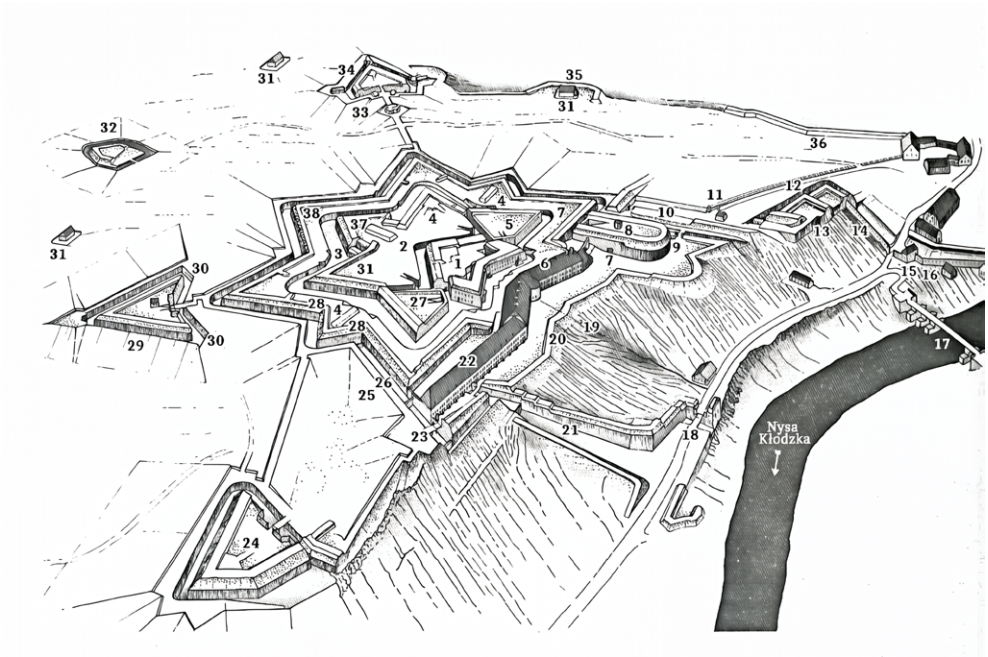


Fig. 9. Fort Owcza Góra in the early 19th century [Podruczny 2023]

2.3. Barracks

The most well preserved elements of Fort Owcza Góra, surviving to the present day, are the barracks, which consist of two separate parts. These structures are the Red Barracks and the White Barracks, which owe their names to the original colour of the facade. They were built at different times. The Red Barracks were built between 1744 and 1750, while the White Barracks were erected in 1800.

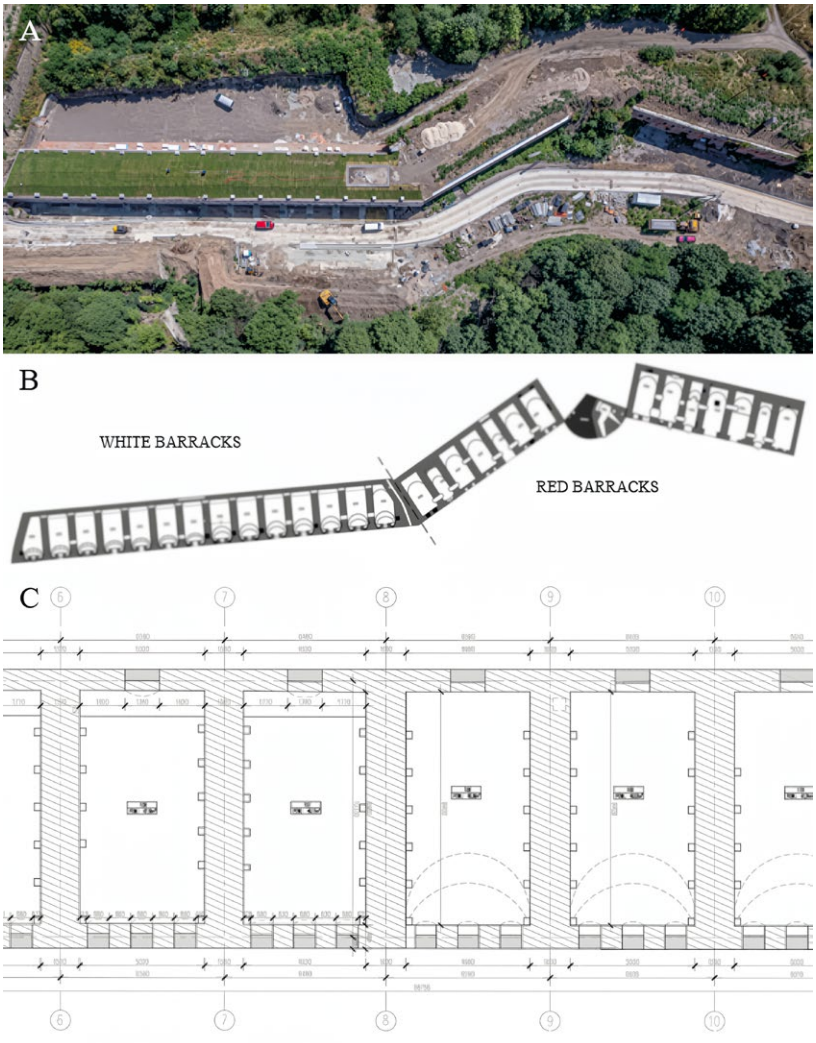


Fig. 10. Overhead view of the Barracks (A); Plan of the Barracks (B); Fragment of the plan of the White Barracks (C) [Archives of the Department of Conservation of Monuments]

Over the centuries, the Barracks has changed its function. The initial accommodation for soldiers was transformed into military depots and warehouses, a prison, a back office and headquarters for wholesalers, and eventually the building became disused. Of the original architectural elements of the White Barracks, the form of the building, consisting of 14 rooms – casemates, the rhythmic arrangement of the window axes, the stone frames of the window and door openings and the crowning cornice have been preserved. The site was entered in the register of monuments on the basis of decision No. 143/A/02/1-17 of 2 January 2003.

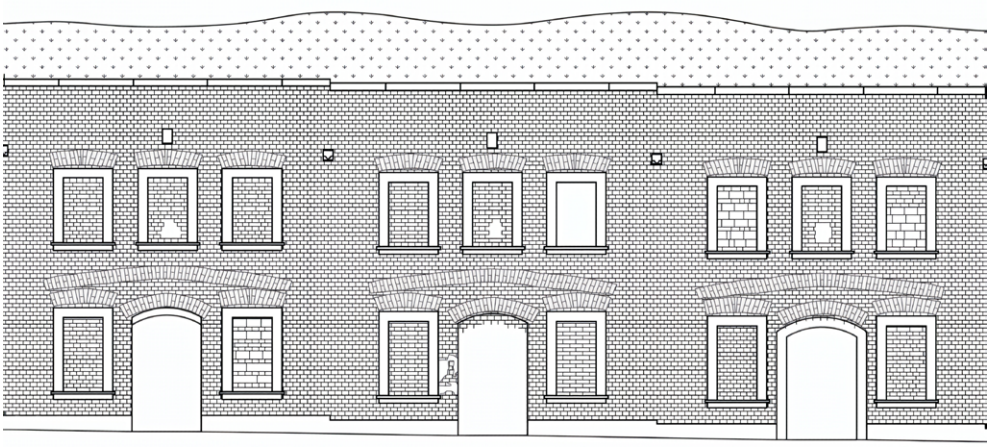


Fig. 11. Fragment of the facade inventory of the White Barracks
[Archives of the Department of Conservation of Monuments]

Fig. 12. Fragment of the inventory of the longitudinal section of the White Barracks
[Archives of the Department of Conservation of Monuments]

3. STATE OF PRESERVATION OF THE WHITE BARRACKS

In the mid-20th century, the building was abandoned and was subject to processes of degradation over the next few decades. In 2018, the barracks underwent a detailed inventory and technical condition assessment. The assessment of the technical condition was carried out based on the criteria developed in the 'Universal Chart for the Assessment of the Technical Condition of Traditional and Historic Buildings'. The photographic documentation is from the Archives of the Department of Conservation of Monuments, Lublin University of Technology, 2018.

3.1. Assessment of the state of preservation of the White Barracks facade

The technical condition assessment work was preceded by field measurements and the preparation of drawing documentation. The next stage was to carry out an on-site visit to the site, including an assessment of the technical condition of the structural and finishing elements. At the same time, in situ tests were carried out and samples were taken for laboratory tests.

Table 1 provides a description of the technical condition of the various elements and photographic documentation.

Tab. 1. Technical condition assessment of facade wall elements

EXTERNAL WALLS – SATISFACTORY CONDITION External masonry walls of solid clay brick in lime mortar, with cross bond. The exterior of the building is significantly degraded. There are numerous cracks and defects in the masonry structure and areas of severe biological corrosion. There are white efflorescences on the face of the bricks, caused by salt crystallisation. The mortar is discontinuous and washed out in many places. Plaster remains in small areas.	 Fig. 13. Exterior wall in ground level strip

BACKGROUND – SATISFACTORY CONDITION Stone plinth to a height of 35cm above ground level Ground zone of facade with numerous outbreaks of biological corrosion. There are cavities and cracks along the whole length of the plinth. No band at the object.	 Fig. 14. The plinth of broken stone
LINTELS – GOOD / SATISFACTORY / FAILING CONDITION Arched brick lintels. Lintels over window openings mostly in good condition. Some window lintels in satisfactory condition with numerous superficial losses of material. Lintels over doorways leading to rooms 1-7 and 14 in good condition. Lintels over doorways leading to rooms 8, 9, 12 and 13 in satisfactory condition with visible losses. In casemates 10 and 11, the lintels in an failing condition.	 Fig. 15. Ceramic brick lintel
WINDOWS AND DOORS – INADEQUATE CONDITION Complete absence of windows and doors. Window and door framing in hewn stone, sandstone. Window frames with numerous cracks and loss of texture. Window bands mostly retained, external door bands 40% retained. Partially replaced by brick repointing.	 Fig. 16. Window framing

DEHYDRATION SYSTEM – INADEQUATE CONDITION System made of stone. System obstructed and incomplete. It is likely that none of the pukes are performing their function of draining water away from the perimeter of the building due to their inflow being backfilled with earth masses. In 4 out of 15 locations the element is missing.	 Fig. 17. A stone system
CHIMNEYS – INADEQUATE CONDITION Solid clay brick chimneys. Chimney flues probably obstructed, having been backfilled with earth embankment. Part of chimney extending above the earth embankment with numerous cavities in the structure, overgrown with vegetation.	 Fig. 18. Remains of the chimney

3.2. Assessment of the state of preservation of the interior of the White Barracks casemates

Assessment was carried out on all 14 rooms, the condition of the masonry, vaults, plaster remains, paint coatings and floors was assessed. The overall technical condition of all rooms was similar to each other. The collected results of the visual inspection have been summarised in table 3, which allows a precise estimation of the scale of damage and the location of individual damages. The table allows a detailed analysis of the distribution and nature of the damage. This makes it easier to identify areas in need of repair and take appropriate steps.

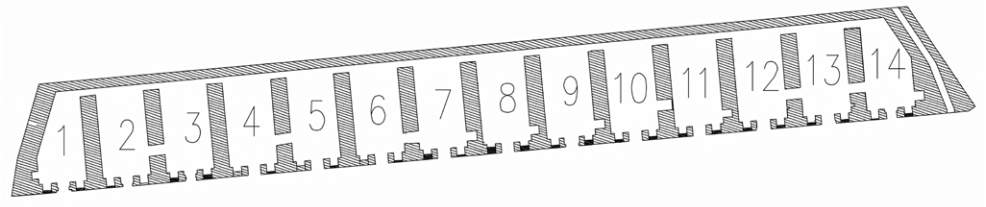
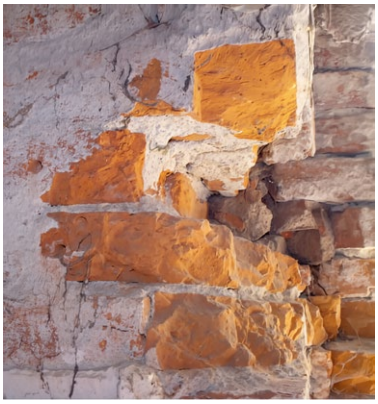


Fig. 19. Ground plan of the White Barracks with marked rooms
[Archives of the Department of Conservation of Monuments]

Tab. 2. Assessment of the technical condition of the interior of the casemates

INTERNAL WALLS – INADEQUATE CONDITION Internal masonry walls of solid clay brick in lime mortar with cross bond, above 2.5 m from p.p. made of stone. External walls on the inside and internal walls heavily degraded. There are numerous cavities in the masonry of considerable size, particularly in the corners of the walls. There are focuses of biological corrosion, increased levels of dampness.	 Fig. 20. Construction wall, casemate no. 3
LINTELS – SATISFACTORY / FAILING CONDITION Arched brick lintels. Lintels over most openings in satisfactory condition, only in room 4 in a failing condition. There are numerous cavities and structural cracks, threatening the safety of use. Surfaces of lintels in sufficient condition with shallow loss of material, without scratches. The lintel between room 6 and room 7 is bricked up and reinforced from below with a steel beam element.	 Fig. 21. Lintel, casemate no. 4  Fig. 22. Lintel, casemate no. 1
VAULTS – SATISFACTORY CONDITION Brick, cradle vaults, finished with lime plaster. There are no scratches on the surfaces of the vaults. Numerous superficial material losses and severe dampness with developing biological corrosion are evident in many areas.	 Fig. 23. Vault, casemate no. 14

**PLASTERS –
INADEQUATE CONDITION**

Lime plaster.

There are numerous cracks, scratches and build-ups on the surface of all plastered elements. Deep cavities in many places, exposing structural material. Plaster within walls in contact with the ground soggy with foci of biological corrosion and salt efflorescence. Due to bonfires, wall and vault surfaces smoky and sooty.

Fig. 24. Plaster, casemate no. 3

Fig. 25. Plaster, casemate no. 12

**MALATURES –
INADEQUATE CONDITION**

Numerous layers, cracks and spalling are visible on all paint surfaces. In many rooms, as in the case of the plasterwork, the paintwork is stained with smoke and graffiti.

Fig. 26. Paintings, casemate no. 3

**FLOORINGS –
UNSATISFACTORY CONDITION**

Concrete floors, in some rooms in the form of threshing floor.

Floor surfaces uneven, with numerous cracks and losses of material.

Fig. 27. Floor, casemate no. 1

Tab. 3. Summary of damage occurring in the White Barracks rooms

Casemate no.:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Defects in masonry	x	x	x	x	–	x	x	x	x	x	x	x	–	x
Repeated openings in masonry	x	–	–	x	–	–	–	–	–	–	–	x	–	–
Defects in lintels	x	–	–	x	x	–	x	–	–	x	–	–	–	x
Spalling plaster	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Damages paintings	x	x	x	x	x	x	x	x	x	x	x	x	x	x

3.3. Laboratory and *in situ* tests

During the site visit, large sections of masonry were found to be degraded due to salt crystallisation. As moisture is responsible for the distribution of salt in the masonry structure, it was decided to carry out a comprehensive moisture and salinity survey of the barracks' internal and external masonry. In the case of salinity testing, samples were taken for laboratory testing. Moisture testing was carried out using two methods: the dielectric method and the laboratory method.

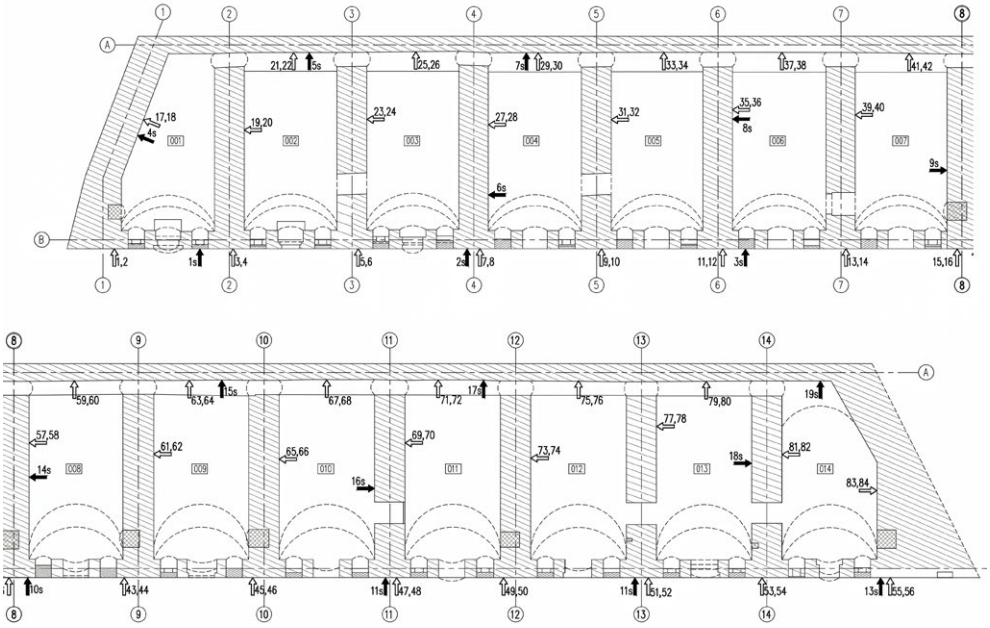


Fig. 28. Ground plan of the White Barracks with marked sampling locations, white arrows – moisture testing, black arrows – salinity testing [Archives of the Department of Conservation of Monuments]

3.3.1. Moisture-moisture test by the oven-dry method

Samples for moisture analysis using the laboratory method were taken using a slow-speed drill from a depth of approximately 15 cm in the masonry structure. Each sampling point comprised two holes: the first located a few centimetres above ground level and the second at a height of approximately 1 metre. This method of collection ensured that the samples were representative for the analysis of differences in moisture content at different levels of the facade.

Tab. 4. Degrees of moisture in brick masonry

I	0-3%	walls with permissible moisture content
II	3-5%	masonry of higher moisture content
III	5-8%	walls with average moisture content
IV	8-12%	walls with high humidity
V	> 12%	wet walls

The table below highlights measurements that exceed the permissible moisture level – above 3%.

Tab. 5. Selected moisture results

Place of sampling	Humidity [%] 0,1 m / 1,0 m	Place of sampling	Humidity [%] 0,1 m / 1,0 m
facade	1,58 / 1,42	facade	1,60 / **3,94**
facade	1,10 / 1,50	facade	**3,67** / 2,14
casemate no. 1	1,38 / **3,11**	casemate no. 8	1,77 / 2,00
casemate no. 2	2,25 / **13,91**	casemate no. 9	1,66 / 1,51
casemate no. 3	**6,46** / 2,50	casemate no. 10	1,84 / 1,14
casemate no. 4	**3,07** / 1,22	casemate no. 11	1,38 / **3,94**
casemate no. 5	2,47 / 1,24	casemate no. 12	**4,62** / 0,88
casemate no. 6	**8,73** / 2,12	casemate no. 13	1,28 / 1,70
casemate no. 7	**6,20 / 3,05**	casemate no. 14	**5,85** / **6,08**

The study found that of the 30 analyses carried out on the facade, in 23 cases the moisture content was within the permissible values, in 4 cases there was elevated moisture content and in 2 cases there was medium moisture content. For the 54 moisture measurements taken indoors, 32 samples were found to have acceptable moisture, 8 had elevated moisture, 10 had medium moisture, 2 had high moisture and 2 had walls identified as wet.

These results indicate varying levels of dampness depending on local environmental and technical conditions.

3.3.2. Salinity test

Samples for salinity testing were taken from a height of approximately 0,5 m above floor or ground level, from a depth of approximately 5-6 cm. Salt loading tests were performed using Merck laboratory tests. The salt ions to be determined were sulphate, chloride and nitrate. In addition, samples were prepared from the obtained borehole to determine the pH of the material.

Tab. 6. Degrees of salinity

%	Sulphates	Nitrates	Chlorides
Low	< 0,5	< 0,1	< 0,2
Medium	0,5-1,5	0,1-0,3	0,2-0,5
High	> 0,5	> 0,3	> 0,5

Tab. 7. pH degrees

pH	Acidic	Neutral	Alkaline
	0-6,5	6,5-7,5	7,5-14

Tab. 8. Summary of salinity test results

Place of sampling	Sulphates [%]	Nitrates [%]	Chlorides [%]	pH [%]
elevation	0,30	0,00	0,02	7,0
elevation	**0,55**	0,00	0,02	11,0
casemate no. 1	**0,53**	0,00	0,02	6,0
casemate no. 2	0,35	0,00	0,02	8,5
casemate no. 4	0,24	0,00	0,02	7,0
casemate no. 6	0,26	0,00	0,03	6,5
casemate no. 7	0,16	0,00	0,02	7,5
casemate no. 8	0,29	0,00	0,04	6,5
casemate no. 9	0,41	0,00	0,03	8,0
casemate no. 10	0,49	0,00	0,09	6,0
casemate no. 11	**0,60**	0,00	0,02	8,0
casemate no. 13	0,20	0,00	0,02	7,5
casemate no. 14	0,36	0,00	0,02	7,5

Based on the analysis of the 19 test results, a low level of masonry salinity was determined. Sulphate salinity was in the low range in 12 cases, while 7 cases were reported to exceed the medium salinity level. Nitrates were not detected in any of the masonry samples tested. All 19 chloride salinity measurements also indicate low levels of these compounds.

The pH analysis showed varying values, with neutral pH recorded in 7 measurements, acidic pH in 3 and alkaline pH in 9. The results indicate a variety of chemical conditions in the structure of the studied masonry.

3.3.3. Dielectric humidity test of the facade

The test was made using a moisture meter LB-796 with a capacitive probe. The capacitive method consists in measuring the dielectric constant of a material, which depends on the water content in a given material. Measurements were taken along the entire length of the building's front elevation, at five heights of a given section (at the ground/floor, at 0,5 m, 1,0 m, 1,5 m and 2,0 m).

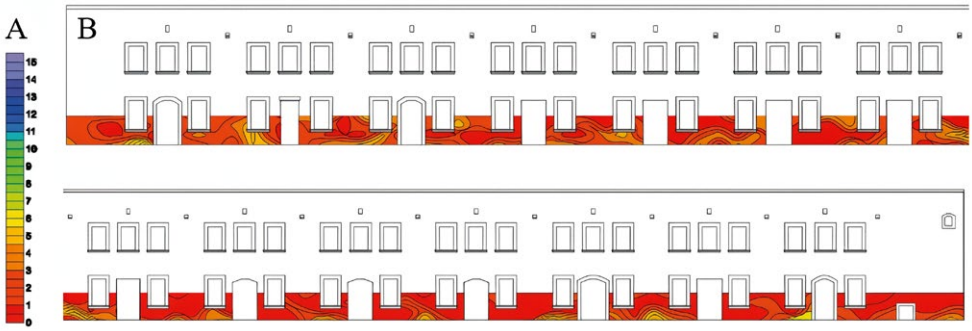


Fig. 29. Humidity scale (A); moisture maps of the facade wall (B)
[Archives of the Department of Conservation of Monuments]

Based on the surveys carried out, the moisture level of the masonry of the west elevation was found to be at a low level. The moisture content of the masonry for the most part remains within the value range of 0-3%, which characterises masonry with acceptable moisture content. Locally, elevated moisture levels in the range of 3-5% and average moisture content of 5-8% were noted. The increased dampness of the masonry is found primarily in the ground zone, indicating the influence of soil and water conditions.

4. PRESENT STATE OF THE WHITE BARRACKS

The restoration of historic buildings is a challenge for contemporary architecture and construction. The aim of such activities is to preserve cultural heritage and transform former buildings into functional spaces that meet contemporary needs.

The project: 'Conversion and change of use, revalorisation of the White Barracks for service purposes together with the construction of the necessary technical infrastructure', carried out by the design studio ARCHI-S in the Owcza Góra Fortress in Klodzko, focused on the adaptation of the building for service purposes, while respecting its historical form and character.

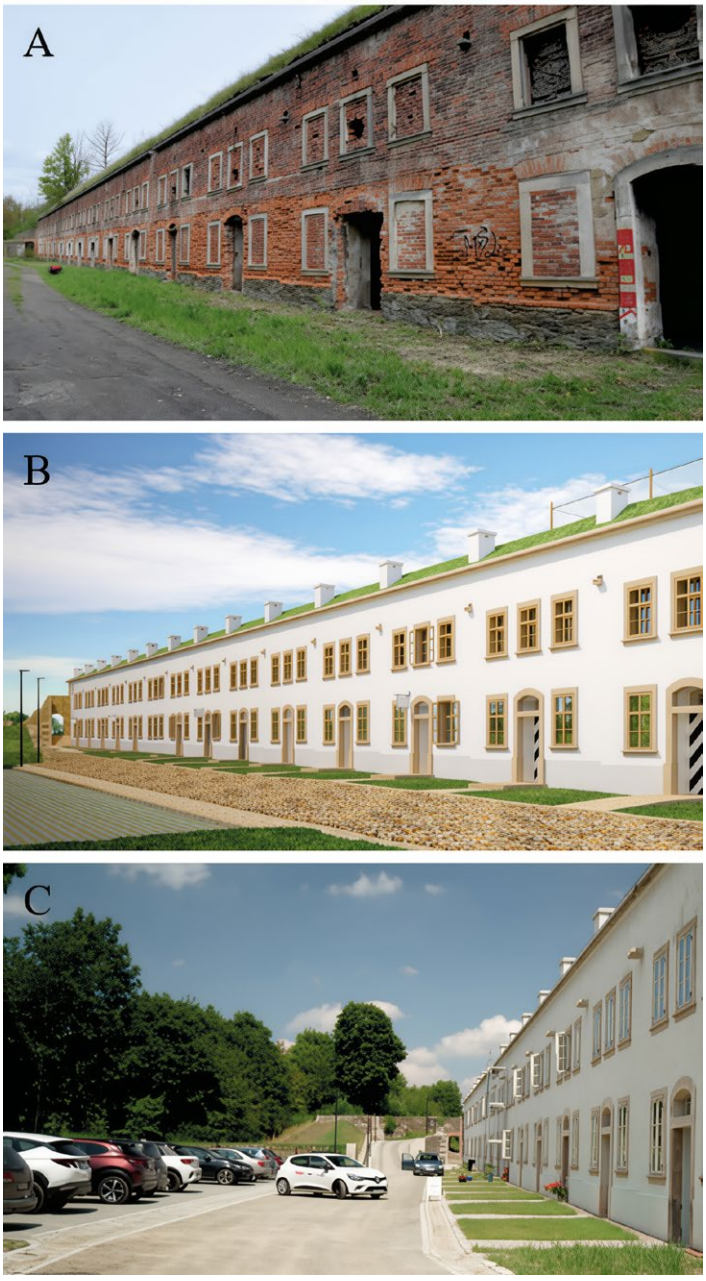


Fig. 30. View of the White Barracks: facade in 2018 (A)
[Archives of the Department of Conservation of Monuments];
visualisation of the revitalisation (B) [design studio ARCHI-S 2021];
facade in 2024 (C) [Archives of the Department of Conservation of Monuments]

The works included the restoration of historic structural elements such as the wooden ceilings and the cradle vaults of the casemates. Damp-proofing was carried out by undercutting the masonry and introducing an HDPE membrane diaphragm, thus eliminating moisture problems in the masonry [project documentation, design studio ARCHI-S 2021].

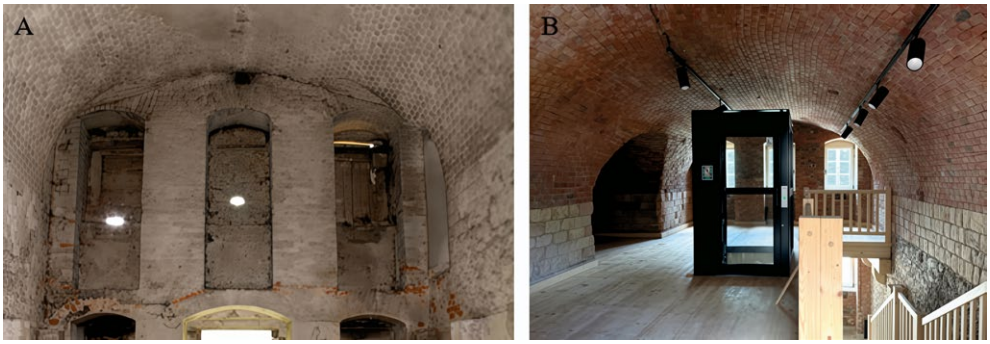


Fig. 31. Interior view of the casemate: 2018 (A); 2024 (B)
[Archives of the Department of Conservation of Monuments]

On the exterior of the building, the original colours of the facade were restored, using lime plaster and sol-silicate paint in accordance with the historical documents. The bands of the window and door openings were restored in grey sandstone. of grey sandstone, and secondary brickwork was removed. Damaged elements such as cornices, drainage channels and chimneys were also reconstructed, in accordance with archival plans and photographs [project documentation, design studio ARCHI-S 2021].

Fig. 32. Reconstruction of windows and doors and restoration of façade: 2018 (A);
2024 (B) [Archives of the Department of Conservation of Monuments]

The interiors of the building were adapted to the new functions, while historical fragments were preserved. The surfaces of the interior walls and vaults were cleaned, and plasterwork in an insufficient state of repair was removed. They were renovated, which allowed the walls to better absorb moisture. The technical installations – electrical, water and sewage, heating with heat pumps and ventilation – were modernised [project documentation, design studio ARCHI-S 2021].

The accessibility of the building has been improved through the installation of a lift for people with disabilities and adapting the toilets to their needs. The works also included the renovation of the historic access road, the construction of car parks and paths and the landscaping of the area with park greenery. The earth embankments on the crown of the barracks were restored, while protecting the moat and its surroundings from further degradation [project documentation, design studio ARCHI-S 2021].

Fig. 33. Down view of the Barracks and technical infrastructure
[Archives of the Department of Conservation of Monuments]

All the work was carried out in close cooperation with the Provincial Conservator of Monuments to ensure that the activities were in line with the requirements of cultural heritage protection

5. SUMMARY

The article describes in detail the history, state of preservation and the process of revalorisation of the White Barracks that are part of the Owcza Góra Fortress, which is part of the Klodzko Fortress. The fortress, located in south-western Poland, has a rich history dating back to the 10th century, when it functioned as a wooden fortification. In the 18th century, during Prussian rule, Fort Owcza Góra was built, designed by Gerhard Cornelius Walrave. This complex included the White

Barracks, which from the 19th century onwards served as warehouses, prison and storage for military supplies.

In the mid-20th century, the White Barracks was abandoned, which initiated its gradual deterioration. A detailed inventory was carried out in 2018-2019, including field surveys, drawing documentation and laboratory tests. On the basis of these, a compelling assessment of the Barracks' technical condition was carried out. The documentation allowed for a precise estimation of the scale of damage and the location of damage, enabling the planning of appropriate conservation and repair activities

The project: 'Reconstruction and change of use, revitalisation of the White Barracks for service purposes together with the construction of the necessary technical infrastructure' was carried out by the ARCHI-S design studio. The revitalisation works, completed in 2023, allowed the White Barracks to be brought back to life as a service facility, accessible to residents and tourists. The historical authenticity of the building was successfully preserved, contributing to its value as a cultural monument and tourist attraction. The building became part of a larger concept for the revitalisation of the Klodzko Fortress, emphasising the importance of protecting historical heritage in modern adaptation projects.

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ANALIZA STANU ZACHOWANIA KOSZAR BIAŁYCH FORTU OWCZA GÓRA TWIERDZY KŁODZKO

Streszczenie

W niniejszym artykule omówiona została problematyka stanu zachowania jednego z obiektów militarnych Twierdzy Kłodzko. Fort Owcza Góra został wzniesiony w XVIII w. na przeciwległym brzegu Nysy Kłodzkiej. Koszary Białe, będące częścią Fortu Owcza Góra, zostały wybudowane na przełomie XVIII i XIX w. Na przestrzeni lat zmieniały swoją funkcję i sposób użytkowania, pierwotne zakwaterowanie dla żołnierzy przekształcono kolejno w składy i magazyny wojskowe, więzienie, zaplecze techniczne oraz siedziby hurtowni. W II poł. XX w. obiekt został opuszczony i przez kolejne kilkadziesiąt lat podlegał procesom degradacji. W 2018 r. koszary poddano szczegółowej inwentaryzacji i ocenie stanu technicznego. Dokumentacja pozwoliła na precyzyjne oszacowanie skali zniszczeń oraz lokalizację uszkodzeń, umożliwiając planowanie odpowiednich działań konserwatorskich i naprawczych. Na kolejnym etapie opracowano projekt rewaloryzacji Koszar Białych na cele usługowe, przy zachowaniu historycznej formy, i przywrócenia pierwotnego charakteru budynku. Projekt został wykonany przez pracownię ARCHI-S. Inwestycję zrealizowano i w 2023 r. obiekt oddano do użytku.

Słowa kluczowe: twierdza, fort, założenie obronne, dziedzictwo militarne, stan zachowania, ocena stanu technicznego, degradacja, badania, zmiana przeznaczenia obiektu, rewaloryzacja