CONSILIUL JUDETEAN CLUJ

ORDINUL ARHITECTILOR DIN ROMÂNIA

CLUJ-NAPOCA COMPREHENSIVE TRANSPLANT CENTRE

COMPETITION BRIEF

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1. GENERAL DATA

1.1. PURPOSE OF THE COMPETITION

The competition seeks to select the best design solution for a Comprehensive Transplant Centre, located in the central area of Cluj-Napoca Municipality, within the University Hospital Complex, in order to award the design services contract.

The Comprehensive Transplant Centre will be part of the structure of the Cluj County Emergency Clinical Hospital. The project has a strong innovative character, aiming to design and execute the first transplant centre in the country that accommodates all the necessary facilities for four types of transplant: heart transplant, lung transplant, liver transplant and kidney transplant.

1.2. THE CONTRACTING AUTHORITY OF THE COMPETITION

The competition is promoted by the Cluj County Council, the owner of the land and the beneficiary of the competition results.

1.3. NEED FOR INVESTMENT

As more and more people suffer from terminal failure of a solid organ (heart, lung, liver, or kidney), organ transplantation is the only survival option for these patients. Currently, in Romania there are over 5,000 people on chronic dialysis who should benefit from a kidney transplant. The health issues that require a kidney transplant is one that can be kept under control by dialysis, but the same cannot be said about patients suffering from terminal pathologies of other organs (heart, lung, liver) who have a life expectancy of less than two years. These patients, without a solid organ transplant, would invariably die.

The construction of a multi-organ transplant centre in Cluj-Napoca is an approach that supports the growing need for these life-saving surgeries for those who are at an terminal stage of an organ disease. It takes into account both the geographical factor and the fact that the few active transplant centres cannot support the transplant activity under optimal conditions and cannot meet the growing need for solid organ transplant surgeries.

Since 2017, the only lung transplant centre in Romania has been accredited at the Sfânta Maria Hospital in Bucharest, after a period of 10 years during which time the

only option for Romanian patients who needed a lung transplant was at AKH Vienna (47 transplants in 10 years). When this collaboration was one-sidedly terminated, there was no other possibility than performing this transplant in Romania. At that time, the only healthcare unit that had the accreditation criteria for this procedure was the Sfânta Maria Clinic in Bucharest, where a transplant experience was already there, but only for the liver. After obtaining this accreditation and for a period of 3 years only 8 lung transplants were performed, although, according to estimates, Romania would need an average number of 50 lung transplants each year. This number refers to cases with relatively common and uncomplicated indication for lung transplant, without taking into account complex cases with major co-morbidities or paediatric cases.

A major, if not the biggest problem of this small number of lung transplants is the impossibility of some patients to safely reach a unit where the transplant could be performed. Most of those who require such a procedure experience a severe organ failure, and the large distance travelled in Romania makes a pre-transplant consultation impossible to take place so as to determine the indication of a transplant and finally to be placed on the waiting list. Once the organ transplant indication is established, they must be able to reach the centre, where the transplant will be performed in 4-6 hours from the moment they were contacted that there is a brain-dead donor. This is almost impossible if we talk about an organ receiver located in the northwest or northeast of the country. Thus, the need to territorialize these surgical interventions is important, so that all patients in Romania can benefit from such life-saving interventions.

Liver transplantation is performed in Romania in three centres: one center in Iasi (which serves the region of Moldova and Bucovina), two centres in Bucharest - the only ones that perform liver transplantation on a regular basis.

The heart transplant is performed in Romania in two centres: a centre in Bucharest (which has not had any activity in this regard since 2019) and a centre in Târgu - Mureș. At present, in Romania, the need for heart transplantation is much higher than the ability to perform such procedures. Considering that there were times when there was a large number of organ donors in a short time, and the capacity of the cardiac transplant centre was exceeded, the creation of another cardiac transplant centre in Cluj is justified, in order to be able to harvest all organs from brain-dead donors.

The creation of a multi-transplant centre in Cluj is also based on the need for kidney transplantation, the Renal Transplant Centre in Cluj being the most active organ transplant centre in Romania. At the moment, it is located in a building wing in the centre of Cluj Napoca and it does not have the possibility to develop and adapt to the increasing demands for transplantation and supervision of renal transplant patients.
In the North-West Development Region (North Transylvania), according to the report of the North-West Regional Development Agency, there are significant discrepancies regarding access to medical services. The statistics highlight the role of Cluj-Napoca as a regional centre of excellence in the medical field, as well as the poor development of medical services in Sălaj, Bistrița-Năsăud and Satu Mare counties. The city of Cluj-Napoca has all the necessary infrastructure available to support a multi-organ transplant centre that serves the entire region: medical units with tradition, having a large number of institutes of excellence in the field of cardiovascular diseases, oncology, urology and kidney transplant, as well as with a large number of general and specialized hospitals or higher education institutions in this field. The Comprehensive Transplant Centre thus responds to the urgent need for territorialisation of this type of surgical interventions, while supplementing at the same time the pole of medical services created by the establishment of the Cluj-Napoca Regional Emergency Hospital through the medical services rendered.

1.4. PROJECT OBJECTIVES

The project of the Comprehensive Transplant Centre aims to provide an example of good practices both in terms of medical architecture and with regard to the insertion of a volume of contemporary architecture in a historical, heterogeneous site.

The objectives pursued by the Contracting Authority are the following:

- Develop comprehensive transplant centre that provides a wide range of high-quality organ transplant services, accessible to all patients;
- Build of a new hospital, whose design complies with international standards in the field, a building in which the professionalism and expedience of the medical staff are supported by the specialized design;
- Create of a space centred around the patient's needs, using both the finishes and the relationships between spaces to create a therapeutic environment, capable of reducing the stress generated by the medical intervention;

- Complete the existing built tissue with a contemporary urban insertion, seeking to mediate the current dysfunctions identified both within the University Hospital Complex, and in the adjacent area.

1.5. ORGANIZER OF THE COMPETITION

The competition is organized by the Order of Architects in Romania, in accordance with the Competition Rules of the International Union of Architects - UIA - and the provisions of the International Recommendations for Architecture and Urban Planning Competitions adopted at the General Conference of UNESCO of 1956, revised on 27 November 1978, in compliance with the provisions of the legislation in force regarding the award of public procurement contracts.

2. SITE INFORMATION

The new Comprehensive Transplant Centre will be located in the central area of Cluj-Napoca City, in the immediate vicinity of the University Hospital Complex. The plot has direct access from Victor Babeș Street and B.P. Haşdeu Street. The sections below provide some brief information on the current situation of the site and its evolution from a historical point of view, detailed in the supporting documents and annexes made available to the competitors.

The negotiation of the urbanistic constraints imposed by the site, both at the level of the plot dedicated to the Comprehensive Transplant Centre, and at the level of the whole University Hospital Complex, rests with the competitors and constitutes an important aspect in evaluating the proposed solutions. At the same time, the architectural and patrimonial value of the buildings and the historical routes that constitute the University Hospital Complex will have to be taken into account when defining the planning proposals related to the whole complex.

2.1. BRIEF DESCRIPTION OF THE SITE

The plot proposed for the competition is located within the city limits of Cluj-Napoca, **inside the urban complex of the Historical city centre of Cluj**, code LMI CJ-11-a-A-07244. It has an area of 15.040m2and is identified by Land Book no. CF 328045, being owned by Cluj County and under the administration of Cluj County Council.

The plot is delimited on the north and west sides by the University Hospital Complex, a historical monument of class A, LMI CJ-II-a-A-07297, which is owned by the County of Cluj and under the administration of the Cluj-Napoca County Emergency Clinical Hospital. On the east side, the plot is delimited by Victor Babeș street, and on the south side by Aleea Studenților (see**Figure1**).

Figure1 Site layout plan

Figure2 Competition site – view from the Rector's Office of the University of Medicine and Pharmacy towards Victor Babeș Street (left) and Aleea Studenților (background)

2.2. HISTORICALAND STYLISTIC EVOLUTION OF THE AREA

2.2.1. PLOT EVOLUTION

In the first phase, the land on which the University Hospital Complex was later built had the function of a garden, *Mikó Kert*, owned by the Count Mikó Imre. In 1856,he donated it to the Transylvanian Museum, being transformed into *Muzeum Kert* and delimiting the land allocated to the hospital complex, namely to the museum complex and to theMiko Garden.

The historical study presents a detailed evolution of all the plots delimited by the Clinicilor, Victor Babeș and B.P. Haşdeu Streets. The land on the eastern side of the hospital complex (the area between Victor Babeș Street) resulted from operations of merging the existing plots in the second half of the 19th century. The plot that is the object of the competition seems to be composed approximately of the former lands registered at no. 6-20 related to Felsó Szén street (currently Victor Babeș Street), as well as to those from no. 1-7 and partially 9 from Kökert Street (now B.P. Hașdeu).[1]

Figure4 Location - extract from the map of 1860

Figure3 Location – extract from the map of 1869

2.2.2. EVOLUTION OF THE UNIVERSITY HOSPITAL COMPLEX

The plot of land that is the object of the competition is part of the precinct of the*University Hospital Complex*(CJ-II-a-A-07297), built between 1886 and 1908. At its opening, the complex had a capacity of 594 beds for the treatment of patients, along with numerous educational spaces (for example, anatomy amphitheatres).

[1] Source: Historical study for the investment objective of an Comprehensive Transplant Centre, elaborated by SC ECLECTIC SRL, 2019.

The construction of the complex was determined by both the slope terraces and the building stages. Given the steep inclination and the geological specificity of the slope, prior to the actual execution, a series of earthworks and vertical systematization works were carried out, using drainages to take over the groundwater. As a result of these works, **three parallel horizontal terraces** have been arranged, realized on the contour of the level curves related to the area.

The approach of systematizing the land divides the complex into two areas: **(1) the lower hospital complex**, which includes the buildings constructed on the first two terraces, and **(2) the upper hospital complex**, which includes the buildings constructed on the third terrace. The competition plot is on the third terrace, with direct access from Victor Babeș street.

The three terraces of the complex descend from the B.P. Hașdeu and Victor Babeș Streets towards Clinicilor Street. The first two terraces developed relatively simultaneously, between 1886 - 1900, covering most of the hospital wings. The third terrace was developed in two stages, between 1900-1908. The layout of the buildings on the three terraces, as well as the building stages of the whole Complex are detailed in**Table1**and**Table2**, respectively in**Figure6**and**Figure5**.

Figure5 Arrangement of the clinics on the three terraces, 1937[2]

[2] Source: Historical study for the investment objective of an Comprehensive Transplant Centre, elaborated by SC ECLECTIC SRL, 2019.

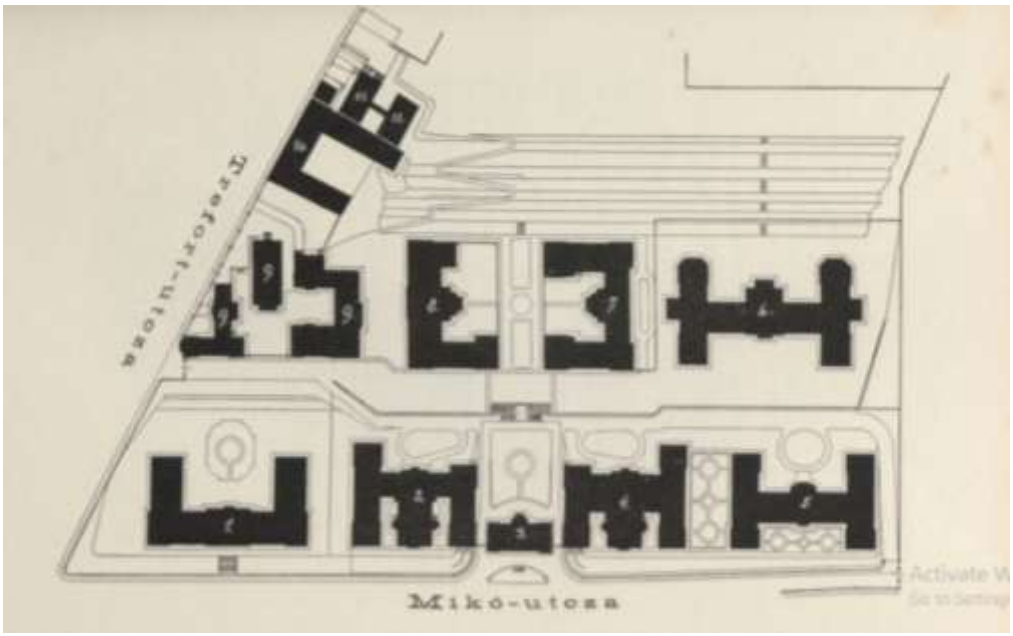

Figure6 Arrangement of the clinics – the first two terraces[3]

First terrace	Institute of Physiology and Hygiene (1)
	Surgery Clinics (2)
	Administrative Wing (3)
	Internal Disease Clinic (4)
	Birth and Gynaecology Clinic (5)
Second terrace	Institutes of Anatomy, Anatomical Pathology and Forensic Medicine (6)
	Skin Disease and Syphilis Clinic (7)
	Ophthalmology Clinic (8)
	Management Complex (9)
	Therapeutic Medicine, Pharmacology, University Pharmacy (10)
	Contagious Disease Shelter (11)
Third terrace	Psychiatry and Neurology Clinic
	Tubercular Patient Internal Disease Clinic
	Nuns Wing

Table1 University Hospital Complex–arrangement of buildings

[3] Source: Historical study for the investment objective of an Comprehensive Transplant Centre, elaborated by SC ECLECTIC SRL, 2019.

Stage I **1886-1889**	First terrace	Institute of Physiology and Hygiene (1)
	Second terrace	Institutesof Anatomy, Anatomical Pathology and Forensic Medicine (6)
Stage II **1897 - 1900**	First terrace	Administrative/Management Wing (3) Internal Disease Clinic (4) Surgery Clinics (2) Birth and Gynaecology Clinic (5)
	Second terrace	Skin Disease and Syphilis Clinic (7) Ophthalmology Clinic (8)
Stage III **1900 - 1903**	Third terrace	Psychiatry and Neurology Clinic
Stage IV **1903 - 1908**	Third terrace	Tubercular Patient Internal Disease Clinic Nuns Wing

Table2 University Hospital Complex–building stages

The first two terraces are structured along a transverse axis, perpendicular to Clinicilor Street (Miko-utca), which allows the configuration of two small squares, reinforcing the urban character of the whole complex. The connection between the two terraces is made through a package of stairs, located in the central area of the transverse axis. (see**Figure6**).

The interlinking with the third terrace, subsequently developed and only partially occupied (see**Figure5**), takes place through a park, which has a direct relationship with the small square at the level of the second terrace, delimited by the Skin Disease Clinic (7) and theOphthalmology Clinic (8). (see**Figure6**)

In the second half of the twentieth century, a series of contemporary interventions were introduced in the initial structure of the University Hospital Complex, detailed in **Table3**and**Figure7**. Currently, the third terrace is occupied by the Leon Daniello Clinical Hospital for Pneumology and Phthisiology in Cluj-Napoca and the plot that makes the object of the competition. The park that connects terraces II and III is an integral part of the plot dedicated to the ComprehensiveTransplant Centre. (see**Figure7**).

Interventions	**Remarks**
Dermatology Clinic	• Extension made during the 1960s; • Follows the dominant line of the Dermatology Clinic façade, using apparent brick.

Interventions	Remarks
	(see**Figure7** / 2)
Forensic Medicine Institute	• Extension made during the communist period, located on the second terrace, within the building of the Anatomy, Anatomical Pathology and Forensic Medicine Institutes; • It does not integrate from a volumetric point of view in the existing complex.
Nephrology Clinic	• Built on the eastern end of the first terrace, next to the Institutes of Physiology and Hygiene, in a modernist style.
Block buildings / B.P. Hașdeu Street	• Constructions erected in the immediate vicinity of Wing II of the Pulmonology and Phthisiology Hospital, on the third terrace; • They are not part of the Hospital Complex, and their presence is improper, given that they were located in the terraced park, which previously belonged to the botanical garden of the museum.
EmergencyDepartment (UPU)	• Construction built after 1990, next to the Management Wing, at a distance of a few meters, so as to accommodate a road access, and in the immediate vicinity of the support wall and of the monumental staircase. • From a volumetric point of view, it has a major impact on the operating mode of the transverse axis that structures the entire Complex. (see**Figure7** / 1)
Rector's Office of Iuliu Haţieganu University of Medicine and Pharmacy	• The construction dominates the slope, having a direct access from Victor Babeș Street. • The proposed volumetric solution does not contribute to the establishment of a coherent front at the level of Victor Babeș Street and does not ensure in any way the interlinking of the intervention with the Hospital Complex. (see**Figure7** / 3)
St. Pantelimon Orthodox Church	• Built after 2005, on the third terrace, with direct access from B.P. Hașdeu Street. • It is located at the boundary of the plot that is the object of the competition. (see**Figure7** / 4)
Parasitic constructions	• A series of annexes have been built over time

Interventions	Remarks
	throughout the whole complex, for various purposes. (annexes for electrical installations, transformer station, auxiliary wings for food blocks/laundries). • A series of constructions made of insulating windows / metal structure have been made to ensure access to the existing buildings (ramps, corridors). • A large part of the network of installations is solved above ground, crossing circulation paths or placed on the facades of buildings. (see**Figure7** / buildings marked with yellow)

Table3 Contemporary interventions in the University Hospital Complex - summary

Some of these insertions have a direct impact on the routes and axes that structured the University Hospital Complex. Thus, the volumetric insertions serving the Emergency Department and the extension of the Dermatology Clinic directly intervene in the transverse axis that structured the relationship between the three terraces of the complex. At the same time, through the interposition of the extension of the Dermatology Clinic, the park no longer has a direct visual relationship with the whole complex. (see**Figure7**).

Unused, the park is in an advanced state of degradation, lacking any elements of urban or landscape design:

- The access between terraces II and III (the area occupied by the Leon Daniello Clinical Hospital of Pulmonology and Phthisiology) is delimited by a metal fence, with prevents the transverse transit of the whole Complex, between Clinicilor and B.P. Hașdeu Streets;
- The relationship between the park and the Rector's Office of Iuliu Hațieganu University of Medicine and Pharmacy is delimited by a metal fence;
- The alleys and stairs that connect terraces II and IIIof the University Hospital Complex are not arranged;
- The vegetation is aged and overgrown;
- the elements of urban furniture and lighting are either completely missing or very deteriorated.
- It is crossed by a series of above-ground facilities networks.

Beyond these aspects, in the period 2007-2008, the south-eastern part of the plot subject to competition made the object of an intervention to build a mall, stopped in time, but which produced further degradation. The interventions are extensively detailed in section 2.7Data on the existing structure on the site.

Within the arrangement proposals aimed at the entire University Hospital Complex, the competitors have the freedom to propose the remodelling / elimination of those volumes or elements that they consider harmful, based on justifications and viable alternative solutions.

Figure7 University Hospital Complex–current situation

Legend:

----- Limit of the University Hospital Complex

----- Limit of the plot that makes the object of the competition

Figure8 Perspective from terrace II to terrace I (Emergency Department insertion in the background)

Figure9 Perspective from terrace II to the park (extension of the Dermatology Clinic in the background)

Figure10 Park – access staircase between the terraces II and III of the University Hospital Complex (in the background – The Dermatology Clinic)

Figure12 The relationship between the park and the site

Figure11 The current arrangement level of the park

2.2.3. ACCESIBILITY OF THE SITE. IMPACT OF THE INVESTMENT ON URBAN MOBILITY

The plot intended for the development of the ComprehensiveTransplant Centre has the following types of access:

- **Direct car access**, from Victor BabeșStreet and Aleea Studenților;
- **Secondary car access**, through the precinct of Leon Daniello Clinical Hospital of Pulmonology and Phthisiology, from Bogdan Petriceicu Hașdeu Street;
- **Pedestrian access**from Victor Babeș and Aleea Studenților streets, as well as from the precinct of the Emergency County Clinical Hospital, through the green terrace.

Victor Babesstreet is a street belonging to category III, with one-way single-lane and parking places arranged laterally, along the street. Bogdan Petriceicu Hașdeu street is also included in category III, with two lanes per direction, without any parking spaces. Aleea Studenților, which partially embroiders the western side of the land is a category IV street, with one-way single-lane and parking lots along the street. Both Victor Babeș Street and Bogdan Petriceicu Hașdeu Street have a collector role, taking over the traffic and ensuring the connection of the central area with the other neighbourhoods of the city: Mănăștur neighbourhood (on Bogdan Petriceicu Hașdeu street), Zorilor neighbourhood (on Victor Babeș - Louis Pasteur streets).

The **Traffic study**conducted by the Technical University of Cluj-Napoca analysed the effect of the development of the ComprehensiveTransplant Centre in a wider context, approaching the general traffic in the area of possible influence. The general traffic on the following streets was taken into account: Victor Babeș (cat. III), Ion Creanga (cat. Ill), Bogdan Petriceicu Hasdeu (cat. Ill), Clinicilor (cat. Ill), Gheorghe Marinescu (cat. Ill) and Louis Pasteur (cat. Ill)., carrying out analyses in alternative scenarios that aim at:

- The current stage of traffic flow, in the absence of the project;
- The immediate perspective, with traffic induced by the development of the project;
- The perspective in the year 2025, with the growth forecast of all the factors considered in the simulation;
- The effect of investment on the environment, from the perspective of urban mobility.

Following the analysis and interpretation of the data resulting from the traffic study, it was found that the streets Ion Creangă and Clinicilor currently have a significant load. Currently, the level of use of the circulation capacity of these arteries is 92%, respectively 84%. Introducing into the equation the effect of the investment but also the general outlook for the year 2025, the percentage of the level of use of the circulation capacity presents a significant difference (182% for Ion Creangă street, 142% for Clinicilor street). There is also an increase on Louis Pasteur Street, at 152%.

Estimates for the ComprehensiveTransplant Centre are based on 250 underground parking spaces. The impact of the ComprehensiveTransplant Centre on the traffic in the area is reduced, this being estimated at 0.6%, respectively 21 vehicles/hour.

2.3. FUNCTIONAL STRUCTURE OF THE AREA

The site is located in the central area of Cluj-Napoca City, in an area with a high built density and a strong functional mix: administrative, cultural, healthcare, higher education, housing and commercial or public catering spaces. Referring to the proposed area of study, the predominant function is that of medical services, represented by the wing assembly of the Cluj-Napoca County Emergency Clinical Hospital.

The Cluj County Emergency Clinical Hospital is one of the largest hospitals with beds in Romania, being classified in the category of *Regional Emergency Hospital IA* (very high level of competence[4]). With 1,542 beds and over 3,000 employees, the hospital provides emergency medical services for the northwest region. The hospital operates in a winged mode, in a number of over 33 distinct buildings distributed over a radius of 33 km from the headquarters. The activity of the hospital is structured in three segments:

- emergency medical assistance, respectively acute/chronic diagnosis
- healthcare programs
- academic and postgraduate medical education, medical scientific research.

Cluj-Napoca County Emergency Clinical Hospital has 41 clinical (and non-clinical) departments and wards covering all the medical-surgical specialties, most of them

[4]*According to*Order no. 1.408 of 12 November 2010 approving the classification criteria of hospitals according to their competence, available online here: http://legislatie.just.ro/Public/DetaliiDocumentAfis/123677

being on the site delimited by the Clinicilor and Victor Babeș Streets. The ComprehensiveTransplant Centre completes the dominant function in the area, bringing a new set of services to the portfolio of the Cluj-Napoca County Clinical Hospital.

2.4. UTILITY PROVISION

The plot that is the object of the competition has direct access to the technical-public utility networks in the area through the front of Victor Babeș street (water-sewerage, electricity, natural gas, telecommunications and fibre optics). The calibration between the investment-generated requirement and the capacity of the networks will be done in the subsequent design phases. The plot is not burdened by easements when it comes to the technical-public utility networks.

2.5. PROVISIONS OF URBAN PLANNING DOCUMENTATIONS

The competition site is under the protection zone generated by two historical monuments of class A: *University Hospital Complex*(CJ-II-a-A-07297), respectivelyahistorical monument of class B: *Clinics of Paediatric Neurology and Neuropsychiatry*(CJ-II-m-B-07272)[5]. At the same time, according to the General Urban Plan of the City of Cluj Napoca, it is registered in the UTR ZCP Vt - Green area with thematic character and UTR ZCP M1 - Mixed area with closed construction regime, adjacent to the main traffic lanes. The Hospital Complex belongs to UTR ZCP Is_A - an area of public and public-interest institutions and services constituted in independent assemblies. (see**Figure13**). The provisions of the Local Urban Regulation related to the General Urban Plan for each of the reference territorial units included in the study area can be consulted online, by accessing the following addresses:

- ZCP_Is_A: https://primariaclujnapoca.ro/urbanism/unitate-teritoriala/zcp_is_a/
- ZCP_Vt:https://primariaclujnapoca.ro/urbanism/unitate-teritoriala/zcp_vt/
- ZCP M1:https://primariaclujnapoca.ro/urbanism/unitate-teritoriala/zcp_m1/

[5]*According to the*Historical study for the investment objective of the Comprehensive Transplant Centre, elaboratedby EC ECLECTIC SRL in October 2019.

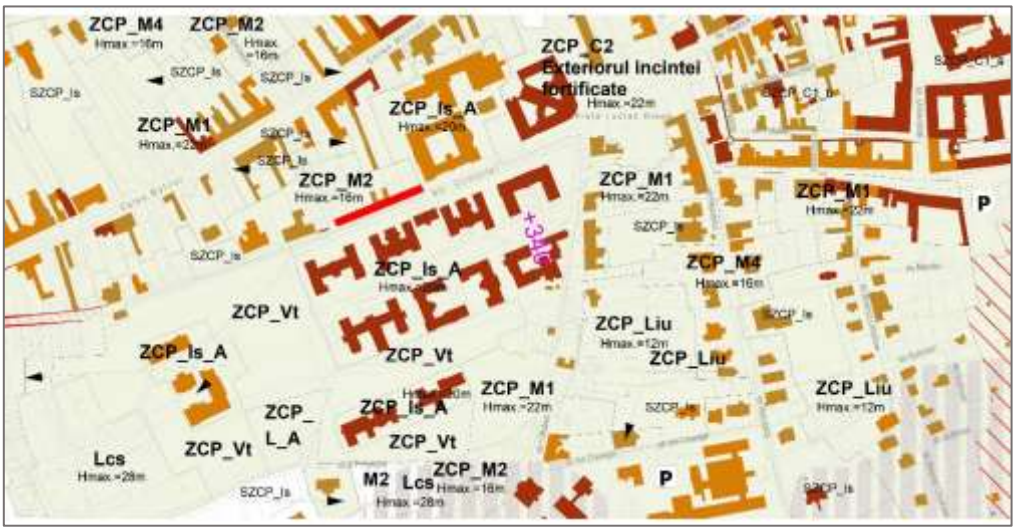

Figure13 Reference Territorial Units – extract from the General Urban Plan of Cluj-Napoca

According to the provisions of the Urban Planning Certificateno. 3530 / 19.07.2017, for the detailed regulation of all these areas**it will be necessary to elaborate a Zonal Urban Plan for Protected Built Areas. This stage is part of the services that will be contracted after the competition has taken place.**

Starting from this premise, **the negotiation of the urban planning constraints imposed by the site, respectively by the Local Urban Regulation related to the General Urban Plan, rests with the competitors, while keeping in mind the recommendation to take into account the objectives related to a Zonal Urban Plan for Protected Constructed Areas**[6], namely:

- highlighting the catalytic role of such areas for urban, territorial and regional development;
- ensuring the physical, functional and spiritual continuity of the built framework in localities and stimulating the economic and cultural interest for its use;
- protecting and valorisation of historical monuments, archaeological areas and special architectural and urbanistic complexes, as well as the context and characteristics that outline their historical significance,

as well as the fact that this type of documentation:

- will establish the directions and priorities for a logical development of the considered areas, related to the development of the locality as a whole;

[6]According to theElaboration Methodology and frame content of the urban planning documentation for protected built areas (PUZ – Zonal Urban Plan)

- will regulate the use of the lands within the perimeters of the respective areas;
- will establish the conditions for the erection and compliance of constructions and urban arrangements on the respective areas.

2.6. NATURE OF THE LAND. GEOCLIMATIC CHARACTERISTICS

2.6.1. GEOTECHNICAL INVESTIGATIONS

The geotechnical study conducted in July 2006 on the plot that is the object of the competition presents the following conclusions, based on three boreholes[7]:

- In the upstream area appears a large package of cohesive lands (clay sandy dust), consistent - stiff plastic, with a soft plastic interlayer, on a thickness of 1.00m;
- In the downstream areas, only packages of sands with medium, large and fine sand content appear, which change in depth. The layer is medium-thick, up to -elevations of 12.00m (F3), -7.00m (F1) and -9.30 (F2), and then the layer becomes packed.
- In the area of F3 and F2 boreholes concretions appeared, which prevented the advancement in borehole F2, and in borehole F3 they were perforated.
- The mixed sand pack increases the state of thickening towards the lower areas, respectively from the elevations -10.40m (F1 and F2) and -14.00m (F3).

2.6.2. FOUNDING CONDITIONS

The general conditions that derive from the geotechnical investigation impose the foundation in a layer of gravel and sand, located over a layer of hard clay at depth. During the preliminary investigations numerous concretions were discovered, some of them with higher density, which made the continuation of the drilling impossible. This fact will have to be taken into account both when the geotechnical investigation will be updated and subsequently, when choosing the foundation system.

2.6.3. GROUNDWATER

According to the geotechnical study, the groundwater level is found at -10.00m (F3) and -4.00m (F2). The groundwater seems to be moving and exerts a hydrodynamic pressure on the loose sand package located at -4.00-4.50m. The insertion of a new volume on this site entails the risk of interrupting the flow of water, which will have to

[7] Annex XX contains the entire geotechnical study, as well as the location of the boreholes on the land.

be mediated through drainage systems adapted to the situation on the ground (as it results after updating the geotechnical study).

2.6.4. WATER CONTAMINATION LEVEL

The test report on water aggressiveness does not reveal that it is contaminated. The tests will be resumed with the updating of the geotechnical investigation.

2.7. DATA ON THE EXISTING STRUCTURE ON THE SITE

As specified in Section2.2Historical, the plot that is the object of the competition is occupied by the infrastructure built in 2008-2009 for a project dedicated to a shopping centre - the Akademia Multifunctional Centre - whose construction was subsequently abandoned.

2.7.1. PROVISIONS OF THE TECHNICAL PROJECT FOR THE AKADEMIA MULTIFUNCTIONAL CENTRE

According to the technical report related to the project of the Akademia Multifunctional Centre, the proposed infrastructure was composed of the following main elements: an enclosure wall made of bored piles, a series of internal bored piles that provided the discharge of forces and a general foundation plate. The recommended construction version was a top-down one, due to a short execution time and the reduction of the risk of damage due to ground movements.

The table below summarizes the main characteristics of the infrastructure, as they appear in the technical report:

Interventions	Remarks
Enclosure wall	• It will be made of STAR piles with a diameter ranging from 600-800mm in the interaxis, intersecting the soft piles of the same diameter and at the same interaxis. The wall of secant piles will continue in depth until the layer of hard clay, which is below the level of the foundation plate, to be a water protection wall. • In order to take over the misalignment tolerance of the piles, a 250 mm thick reinforced concrete wall will be poured on the internal face of the piles.
Internal piles	• The internal piles from the construction footprint have embedded metal pillars on which the structure rests as the

Interventions	Remarks
	construction advances. • They will have a depth of 25-30m.

Table4 Extract from the technical report – Akademia Multifunctional Centre

Annexes 5 and 6 of the competition documentations include the technical documentation related to the infrastructure executed on the ground, respectively the geotechnical study and the technical report, the basement plans and the relevant characteristic sections, as well as an overlap (in .dwg format) over the whole outline of the plot.

2.7.2. SITUATION OBSERVED IN THE FIELD

The following structural elements are visible on the land:

- **Perimeter enclosure wall** – observes the outline that appears in the technical documentation of the Akademia Multifunctional Centre. The upper part of the reinforcements is visible on a height of about 30 cm, most of which is rusty and damaged.
- **Internal piles** – only a portion of the internal piles that appear on the plan are executed. The upper part of the metal structure is visible and rusty.

Taking into account the fact that at the time of elaboration of the design brief there is no detailed technical expertise to establish the viability of the infrastructure existing on the land, the competitors:

- **will not take into account the internal piles**; the costs arising from their demolition are going to be taken over in the execution phase;
- **have the freedom to choose whether or not to integrate the perimeter enclosure wall into the proposed solution.** If, following a detailed technical expertise, it proves to be unusable, the costs arising from its demolition will be taken over in the execution phase.

Depending on the solution proposed, the competitors **will have to take into account in the estimate of the design costs also the need to draft a technical documentation for the demolition of the constructions** currently existing on the plot intended for the competition and **to subject it to approval**.

Figure 14 View of the site from the courtyard of the Leon Daniello Pulmonology and Phthisiology Hospital, towards Victor Babeș Street and Aleea Studenților (right)

Figure15 View of the site from the terrace of the Rector's Office of the University of Medicine and Pharmacy, towards Aleea Studenților and Victor Babeș Street (left)

Figure16 The existing structure on the site – view towards Victor Babeș Street

Figure17 Perimeter wall – visible reinforcement

Figure18 View from the site towards Aleea Studenților and Victor Babeș Street (left)

Figure19 View from the site towards Aleea Studenților (background) and Leon Daniello Hospital (right)

3. DESIGN BRIEF

The project of the ComprehensiveTransplant Centre brings along the opportunity to provide an example of good practices both in terms of medical architecture and with regard to the insertion of a volume of contemporary architecture in a historical, heterogeneous site. The project has a strong innovative character, aiming to design and execute the first transplant centre in the country that accommodates all the necessary facilities for four types of transplant: heart transplant, lung transplant, liver transplant and kidney transplant.

3.1. DESIGN PRINCIPLES

As this is a medical architecture project, the ComprehensiveTransplant Centre offers the competitors the chance to redefine, through their solution, the way in which the built environment supports the development of the medical intervention, bringing forwarda series of design principles. Thus, the proposed solution:

- will aim at creating **a space centred around the patient's needs**, using the proposed finishes and the relationships between the spaces to create a therapeutic environment, capable of reducing the stress generated by the medical intervention;
- will have an **innovative nature**, integrating contemporary technical solutions and offering a structure flexible enough to adapt to the evolutions in the field of medical equipment (for example: automation of services, use of robots, etc.);
- will propose **a conscious and sustainable attitude regarding energy consumption**, offering viable solutions for reducing energy consumption in the medium and long term and allowing the **BREEAM certification** of the building;
- will integrate the principles of a **participatory design**, the final solution being the result of a consultation process of the project beneficiaries (patients, medical staff);
- **will mediate the existing relationships between the existing urban fabric and the University Hospital Complex**, through a contemporary insertion, capable of generating a high-quality public space;

3.2. INTEGRATION IN THE URBAN TISSUE

From an urban perspective, the competitors will approach the intervention within the protected built area by looking at two aspects. On the one hand, they will target the entre site of University Hospital Complex. On the other hand, they will also address

the way their proposal relates to both the University Hospital Complex and the heterogeneous built tissue in the area (especially the one on Victor Babeș Street).

3.2.1. REQUIREMENTS REGARDING THE UNIVERSITY HOSPITAL COMPLEX

The competitors are asked **to elaborate a site plan** of the University Hospital Complex. The proposal will have a conceptual nature and will formthe basis ofthe Zonal Urban Plan of the Protected Built Area, requested by the Urban Planning Certificate.

In the medium and long term, it is very likely that the entire site occupied by the University Hospital Complex will be the subject of an urban reconversion project, given the authorities' intention to build a new Regional Emergency Hospital in Florești. This will involve moving some functions to the new headquarters, freeing up a number of spaces that will be able to receive another use. At the time of elaboration of this brief, not all the data regarding the functional structure that will remain *in situ*, respectively the one that will be moved, are known. **Starting from these premises, the competitors will deal in the competition phase only with the aspects that concern the current situation, respectively the scenario in which the existing medical functions remain *in situ* until 2030 (estimated).**

Period	Context &requirements
2020 – 2030	**Context** Existing functions remain *in situ* until the completion of the Cluj-Napoca Regional Emergency Hospital (estimated completion date 2030)
	Requirements Based on the analyses made by the competitors, the proposal will present, at a conceptual level, a functional urban layout for the Complex, aimed at solving the malfunctions identified. It will tackle at least the following aspects: • **Organizing car and pedestrian traffic inside the complex, as well as the access on site.**One should consider the restoration of the historical routes, where possible, respectively the proposal of new pedestrian routes, which will facilitate the connection of all the existing functions and the integration of the contemporary interventions. At the same time, proposals will be made for organizing the parking spaces inside the enclosure, taking into

Period	Context &requirements
	account the contribution of parking places resulting from the underground parking within the framework of the ComprehensiveTransplant Centre. As it is a site located in the central area, which has a high degree of accessibility, it will minimize the number of parking lots on the ground, in favour of judicious organization of car routes and favouring pedestrian routes. • **Landscaping proposal for the park between terraces two and three**. It was initially built on a system of four slopes, inside which alleys were arranged. The current state of the park, correlated with the contemporary volumetric interventions inside the complex, makes it almost impassable. Considering that the park belongs to the plot that is the subject of the competition, the landscaping proposal will be closely linked to the volumetric and functional solution proposed for the ComprehensiveTransplant Centre.

Table5 Requirements for the University Hospital Complex

3.2.2. VOLUME INTEGRATION IN THE EXISTING CONSTRUCTED TISSUE

The proposed volume will mediate both the relationship with the University Hospital Complex and with the heterogeneous built front of Victor Babes street. At the same time, being a plot on the corner, the volume will become an end of perspective in relation to B.P. Hașdeu Street, but also from the intersection of Victor Babeș, Neagră and Aleea Studenților streets. From a stylistic point of view, the volume will have a contemporary aspect and will express the nature of the program. It is forbidden to make architectural copies or to imitate historical styles. The materials used will be of good quality, in accordance with the program and the architecture of the building.

The competition brief **does NOT impose any requirements regarding the height or the withdrawals from the alignment**, as these will be detailed and justified by each individual proposal. However, special attention will be paid to the position of the building on site, as well as to the resulting spaces and their nature: public, half public and private spaces.

When placing the volume on the plot, the competitors will also take into account the fact that about half of the surface of the plot falls under the UTR ZCP_Vt, thus having a construction ban - this is the park that connects terraces two and three of the University Hospital Complex. Starting from these premises, the volume will

judiciously use the remaining land area, strengthening the relationship with the park and limiting any residual spaces.

3.2.3. INTERLINKING WITH THE EXISTING STRUCTURE ON THE PLOT

Taking into account the fact that at the time of drafting the design brief there is no detailed technical expertise to establish the viability of the existing infrastructure on the land, the competitors:

- **will not take into account the internal piles**; the costs arising from their demolition are to be taken over in the execution phase;
- **have the freedom to choose whether or not to integrate the perimeter enclosure wall into the proposed solution.** If, following a detailed technical expertise, it proves to be unusable, the costs arising from its demolition will be taken over in the execution phase.

Depending on the solution proposed, the competitors **will have to take into account in the estimate of the design costs the need to obtain a demolition permit, based on a technical documentation for the demolition of the constructions** currently existing on the plot intended for the competition.

3.2.4. PLOT ARRANGEMENT. ACCESS ROUTES. FREE AND PLANTED SPACES

The site layout will seek to strengthen the urban nature of the intervention, through a succession of representative spaces / squares. They will have a direct relation tothe main access points dedicated to the public (patients, carers and visitors) and the medical-sanitary staff. The urban furniture will contribute to creating a coherent urban concept and user-friendly public spaces.

The access ways to the plot will be organized so as to allow the following areas to function optimally:

- **Public area:**the part of the enclosure comprised between the main access to the precinct and the main access ways to the ComprehensiveTransplant Centre, where most of external users and vehicles have access (seeSection**Error! R eference source not found.**.regarding the need for parking places);
- **Service area:**the area delimited by the accesses, circulations and platforms related to the spaces that host technical-public utility functions;

- **Recreation area for the patients**– includes the green spaces and the outdoor walkways reserved for the patients - a more direct relation between this and the vertical circulation nodes that serve the healthcare functions has to be considered;
- **Protection areas** - include planted areas for microclimate protection and other restricted areas for the protection of certain functions;

The position of the traffic nodes mentioned above will relate to the site plan proposed for the whole assembly. The traffic and pedestrian flows generated by the new investment will be integrated into the proposed traffic system. The dimensioning of the traffic alleys will be made according to the traffic (flows), the needs of parking, and the sizes of the means of transport used. The traffic alleys will be separated from the pedestrian walkways and their width will not be less than:

- 3.5m wide for those with one lane and a maximum length of 10.00 m;
- 7m for those with two lanes and a length of more than 10.00 m.

3.3. COMPREHENSIVETRANSPLANT CENTRE – SPATIAL & FUNCTIONAL REQUIREMENTS

The spatial-functional structure of the centre is determined by the four types of transplant that will be performed in this unit, namely: heart transplant, lung transplant, liver transplant and kidney transplant. The ComprehensiveTransplant Centre will have **307 beds for continuous hospitalization and 12 beds for day hospitalization**. The centre will be organized into four main departments, with the related wards and departments, to which a package of commonly used functions will be added:

- Anaesthesia and Intensive Care unit, with the wardsrelated to each pathology,
- common medical functions (operating unit, imaging, pharmacy, etc.)
- spaces dedicated to research and education;
- administrative, technical and logistical spaces.

In the organization of medical spaces and circuits, the fact that the training of students will continue within this centre should also be taken into account, thus providing for at least one amphitheatre with all the annexes necessary for conducting the courses.

Subsequent sections detail the relationships established between these functional groups both from the perspective of the number of beds allocated and the related surfaces, as well as the medical circuits necessary for the proper operation of the ComprehensiveTransplant Centre. Annexes 6.1,6.2and6.3, related to the Design brief, detail the specific space requirements and estimated usable areas for each functional group, the minimum requirements regarding the patient accommodation structure and provide information on the maximum occupancy level of the building with people. Annex 1.2 - CIT CJ - Summary of surfaces &staff, part of the competition documentation made available to the competitors, includes a list offunctions for each of the major functional groups, indicating both the interlinking of spaces and an estimate of the minimum surfaces.

Competitors have the freedom to propose the**optimization[8]of the minimum usable areas indicated by the design brief and its annexes**,in order to achieve an optimal ratio between the gross floor area and the number of beds, located around the value of **100m^{2}Gross Floor Area / bed.**At the same time, to the extent that they consider it necessary/possible, **the competitors may add to the list of minimum spaces defined by the design theme other complementary spaces / functions that can contribute to the creation of an innovative space, centred around the patient's needs.**

The need for **parking places** was estimated according to the provisions of the General Urban Planning Regulation, respectively one parking place for every four persons employed, with an increase of 10%. Based on the brief data made available by the beneficiary, a total number of **738 employees resulted for the ComprehensiveTransplant Centre**. Given the ultra-central positioning of the investment, it is required to create at least 200 underground parking spaces and reduce the overgroundparking spaces as much as possible.

The ComprehensiveTransplant Centre will be provided with a **heliport**, served by SMURD helicopters. It will be located on the roof of the hospital and will be in direct connection with the operating block. It is expected that the heliport will also be used by the other departments of the Cluj County Clinical Hospital, until their transfer to the Regional Emergency Hospital located in Florești. Competitors will decide how to

[8]The area optimization proposals will comply with the requirements imposed by the legal framework in force.

place the heliport, referring to the proposed volumetric solution and the constraints imposed by the location and the legal framework in force.

3.3.1. PROPOSED FUNCTIONAL STRUCTURE

Department	Number of beds	Estimated usable area[9] (m^2)
RENAL TRANSPLANT AND UROLOGY DEPARTMENT	85beds	3,831 m^2
Urology Division I (includes 5 beds for children)	35 beds	1,155 m^2
Urology Division II	50 beds	1,926 m^2
of which Renal Transplant Ward	10 beds	457 m^2
of which Nephrology Ward	10 beds	474 m^2
Dialysis Division	4 beds	358 m^2
Day Hospitalization Division	8beds	392 m^2
PULMONOLOGY & PHTHISIOLOGY AND THORACIC SURGERY DEPARTMENT	67beds	2,255 m^2
Pulmonology & Phthisiology Division	40 beds	1,219 m^2
Thoracic Surgery Division	27 beds	1,036 m^2
CARDIAC SURGERY AND HEART TRANSPLANT DEPARTMENT	40 beds	1,993 m^2
Cardiovascular Surgery Division (5 beds for children)	20 beds	926 m^2
Transplant Division	5 beds	480 m^2
Interventional Cardiology Division	15 beds	487 m^2
GASTROENTEROLOGYAND LIVERTRANSPLANT DEPARTMENT	70 beds	2,337 m^2
Gastroenterology Division I	40 beds	1,216 m^2
Gastroenterology Division II and Liver Transplant	30 beds	1,121 m^2
ANAESTHESIA & INTENSIVE CARE UNIT	45 beds	2,645 m^2
AIC Wardfor Kidney Transplant and Urology (6 beds for kidney transplant)	16 beds	960 m^2
AIC Ward for Pulmonology & Phthisiology and Thoracic Surgery	9 beds	545 m^2
AIC Ward for Cardiac Surgery and Heart Transplant	10 beds	570 m^2
AIC Ward for Gastroenterology and Liver	10 beds	570 m^2

[9]The estimated usable area does not include the spaces allocated to circulations.

Department	Number of beds	Estimated usable area[9] (m^2)
Transplant		
COMMON MEDICAL SERVICES	-	6,472 m^2
Access area / Office of admissions - discharges	-	535 m^2
Integrated outpatient clinic	-	340 m^2
EmergencyDepartment (CPU)	-	370 m^2
Imaging / Radiology Department	-	545 m^2
Operating rooms	-	2,254 m^2
Sterilization	-	188 m^2
Pharmacy	-	335 m^2
Laboratory	-	620 m^2
Transfusion unit	-	250 m^2
Pathological Anatomy	-	450 m^2
Research and Education	-	585 m^2
TECHNICAL&ADMINISTRATIVE SPACES	-	8,490 m^2
Dietary services (kitchen & cafeteria units)	-	1,269 m^2
Technical & Logistics unit	-	2,394 m^2
Laundry	-	327 m^2
Administrative unit	-	650 m^2
Chapel	-	50 m^2
Heliport		500 m^2
Underground parking (200 places)	-	3,300 m^2
NUMBER OF BEDS / CONTINUOUS HOSPITALIZATION	307beds	28,023 m^2
NUMBER OF BEDS / DAY HOSPITALIZATION	12 beds	

Table6 Correlation of the proposed functional structure with the number of beds and the estimated usable area

3.3.2. ESTIMATED GROSS FLOOR AREA

The estimate of the gross floor area was made starting from the usable area, according to the table below:

Usable area (estimated)	28,023 m^2
Circulations - area (estimated) ($A_{traffic}$ = 20% x A_{useful})	5,605 m^2
Gross floor area (estimated) A_{TB} = 120% x ($A_{traffic}$ + A_{useful})	40,354 m^2
Gross floor area (estimated) / per each hospital bed	131 m^2/bed
Land area	15,040 m^2

(of which approximately7,230 m^2non-buildable, falling under UTR ZCP_Vt)

Table7 Estimated gross floor area

3.3.3. MEDICAL CIRCUITS

The proposal will integrate the appropriate technical and spatial organization solutions to ensure the correct resolution of the medical circuits mentioned in the table below, in compliance with all the legal provisions in force.

	Circuits
1	**The patient's circuit**
	It is the circuit followed by the patient from the time of admission to hospital until the time of discharge. The patient's circuit will not intersect with the circuit of medical instruments, linen, food or waste.
2	**The circuit of the medical-sanitary staff**
	It is the circuit followed by the medical-sanitary staff (qualified and unqualified medical staff) from the moment of entering the hospital until leaving it. In defining the circuit of the medical-sanitary staff, all the necessary filters will be interposed to reduce the epidemiological risk. The circuit of the medical-sanitary staff will not intersect with the circuit of the linen, the food or the waste.
3	**The circuit of visitors and companions**
	The circuit of visitors and companions brings with it an increased epidemiological potential. In order to limit the risk of exposure, the circuit will be shaped according to the requirements of each section, with the provision of access filters, respectively limiting the access of visitors and companions in certain areas.
4	**The circuit of students**
	It is the circuit followed by medical students from the moment they enter the hospital until they leave the hospital. In defining the student circuit, all the necessary filters will be interposed to reduce the epidemiological risk. The student circuit will not intersect with the linen, food or waste circuit and will be limited only to the areas dedicated to conducting academic activities.
5	**The circuit of deceased persons**
	It is the circuit followed by the deceased persons from the registration of death to their taking over by the family through an authorized funeral service. After the death is ascertained, the corpse is transported to the morgue and deposited in the mortuary refrigerator / cold room. After performing all the necessary procedures (autopsy), the body is released to the family. The circuit of deceased persons will not

	Circuits
	intersect with the rest of the medical circuits and will be a circuit without return.
6	**The circuit of medical instruments**
	It is the circuit followed by the medical instruments inside the central sterilization unit, respectively from the central sterilization unit at the point of use and back in the sterilization area. The proposed solutions will ensure a separation between the circuit followed by the sterile instruments / materials and the non-sterile / used ones. **The central sterilization unit**will have a closed circuit for people, with single access from the general circulations of the hospital.If the central sterilization unit is attached to the operating unit, it may still have an internal communication with its circulations (through the door in the "neutral" area and through the counter in the "clean" area of the unit. Within the sterilization unit, the spaces are divided and placed in the flow so as to provide separate circuits for the sterile instruments and materials, as follows: a. **the activity area with non-sterile materials**, including the spaces for reception, temporary storage, sorting, primary processing, introduction into the sterilization device or chamber; b. the actual sterilization zone or "hot zone"; c. **the activity area with sterile materials**, including the spaces for removal from the hot and cooling zone, sorting, inscription, storage, delivery; d. **the sector of common annexes**: office of records, deposit of detergents and talc (as applicable), locker room and restroom with shower for the staff.
7	**The circuit of the operating unit**
	The operating unit will have: • Direct connection with the anaesthesia - intensive care unit and with the central sterilization area. • Easy links provided with the emergency department, radiology and functional exploration services, the anatomical pathology laboratory and the hospital wards. From the point of view of hygienic-sanitary conditions, the operating unit is part of the clean area of the hospital. It is addressed only to hospitalized patients and has severe hygiene and asepsis requirements. It can be sectored, by separating into **septic and aseptic units**, with differentiated treatment of the operating rooms and the medical annexes regarding the aseptic measures. The layout of the spaces and the organization of the circuits inside the operating unit will be done gradually, while observing the asepsis requirements, including the following areas: • **Neutral area** (common hygienic-sanitary conditions for the sanitary sector): the

	Circuits

area of the access filters and the area of the secondary functions (operating protocol, transfusion point, laboratory for emergency determinations, etc.)

- **Clean area** (special hygiene conditions): room for preparing patients, waking room, working space for doctors, etc.
- **Aseptic area**: operating room, washing room and sterile equipment of the operating team, etc.

Inside the operating unit the following circuits will be solved:

i. Circuit of persons;
ii. Circuit of medical and surgical instruments;
iii. Soft material circuit;
iv. Circuit of biological products for EHP;
v. Waste circuit;
vi. Supply circuit;
vii. Fire prevention and extinguishing circuit.

8 The food circuit

The food circuit includes the food block, the mode of distribution and transport of the prepared food, the food rooms on the wards and the mode of serving the patients' table. The proposed solutions for transporting food from the food block to the food rooms on the wards will ensure a separate circuit, which does not intersect with the rest of the functional circuits.

9 The linen circuit

The linen circuit includes the routes generated by the transport, storage and collection of clean and dirty linen. It includes all the spaces necessary to ensure such flow, both at the level of the wards and at the level of the laundry of the medical unit.

Hospital linen[10]is the totality of the textile articles used in the medical unit and includes: sheets, pillow girls, medical staff uniforms, towels, pyjamas, patients clothing, etc. It is classified into:

- **dirty linen**represents all of the linen items and includes both unpainted dirty linen (dirty linen from inpatients) and contaminated linen (linen that came in contact with blood and/or other biological fluids);
- **clean linen**is the linen that has gone through all the stages of the washing, drying, ironing process and has no dirt, visible spots and has undergone a thermal or chemical disinfection process.

[10]*According to the*provisions of Order no. 1.025 / 2000 approving the Rules regarding the laundry services for medical units.

	Circuits

The storage of the linenwithin the wards is done in a separate space for clean linen, respectively dirty linen, in which patients and visitors will not have access. The solutions proposed for the transport of linen between the hospital sections and the laundry area will ensure the separation of the clean linen circuit from the dirty one.

10	**The waste circuit**

The waste circuit includes, from a sanitary point of view, the measures that are taken to avoid contamination of the external environment by ensuring their proper collection and disposal. The waste is classified into[11]:

- **Non-hazardous waste:**it is the waste whose composition and properties do not pose a danger to human health and the environment;
- **Dangerous waste:**
  - **anatomical-pathological waste**: they contain human fragments and organs, including blood vessels and preserved blood;
  - **infectious waste**is waste that has dangerous properties, namely substances and preparations containing viable microorganisms or toxins thereof, which are known to cause disease in humans or other living organisms;
  - **stinging-cutting waste** are sharp objects that can cause mechanical injury by pricking or cutting; these wastes are considered infectious / hazardous wastes if they have been in contact with biological fluids or dangerous substances;
  - **chemical and pharmaceutical waste**: are solid, liquid or gaseous chemicals that can be toxic, corrosive or flammable; expired drugs and residues of chemotherapeutic substances, which may be cytotoxic, genotoxic, mutagenic, teratogenic or carcinogenic.

The collection, separation by categories, packaging and labelling of waste will be done as close to the place of their production.

The temporary storage will be made according to the categories of waste collected at the place of production. The duration of the temporary storage will be as short as possible and the storage conditions will comply with the hygiene rules in force. For hazardous waste, the duration of the temporary storage should not exceed 72 hours, of which 48 hours within the unit and 24 hours for transport and final disposal.

[11]according to the provisions of Annex 1 of Order no. 1.226/2012 for the approval of the Technical Norms regarding the management of waste resulting from medical activities and of the Methodology of data collection for the national database on waste resulting from medical activities.

Circuits
The central waste storage area will have two compartments: • **a compartment for hazardous waste**, provided with a closure device that allows only the access of authorized persons; • **a compartment for non-hazardous waste**, arranged according to the Hygiene norms and recommendations regarding the living environment of the population, approved by the Order of the Minister of Health no. 536/1997, as subsequently amended and supplemented. **The conditions of the central storage space for hazardous waste**must allow the temporary storage of the amount of hazardous waste accumulated in the interval between two successive removals. Space will be provided with: • floor drain for drainage of wastewater resulting from cleaning and disinfection in the sewerage network. • adequate ventilation to ensure low temperatures that do not allow the decomposition of organic material from the composition of hazardous waste. **The transport of hazardous waste** within the sanitary unit will be done on a separate circuit, which will not intersect with the patients or visitors and attendants.

Table8 Medical circuits – minimum requirements

3.3.4. SPECIFIC REQUIREMENTS REGARDING MEDICAL CIRCUITS AND FUNCTIONAL RELATIONSHIPS

Following the discussions with the medical staff that will serve the ComprehensiveTransplant Centre, the following specific requirements regarding the medical circuits and the functional relationships were outlined:

- Each department will be served by a reception area that will represent the interface between the medical care area and the public area (relatives/visitor, other persons), also controlling the manner in which the public can access medical wards within the department;
- All departments will have an access filter for visitors / relatives, aiming to limit their access within department to the areas specially arranged for the visit.
- Academic activities will take place within the ComprehensiveTransplant Centre. The necessary spaces will be provided for carrying out the educational activity as well as the circuits necessary for the students to move through the building. The building will be provided with an amphitheatre that can accommodate at least 50

people and the students will also have access to the research and development area (in the research offices / laboratories).

- The RenalTransplant and Nephrology wards, part of the Urology Division II, will have separate medical circuits from those of the Urology Division II;
- The Dialysis Division within the Department of Urology and RenalTransplant will be located in the immediate vicinity of the Anaesthesia and Intensive Care Unit or will have a direct connection with it.
- The day hospitalization division within the Department of Urology and RenalTransplant will be located in the integrated outpatient area.
- **Anaesthesia and Intensive Care Unit**:
  - The accommodation structure and the related medical functions will be grouped into four wards, correlated with the activity of the four departments.
  - Within each ward, the accommodation structure of the patients will be organized both in an **open – space system** (of four beds grouped around a monitoring station), as well as with**side-rooms and isolation rooms for one person**. Individual monitoring stations will be provided for side-rooms and isolation rooms. Depending on the proposed planimetric solution, the monitoring stations can be grouped to serve more side-rooms.
  - The access filter of the medical staff will be a common one for the entire department.
- **Operating unit:**
  - The operating rooms and their related functions will be grouped to ensure the most efficient operation, both from the point of view of the medical circuits and of the subsidiary functions.
  - The access filter of the medical staff will be a common one for the entire operating unit.
  - Between the operating unit and the departmentsof the ComprehensiveTransplant Centre there will be a closed circuit, accessible only to medical staff and, implicitly, to patients undergoing surgery.
  - There will be a direct connection between the operating unit and the Anaesthesia - Intensive Care Unit.

3.4. TECHNICAL REQUIREMENTS

3.4.1. CHARACTERISTICS OF THE PROPOSED CONSTRUCTION

According to the anti-seismic design norm - Part I - "Design provisions for buildings", indicative P 100-1 / 2013, the building falls into **class I of importance**.

The degree of fire resistance and the category of importance of the building will be established in the subsequent stages of the solution competition, according to the regulations in force.

3.4.2. PUBLIC UTILITY EQUIPMENT OF THE BUILDING

It is proposed to equip the building with the following types of facilities:

- **Sanitary and sewerage facilities**adapted to the different types of functions (according to the national and international standards in force):
    - Usual sanitary and sewerage facilities;
    - sterile water installations;
    - fire extinguishing systems: indoor and outdoor hydrants, extinguishing system with sprinklers;

- **ventilation and air conditioning systems**adapted to the different types of functions and their specificity (according to the national and international standards in force):
    - air conditioning systems (heating or cooling);
    - ventilation installations;
    - smoke exhaust installations.

- **electrical installations of strong currents** adapted to the different types of functions and their specificities (according to the national and international standards in force)
    - TE on departments and rooms where appropriate (e.g. operating unit)
    - PUS system;
    - platform for electric generators;
    - transformer station
    - ground fault network;

- **electrical installations of low currents** adapted to the different types of functions and their specificities (according to the national and international standards in force):
    - assistant alarm system;
    - voice-data system;
    - access control systems;
    - video surveillance systems;
    - audio system for each room;
    - fire detection and alarm system;
    - Building Management System.

- **medical gas installations** adapted to the different types of functions and their specificities (according to the national and international standards in force):
    - medical oxygen;
    - medical compressed air - 4 bar;
    - medical vacuum;
    - argon;
    - medical carbon dioxide.
- **pneumatic mail system.**

3.4.3. ENERGY EFFICIENCY

In defining the proposed technical solutions, the increase of the energy efficiency of the building will have to be considered. Thus, the covering of the heated spaces will be, as far as possible, continuous, reducing the thermal bridges as much as possible and passive solutions will be proposed that can contribute to the reduction of energy consumption. (shading systems to avoid overheating, naturally lit spaces to reduce the energy consumption of artificial lighting, thermal mass for energy retention and storage, etc.).

The entire transplant centre will be equipped with a system of automation, monitoring and control of the facilities, in order to make their operation more efficient and to reduce the consumption or maintenance costs. At the same time, it is proposed to use systems for the production of energy from renewable sources, capable of covering at least 10% of the primary energy needs. Renewable energy production systems will be subject to a technical-economic analysis, during the elaboration of the feasibility study, to verify their efficiency. As a result, for the solutions

competition, the participants are invited to propose such systems, but in the later stages of project detailing, the proposed systems will only be implemented if they prove their technical-economic efficiency over a 60-year life of the building.

3.4.4. PROJECT SUSTAINABILITY

The Contracting Authority will certify the design and implementation process of the ComprehensiveTransplant Centre, using the BREEAM (Building Research Establishment's Environmental Assessment Method) International New Construction standard, aiming to achieve the Excellent level. In this regard, the Contracting Authority has hired a consultant and an evaluator, who will assist the design and execution teams until the reception of the building, verifying the evolution of the project, carrying out studies to substantiate the solution, offering tips for improving the project and implementing the BREEAM standard requirements.

In order to be able to estimate the cost of the design correctly, we inform the participants that during the elaboration of the feasibility study, in collaboration with the design team, at the optimal times established in agreement with the design team, the Contracting Authority will carry out the following investigations, at its own expense:

- **energy modelling** to verify whether the building will have a primary energy consumption below 69 kWh/sqm/year, as well as the effect of passive solutions implemented
- **the technical and economic feasibility of the implementation** of the renewable energy sources proposed by the design team
- **the cost-benefit analysis** will analyse 2 different construction systems both in terms of cost for the execution of the building and for the operation of the building for a minimum period of 60 years, taking into account the possible costs of repair, maintenance or replacement.

Based on the feasibility study, the Contracting Authority will carry out, at its own expense, the investigations below, whose conclusions and recommendations will be implemented in the stage of carrying out the technical project:

- analysis of natural lighting;
- analysis of thermal comfort;
- acoustic study;

3.4.5. SPECIFIC REQUIREMENTS FOR DIFFERENT TYPES OF SPACES

In order to dimension, equip and use the different functions of the ComprehensiveTransplant Centre, the national and international standards in force, as well as the minimum requirements detailed below, will be observed for each type of space:

Space	Requirements
Wards and side-rooms	
Volumetric requirements	• the minimum height of the wards will be 2.80m;
Lighting	• they will benefit from natural lighting, with an adequate orientation in relation to the cardinal points; • an automated, economic artificial lighting with a colour intensity specific to the medical space will be provided;
Finishes/Furniture	• they will be equipped with electric beds and bedside cabinets with folding table; • the beds will be placed parallel to the front of the window; • the distances between the beds will be at least 80cm and the distance between the bed and the outside wall will be at least 80cm; • the restrooms will be equipped with easy-to-maintain sanitary objects, with special accessories for patient support.
Installations	• **low current networks:**assistant alarm system, voice-data system, fire alarm system, telemedicine system, video surveillance systems where appropriate, audio systems; • **HVAC system**specific to the medical space and the patient's needs; • **medical gas network** with the following types of gases: compressed air, vacuum and oxygen; • backup electrical network;
Anaesthesia and Intensive Care wards and side-rooms	
Lighting	• five types of lighting will be proposed for the artificial lighting system: o LED lighting for direct examination of patients mounted on the ceiling; o Directional LED lighting for examination mounted near the bed or incubator;

Space	Requirements
	○ LED lighting for visitors - mounted on the ceiling or wall, directed to the seating area; ○ ambient LED type lighting with indirect light, mounted on walls or ceilings; ○ lighting for interventions with 3000K colour temperature).
Finishes / Furniture	• the floors will be sound absorbent floors; • the doors will open automatically, they will be equipped with a window that will be equipped with a shutter system A - cleaning class ISO8;
Installations	• **medical gas network**with the following types of gases: iNO, carbon dioxide, helium, protoxide, oxygen, medical air, vacuum; • **monitoring and alarm systems** on all circulations, with monitors for vital signs in all corners, IP telephony, teleICU, tele surveillance system, video calling system, ICCA computer system; • a**computer** will be provided**–with a barcode reader integrated** into the operating and archiving system for each patient and a cabinet with consumables for each room.
Cabinets, offices and spaces dedicated to medical staff	
Lighting	• they will benefit from natural lighting, with an adequate orientation in relation to the cardinal points; • an automated, economic artificial lighting with a colour intensity specific to the medical space will be provided;
Finishes / Furniture	• they will be equipped with washbasin connected to the usual water and sewerage network;
Installations	• **low current networks:**central surveillance system where appropriate, voice-data system, fire alarm system, telemedicine system, video surveillance systems where appropriate, audio systems; • **HVAC system**specific to the medical space and the needs of the respective space; • backup electrical network;
Treatment and intervention rooms	
Lighting	• an automated, economic artificial lighting with a colour intensity specific to the medical space will be provided;
Finishes / Furniture	• they will be equipped with a medical washer with sterile water

Space	Requirements
	or a washbasin connected to the usual water and sewerage network, depending on the specificity of the room.
Installations	• **medical gas network**with the following types of gases: compressed air, vacuum and oxygen; • **low current networks**: voice-data system, fire alarm system, telemedicine system, video surveillance systems where appropriate, audio systems; • **HVAC system**specific to the medical space and the needs of the respective space; • backup electrical network;
Operating rooms	
Volumetric requirements	The minimum height of the operating rooms will be 3.00m;
Categories	The proposed operating rooms are of two types: septic and aseptic. The septic ones will be separated from the aseptic ones by a filter - ensuring the supplies of materials and the access of the patients or of the medical staff. The following categories of operating rooms will be provided: • operating rooms of risk class B - ISO5 equivalent; • operating rooms of risk class C - ISO7 equivalent.
Installations	The following types of**medical gases** shall be provided: • medical oxygen; • medical compressed air - 4 bar • medical vacuum; • argon; • medical carbon dioxide. The following additional protective measures will be taken for**electrical power supply to consumers**: • automatic power outage; • establishing equipotential links; • limitation of the touch voltage; • use of high sensitivity differential devices; • high sensitivity IT scheme power supply; • individual electrical separation. The following**low current installations** will be provided: • electrical access monitoring and control installations; • door automation installations;

Space	Requirements
	• structured cabling / surveillance, TV and voice data facilities; • assistant alarm installations; • telemedicine system; • fire alarm electrical installations. **The ventilation and air conditioning equipment** will be of a decentralized type in order to limit contamination and the high degree of redundancy. It is recommended to use the ceiling-type filter system to ensure the dry treatment of the air temperature in the rooms. The operating rooms will be equipped with laminar flow air conditioning equipment, including HEPA filtration, individually for each room. The entire ventilation and air conditioning system will be automated.
Pharmacy	
Pharmaceutical materials are stored in the central pharmacy and on different sections, using centralized, robotic systems. Distribution from the central pharmacy to the departments will be done through a pneumatic mail system.	
Laboratory	
Distribution from the central laboratory to the departments will be done through a pneumatic mail system. Small niches with rapid analysis equipment will be installed in the departments with urgent needs.	
Sterilization	
Clean and dirty access circuits will be separated. The transport will be done by carts.	

Table9 Requirements for equipping different spaces – summary

3.4.6. VERTICAL AND HORIZONTAL CIRCULATIONS

The areas includedin the design brief**do NOT include**the areas allocated to the vertical and horizontal circulations. They will be judiciously sized and grouped, reducing as much as possible their weight relative to the total area of the building. The streamlining of the area used by the two types of circulations and the reaction time will have to be considered.

The vertical circulations will be grouped in traffic nodes, sized according to the standards and legislation in force (including the evacuation in case of fire). The vertical traffic nodes will be dimensioned so as to allow access by stretcher, both in the elevator area and on the escape stairs.

Horizontal circulations will be at least 2.20m wide. Where monitoring stations are required to be positioned on the circulation routes, they will have a width of at least 2.80m. The minimum height will be 2.40m.

The main networks of installations will be located along the horizontal circulation routes. If they do not have natural ventilation, they will be equipped with a smoke exhaust system.

3.4.7. FINISHES

The interior finishes will be chosen in such a way as to comply with the standards and legislation in force, in particular Order 914/2006 approving the rules regarding the conditions that a hospital must meet in order to obtain the sanitary authorization for operation.

The finishes of the hospital rooms where the patients stay or move or where medical activities are carried out will be:

- washable;
- resistant to disinfectants;
- resistant to radioactive decontamination (as appropriate);
- have no asperities to retain dust;
- bactericide (in aseptic spaces);
- non-generating fibres or particles that could remain suspended in the air;
- resistant to the action of acids (in laboratories and treatment rooms).

It is forbidden to use finishing materials that by their composition or by the way of application can favour the development of parasitic organisms (arthropods, mites, moulds) or of harmful substances that can endanger human health.

3.5. FINANCIAL FEASIBILITY OF THE PROPOSALS

The estimation of the total value of investments was made starting from the cost indicators adopted in the feasibility study carried out by the Ministry of Health for the Cluj Emergency Regional Hospital, by comparing them to an average value / built sqm. The calculation was made by rounding up the estimated built area, from 40,354 sqm to **40,500 sqm**. The values expressed are in euros, excluding VAT.

Estimated Gross Floor Area 40,500sqm	**Estimated price** (euro / sqm)	**Total** (euro, exclusive of VAT)
Total investment value	**2.770**	**112.185.000**
Total value C+M	1.660	67.230.000
(expenses for landscaping, expenses for providing the utilities necessary for the objective, expenses for the basic investment and site organization)		
C + M percentage of the total investment value		59.93%
Expenditure on design and technical assistance	**156**	**6.318.000**
of which costs ofthe design team	***105***	***4.252.500***
Percentage of total investment value		5.63%
Percentage of C + M		9.40%

Table10 Total investment value - estimate

4. COMPETITION-RELATED DELIVERABLES

4.1. TECHNICAL PROPOSAL

The projects will be presented on a **maximum of5 (five)sheets, size A0 - 841 x 1189 mm**, vertically paged (portrait), unobstructed on a rigid support. The sheets will include the following parts:

Board	Objectives / Minimum requirements for written and drawn pieces	
Board 1	It presents the general design concept proposed for the University Hospital Complex and details the proposal to arrange the park between the second and third terraces.	
	Written and drawn parts	**Scale**
	• 1 siteplan for the whole complex, integrating the proposal for the new ComprehensiveTransplant Centre;	1:1000

	• 1 siteplan of the plot that is the object of the competition detailing;
	  ○ The accesses, the card and pedestrian traffic flows, the relationship of the newvolume with the neighbouring streets and the park, landscaping proposals for the public, semi-public and / or private spaces;
	  ○ The plan will include a proposal for landscaping the park between the second and third terrace.
		1:500

	• 1 cross-section through the park that captures the relationship between the terrace II and III of the University Hospital Complex;	1:500
	• 1 relevant external perspective (aerial or at eye level), presenting the landscaping proposal for the park and its relationship with the Comprehensive Transplant Centre;	graphics
	• Sketches, functional / volumetric schemes, collages, renderings and/or suggestive proposals highlighting the proposed solution (traffic flows, landscaping details, etc.)	graphics
	• Explanatory text - maximum 500 words.	graphics
Board 2 **Board 3**	It details the proposal regarding the ComprehensiveTransplant Centre: its position on the plot, the volumetric concept and the spatial-functional organization.	

Board	Objectives / Minimum requirements for written and drawn pieces	
	Written and drawn parts	**Scale**
	• Plans of all levels, with chromatic coding of the main functional groups;	1:500
	• Schematic presentation, in axonometry, of the organization of the medical circuits, chromatically coded;	Graphic
	• 1 cross-section through the newvolume;	1:500
	• 1 longitudinal section through the proposed volume (at least one of the sections will capture the relationship between the newvolume and the main access on the plot // at least one of the sections will capture the relationship of the building with Aleea Studenților).	1:500
	• 1 exterior perspective at the eye level from Victor Babeș street (preferably from the crossroad Victor Babeș xAleea Studenților);	Graphics
	• 1 facade to choose from: the facade of Victor Babeș street (eastern), the facade related to Aleea Studenților (southern) and the visible facade from the park (western / north-western);	1:500
	• Sketches, functional / volumetric schemes, collages, renderings and/or suggestive proposals that highlight the proposed solution;	graphics
	• Detailing the innovative elements and the proposed energy concept;	graphics
	• Explanatory text - maximum 500 words.	graphics
	• Summary of the areas allocated to the main functional groups, in the form of a table, according to the structure presented in Annex 2.8 – Area estimate.The table will also include new functional groups inserted by competitors, where appropriate.	graphics
Board 4 **Board 5**	It details the access area, the reception and the integrated outpatient unitand the area dedicated to the operating unit.	
	Written and drawn parts	**Scale**
	• **Excerpt from the ground floor plan detailing the access area in the building**, with all the adjacent functions and the integrated outpatient unit. The plan will also capture the relation of the access area with	1:100

Board	Objectives / Minimum requirements for written and drawn pieces	
	the external space and its layout.	
	• 1 relevant section of the access area;	1:100
	• 1 external perspective from the access area, at the eye level;	Graphics
	• 1 interior perspective from the access area, at the eye level.	Graphics
	• **Extract from the plan of the level (or levels) in which the operating unit is located**, with the chromatic coding of the main functional groups. Depending on the solution chosen, the plan will also highlight the relationship of the operating unit with the Anaesthesia and Intensive Care area and the sterilization area (if applicable);	1:100
	• 1 relevant section through the operating unit;	1:100
	• Schematic presentation, in axonometry or in plan, of the w medical circuits, inside the operating unit, with a chromatic coding thereof;	Graphics
	• Details of the innovative elements proposed: sketches, functional / volumetric schemes, collages, renderings and/or suggestive proposals that highlight the proposed solution;	Graphics
	• 1 exterior perspective at eye level from the intersection of B.P. Hașdeu Street with Aleea Studenților;	Graphics
	• Explanatory text - maximum 500 words.	Graphics

Table11 Competition-related deliverables – minimum requirements

The boardsmay also contain other elements considered important to support the proposed solution, but not exceeding the maximum number of 5 (five) A0 formatted boards.

Competitors may submit a smaller number of boards provided the following requirements are met:

- Compliance with the minimum requirements for written and drawn pieces, detailed above;
- Structuring the information in such a way as to enable the five major themes detailed in competition to be judged in parallel:
    - Proposal for the site planof the University Hospital Complex;

- The site plan and landscaping proposal for the plot that is the subject of the competition, including the park between terraces II and III;
- Proposed functional and volumetric solution;
- Details of the access area and integrated outpatient unit;
- Details of the operating unit;

As for the general elements present on each sheet, they:

- will contain, at the top, the title: **COMPREHENSIVETRANSPLANT CENTRE CLUJ –DESIGN COMPETITION;**
- will be numbered in the lower right corner, following the format: “page no. / total pages”;
- they will have an alphanumeric identity symbol, composed of 2 letters followed by 4 digits, at the competitor's choice. The identity symbol will be inscribed on the front of each sheet, in the upper right corner, in a rectangle covered with 5x3 cm black paper, glued only on the outline, on both sides.

4.2. FINANCIAL PROPOSAL

Each project will include an estimate of the design services, filled in according to Annex 2.3 - Financial proposal. The financial proposal will have the values expressed in lei and will not exceed the maximum ceiling estimated for the design costs. The financial proposal will be part of the negotiation basis for the conclusion of the design services contract with the winner of the competition.

5. EVALUATION CRITERIA OF THE SOLUTION

The criteria underlying the evaluation of the proposed solutions are the following:

	Criterion	Maximum score
A	**Meeting the spatial, functional and technical requirements**	**70 points**
A1	**The quality of the urban intervention:**	**15points**
	The plot that is the object of the competition is located in the central area of Cluj-Napoca City, at the boundary of the University Hospital Complex, a historical monument ensemble. As it is an intervention in a protected site, the quality of the urban intervention will have a direct impact on the further development of the area. Given the complex urban context in which we operate, the solution cannot be evaluated independently, without	

	Criterion	Maximum score
	proposing a viable solution for the entire University Hospital Complex. Thus, the following aspects will be evaluated in particular: • The site plan for the whole University Hospital Complex; • The site plan and landscaping proposal for the plot that is the object of the competition (layout and site uses, the relationship between the public space and the University Hospital Complex, the relationship with the park between the terrace II and III). • The landscaping proposal for the park between terraces II and III (the diversity of the proposed green spaces, the created spatial and urban relationships).	
A2	**The functionality of the proposed solution**	**35points**
	The project aims at a complex medical function, burdened by a series of normative constraints, generated by the legal framework in force. In order to lay the groundwork for a feasible approach, it is essential that the proposed solution responds to all the spatial and functional requirements imposed by the design theme and observes the legal framework in force. Thus, in evaluating the projects, the following sub-criteria must be followed: • Integration of all the functions requested by the competition briefand the judicious use of the space; • Correctly solving medical circuits; • Innovative solutions proposed for solving and optimizing medical functions and circuits, especially for the operating unit. • Structural viability of the proposed solution;	
A3	**Energy concept**	**10 points**
	The criterion evaluates the project's ability to propose a conscious and sustainable attitude regarding energy consumption, offering viable solutions for reducing energy consumption in the medium and long term. The following aspects will be evaluated: • Proposed solutions for reducing energy losses; • Integration of renewable energy production systems into the proposed architectural complex;	
A4	**Financial offer regarding the design services**	**10 points**
	The criterion quantifies the value of the design services provided	

	Criterion	Maximum score
	by the tenderer. As it is a complex medical function, financed from public funds, it is important that the relationship between the services provided and their value is correct. • The actual cost of the design and its classification within the maximum cost estimate is a mandatory criterion. • **Failure to meet the maximum cost ceiling leads to the 0 scoring of the economic criterion.**	
B	**Expressive attributes of the intervention**	**30 points**
B1	**The plastic expressivity of the proposed volume**	**20points**
	The architectural quality of the proposed volume brings added value both to the project, as a whole and to the local community. Through a correct insertion, the project has the opportunity to render the community a central space, currently unused, while also completing a heterogeneously constructed tissue. The following aspects will be evaluated: • The potential of the solution to establish a good practice model, both in terms of relating the proposed volume to the existing constructed tissue; • The potential of the solution to establish a good practice model, both in terms of relating the proposed volume to the existing constructed tissue; • The representative / contemporary character of the proposed volume.	
B2	**The quality and atmosphere of the proposed spaces**	**10 points**
	The criterion evaluates the project's ability to generate a **space centred around the patient's needs,** using the proposed finishes and the relationships between spaces to create a therapeutic environment, capable of reducing the stress generated by the medical act. • The quality of the spaces and the visual relationships generated, including the relationship with the natural environment; • Easy orientation inside the hospital (wayfinding) and ergonomic use of the spaces, in order to create an environment that is as friendly as possible to the patient.	

Table12 Evaluation criteria of the solution

The calculation algorithm used for the final evaluation of the projects is the following:

Final score (maximum 100 points) = CriterionA Score + Criterion B

ScoreCriterionA Score (maximum70 points) = A1 + A2 + A3 + A4

Criterion B Score (maximum 30 points) = B1 + B2

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6. ANNEXES

6.1. ESTIMATED MINIMUM USABLE AREAS FOR EACH GROUP OF FUNCTIONS

6.1.1. ESTIMATEED MINIMUM USABLE AREAS FOR TRANSPLANT DEPARTMENTS

Function	Areas related to each department				
RENAL TRANSPLANT AND UROLOGY DEPARTMENT					
	Urology Division I	**Urology Division II**	**Dialysis Division**	**Day Hospitalization Division**	**Total (m^2)**
	1,175	1,986	378	392	3,931
Access area	110	150	0	20	280
Patient accommodation	530	731	63	92	1,416
Patient monitoring	80	160	40	40	320
Doctors' offices& treatment spaces	46	108	31	16	201
Spaces for medical staff	245	385	100	80	810
Food distribution unit	40	120	40	40	240
Storage spaces	124	332	104	104	664

PULMONOLY & PHTHISIOLOGY AND THORACIC SURGERY DEPARTMENT			
Function	**Pulmonology & Phthisiology**	**Thoracic surgery**	**Total**
	1,219	1,036	2,255
Access area	120	100	220
Patient accommodation	545	426	971
Patient monitoring	90	90	180
Doctors' offices& treatment spaces	46	62	108
Spaces for medical staff	254	194	448
Food distribution unit	40	40	80
Storage spaces	124	124	248

CARDIAC SURGERY AND HEART TRANSPLANT DEPARTMENT				
Function	**cardio-vascular surgery**	**Transplant Division**	**Interventional cardiology**	**Total**
	926	480	587	1,993
Access area	120	35	35	190
Patient accommodation	315	150	265	730

Function	Areas related to each department			
Patient monitoring	40	40	40	120
Doctors' offices& treatment spaces	62	31	31	124
Spaces for medical staff	225	140	140	505
Food distribution unit	40	20	20	80
Storage spaces	124	64	56	244

LIVER TRANSPLANT DEPARTMENT

Function	Gastro I	Gastro II + Transplant	Total
	1,216	1,121	2,337
Access area	120	100	220
Patient accommodation	545	530	1,075
Patient monitoring	80	80	160
Doctors' offices& treatment spaces	62	62	124
Spaces for medical staff	245	185	430
Food distribution unit	40	40	80
Storage spaces	124	124	248

ANAESTHESIA & INTENSIVE CARE UNIT

	Urology	Pulmonology & Thoracic surgery	Cardiac surgery	Gastro & Liver transplant	Total
	960	545	570	570	2,645
Access area	130	0	0	0	130
Patient accommodation	360	210	235	235	1,040
Patient monitoring	80	40	40	40	200
Doctors' offices& treatment spaces	31	31	31	31	124
Spaces for medical staff	215	120	120	120	575
Food distribution unit	40	40	40	40	160
Storage spaces	104	104	104	104	416

Table13 Minimum usable areas for transplant departments

6.1.2. MINIMUM USABLE AREAS FOR COMMON MEDICAL SERVICES

Function	Number	Area / room&related functions	Area / sqm
ACCESS AREA			535
Access area			275
Hospital admission/discharge office			260
Access filter for medical staff			270
INTEGRATED OUTPATIENT CLINIC			340
EMERGENCY DEPARTMENT (CPU)			370
Access and spaces for relatives			55
Spaces for triage, stabilization, monitoring and treatment			100
Spaces for medical staff			110
Storage spaces			105
IMAGING			545
CT, MRI, X-ray, functional scans area			325
Spaces for medical staff			130
Storage spaces			90
OPERATING UNIT			2,254
Access area			125
Transfer & preparation of patients / preoperative & postoperative			290
Operating unit			**1,509**
Room type	Number	Area / room&related functions	
Hybrid cardiac surgery operating room	**1**	**130 sqm**	
Surgery room for lung transplant / thoracic surgery	**2**	**100 sqm**	
Bronchial endoscopy room X-ray - fluoroscopy	1	30 sqm	
Minor thoracic surgery / Pulmonology	1	30 sqm	
Urological surgery room and kidney transplant	**3**	**100 sqm**	
Endoscopy / urology & kidney transplant room	1	70 sqm	
X-ray room - fluoroscopy / urology&kidney transplant	2	70 sqm	
Liver transplant surgery room	**2**	**100 sqm**	
Endoscopy room	1	70 sqm	
Laboratory of mini-invasive explorations / electrophysiology	1	127 sqm	
Interventional cardiology room for adults and children, equipped with an angiograph	1	87 sqm	
Laboratory for emergency determinations	1	20 sqm	
Spaces for medical staff			110

Function	Area / sqm
Food distribution unit	20
Storage spaces & technical spaces	200
STERILIZATION	188
Sterilization area	100
Storage spaces & technical spaces	52
Staff spaces	36
PHARMACY	335
Pharmacy spaces	75
Storage spaces & technical spaces	220
Staff spaces	40
TEST LABORATORY	620
Laboratory spaces	325
Storage spaces & technical spaces	155
Staff spaces	140
TRANSFUSION UNIT	250
Transfusion unit spaces	120
Storage spaces & technical spaces	60
Staff spaces	70
ANATOMICAL PATHOLOGY	450
Anatomical Pathology Laboratory	**285**
Laboratory spaces	110
Staff spaces	60
Storage spaces & technical spaces	115
Morgue	**165**
Morgue spaces	75
Spaces for the staff & relatives	70
Storage spaces & technical spaces	20
RESEARCH AND DEVELOPMENT	585
Spaces for lectures / clinical activity	170
Offices and workspaces	175
Laboratories and technicalspaces	240

Table14 Minimum usable areas for common medical services

6.1.3. MINIMUM USABLE AREAS FOR TECHNICAL SPACES

Function		Area / sqm
LAUNDRY		327
Laundry spaces		237
Storage spaces & technical spaces		20
Staff spaces		70
FOOD UNIT		1.269
Food unit for patients		545
Food unit for staff & relatives		724
TECHNICAL & LOGISTICS UNIT		6,194
Storage spaces		**1,379**
Staff spaces	90	
Administrative spaces	120	
Reagent deposit	110	
Medical deposit	190	
Material and equipment deposit	190	
Building maintenance materials deposit	210	
IT deposit	65	
Car deposit&repair shops	160	
Archive of medical documents		200
Technical spaces		1,009
Chapel		50
Heliport		500
Underground parking		3,300
ADMINISTRATIVE UNIT		650
Board of Directors		260
Financial Department		125
Other departments		80
IT Department		85
Procurement Department		50
Maintenance department		75
Auxiliary spaces		40

Table15 Minimum usable areas for technical spaces

6.2. PATIENT ACCOMMODATION STRUCTURE

6.2.1. CORRELATION OF THE PROPOSED FUNCTIONAL STRUCTURE WITH THE PATIENT ACCOMMODATION STRUCTURE

Department	Number of beds	Patient accommodation structure						
		Patient rooms& side-rooms			Anaesthesia & Intensive care			Total beds
		Patient roomswith two beds/ adults	Side-rooms with 1 bed/ adults	Side-rooms with 1 bed/ children	Beds in open space system	Side-rooms with 1 bed	Side-rooms with 1 bed/ isolating room	
RENAL TRANSPLANT & UROLOGY DEPARTMENT	**85**	**27**	**24**	**7**	**0**	**0**	**0**	**85**
Urology I Division ((includes 5 beds for children)	35	10	10	5				35
Urology II Division	30	10	10	0				30
Kidney transplant ward within the Urology II Division	10	4	1	1				10
Nephrology ward within the Urology II Division	10	3	3	1				10
Day Hospitalization Division	8	4	0	0				8
Dialysis Division	4	1	2	0				4
PULMONOLOGY & PHTHISIOLOGY AND THORACIC SURGERY DEPARTMENT	**67**	**25**	**17**	**0**	**0**	**0**	**0**	**67**
Pulmonology & Phthisiology Division	40	15	10	0				40
Thoracic Surgery Division	27	10	7	0				27

Department	Number of beds	Patient accommodation structure						
		Patient rooms& side-rooms			Anaesthesia & Intensive care			Total beds
		Patient roomswith two beds/ adults	Side-rooms with 1 bed/ adults	Side-rooms with 1 bed/ children	Beds in open space system	Side-rooms with 1 bed	Side-rooms with 1 bed/ isolating room	
CARDIAC SURGERY AND HEART TRANSPLANT DEPARTMENT	**40**	**10**	**15**	**5**	**0**	**0**	**0**	**40**
Cardio-vascular surgery Division (includes 5 beds for children)	20	5	5	5				20
TransplantDivision	5	0	5	0				5
Interventional cardiology Division	15	5	5	0				15
GASTROENTEROLOGY &LIVER TRANSPLANT DEPARTMENT	**70**	**25**	**20**	**0**	**0**	**0**	**0**	**70**
Gastroenterology Division	40	15	10	0	0	0	0	40
Liver transplant Division	30	10	10	0	0	0	0	30
ANAESTHESIA & INTENSIVE CARE UNIT	**45**	**0**	**0**	**0**	**20**	**17**	**8**	**45**
AIC Division for Kidney transplant and urology (6 beds for kidney transplant)	16				8	6	2	16
AIC Division for Pulmonology & Phthisiology and thoracic surgery	9				4	3	2	9
AIC Division for Cardiac surgery and heart transplant	10				4	4	2	10

Department	Number of beds	Patient accommodation structure						
		Patient rooms& side-rooms			Anaesthesia & Intensive care			Total beds
		Patient roomswith two beds/ adults	Side-rooms with 1 bed/ adults	Side-rooms with 1 bed/ children	Beds in open space system	Side-rooms with 1 bed	Side-rooms with 1 bed/ isolating room	
AIC Division for Gastroenterology and liver transplant	10				4	4	2	10
TOTAL NUMBER OF BEDS / CONTINUOUS HOSPITALIZATION	**307**	**87**	**76**	**12**	**20**	**17**	**8**	**307**
TOTAL NUMBER OF BEDS / DAY HOSPITALIZATION	**12**	**5**	**2**	**0**	**0**	**0**	**0**	**12**

Table**16**Patient accommodation structure – correlation with the functional structure

6.3. MAXIMUM OCCUPANCY LEVEL OF THE BUILDING BY PERSONS

In order to estimate the maximum occupancy level of the building by users, the following information was correlated: the functional structure, the specialized medical staff, the average and auxiliary healthcare staff, the technical, economic and socio-administrative staff, the maximum number of patients allowed by the structure of accommodation and the maximum number of visitors. Subsequent sections detail these aspects, estimating the maximum occupancy level of the building, from the users' point of view.

6.3.1. DISTRIBUTION OF THE SPECIALIZED MEDICAL STAFF BY DEPARTMENTS

Department	Number of beds	Specialized physicians	Resident physicians	Total
RENAL TRANSPLANT AND UROLOGY DEPARTMENT	85beds	14 persons	10beds	24persons
Urology I Division	35 beds	5persons	4 persons	9persons
Urology II Division	50 beds	5persons	4 persons	9persons
Dialysis Division	4 beds			
Day Hospitalization Division	8beds	4persons	2 persons	6persons
PULMONOLOGY & PHTHISIOLOGY AND THORACIC SURGERY DEPARTMENT	67beds	9persons	13persons	22persons
Pulmonology & Phthisiology Division	40 beds	4 persons	6 persons	10 persons
Thoracic Surgery Division	27 beds	5 persons	7 persons	12 persons
CARDIAC SURGERY AND HEART TRANSPLANT DEPARTMENT	40beds	13persons	34persons	47persons
Cardio-vascular surgery division	20 beds	5 persons	20 persons	25 persons
Transplant division	5 beds	4 persons	4 persons	8 persons
Interventional cardiology division	15 beds	4 persons	10 persons	14 persons
LIVER TRANSPLANT DEPARTMENT	70 beds	12persons	8persons	20persons
Gastroenterology division	40 beds	6 persons	4 persons	10 persons
Liver transplant division	30 beds	6 persons	4 persons	10 persons
ANAESTHESIA & INTENSIVE CARE UNIT	45 beds	12 persons	17 persons	29 persons

Department	Number of beds	Specialized physicians	Resident physicians	Total
AIC Division for Kidney transplant and urology (6 beds for kidney transplant)	16 beds	4 persons	2 persons	6 persons
AIC Division for Pulmonology & Phthisiology and Thoracic Surgery	9 beds	4 persons	5 persons	9 persons
AIC Division for Cardiac surgery and heart transplant	10 beds	2 persons	5 persons	7 persons
AIC Division for Gastroenterology and Liver transplant	10 beds	2 persons	5 persons	7 persons
COMMON MEDICAL SERVICES		26 persons	2 persons	28 persons
Integrated outpatient clinic	-	20 persons	2 persons	22 persons
Imaging / radiology division	-	(in two shifts)		
Laboratory	-	3 persons		3 persons
Transfusion unit	-	1 person		1 person
Anatomical pathology	-	2 persons		2 persons
SUMMARY	307beds	86 persons	84 persons	170persons

Table17 Distribution of the specialized medical staff by departments

6.3.2. DISTRIBUTION OF THE AVERAGE AND AUXILIARY HEALTHCARE STAFF RELATED TO COMMON MEDICAL SERVICES

	Average and auxiliary healthcare staff		Other staff
Department	Senior nurses	Nurses	
COMMON MEDICAL SERVICES			
Integrated outpatient clinic	23 persons	2 persons	-
Imaging / Radiology division	(in 2 shifts)	(in 2 shifts)	
Operating unit	30 persons	30 persons	
Sterilization	-	-	20 persons
Pharmacy	-	-	10 persons
Laboratory	6 persons	3 persons	2 persons
Transfusion unit	2 persons	-	
Anatomical pathology	3 persons	-	2 persons
SUMMARY	64 persons	35 persons	34 persons

Table18 Distribution of the average and auxiliary healthcare staff related to common medical services

6.3.3. AVERAGE AND AUXILIARY HEALTHCARE STAFF OF THE TRANSPLANT DEPARTMENTS

		Average and auxiliary healthcare staff				Distribution by shifts of the average and auxiliary healthcare staff				
Department	**Number of beds**	Senior nurses	Nurses	Caretakers	Stretcher bearers	Shifts	Senior nurses	Nurses	Caretakers	Stretcher bearers
RENAL TRANSPLANT AND UROLOGY DEPARTMENT	85beds	18persons	14persons	6 persons	0 persons		5persons	5persons	3 persons	0 persons
Urology I Division	35 beds	8	6	2	0	3	2	2	1	0
Urology II Division	50 beds	8	6	2	0	3	2	2	1	0
Dialysis Division	4 beds									
Day Hospitalization Division	8 beds	2	2	2	0	2	1	1	1	0
PULMONOLOGY & PHTHISIOLOGY AND THORACIC SURGERY DEPARTMENT	67 beds	22 persons	12persons	0 persons	0 persons		4persons	4persons	0 persons	0 persons
Pulmonology & Phthisiology Division	40 beds	12	6	0	0	3	2	2	0	0
Thoracic Surgery Division	27 beds	10	6	0	0	3	2	2	0	0
CARDIAC SURGERY	40 beds	33	15	10	6		13	5	3 persons	3

Department	Number of beds	Average and auxiliary healthcare staff				Distribution by shifts of the average and auxiliary healthcare staff				
		Senior nurses	Nurses	Caretakers	Stretcher bearers	Shifts	Senior nurses	Nurses	Caretakers	Stretcher bearers
AND HEART TRANSPLANT DEPARTMENT		persons	persons	persons	persons		persons	persons		persons
Cardiovascular surgery division	20 beds	15	9	4	2	3	7	3	1	1
Transplant division	5 beds	9	3	3	2	3	3	1	1	1
Interventional cardiology division	15 beds	9	3	3	2	3	3	1	1	1
LIVER TRANSPLANT DEPARTMENT	70 beds	90persons	60persons	0 persons	0 persons		24persons	18persons	0 persons	0 persons
Gastroenterology division	40 beds	45	30	0	0	3	12	9	0	0
Liver transplant division	30 beds	45	30	0	0	3	12	9	0	0
ANAESTHESIA & INTENSIVE CARE UNIT	45 beds	52 persons	30 persons	10 persons	10 persons		17 persons	9 persons	3 persons	4 persons
AIC Division for Kidneytransplant and urology	16 beds	12	12	0	3	3	3	3	0	1
AIC Division for Pulmonology &	9 beds	10	6	0	3	3	4	2	0	1

Department	Number of beds	Average and auxiliary healthcare staff				Distribution by shifts of the average and auxiliary healthcare staff				
		Senior nurses	Nurses	Caretakers	Stretcher bearers	Shifts	Senior nurses	Nurses	Caretakers	Stretcher bearers
Phthisiology and Thoracic surgery										
AIC Division for Cardiac surgery and heart transplant	10 beds	15	6	3	2	3	5	2	1	1
AIC Division for Gastroenterologyand liver transplant	10 beds	15	6	3	2	3	5	2	1	1
SUMMARY	307beds	215persons	131 persons	26 persons	16 persons		63 persons	41 persons	9 persons	7 persons

Table19 Transplant departments – average and auxiliary healthcare staff

6.3.4. MAXIMUM OCCUPANCY LEVEL OF THE BUILDING BY PERSONS

Department	Number of beds	Specialized medical staff	Average and auxiliary medical staff[12]	Other staff	Patients	Visitors	Maximum occupancy
RENAL TRANSPLANT AND UROLOGY DEPARTMENT	92 beds	24persons	13persons	-	97persons	97persons	231persons
Urology I Division	35 beds	9persons	5persons	-	35 persons	35 persons	84persons
Urology II Division	50 beds	9persons	5persons	-	50 persons	50 persons	114persons
Dialysis Division	4 beds	6 persons	3 persons		4 persons	4 persons	17 persons
Day Hospitalization Division	8 beds			-	8 persons	8 persons	16 persons
PULMONOLOGY & PHTHISIOLOGYAND THORACIC SURGERY DEPARTMENT	67 beds	22 persons	8 persons	-	67 persons	67 persons	164 persons
Pulmonology & Phthisiology Division	40 beds	10 persons	4 persons	-	40 persons	40 persons	94 persons
Thoracic Surgery Division	27 beds	12 persons	4 persons	-	27 persons	27 persons	70 persons
CARDIAC SURGERY AND HEART TRANSPLANT DEPARTMENT	40 beds	47 persons	24persons	-	40 persons	40 persons	151persons
Cardiovascular surgery division	20 beds	25 persons	12persons	-	20 persons	20 persons	70 persons

[12]Only the average and auxiliary personnel that is present in one shift were taken into account in the estimate.

Department	Number of beds	Specialized medical staff	Average and auxiliary medical staff[12]	Other staff	Patients	Visitors	Maximum occupancy
Transplant division	5 beds	8 persons	6persons	-	5 persons	5 persons	21 persons
Interventional cardiology division	15 beds	14 persons	6persons	-	15 persons	15 persons	47 persons
LIVER TRANSPLANT DEPARTMENT	70 beds	27 persons	42 persons	-	70 persons	70 persons	202 persons
Gastroenterology division	40 beds	10 persons	21 persons	-	40 persons	40 persons	111 persons
Liver transplant division	30 beds	10 persons	21 persons	-	30 persons	30 persons	91 persons
ANAESTHESIA & INTENSIVE CARE UNIT	45 beds	29 persons	33 persons		45 persons	45 persons	152 persons
AIC Division forKidney transplant and urology	16 beds	6 persons	8persons	-	16persons	16persons	46persons
AIC Division for Pulmonology & Phthisiology and Thoracic surgery	9 beds	9 persons	7persons	-	9 persons	9 persons	34persons
AIC Division forCardiac surgery and heart transplant	10 beds	7 persons	9persons	-	10 persons	10 persons	36persons
AIC Division for Gastroenterology andliver transplant	beds	7 persons	9persons	-	10 persons	10 persons	36persons
COMMON MEDICAL SERVICES	-	34 persons[13]	64 persons	34 persons	20 persons[14]	20 persons	172 persons

[13]It does not include the doctors present in the operating unit, namely the specialized medical staff for the four transplant departments.

Department	Number of beds	Specialized medical staff	Average and auxiliary medical staff[12]	Other staff	Patients	Visitors	Maximum occupancy
Access area / Hospital admission – discharge office	-	-	-				
Integrated outpatient clinic	-	20 persons	25 persons	-	20 persons	20 persons	85 persons
Imaging / radiology division	-						
Operating unit	-	23 persons	60 persons	-	10	-	93 persons
Sterilization	-	-	-	20 persons	-	-	20 persons
Pharmacy	-	-	-	10 persons	-	-	10 persons
Laboratory	-	3 persons	9 persons	2 persons	-	-	14 persons
Transfusion unit	-	1 person	2 persons		-	-	3 persons
Anatomical pathology	-	2 persons	3 persons	2 persons	-	-	7 persons
TECHNICAL SPACES	-	0 persons	0 persons	33 persons	0 persons	0 persons	33 persons
Food unit	-	-	-		-	-	
Technical & logistics unit	-	-	-		-	-	
Laundry	-	-	-		-	-	
Administrative unit	-	-	-	31 persons	-	-	31 persons
Chapel	-	-	-	2 persons	-	-	2 persons
Underground parking	-	-	-				

[14]It does not include the number of patients in the operating unit, namely the patients already admitted to one of the four transplant departments.

Department	Number of beds	Specialized medical staff	Average and auxiliary medical staff[12]	Other staff	Patients	Visitors	Maximum occupancy
SUMMARY	307 beds	176 persons	184persons	67 persons	339persons	339persons	1105persons

Table20 Maximum occupancy level of the building by persons