

**CONCEPT FOR DEVELOPMENT OF BRATISLAVA UNIVERSITY
HOSPITAL**

AND

**PROPOSAL FOR THE CONSTRUCTION OF A NEW UNIVERSITY
HOSPITAL IN BRATISLAVA**

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1. Objectives set for a new Bratislava University Hospital

1.1. Result objectives

The "Concept for Development of Bratislava University Hospital" project places the strongest emphasis on the quality in the provision of healthcare services, direct interactions with a new approach to university-level education and training of medical professionals, and implementation of the results of clinical research.

The project is focused on result objectives presented in Table 1 below.

Objective	Time horizon	Measurable indicator
1 Improving quality and effectiveness of services provided	medium-term	treatable (amenable) mortality rate in the Bratislava region reduced by 5% by 2030 ¹
		improved quality of the environment in healthcare facilities (JCI accreditation)
		long-term and post-treatment care capacities increased by 100% by 2030
		bed occupancy rate at 85% by 2025
		number of repeated surgeries reduced by 35% by 2030
		the share of so-called ACSC in overall hospitalisations reduced to 30% by 2020 ²
		a 1.5% reduction in cross-border migration of qualified health professionals, especially of physicians, nurses and medical specialists
2 Improving quality of tertiary education	medium-term	a higher number of medical specialists participating in the tertiary education system who will train future physicians
		stabilisation of the employed physicians after completion of specialist studies by 1% for the quality of education
3 Strengthening clinical research and development, and their quality	medium-term	increasing the volume of funds for research and development obtained by tertiary schools and the biomedicine centre from foreign competitions and from the state budget by 5%
		an increase in the number of supported EU research projects by one per year

Table 1 Result objectives to be achieved under the "Concept for BUH Development" project

1.2. Output objectives

The goal of the new Bratislava University Hospital project (hereinafter only referred to as the "nBUH") is to reorganise healthcare provision structures across the region with a focus on the construction and reconstruction of capacities necessary for the provision of the most demanding and comprehensive healthcare services.

The new concept of healthcare services should present an integrated medical system which:

¹ The Health Ministry is aware that the improvement under the amenable mortality indicator primarily depends on such factors as prevention and early diagnosis, and that the improvement in tertiary capacities alone and a higher quality of treatment do not have such a strong impact on treatable mortality. However, earlier admission of urgent cases, surgeries and extended diagnostic possibilities are among the services which the new university hospital will be able to provide, therefore, this indicator is one of the key objectives of the project

² ACSC – "ambulatory case sensitive conditions" – are medical cases and diagnoses which, if properly treated, should not be subject to inpatient treatment; the new university hospital should have reinforced outpatient capacities which should have a positive effect on this indicator

is capable of effectively responding to a demand for specialised and highly specialised, top-quality healthcare services;

- will link the provision of healthcare services with education provided by universities that train healthcare workers by creating a catchment university centre and actively applying the knowledge from biomedical and translational clinical research.

2. Background

The project to build a new hospital dates back to 1980s and was driven by the need to modernise the existing teaching base and create a modern, innovative type hospital. In the wake of the expectations of the completion of this project, investments in upgrading and any major maintenance of the existing facilities were dampened. However, the project has since undergone a number of changes and has eventually not been implemented to this date, (more than the thirty years after the original decision to build a new hospital), while the insufficient investments in the modernisation of the existing healthcare infrastructure have resulted in its critical conditions.

2.1. Construction project for a new Bratislava University Hospital

2.1.1. Legislative background 1982 -2016

- Government decision to build the Rázsochy teaching hospital (1982);
- Launch of construction works on the Rázsochy hospital (1987);
- Decisions to amend the construction project prior to completion: 1996, 1997, 2002, 2005, 2008, 2101;
- Government resolution No. 24242/2010 on the proposal for the financing of the implementation of the Rázsochy Teaching Hospital project - financing of the Rázsochy Teaching Hospital project through PPP (public-private partnership);
- Government resolution No. 363/2013 concerning the investments in acute healthcare beds in Slovakia and a proposal for construction of a new hospital in Bratislava – the government commits the health minister to present for a government discussion a feasibility study on investments in acute healthcare beds in Slovakia in the context of the proposal for the construction of a new hospital in Bratislava;
- Government resolution No. 296/2014 on the “Feasibility study on investments in acute healthcare beds in Slovakia in the context of the proposal for the construction of a new hospital in Bratislava - Summary Report” – the government commits the health minister to prepare, in cooperation with a deputy prime minister and minister of finance, a proposal for the financing of the construction of a new hospital with polyclinic in Bratislava from extra budgetary funds, and to commence project works for the preparation of documents necessary to commence the actual construction works on a new hospital in Bratislava;
- The feasibility study identified a PPP model as a well-suited form of implementation of the new hospital construction project, expecting that the new university hospital in Bratislava will replace the existing hospitals in Staré mesto, Kramáre and Ružinov city districts, which will be phased out and/or will transform into providers of outpatient and post-treatment care services.
- On 11 February 2015, the Slovak Health Ministry signs a consultancy services agreement with a consortium consisting of Ernst & Young Financial Advisory and Ružička Csekés law firm, entitled "Comprehensive financial, legal and technical consultancy and public procurement consultancy services regarding the preparation and implementation of the new Bratislava University Hospital PPP project" (hereinafter only referred to as the “consultancy agreement”) worth EUR 2.25mn, exclusive of VAT³. The agreement covered the entire process of project management and support in the legal, technical and financial preparations of the projects.

³ This sum does not include the costs of the preparation of the feasibility study in a total amount of EUR 739,000, exclusive of VAT.

- January 2015 - the Health Ministry announces the commencement of a public contract award procedure – competitive dialogue for the “Concession for the design, construction, financing, operation and maintenance of the new University Hospital in Bratislava with an anticipated 30-year provision of healthcare therein, including the provision of tertiary and further education of medical professionals ” ;
- June 2015 – February 2016: three rounds of the competitive dialogue were held; tenderers presented their preliminary proposals and prepared a draft concession contract and a final informative document.
- The consultancy agreement concluded with the Ernst & Young Financial Advisory and Ružička Csekcs law firm expires on 29 February 2016;
- On 2 November 2016, government resolution No. 503/2016 **cancels the PPP project for the construction of a new hospital** and commits the Health Ministry to draft an alternative plan by the end of March 2017.

2.1.2. Reasons for discontinuing the implementation of the PPP project for the new Bratislava University Hospital

Discussions with qualified tenderers and the preliminary proposals they submitted during the competitive dialogue on the procurement of the nBUH through PPP confirmed the existence of substantial obstacles concerning the project funding, risk distribution, location of the construction site, as well as the form of procurement. These obstacles put the suitability of the PPP model to a different perspective compared to the original assumptions, resulting in the government cancelling the PPP project by resolution No. 503/2016 adopted in November 2016. The next three chapters describe the key reasons for discontinuing the PPP project.

2.1.2.1. Risk distribution and funding

- the planned distribution of risk between the private and public sector envisaged under the project was too ambitious, having little precedent in other projects;
- several project parameters give rise to substantial risks with respect to its overall feasibility, as also confirmed by preliminary calculations made by all tenderers that were unable to provide a financial estimate for the current parameters of the project;
- also, with respect to the project funding to be provided by the state, it would be necessary to substantially reduce the project's demand risk through availability payments or other guarantees in order for the tenderers to be able to fund the project using their own capital.

These findings put the expediency of the PPP model to a completely different perspective compared to the original assumptions. Due to the lack of private investors' appetite to bear the risks that were to be transferred on the private sector, the key positive synergies from having all stages of preparation, financing, construction and subsequent operation of the new hospital provided by a private partner diminished. The demonstrated need for a substantial capital contribution from the public sector and for sufficient legislative and commercial guarantees concerning the project feasibility has even more weakened the benefits of the PPP project.

The controversial parameters, such as the ownership of the new hospital in the hands of a private partner, financing based on demand (from health insurers) or an expected state guarantee, hint that the costs of financing (hence the effectiveness of public spending), driven by a higher risk, are higher than what they would be if the project was directly financed from the public funds.

The Health Ministry was warned of this risk by the authors of the feasibility study, as well; however, the lack of references from other countries could neither confirm nor refute the risk. It

was only the actual competitive dialogue which showed that the project carried a risk for a private investor which was difficult to eliminate.

2.1.2.2. Project site

Discussions with the qualified tenderers and the preliminary proposals they submitted during the competitive dialogue have proved that:

- if the assumed parameters of the new hospital are to be observed, the Project cannot be implemented in the selected Patrónka site without amending Bratislava's zoning plan with respect to the site in question;
- amending the zoning plan is a time-demanding process beyond control of the contracting authority and/or a successful tenderer;
- amending the zoning plan would undoubtedly have to constitute a condition precedent with respect to the effective date of the concession contract; moreover, given the fact that it is impossible to control the outcome and duration of this process, even if the zoning plan changed, the change (depending on its conditions and duration) could have a substantial impact on the actual concession contract and its parameters.

The PPP project feasibility study assumed that the lands in the Patrónka site would be acquired for no consideration. The lands in questions are owned by a joint-stock company wholly owned by the state - the St. Michael's Hospital. The assets of a joint-stock company cannot be transferred for no consideration, unlike the assets controlled by state-asset management companies. The owner of the lands informed the contracting authority during the competitive dialogue that the lands could be provided for the purposes of the Project against a payment of approximately EUR 32.2 million.

This amount was not included in the calculation of the benefits of the PPP model and it again shows the model's benefits in a different perspective compared to the original assumptions.

2.1.2.3. Risks related to public procurement procedure

With respect to the changed circumstance as described above, the following facts had to be considered:

- if the competitive dialogue continued with the presented Project risk distribution and Patrónka as the site of choice for the Project, ensuring sufficient competition was unlikely (a number of qualified tenderers would probably not submit their tenders);
- in order to make the implementation of the Project feasible, it was, therefore, necessary to substantially change both the risk distribution and the construction site of the Project;
- this represents a significant delay in the competitive dialogue (due to the necessary modifications in the project documentation, in proposals presented by the tenderers, as well as new negotiations with the tenderers);
- the significant changes in the Project could likely be assessed as prohibited by the Public Procurement Office ("PPO"), which, had they been considered right at the beginning of the competitive dialogue, could have brought a different (or wider) group of bidders for the public contract;
- The PPO received four objections and more were likely to be submitted if the Project had been changed. Taking into account the system of review procedures under which the objections are only assessed after the actual closing of the procedure (after the bids are submitted), a risk exists that despite the additional costs and a significant delay in the

competitive dialogue resulting from the substantial modifications of the Project, the PPO would eventually cancel the Project as whole;

- carrying on with the competitive dialogue without changing the distribution of risk would also necessitate engaging another advisor because the previous consultancy agreement expired on 29 February 2016, while advisory services were estimated to be needed at least until the end of 2017.

In light of the above considerations, it was evident that the Project risk distribution would need be changed significantly in the course of the competitive dialogue, which would result in non-negligible delays and increased financial costs both on the side of the contracting authority and the tenderers, whereas the changes in risk distribution alone carried a significant risk that the Project would be cancelled despite the additional time and costs spent.

2.1.3. Factual background 1982 -2016

The insufficient network and a new concept for the development of healthcare facilities in Bratislava in 1970s were the reason for opening an architectural competition designed to assess the existing conditions and propose solutions. The Rázsochy area located in the Bratislava – Lamač city district was chosen as a site for the construction of a new healthcare complex.

According to the available information, the new complex was originally expected to consist of five separate structures (construction stages) in the following scope and order:

1. Structure 1 – Teaching hospital specialising in surgery with 405 beds
2. Structure 2 – Teaching hospital specialising in internal medicine disciplines, with estimated increase in the number of beds by additional 1,320 beds
3. Structure 3 – Theoretical institutes of the medical faculty
4. Structure 4 – Institutes of clinical oncology
5. Structure 5 – Accommodation facilities for mid-level healthcare personnel

The Bratislava city urban zoning plan reserved a locality to cover this scope of construction development. The lands covering approximately 15 hectares of the locality were transferred to the FNsP ownership for the purpose of construction stage 1. The lands located on the Rázsochy hospital site were purchased and/or expropriated from their original owners between 1985 and 1988. The FNsP Rázsochy site spans over an area bordering with Pod Zečákom and Zidiny streets to the south, and Zelenohorská street and the built-up areas in the Lamač city district to the east. The actual site is situated at the foot of a south-facing slope of the Lesser Carpathians mountain range in a close vicinity of the main railway route Bratislava - Kúty and the D2 motorway Bratislava – Malacky - Brno.

As of the present date, five supplier contracts have been concluded in connection with the Rázsochy project, signed by Stavoinvesta Bratislava, s.r.o., on behalf of FNsP Bratislava, namely:

- a) construction works contract (*Hospodárska zmluva o dodávke stavebných prác na investičnú výstavbu*) No. 723/86 of 26 January 1987 between original contractor Pozemné stavby n.p. Nitra and original investor KÚNZ Bratislava, directorate for teaching hospital development, plus 39 amendments to the contract;
- b) engineering works contract (*Zmluva na výkon inžinierskej činnosti vo výstavbe pre stavbu FNsP Bratislava – Rázsochy*) signed between FNsP Bratislava and Stavoinvesta Bratislava on 7 February 1991, plus 11 amendments to the contract. After the privatisation of Stavoinvesta Bratislava, the contractual obligations were assumed by its legal successor – limited liability company Stavoinvesta Bratislava, s.r.o.

- c) project design contract covering the fencing and thermal insulation of the facade (*Zmluva na dodávku projektových prác v rozsahu oplotenia a tepelnej izolácie fasády*) of 11 April 1995 with a performance period until 15 May 1995.
- d) contract for works for project design and design architect's supervision (*Zmluva o dielo na dodávku projektových prác a výkon autorského dozoru*) concluded with Zdravoprojekt - Internacionál a.s on 29 March 1999, plus 7 amendments to the contract; under an agreement on the assumption of obligations of 29 September 1999, the original contractor was replaced by a new contractor - ZDRAVOPROJEKT BRATISLAVA, s.r.o.
- e) project design contract covering a simplified city planning study of the complex for all structures (*Zmluva na dodávku projektových prác v rozsahu zjednodušenej urbanistickej štúdie areálu všetkých stavieb*) of 10 November 1999 with a performance period until 30 November 1999.

The location of the Rázsochy Hospital was approved by decision No. ÚPA - 3172-154/24/84 on the siting of structure No. 4144 issued by the National Committee of the Capital of the Slovak Socialist Republic Bratislava, urban planning and architecture department, on 10 July 1985.

The first building permit for the "*FNsP -1 stavba stavebné objekty Bratislava Rázsochy*" project became final on 14 October 1987. The construction works started in 1987, with the completion date originally planned for 1993. A majority of structures located on the site under review are unfinished buildings on which the construction works were mostly discontinued in 1991. These structures have since then received little maintenance, having become obsolete and physically time-worn. The original completion deadline set for May 1993 was repeatedly extended.

After 1990 changes were made to the Project due to which the requirement to build Structure 2 was cancelled. Since, in the meantime, the clinical oncology institutes had moved to other premises, Structure 4 was also left out from the further development plans.

Under decision No. 2016/138-2202/RUSK/zspd/Ká of 1 March 2016 issued by City District Bratislava Lamač, which became final on 13 April 2016, the deadline for the completion of the "*Fakultná nemocnica s poliklinikou Bratislava Rázsochy – Inovácia 1. stavby*" project stage has been set for **31 March 2017**.

On 28 November 2016, the BUH submitted an application for permit for the modification of the structure prior to completion, requesting the Lamač municipal authority, acting in the capacity of a competent building authority, to extend the completion deadline to 31 December 2021. By letter No. 2017,2016/1228-1703/RUSK/PLV/Ka of 8 March 2017, the Lamač municipal authority extended the completion deadline until 31 March 2018.

The Rázsochy site is part of the Zoning Plan Zečák, Bratislava - Lamač, currently under discussion. The Ministry of Health of the Slovak Republic intensively consults with Lamač municipal authority officials all substantial changes which could have any impact on the development of the Rázsochy site.

2.2. Present situation in the provision of healthcare services in Bratislava

2.2.1. Bratislava University Hospitals

Inpatient and outpatient health care and shared diagnostic and treatment services are currently provided in five hospitals in Bratislava, which belong to the Bratislava University Hospital, a quasi-government organisation controlled by the Ministry of Health, with a total capacity of 2,575 beds in 2015.

Map	Bratislava University Hospital	No. of dept.	Beds			Hospitalisations		
		2015	2013	2014	2015	2013	2014	2015
1	Všeobecná nemocnica akad. L. Déreza Kramáre (general hospital)	15	627	625	625	30,137	31,324	31 259
2	Všeobecná nemocnica Staré mesto (general hospital)	8	313	313	313	10,748	11,261	11 378
3	Všeobecná nemocnica Ružinov (general hospital)	25	881	875	875	39,414	40,212	40 866
4	Špecializovaná geriatrická nemocnica Podunajské Biskupice (specialised geriatric hospital)	4	113	113	113	2,327	2,379	2 527
5	St Cyril and Methodius Hospital (general hospital)	21	649	639	649	28,267	25,925	25 892
TOTAL		73	2,583	2,565	2,575	110,893	111,101	111,922

Table 2 Inpatient care provided by BUH⁴

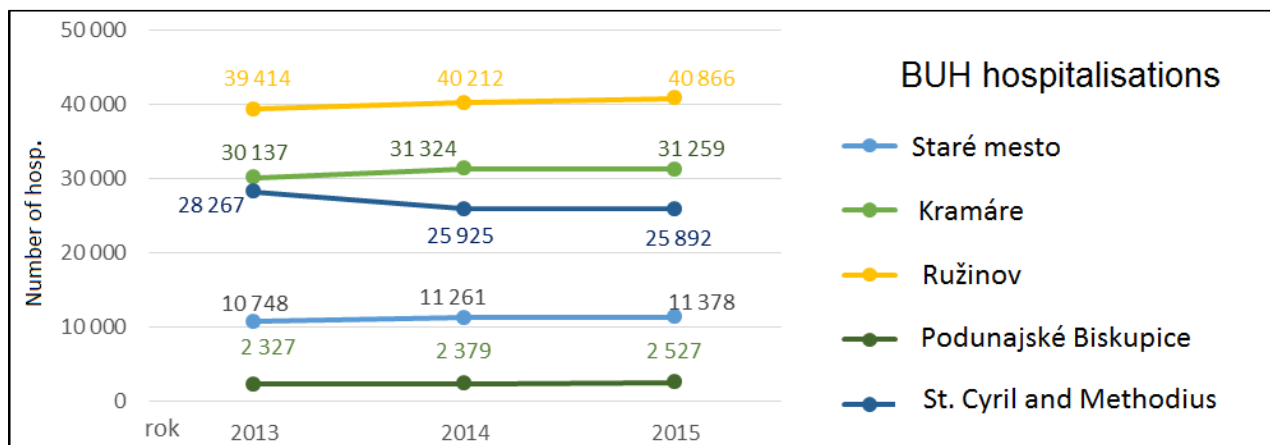


Chart 1 Number of hospitalisations in BUH, 2013 -2015⁵

⁴ Source: NHIC 2017

⁵ Source: NHIC 2017

2.2.2. Specialised and other hospitals

In addition to the university hospitals, healthcare services are also provided by specialised hospitals falling within the purview of the Ministry of Health and by hospitals managed by other institutions.

Map	General and specialised hospitals	No. of dept.	Beds			Hospitalisations		
		2015	2013	2014	2015	2013	2014	2015
6	National Oncology Institute	18	235	235	237	7,837	7,918	8,181
7	National Institute of Cardiovascular	18	281	282	282	9,631	10,48	10,92
8	Children's Teaching Hospital with	15	397	397	397	16,22	17,41	16,98
9	Hospital of the Hospitaller Order of Saint	9	122	122	122	3,500	3,589	3,667
10	GPN s.r.o. (gynecology and obstetrics)	2	43	48	48	1,502	2,128	2,514
11	St. Elisabeth Cancer Institute	7	196	183	187	5,826	5,924	5,816
12	St. Michael's Hospital	14	100	100	120	2,372	3,924	3,602
13	SI Medical	6	15	15	15	360	279	233

Table 3 Inpatient care provided by specialised and other hospitals⁵

2.3. Current situation in healthcare education and training

2.3.1. Study programmes for doctors

Medical study programmes are currently offered by the Faculty of Medicine of Comenius University in Bratislava (hereinafter only referred to as "LF UK"), the Jessenius Faculty of Medicine of Comenius University in Martin (hereinafter only referred to as "JLF UK"), the Faculty of Medicine of the Slovak Medical University in Bratislava (hereinafter only referred to as "LF SZU"), and the Faculty of Medicine of the Pavol Jozef Šafárik University in Prešov (hereinafter only referred to as "LF UPJŠ").

2.3.2. Undergraduate study programmes at the Bratislava University Hospital

The Bratislava University Hospital (hereinafter only referred to as the "BUH") is a core medical institution which delivers undergraduate tertiary study programmes in general medicine and dental medicine for the Faculty of Medicine of Comenius University and the Faculty of Medicine of the Slovak Medical University, further education for doctors in individual fields of specialisations, as well as in other healthcare professions, such as nurses, midwives, physiotherapists, etc. In addition, future healthcare professionals are also trained in other institutions across Bratislava, such as the National Oncology Institute (hereinafter only referred to as the "NOÚ"), the National Institute of Cardiovascular Diseases (hereinafter only referred to as the "NÚSCH"), the St. Elisabeth Cancer Institute (hereinafter only referred to as the "OÚsA"), and the Children's Teaching Hospital with Polyclinic (hereinafter only referred to as the "DFNsP") which provide highly specialised education and training programmes. Medical education and training is also provided at the University Hospital of the Hospitaller Order of Saint John of God (hereinafter only referred to as the "UNsP"). The basic training centres and organisational units of the University Hospital are clinics, laboratories, and clinical research centres. The scope of practical undergraduate training provided by the LF UK in Bratislava is shown in Table 4 Some clinics serve as teaching centres both for the LF UK and the LF SZU. (Details in [Annex 2](#)).

Clinical disciplines - practical training	Teaching beds	
	LF UK	LF SZU
Kramáre Hospital (general)	326	316
Staré mesto Hospital (general)		0
Ružinov Hospital (general)		221
St. Cyril and Methodius Hospital (general)		120
Podunajské Biskupice Hospital (geriatric)		50
Total teaching beds	1,428	707
	2,138	

Table 4 Education provided by the LF UK and the SZU - practical training provided in BUH⁶

Number of graduates in study programmes for doctors

The LF UK has now 2,995 students in total; 2,574 in general medicine and 421 in dental medicine. A long-term average number of students studying in every single year at the LF UK is 450. The number students in study programmes for doctors for the 2014-2016 period is shown in Table 5.

Study programme/field	Level	2014	2015	2016
General medicine	1 and 2	254	303	302
General medicine – in English	1 and 2	79	62	81
Dentistry	1 and 2	43	32	36
Dentistry - in English	1 and 2	29	24	41
Undergraduate studies, total		405	421	460
PhD programmes, full-time	3	14	22	22
PhD programmes, part-time	3	21	26	34
Postgraduate studies, total		35	48	56
Total		440	469	516

Table 5 LF UK graduates, 2014-2015⁵

The LF SZU in Bratislava has currently 538 students in total; 455 in general medicine and 83 in dental medicine. The number of graduates in study programmes for doctors for the 2014-2016 period is shown in Table 6.

Study programme/field	2014	2015	2016
General medicine	33	38	38
Graduates in general medicine	33	38	38

Table 6 LF SZU graduates, 2014-2016⁷

2.3.2.1. Postgraduate PhD studies at the Bratislava University Hospital

The LF UK runs 19 accredited PhD study programmes, third degree. The total number of PhD students is shown in Table 7

The available PhD programmes and the number of students are given in [Annex 4](#).

⁶Source: LF UK BA 2017

⁷Source: LF SZU 2017

Field of study	Number of students					
	full-time			part-time		
	2014	2015	2016	2014	2015	2016
Total	120	99	79	249	239	213

Table 7 Number of postgraduate PhD students at the LF UK⁸⁸

The LF SZU runs 2 accredited PhD study programmes, third degree. The total number of PhD students is shown in Table 8

Field of study	Number of students					
	full-time			part-time		
	2014	2015	2016	2014	2015	2016
Total	13	9	47	51	51	43

Table 8 Number of postgraduate PhD students at the LF SZU⁸⁹

2.3.2.2. Specialist studies and certification training - further education at the Bratislava University Hospital

From 2005, specialist study programmes are available at all medical faculties in the Slovak Republic. Since 2009, a total of 588 students have passed specialist studies in accredited fields at the LF UK. (Table 9; details in [Annex 3](#)). As at December 2016, the LF UK in Bratislava had 785 applicants registered in the specialist fields.

Specialist	2009	2010	2011	2012	2013	2014	2015	2016	Total	Studying as at 12/2016
Total	6	23	59	79	67	72	112	78	588	785

Table 9 Further education – specialist studies and certification training – number of LF UK graduates⁸

The fields of study in certification training, number of graduates and number of students are shown in Table 10 below.

Certification training	2011	2012	2013	2014	2015	2016
Dentoalveolar surgery	12	11	16	15	17	21
Diagnostic mammography in radiology	0	0	0	0	2	3

Table 10 Certification training – number of LF UK graduates⁹

The Faculty of Medicine of the Slovak Medical University has been providing further education for more than 70 years. The Faculty of Medicine of the Slovak Medical University currently registers 5,612 applicants for specialist study programmes, certified training and training for healthcare

⁸ Source: LF UK BA 2017

⁹ Source: LF UK BA 2017

workers⁹. The number of graduates in further education programmes since 2010 is shown in Table 11.

Further education	2009	2010	2011	2012	2013	2014	2015	2016	Total	Studying as at 12/2016
Total	900	982	532	692	648	774	733	850	6,111	5,612

Table 11 Further education– specialist studies and certification training – number of LF SZU graduates¹⁰

2.3.3. Nursing care

Nursing care programmes are provided by the Slovak Medical University at the Faculty of Nursing and Professional Health Studies in Bratislava (hereinafter referred to as the “FOaZOŠ”) and the Faculty of Health in Banská Bystrica.

2.3.3.1. Undergraduate study programmes at the Bratislava University Hospital

The Slovak Medical University in Bratislava (hereinafter only referred to as the “SZU”) provides, through its Faculty of Nursing and Professional Health Studies (hereinafter only referred to as the “FOaZOŠ”), full and part-time tertiary level studies in the following accredited study programmes: nursing care, physiotherapy, urgent medical care, midwifery, physiological and clinical nutrition, and radiology techniques. The graduates in a bachelor’s study programme receive first-level tertiary education and the graduates in a master’s study programme receive second-level tertiary education (nursing care and physiotherapy). The number of graduates in healthcare study programmes for the 2012-2016 period is shown in Table 12. The FOaZOŠ has a long-term yearly average of 400 students from other than doctor’s study fields who receive are undergoing practical training in the BUH.

Study programme	Degree	Form	2012	2013	2014	2015	2016
Nursing	Bc.	full-time	19	32	28	24	22
Nursing	Bc.	part-time	63	56	1	0	0
Nursing	Mgr.	part-time	131	99	56	36	27
Midwifery	Bc.	full-time	17	19	12	17	16
Midwifery	Bc.	part-time	8	3	0	0	0
Physiotherapy	Bc.	full-time	22	27	26	24	26
Physiotherapy	Bc.	part-time	49	31	31	24	34
Physiotherapy	Mgr.	part-time	68	84	85	164	154
Radiology technician	Bc.	full-time	11	9	14	22	19
Radiology technician	Bc.	part-time	24	35	27	14	13
Urgent medical care	Bc.	full-time	17	18	26	24	20
Urgent medical care	Bc.	part-time	62	32	33	18	33
Physiological and clinical nutrition	Bc.	part-time	0	0	10	0	19
Social work	Bc.	part-time	29	13	8	0	0
Total for FOaZOŠ			520	458	357	367	383

Table 12 FOaZOŠ graduates, 2012-2016¹¹

¹⁰ Source: LF SZU 2017

¹¹ Source: LF SZU 2017

Study programme	Level	Form	Students
Nursing	I.	full-time	87
Nursing	II.	part-time	69
Midwifery	I.	full-time	49
Physiotherapy	I.	full/part-time	59
Physiotherapy	II.	part-time	408
Urgent medical care	I.	full/part-time	43/13
Radiology	I.	full/part-time	83/38
Total			849

Table 13 Number of students in academic year 2016/2017¹¹

2.3.3.2. Postgraduate PhD studies at the Bratislava University Hospital

The SZU's Faculty of Nursing and Professional Health Studies has one accredited PhD study programme in nursing care; the number of students is shown in Table 14.

Study	Level	Form	Students
Nursing	III.	full-time	4
Nursing	III.	part-time	12
Total			16

Table 14 Number of postgraduate PhD students at the FOaZOS⁸ in academic year 2016/2017¹¹

2.3.3.3. Specialist studies and certification training – further education at the Bratislava University Hospital

The FOaZOŠ enables to continue studies for individual healthcare professions (Table 15) in 30 accredited specialist study programmes and 11 accredited further education programmes for certified work activities in the following scope:

Healthcare profession	Specialist programmes (SPs)	Certified work activities (CWAs)	Included in SP	Included in CWA	Total
Nurse	13	6	477	58	535
Midwife	3	1	44	9	53
Physiotherapist	2	2	38	0	38
Assistant nutritionist	1	0	0	-	1
Paramedic	2	0	13	-	13
Radiology technician	4	2	35	14	49
Medical technician	3	0	17	-	17
Pharmacy technician	2	0	43	-	43
Total	30	11	667	81	711

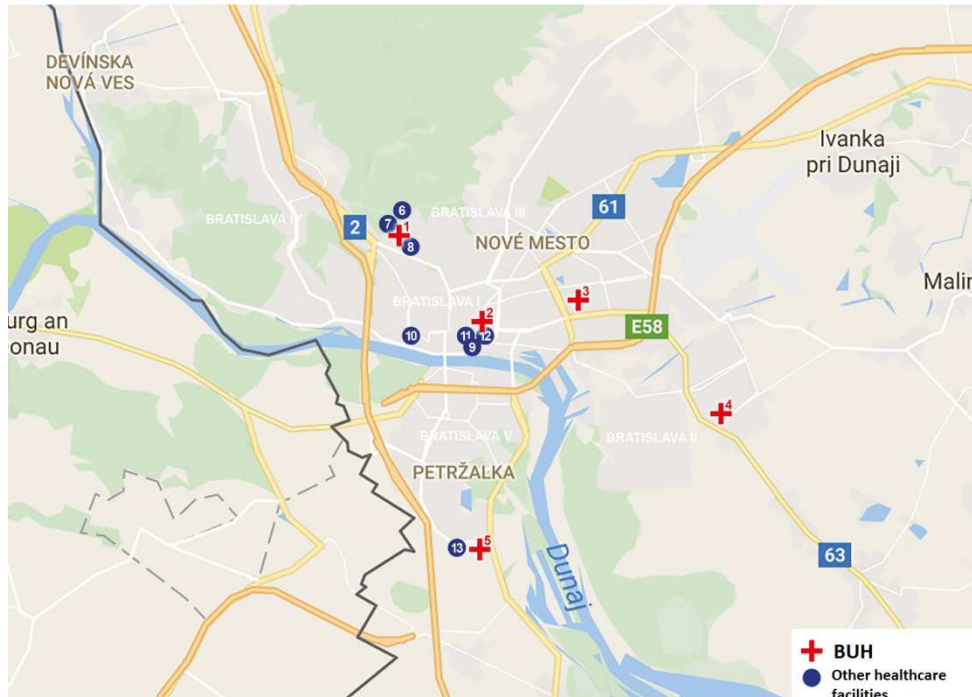
Table 15 FOaZOŠ applicants for further education in academic year 2016/2017¹²

¹²Source: LF SZU 2017

2.4. Technical considerations

2.4.1. Territorial distribution of healthcare services in Bratislava

Various healthcare facilities are strategically located throughout the entire territory of Bratislava. From the geographical point of view, Bratislava lacks a healthcare facility which would satisfy the demand for healthcare services in its north-western and north-eastern parts.



Explanatory notes:

1. Univerzitná nemocnica ak. L. Déra - Kramáre (Kramáre Hospital), 2. Univerzitná nemocnica Bratislava Staré mesto (Staré mesto Hospital), 3. Univerzitná nemocnica Bratislava Ružinov (Ružinov Hospital), 4. Špeciálna geriatrická nemocnica Podunajské Biskupice (Podunajské Biskupice Hospital), 5. Nemocnica sv. Cyrila a Metoda (St. Cyril and Methodius Hospital), 6. Národný onkologický ústav (National Oncology Institute), 7. Národný ústav srdcových a cievnych chorôb (National Institute of Cardiovascular Diseases), 8. Detská fakultná nemocnica s poliklinikou Bratislava (Children's Teaching Hospital with Polyclinic), 8. Nemocnica sv. Michala, a.s., (St. Michael's Hospital) 9. Univerzitná nemocnica s poliklinikou Milosrdní bratia (University Hospital of the Hospitaller Order of Saint John of God) , 10. Gynekologicko pôrodnicka nemocnica Koch, s.r.o., (Gynecology and Obstetrics Hospital Koch) 11 .Onkologický ústav sv. Alžbety, s.r.o., (St. Elisabeth Cancer Institute), 12. SI Medical (Medissimo)

Figure 1 Territorial distribution of healthcare facilities in Bratislava

The recent trend of booming populations in large urban agglomerations is evident in Bratislava, as well. The available data on inpatient admissions clearly show an increase in the number of patients having a permanent residence outside Bratislava. The growth in population coupled with the healthcare services provided to people from a wider area, having an impact on the needs of the population throughout the whole of Slovakia in certain medical domains, results in centralisation and specialisation of health care provision in the Slovak Republic. These aspects will be reflected in the functional model of a new hospital project proposal.

City district	Population			No. of facilities
	2013	2014	2015	
Bratislava I	38,823	38,988	39,470	2
Bratislava II	111,051	112,054	113,201	1
Bratislava III	62,546	63,081	63,997	1
Bratislava IV	93,948	94,554	95,376	0
Bratislava V	111,021	111,001	110,888	1

Table 16 Population as at 31 December of a given year¹³

¹³ Source: NHIC 2017

Bratislava University Hospital		Hospitalisations 2013	% of hosp. by permanent residence 2013			
			BA	non-BA	unknown	abroad
1	Kramáre Hospital (general)	30,137	54.57%	37.31%	7.79%	0.33%
2	Staré mesto Hospital (general)	10,748	53.20%	39.97%	6.72%	0.11%
3	Ružinov Hospital (general)	39,414	48.30%	51.30%	0.08%	0.33%
4	Podunajské Biskupice Hospital (geriatrics)	2,327	69.14%	30.81%	-	0.04%
5	St. Cyril and Methodius Hospital (general)	28,267	60.87%	38.92%	0.01%	0.20%
Bratislava University Hospital		Hospitalisations 2014	% of hosp., by permanent residence, 2014			
			BA	non-BA	unknown	abroad
1	Kramáre Hospital (general)	31,324	53.79%	40.46%	5.57%	0.18%
2	Staré mesto Hospital (general)	11,261	55.11%	42.16%	2.56%	0.17%
3	Ružinov Hospital (general)	40,212	49.18%	50.23%	0.38%	0.21%
4	Podunajské Biskupice Hospital (geriatrics)	2,379	67.63%	32.28%	0.08%	-
5	St. Cyril and Methodius Hospital (general)	25,925	60.42%	39.29%	0.09%	0.20%
Bratislava University Hospital		Hospitalisations 2015	% of hosp., by permanent residence, 2015			
			BA	non-BA	unknown	abroad
1	Kramáre Hospital (general)	31,259	58.05%	41.65%	0.08%	0.22%
2	Staré mesto Hospital (general)	11,378	54.85%	44.57%	0.45%	0.13%
3	Ružinov Hospital (general)	40,866	49.08%	50.59%	0.06%	0.27%
4	Podunajské Biskupice Hospital (geriatrics)	2,527	68.58%	31.34%	0.08%	-
5	St. Cyril and Methodius Hospital (general)	25,892	61.51%	38.32%	0.08%	0.09%

Table 17 Percentage of hospitalisations in the BUH by permanent residence 2013 – 2015¹⁴

BUH - % of hospitalisations by permanent residence in 2015

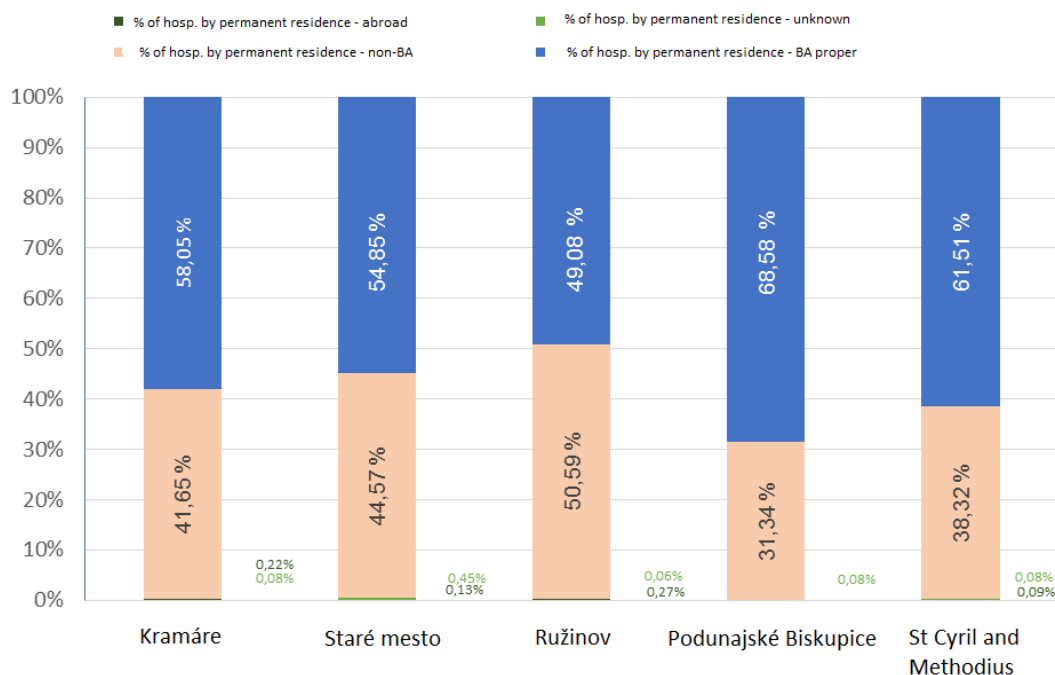


Chart 2 Percentage of hospitalisations in the BUH by permanent residence 2015¹⁴

A comparison of accessible inpatient healthcare facilities against the size of population of Bratislava's individual city districts indicates an evident deficit in Bratislava IV which, given the size of its population, forms a separate catchment area for a hospital.

2.4.2. Evaluation of the existing technical conditions in BUH facilities

A BUH technical analysis has confirmed that Kramáre, Ružinov and Staré mesto hospitals require immediate investments in order to ensure the structural integrity of their buildings and address the most severe safety risks.

A large portion of the Kramáre Hospital was built in 1960s. Due to the negligible scope of maintenance and modernisation works carried out throughout its life-span, the hospital building is nearing the end of its service life. The most pressing technical problems include the insufficient capacity of electrical wiring, leaking roofs, large glass surfaces with insufficient insulation resulting in energy inefficiency (energy losses), and an inadequate air flow rate in air-conditioning and ventilation systems. Due to its monolithic design, the building's functional layout does not allow for effective shortening of operating routes of material flows, patients and personnel. In light of these considerations, as also confirmed by a feasibility study, the reconstruction of the Kramáre Hospital seems too expensive and non-profitable.

The critical issues identified in the Staré mesto Hospital involve significant wear and tear of the sewerage system, outworn electrical installations, problems with parking and logistics inside the hospital complex.

¹⁴ Source: NHIC 2017

Other problems identified in BUH facilities include weathered and decaying facades on the hospital buildings in Ružinov and Kramáře, crumbling concrete structures, obsolete electrical wiring and leaded piping in the Staré mesto Hospital, insufficient capacity of lifts in the Ružinov Hospital, lifts in the Staré mesto Hospital not meeting the national health safety standards, obsolete air-conditioning equipment in operating rooms in all hospitals (30+ years old; some even dating back to 1960s), poor air circulation which significantly increases the risk of nosocomial infections. Generally speaking, the technical design and layout of the existing hospitals, coupled with an unsatisfactory structure of inpatient departments, do not permit to use their bed capacities flexibly and effectively.

2.4.3. Financial considerations

The BUH made an average annual net loss of EUR 40 million over the past three years (2013-2016).

According to the BUH management, the number of interventions provided in the BUH facilities is very close to their full production output and any growth in revenues, and a subsequent reduction of losses, is only likely to be achieved through increasing the prices of medical services and interventions, which, however, are already well above the national average.

The BUH posted an adjusted net debt at the level of EUR 254 million as at 31 December 2016, primarily consisting of overdue liabilities in the amount of EUR 208 million and debts towards the Social Insurance Agency and other health insurance companies in the amount of EUR 111 million¹⁵.

According to all available analyses and statements provided by the BUH management, significant capital expenditures are necessary in order to avoid a situation that the BUH and its patients could be exposed to unacceptable safety and existential risks.

Profit and loss statement (EUR million)			
	2014	2015	2016
Revenues from	158.0	164.1	171.1
Revenues from state	2.4	1.8	1.7
Other revenues	7.6	4.3	3.6
Total revenues	168.1	170.1	176.4
Wage costs	121.0	125.1	128.5
Consumption	58.3	63.5	68.2
Services	7.0	7.6	9.1
Other costs	22.0	16.6	18.3
EBITDA	-30.5	-36.1	-42.0
Depreciation and	9.5	6.8	5.7
Financial costs	0.1	0.1	0.0
Income tax payable	0.2	0.2	0.2
P/L after taxation	-40.2	-42.7	-47.7

Table 18 Profit and loss statement, 2014 – 2016¹⁶

Balance sheet (EUR million)			
	2014	2015	2016
Fixed assets	112.7	108.8	107.0
Inventories	4.3	4.6	4.6
Short-term receivables	24.6	24.5	24.6
Short-term payables	162.9	203.8	247.8
Suppliers	86.0	104.0	122.2
Settlement with social/health	66.5	89.1	112.2
Other liabilities	19.5	14.9	10.0
Accruals	0.7	0.6	0.6
Net working capital	-130.6	-170.3	-214.6
Financial assets	3.4	4.4	4.0
Long-term reserves and	2.3	0.9	0.9
Liabilities towards state	1.0	1.0	1.1
Bank credits and loans	1.1	1.1	1.1
Net debt	-33.918	-40.519	-46.032
Equity	-24.61	-66.41	-114.12

Table 19 Balance sheet, 2014 – 2016¹⁶

BUH operating costs for 2014-2016 are shown in Table 20 and on Chart 3. The operating costs (overheads) include the costs of goods and services, water supply and distribution, electricity and gas supply, cleaning services, wage costs, costs of servicing and repair of equipment (lifts and others).

Bratislava University Hospital	2014 (EUR million)	2015 (EUR million)	2016 (EUR million)
Ružinov Hospital (general)	42.3	44.0	45.7
Kramáre Hospital (general)	35.9	36.7	37.5
St. Cyril and Methodius Hospital (general)	34.9	35.1	35.2
Staré mesto Hospital (general)	16.8	17.1	17.3
Podunajské Biskupice Hospital (geriatrics)	5.1	5.1	5.0

Table 20 BUH operating costs, 2014-2016¹⁶

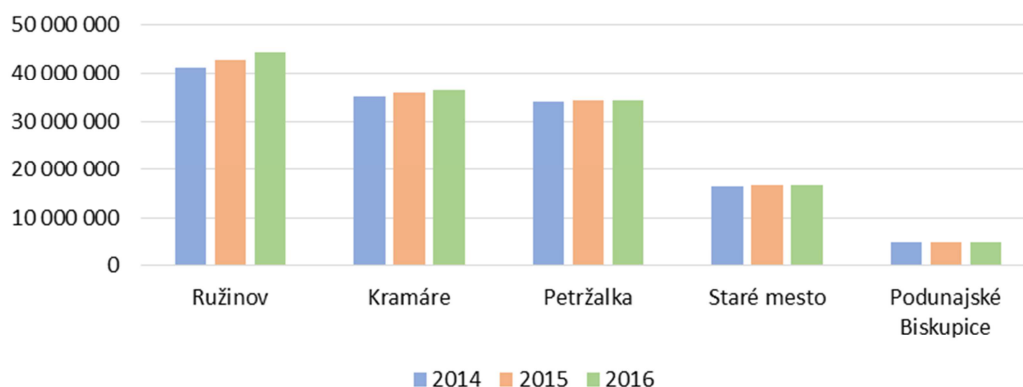


Chart 3 BUH operating costs, 2014-2016¹⁶

3. Concept of the new University Hospital

The present system of the University Hospital in Bratislava is based on five hospitals, with three of them being comparable in size with a majority of other individual hospitals in Slovakia. This system has long been shown as ineffective and there are no rules in place for the operation of a university-type hospital with a significantly lower number of beds. The new proposed solution is based on two university-type hospitals located in Ružinov and Rázsochy, and BUH partner hospitals – St. Cyril and Methodius Hospital, Staré mesto Hospital, St. Michael's Hospital, Hospital of the Hospitaller Order of Saint John of God – which will provide practical training at selected teaching departments. The proposed concept also fully corresponds to the geographical distribution.

The concept of the new University Hospital (hereinafter only referred to as the “nBUH”) proposes to integrate all components of the medical system with the focus on:

- the provision of the highest-quality health care, with the quality of services depending on suitable working conditions;
- economic and operating effectiveness, education, science and research;
- the patient being in the centre of interest, human resources seen as professional assets, top-level technology and equipment, implementation of scientific and research knowledge.

¹⁶ Source: BUH 2017

The nBUH concept includes both an extensive and narrower objectives, that is, construction and operation of a new university hospital, reorganisation of its current operations, as well as developing a new approach to university-type education and training of medical professionals in line with the current standards.

The concept, its implementation, funding and other key parameters have been subject to a detailed economic and qualitative assessment, as described in more detail in Annex 1 to this document. The following chapters present the conclusions and outcomes of these analyses and do not give an in-depth description of all possible alternative solutions.

3.1. Reorganising the BUH’s current profile

The provision of healthcare services in Bratislava has a non-uniform profile. Combined with significant disparities in terms of premises, technology and personnel capacities and coupled with non-existent possibilities to introduce new diagnostic and therapeutic procedures, the chances for modernisation and increasing productivity and effectiveness are zero.

The long-lasting ineffective utilisation of individual components of the medical system can be reversed through a principal reorganisation of the current model of operation of the Bratislava University Hospital.

The aim of the reorganisation is to divide the healthcare facilities according to morbidity, type of medical treatment and its time demands into the following categories:

- specialised and highly specialised hospitals, with the minimum length of hospitalisations, so-called acute care beds,
- post-treatment centres with several levels, with beds for nursing care, for long-term patients, for rehabilitation, for patients with psychiatric conditions;
- special medical centres – specialised beds with a continuous transition to spa, nursing, rehabilitation, long-term and social care.

The present structure of the Bratislava University Hospital and a proposal for its new organisational structure is shown in Figure 2.

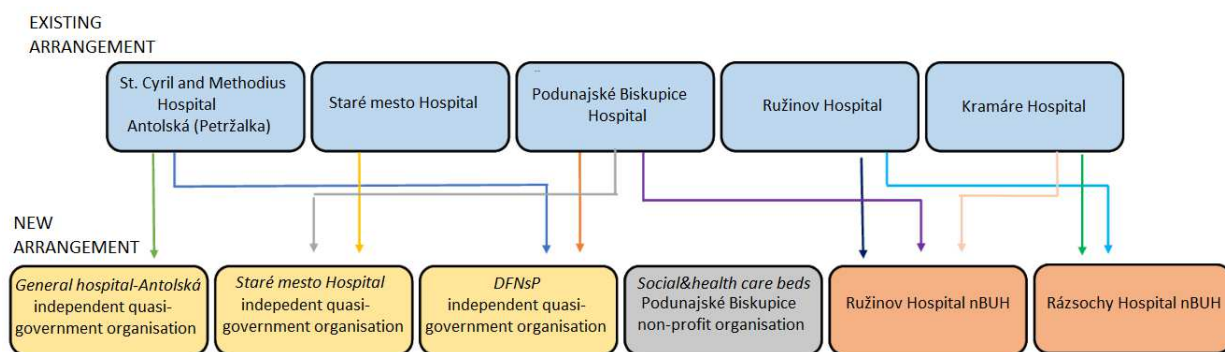


Figure 2 Proposal for a new organisational structure

The reorganisation will bring crucial changes to Kramáre and Ružinov hospitals from which a portion of healthcare services will be transferred to the Rázsochy Hospital. The Kramáre Hospital will be phased out. In line with the proposed scope of services, the new Rázsochy Hospital and the reconstructed (streamlined) Ružinov Hospital will provide complementary healthcare services.

The St Cyril and Methodius Hospital (also referred to as the Antolská Hospital/Petržalka Hospital) will be given an autonomous legal personality; its legal form being a quasi-government organisation. Given the scope of the existing workplaces, the hospital will continue being a core teaching base for practical training in Bratislava. However, its status is proposed to change to a university hospital partner, primarily serving as a catchment hospital. With respect to the introduction of a DRG system, no changes and differences will occur in its funding.

The Staré mesto Hospital will be transformed into a specialised centre for neurological and mental disorders and geriatric patients. The backbone of the new specialised facility will consist of two Centres of Excellence. One will specialise in the comprehensive management of patients with acute stroke. A neurorehabilitation department and a comprehensive outpatient polyclinic wing will have to be built for this purpose. The second one will be a “Comprehensive Geriatric Care Pavilion” directly linked with the shared diagnostic and treatment services provided by the hospital. The pavilion’s capacities will fully correspond with the objective to centralise geriatric care services in Bratislava and its wider surrounding, thus contributing to higher quality and increased effectiveness in the provision of health care to geriatric patients with all its specific requirements. Beds in this hospitals will primarily consist of neurological, psychiatric, internal medicine, geriatric and, as the case may be, palliative care beds.

Taking into account the recent demographic trends in Slovakia, the increasing average life expectancy, the falling birth rate and resulting ageing of population in Slovakia, with an increased incidence of chronic diseases which require adequate healthcare services, this issue requires a specific attention. These aspects were also reflected in the planned re-profiling of the specialised geriatric hospital in Podunajské Biskupice which will preserve “geriatric and chronic beds”, i.e., a department for long-term patients, a post-treatment department, and a department of physical medicine, balneology and rehabilitation. These will be placed in the existing premises of the geriatric department which fully meet the chronic care standards. In addition, outpatient offices (both general and specialised) of regional importance will be preserved in the polyclinic wing of the healthcare facility. The re-profiling will also preserve the laboratory which will provide basic haematological and biochemical testing of patients.

The scope of medical services provided by the Petržalka Hospital will remain almost unchanged. The healthcare services for children will be centralised within the existing Children’s Teaching Hospital with Polyclinic in Kramáre which will operate as a member of the University Education Association. The expected demand for medical services is shown in the following table which compares the old and new model after the implementation of the aforementioned changed (from 2023). The expected demand for beds is shown in Tables 21 and 22.

The purpose of the present document is not to determine the number of clinics that provide practical training; the document reflects the current state of play, while the target proposal assumes that the practical training will be provided at least to the same extent as it is now. The data provided on the number of beds, hospitalisations and organisation of the nBUH are based on the existing situation and demographic trends related with an increase in specific diseases predicted for 2023.

The process of geographical, functional and specialisation reorganisation will be elaborated in full details in a separate document to be discussed by the Slovak government.

Discharges in 2023	Staré mesto	Kramáre	Petržalka	Pod. Biskupice	Ružinov	nBUH
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	New	Originally	New	Originally	New	Originally	New	Originally	New	Originally	New
Anaesthesiology and intensive care medicine*	-	392	-	285	451	451	-	-	419	419	670
Burns	-	-	-	-	-	-	-	-	-	328	328
Day care centre	603	-	-	-	-	-	615	603	-	-	-
Dermatology	-	916	-	-	-	-	-	-	916	-	-
Geriatrics	2,891	-	-	2,105	-	-	-	1,786	-	-	1,000
Gynecology	-	-	-	3,881	4,268	4,268	-	-	4,333	5,333	4,881
Infectious diseases and geomedicine	-	-	-	2,889	-	-	-	-	-	-	1,889
Internal medicine**	3,902	3,902	-	2,953	3,991	3,991	-	-	3,587	4,587	3,953
Long-term care	524	-	-	354	330	330	2,200	867	867	524	-
Neonatology	-	-	-	2,376	3,384	3,384	-	-	2,528	2,528	2,376
Neurology	3,288	3,288	-	1,409	882	882	-	-	1,981	1,981	1,409
Neurosurgery	-	-	-	1,663	-	-	-	-	-	-	2,513
Occupational	-	-	-	466	-	-	-	-	-	-	-
Oncology	-	55	-	-	-	-	-	-	-	887	942
Ophthalmology	-	-	-	-	300	300	-	-	1,262	1,262	-
Otorhinolaryngology	-	-	-	-	1,683	1,683	-	-	516	516	-
Orthopaedics	-	-	-	-	852	852	-	-	2,293	3,293	1,000
Plastic surgery	-	-	-	-	-	-	-	-	1,947	1,947	-
Pneumology	-	-	-	-	-	-	-	-	2,721	2,721	-
Psychiatrics	2,966	1,750	-	-	914	914	-	-	-	1,216	-
Rehabilitation	-	-	-	-	827	827	-	-	777	1,077	300
Surgery	-	1,616	-	1,726	1,867	1,867	-	-	5,982	5,174	2,534
Traumatology	-	-	-	2,524	1,873	1,873	-	-	-	-	3,474
Urology	-	-	-	1,726	1,033	1,033	-	-	1,467	1,467	1,726

Table 21 Expected demand for inpatient care in BUH and nBUH¹⁷

*This does not describe all ICU and anaesthesiology and intensive care medicine department (AICMD) beds; this specialisation only covers those parts where centralisation is expected; ICU and standard beds for each of these specialisations are divided separately to approximately 15% of intensive care and 85% of standard beds.

** including haematology

¹⁷ Source: Health Ministry's HPI 2017

Beds in 2023	Staré mesto		Kramáre		Petržalka		Pod. Biskupice		Ružinov		nBUH	TOTAL	
	New	Originally	New	Originally	New	Originally	New	Originally	New	Originally	New	New	Originally
Anaesthesiology and intensive care medicine*	-	7	-	8	12	12	-	-	12	12	14	38	39
Burns	-	-	-	-	-	-	-	-	-	17	17	17	17
Day care centre	15	-	-	-	-	-	20	20	-	-	0	36	20
Dermatology	-	21	-	-	-	-	-	-	13	-	0	13	21
Geriatrics	74	-	-	54	-	-	-	46	-	-	26	100	100
Gynecology	-	-	-	65	72	72	-	-	67	82	75	213	218
Infectious diseases and	-	-	-	59	-	-	-	-	-	-	39	39	59
Internal medicine**	100	100	-	87	126	126	-	-	71	91	79	376	404
Long-term care	36	-	-	24	23	23	138	54	54	33	0	251	134
Neonatology	-	-	-	31	61	61	-	-	33	33	31	125	125
Neurology	60	60	-	40	23	23	-	-	54	54	39	176	176
Neurosurgery	-	-	-	49	-	-	-	-	-	-	73	73	49
Occupational medicine	-	-	-	11	-	-	-	-	-	-	0	-	11
Oncology	-	2	-	-	-	-	-	-	-	16	17	17	18
Ophthalmology	-	-	-	-	4	4	-	-	14	14	0	18	18
Otorhinolaryngology	-	-	-	-	38	38	-	-	8	8	0	46	46
Orthopaedics	-	-	-	-	19	19	-	-	44	64	19	82	82
Plastic surgery	-	-	-	-	-	-	-	-	24	33	0	24	33
Pneumology	-	-	-	-	-	-	-	-	69	69	0	69	69
Psychiatrics	147	87	-	-	45	45	-	-	-	64	0	192	196
Rehabilitation	-	-	-	-	28	28	-	-	25	35	10	63	63
Surgery	-	39	-	40	45	45	-	-	125	108	53	223	231
Traumatology	-	-	-	37	27	27	-	-	-	-	48	75	64
Urology	-	-	-	39	19	19	-	-	33	33	39	90	90
TOTAL	432	315	0	542	543	543	159	120	646	765	578	2 357	2 284

Table 22 Expected number of beds in BUH and nBUH in 2023¹⁸

* This does not describe all ICU and anaesthesiology and intensive care medicine department (AICMD) beds; this specialisation only covers those parts where centralisation is expected; ICU and standard beds for each of these specialisations are divided separately to approximately 15% of intensive care and 85% of standard beds.

** including haematology

¹⁸ Source: Health Ministry's HPI 2017; the number of beds is given for 2023 when the re-profiling process is expected to be completed and the new university hospital in Bratislava put into operation. Therefore, this figure does not correspond with the situation existing in 2017 but shows expected numbers to be gradually achieved over time through increasing effectiveness in ALOS and bed utilisation regardless of the construction of a new university hospital in Bratislava.

3.2. New concept for education, science and research in the university hospital

The highest-level healthcare services cannot be provided without quality research and development, not only at an institutional level, but also in terms of personnel. The nBUH clinical staff will participate in undergraduate, postgraduate and further education study programmes for healthcare workers, as well as in scientific and research projects, thus contributing to higher professionalism in teaching and training. The practical training in study programmes for doctors and other medical study programmes, as well as pedagogical activities will also be provided by nBUH partners under mutual contractual arrangements.

The key problems identified by the academia include insufficient bed capacities, insufficient number of teachers of clinical subjects, poor organisation at individual clinical workplaces, clinical personnel divided into healthcare facility employees and pedagogical employees of the university, the lack of technical equipment, supply of material and premises for teaching purposes, insufficient links between science & research and education, and a non-existent general workplace of strictly academic nature.

In order to address these problems and provide quality medical education to doctors and other healthcare workers, it is, therefore, necessary to ensure the supply of materials and technical equipment in the clinics, provide adequate personnel and organisational conditions for their operation, and create conditions for clinical research and linking it with other biomedical research institutes. The establishment of a simulation medicine centre will allow the students to practice the skills they learn on medical simulators on real patients.

The number of beds for practical teaching purposes is calculated as 0.5 bed per student (2 students per bed in bedside teaching). For 2,995 students, 1,490 teaching beds are needed. The bed capacity will be sufficient for teaching purposes of the nBUH and its partners.

3.2.1. Science and research

The proposal is based on an idea that the research section will be an integral part of the hospital, directly connected with the premises serving the patients and within the direct reach of medical professionals participating in clinical research. The research section should be shared by the nBUH, LF UK, SZU, the Slovak University of Technology (e.g. development of new sensor-based diagnostic devices) and the Slovak Academy of Sciences for the purposes of clinical research.

A part of research capacities of the LF UK's and SZU's theoretical institutes could be moved to the nBUH premises (all of them, under the best-case scenario). The spatial and technical requirements may then partially overlap with the proposed "University Hospital's Biomedicine Centre" model shown below.

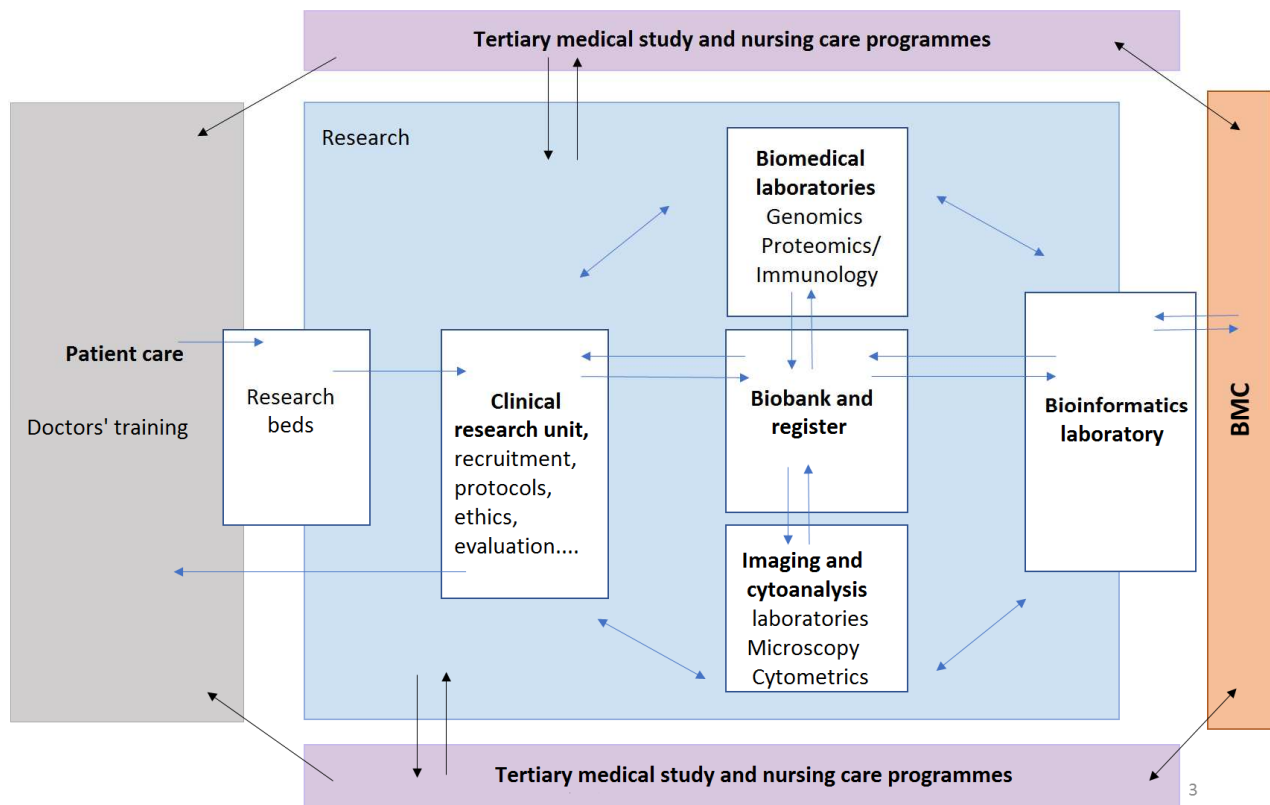


Figure 3 Proposed integration of the science and research component in the nBUH¹⁹

The research section should consist of the following units and laboratories:

- clinical research unit
- biobank and register
- biomedical laboratories
- genomics
- proteomics
- immunology and biochemistry
- virology and microbiology
- imaging and cell analysis laboratories
- microscopy
- cell analysis
- utility rooms ("factory")
- bioinformatics laboratory

The new research facilities would require approximately an area of 1,400 m² and would employ approximately 44 professionals.

The university hospital's biomedicine centre does not require any separate premises. Its pre-clinical and translational research will be conducted in the centre's existing premises inside the Slovak Academy of Sciences complex, whose results can then be validated in the nBUH's research section directly on samples of nBUH's patients in cooperation with the LF UK and SZU. It is assumed that the university hospital's biomedicine centre can provide personnel grants for research in the nBUH to ensure the transfer of knowledge between laboratories and the hospital. Alternatively, nBUH researchers will have employment contracts signed with the nBUH and represent a liaison point between the nBUH and the university hospital's biomedicine centre.

¹⁹ Source: Slovak Academy of Sciences 2017

Proposed targets to be achieved with respect to cooperation in education are shown on Figure 4.

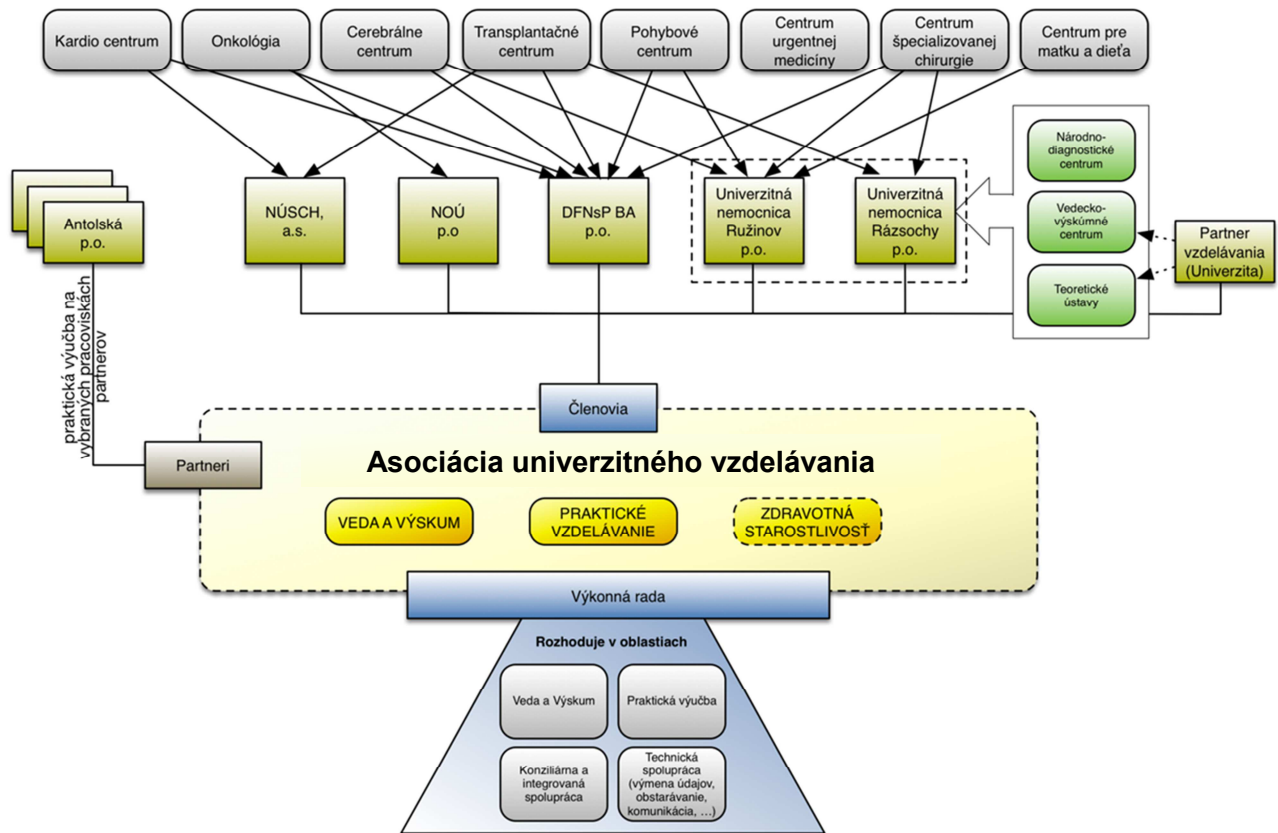


Figure 4 Proposed target arrangement of cooperation in education

LEGEND:

Kardio centrum	Cardio centre
Onkológia	Oncology
Cerebrálne centrum	Cerebral centre
Transplantačné centrum	Transplantation centre
Pohybové centrum	Movement centre
Centrum urgentnej medicíny	Urgent medicine centre
Centrum špecializovanej chirurgie	Special surgery centre
Centrum pre matku a dieťa	Mother and child centre
Antolská p.o.	Antolská Hospital
NÚSCH	National Institute of Cardiovascular Diseases
NOÚ	National Oncology Institute
DFNSP Bratislava	Children's Teaching Hospital
Univerzitná nemocnica Ružinov	University Hospital Ružinov
Univerzitná nemocnica Rážochoy	University Hospital Rážochoy
Národno-diagnostické centrum	National diagnostic centre
Vedecko-výskumné centrum	Science and research centre
Teoretické ústavy	Theoretical institutes
Partner vzdelávania (univerzita)	Education partner (university)
praktická výučba na vybraných pracoviskách partnerov	practical training at selected partner workplaces
partneri	Partners
členovia	Members
Asociácia univerzitného vzdelávania Bratislava	University education association Bratislava
Veda a výskum	Science and research
Praktické vzdelávanie	Practical training
Zdravotná starostlivosť	Health care
Výkonná rada	Executive Board
Rozhoduje v oblastiach	Decides on

Veda a výskum	Science and research
Praktická výučba	Practical training
Konziliárna a integrovaná spolupráca	Medical consultations and integrated cooperation
Technická spolupráca (výmena údajov, obstarávanie, komunikácia...)	Technical cooperation (exchange of information, procurement, communication...)

The marked centres do not represent separate departments, but comprehensive centres of specialisation. The process of geographical, functional and specialisation reorganisation will be elaborated in full details in a separate document to be discussed by the Slovak government.

3.2.2. Legal framework for target arrangement of cooperation in education

The legal framework will consist of a uniform central management platform for the new Bratislava University Hospital along with its members and partners. The purpose of this arrangement is to enable joint planning and delivery of practical training, effective capacity planning and teaching capacity allocation for undergraduate and postgraduate education. Equally important is to unify procedural and legal mechanisms in medical consultations and integrated patient care among individual hospitals and institutes. The third domain of possible cooperation is science and research.

The key prerequisite for the successful functioning of this type of cooperation is the voluntary engagement, though with binding effects on participating members.

In order to effectively use resources and scale of cooperation, two types of engagement have been proposed: a regular membership with corresponding rights and obligations arising from such membership, and a partnership with a limited scope of mutual relations, primarily designed for hospitals that will deliver a part of practical training.

The legal framework governing the uniform central management platform will be defined along these lines:

- a) general contractual arrangement (a memorandum of cooperation, framework agreement on share management and cooperation, etc.), contracts with educational institutions;
- b) the principle of an open contractual arrangement with a possibility for members and partners to join or leave the arrangement in the future;
- c) the principle of a framework-level and general contractual arrangement, with individual rights and obligations subsequently defined and specified in detail through follow-up bilateral or multilateral implementing agreements concluded between members and partners;
- d) initial participants in this contractual arrangement will be the nBUH and selected members (the National Institute of Cardiovascular Diseases, the National Oncology Institute, etc.);
- e) the contractual arrangement will cover a binding agreement of its participants on joint management and cooperation in the following domains: science and research, practical training, medical consultations and integrated cooperation, technical cooperation (exchange of data, procurement, communication);
- f) the participants will be divided into two categories:
 - members with a right to participate in the sessions of a managing body, to comment on discussed matters, and to vote;
 - partners with a right to participate in the sessions of a managing body, to provide comments on discussed matters, but without voting rights;
- g) a joint management body - Executive Board - will be created; its powers, composition and its rules of procedure (including convening meetings, discussion, and decision-

- making) will be governed by a statute to be adopted by the initial participants at the Executive Board's first meeting;
- h) admission of a new member or partner to this contractual arrangement must be subject to decision by the Executive Board;
 - i) each member or partner may leave this arrangement based on a written notice delivered to the Executive Board with a notice period not shorter than 12 months from the day of its delivery.

3.3. Ensuring bed capacities in new BUH – estimated demand

The basic input data to define the size of bed capacities in the nBUH included projected demographic development and structure of population in the city territory according to Infostat, an epidemiologic profile forecast based on the NHIC data, basic parameters of transferred entities, future technology development, and the hospital's educational obligations and research ambitions.

3.3.1. Demographic forecast

The demographic forecast is based on a percentage growth of population against a previous year, based on a 0.9% statistical increase between 2013-2016. The age structure reflects the ageing of population; the 65+ category will nearly double, the child population is expected to decrease, while the size of working-age population remains more or less stable. The data on demographic growth are taken from an INFOSTAT forecast, described in detail in Annex 1.

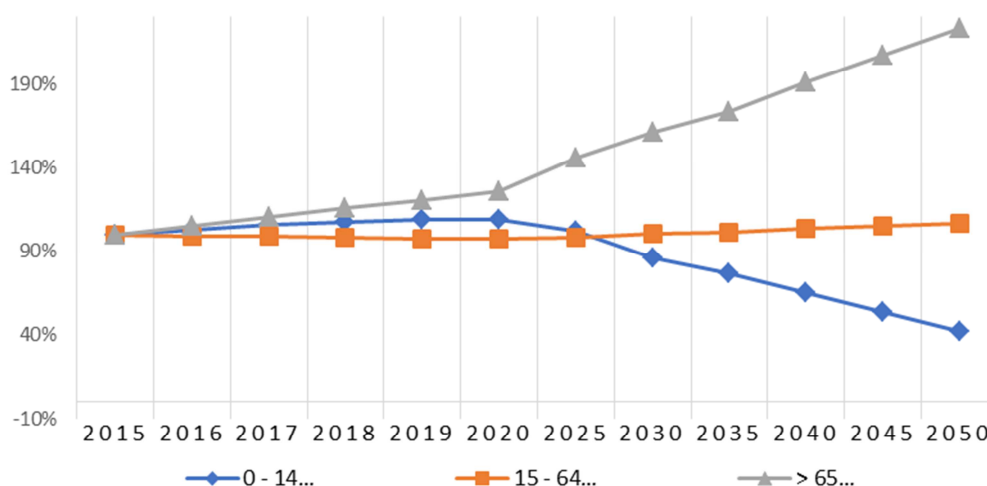


Chart 4 Projected demographic development by age - Bratislava region²⁰

3.3.2. Functional model of a new hospital

²⁰ Source: Infostat 2013

The most recently published studies currently prefer a model that optimises the movement of a patient in a hospital, taking into account the specific features of the hospital as a means of investment in patient's treatment. This approach is known as a "Layers model"²¹ which defines individual layers of a hospital as relatively autonomous hospital wings with a different focus, investment needs, service life periods, and process management.

Hospital's functions are divided into four basic layers:

- first layer "Medical and surgical intensive care (MSIC)" — so-called "hot floor", performs functions with high technical and capital requirements;
- second layer "Hotel" - provides accommodation to patients;
- third layer "Office" - outpatient examinations and treatment, hospital's back-office operations, such as accounting, HR, hospital management;
- fourth layer "Factory" – provides medical and non-medical support services such as laboratory diagnostics, pathology, pharmacy, catering and other services.

Functional model	m2 (NFA)	m2 (GFA)	CaPex (incl. VAT)
Hotel	11,611	21,249	51,390,857
Hot floor	13,187	23,603	78,182,825
Office	27,368	44,783	81,842,299
Factory	18,345	23,849	52,049,164
Total	70,512	113,484	263,465,145

Table 23 Layers model, including estimated net floor area (NFA), gross floor area (GFA), and a gross capital expenditure estimate, inclusive of VAT.²²

Comparing the demographic forecast and the volume of output delivered by the Kramáre General Hospital has helped define the functional requirements for a new hospital. The corner stone of the new Bratislava University Hospital and its organisational structure will be Centres of Excellence which will provide patients having specific diagnosis with comprehensive services all in one place. They will be centralised, state-of-the-art centres (both in terms of technology and personnel) providing the cutting-edge high-tech medical procedures.

The basic structure of healthcare services provided in the new hospital:

- urgent medicine centre
- anaesthesiology and intensive medicine department
- trauma and movement centre (traumatology, orthopaedics, rehabilitation)
- brain (cerebral) centre (neurosurgery, neurology)
- burn centre
- surgery centre (including vascular surgery and urology)
- robotic surgery
- thoracic surgery centre
- transplantation centre
- specialised surgical disciplines (eye surgery; ear, nose, throat surgery, dental surgery)
- one-day surgery centre
- mother and child care centre (maternity ward and perinatology department)
- internal medicine (including geriatrics)
- oncology centre

²¹ Netherlands Board for Health Care Institutions (2007). *Building differentiation of hospitals – layers approach*. Utrecht, Netherlands Board for Health Care Institutions

²² Source: Health Ministry's HPI 2017

- haematology and haemato-oncology
- cardio centre (including invasive cardiology)
- radiology centre (including nuclear medicine)
- infectious diseases
- outpatient centre
- operating rooms
- laboratory and diagnostic centre
- university hospital's teaching centre
- university hospital's biomedicine centre

The urgent medicine centre will provide comprehensive care to patients with urgent (sudden) medical conditions.

The anaesthesiology and intensive medicine centre will provide comprehensive intensive care to patients in critical conditions and anaesthesiology care to patients undergoing surgeries.

The trauma and movement centre (traumatology, orthopaedics, rehabilitation) will be the most advanced traumatology centre in Slovakia, a centre of excellence focusing on comprehensive management of post-traumatic conditions. In cooperation with the brain centre, burn centre and surgery centre, the trauma centre will be capable of treating even the most complicated post-traumatic conditions (so-called polytrauma) in one place, without the need to transport patients to a different hospital. In addition, the centre will carry out a whole range of orthopaedic surgeries on patients with locomotor system diseases and disorders. A rehabilitation department will also be part of the trauma centre.

The brain (cerebral) centre (neurosurgery, neurology) will be another centre of excellence, the most advanced, high-tech equipped neurosurgery department in Slovakia. In cooperation with the oncology centre, the brain centre will carry out the most advanced surgical interventions and provide comprehensive oncology care to patients with brain tumours (no similar comprehensive medical centre currently exists in Slovakia). In addition, it will cooperate with the trauma centre in the treatment and management of post-traumatic conditions. The centre will also include a neurology department which will provide comprehensive care and services to patients with acute strokes (including haemorrhagic strokes).

The burn centre will cooperate with other nBUH centres, mainly with the trauma centre, anaesthesiology and intensive care department, and the surgery centre, in order to provide the most advanced comprehensive treatment of burns.

The surgery centre (including vascular surgery and urology) will provide a wide range of surgical operations, including urological and vascular surgeries. The centre will cooperate mainly with the anaesthesiology and intensive medicine department, the trauma centre, the burn centre, the oncology centre, and the transplantation centre. The robotic surgery centre will be the first comprehensive centre of this kind in Slovakia and will conduct innovative robot-assisted surgeries in urology, gynecology and other medical domains.

The thoracic surgery centre will deliver a wide range of thoracic surgical operations. The centre will closely cooperate with the anaesthesiology and intensive medicine department and with the trauma centre. Together with the oncology centre, it will provide an advanced, comprehensive care to patients with lung cancer (lung carcinoma represents a severe medical issue in Slovakia).

The transplantation centre will cooperate with the surgery centre in order to deliver a comprehensive care to patients included in a transplantation programme.

In cooperation with the surgery centre, the radiology centre, as well as with the National Oncology Institute and the OÚSA, the oncology centre will provide comprehensive treatment of

selected oncological diseases. Its close cooperation with the thoracic surgery centre and the brain centre will allow to create a unique workplace of this kind in Slovakia, focused on the treatment of patients with lung and brain tumours.

The haematology and haemato-oncology will provide comprehensive treatment of both haematologic and haemato-oncologic diseases. The workplace will also include a transplantation unit for autologous and allogenic transplants of blood-forming stem cells.

The cardio centre (including invasive cardiology), in cooperation with the anaesthesiology and intensive medicine department and the National Institute of Cardiovascular Diseases, will deliver the most advanced comprehensive care to patients with myocardial infarction (including through the use of invasive cardiology techniques).

During the spatial planning, the gross floor area was calculated at 113,484 m² (578 beds), taking into consideration simulated demographic development and a future prevalence of individual types of diseases.

Standard prices for general hospitals in the Netherlands were used as a benchmark in calculations of capital expenditures. These standard prices are derived from the data used for a hospital as a whole (monolithic structure). Individual functional types and layers use different price levels expressed as a percentage of the standard prices for a monolithic structure which serves as the basis. Construction works account approximately for 2/3 of total costs, technology and equipment accounts for one-third.

The presented plans for the construction of an advanced university-type hospital will also respect the need to have experimental research placed in a close vicinity of and with physical links to clinical workplaces. The design of individual departments will therefore be divided into a medical section, where medical procedures and clinical teaching are provided, and a scientific and experimental section. This requirement will also be reflected in the preparation of project dossiers.

The design of the medical section will comply with the principles of the so-called good clinical practice. This will allow to apply for research task contracts, as well, with a possibility for training and growth of a new generation of top-level doctors, medical professionals and researchers.

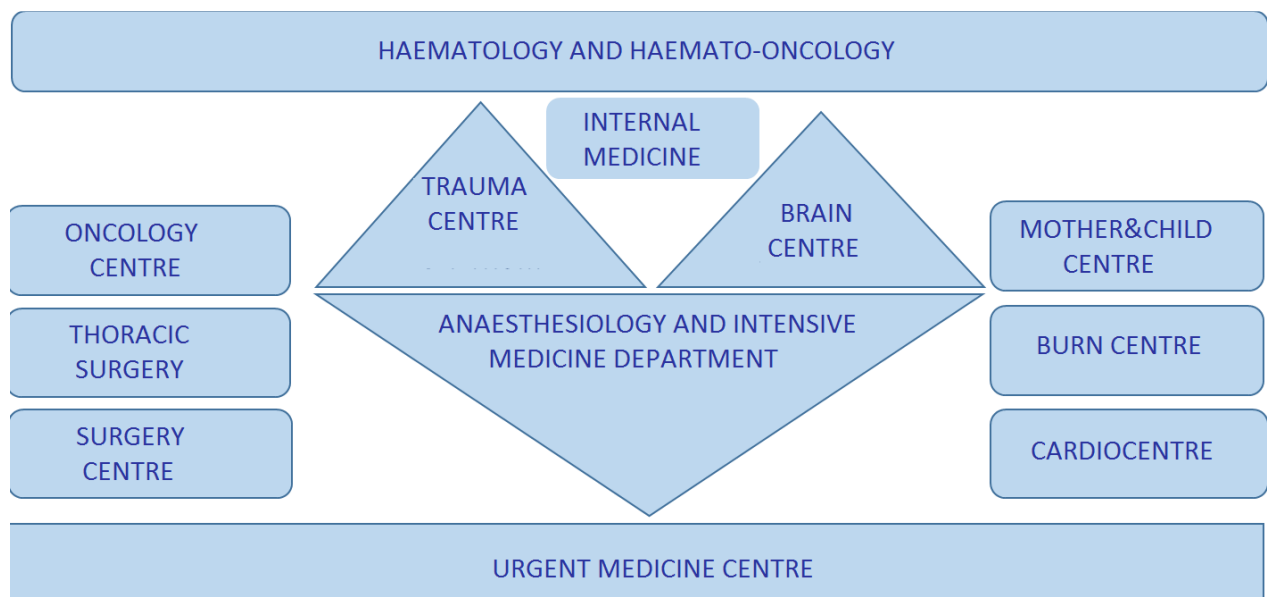


Figure 5 Functional model of the new hospital

3.4. Location of the new University Hospital

3.4.1. Accessibility by sites

The future location of the new hospital should be in the centre of a catchment area that is well served by public transport while respecting the quality of the surrounding environment and the topography of the plot of land. It is not recommended that the plot of land be located parallel to prevailing winds from the direction of major sources of air pollution. Excessive noise levels would also be seen as a negative aspect.

Given the territorial division and catchment areas (for more details see chapter titled [Territorial distribution of healthcare services in Bratislava](#)), four sites in the territory of Bratislava have been investigated in more detail, including the site contemplated under the PPP project. The assessments of individual sites are provided in separate sections of [Chapter 5 Annex 1](#).

Site A the Rázsochy area,	unfinished BUH building	Chapter 5.1.3.1.
Site B the BUH Ružinov area,	reconstruction/completion of the hospital	Chapter 5.1.3.2.
Site C area to the east of Bratislava green field		Chapter 5.1.3.3.
Site D the Patrónka hospital grounds	evaluated under the PPP project	Chapter 5.1.3.4.

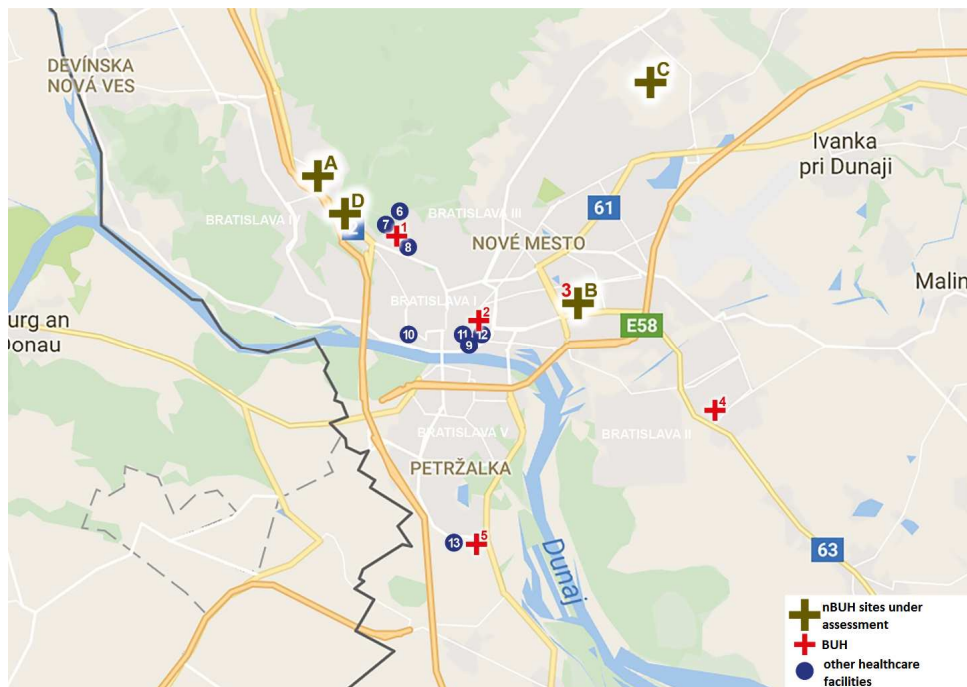


Figure 6 Potential sites for the new hospital

Explanatory notes

1. Univerzitná nemocnica ak. L. Dérera - Kramáre (Kramare Hospital),
2. Univerzitná nemocnica Bratislava Staré mesto (Staré mesto Hospital),
3. Univerzitná nemocnica Bratislava Ružinov (Ružinov Hospital),
4. Špeciálna geriatrická nemocnica Podunajské Biskupice (Podunajské Biskupice Hospital),
5. Nemocnica sv. Cyrila a Metoda (St. Cyril and Methodius Hospital),
6. Národný onkologický ústav (National Oncology Institute),
7. Národný ústav srdcových a cievnych chorôb (National Institute of Cardiovascular Diseases),
8. Detská fakultná nemocnica s poliklinikou Bratislava (Children's Teaching Hospital with Polyclinic),
8. Nemocnica sv. Michala, a.s., (St. Michael's Hospital)
9. Univerzitná nemocnica s poliklinikou Milosrdní bratia (University Hospital of the Hospitaller Order of Saint John of God),
10. Gynekologicko pôrodnická nemocnica Koch, s.r.o., (Gynecology and Obstetrics Hospital Koch)
11. Onkologický ústav sv. Alžbety, s.r.o., (St. Elisabeth Cancer Institute),
12. SI Medical (Medissimo), Site A –

3.4.2. Proposed solution for the new University Hospital considering the sites under review

In connection with the sites under review, the Ministry of Health proposes:

1. the reconstruction and/or completion of the general hospital in Ružinov
2. the construction of a new Bratislava University Hospital in the Rázsochy site

The Ministry of Health will be consulting the individual preparatory stages of the project with the Public Procurement Office on an ongoing basis.

3.4.2.1. Reconstruction of the general hospital in Ružinov

In order for the hospital to be located in the Ružinov city district where high demands for land use prevail, it will be important to increase the internal floor area standard by effectively proposing medical processes which will be part of the conceptual design of medical planning. The scope of the reconstruction or completion in line with the applicable regulations of the Bratislava's zoning plan will be based on the results of medical planning. The purpose of the reconstruction and/or completion of the Ružinov Hospital will be to partially cover the needs of the wind-down hospital at Kramáre and to transform the hospital in Staré mesto with additional needs supplemented by the new hospital.

The total capital expenditures for the reconstruction of the Ružinov Hospital are estimated at EUR 80 million (gross estimated investment incl. VAT)

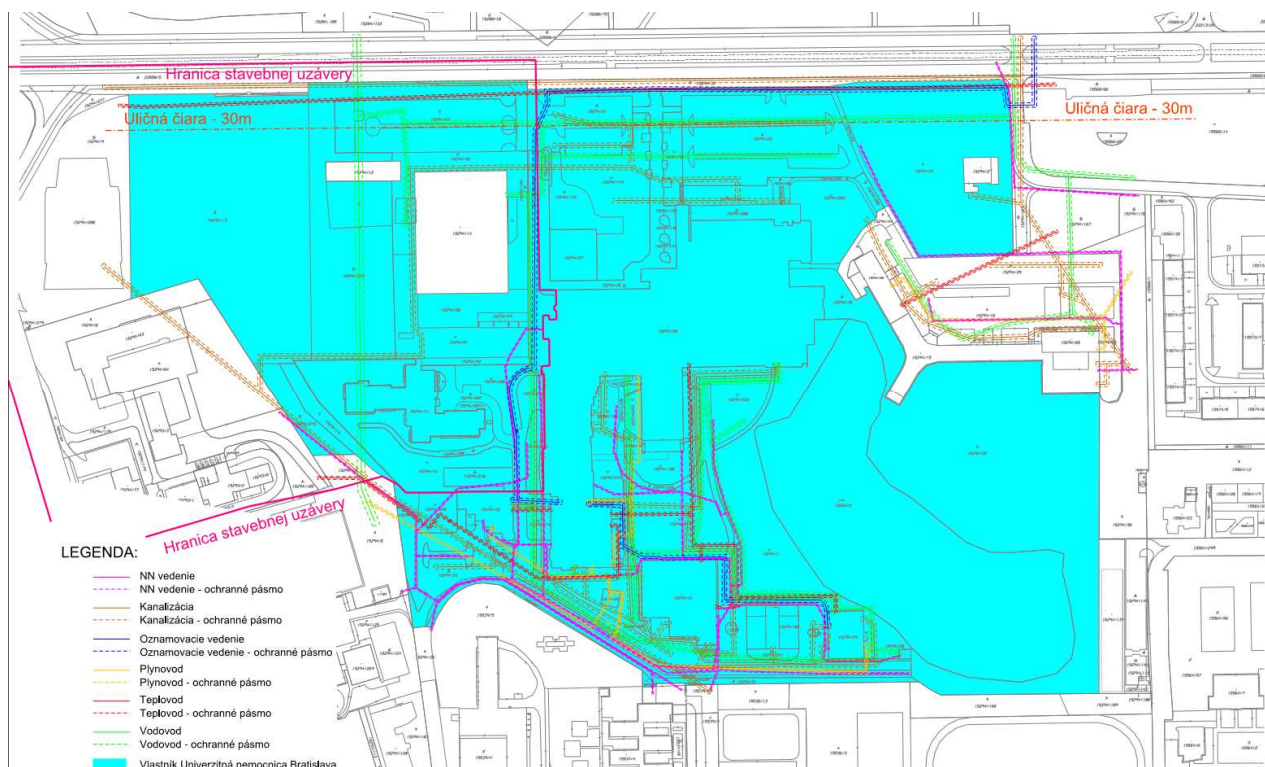


Figure 7 Plots of land in the ownership of the Bratislava University Hospital – the Ružinov site

3.4.2.2. Construction of a new hospital at the Rázsochy site

Due to several nation-wide medical programmes (transplantation, etc.), the catchment area of the Rázsochy Hospital will cover the entire territory of the Slovak Republic. The construction of the new hospital will aim at relieving the burden on major hospitals in Bratislava (Ružinov, Petržalka) which have been supplementing the absenting hospital complex in the long term, as well as finding a replacement for the Kramáre Hospital. Hence, the hospital will not only cater to the needs of the population living in the western part of the city and the adjacent regional areas.

In order to carry on with the construction of the nBUH at the Rázsochy site, it is necessary to settle the disputed claims related to real estate property at the Rázsochy site and the contractual relations that have arisen in connection with the unfinished building of the University Hospital in the past. It must be noted that the existence of the above disputed claims, as well as the need for their settlement, is not subject to the decision as to whether or not the construction at the Rázsochy site should continue.

The possibilities for completing the nBUH construction with the existing building permit by making a significant change in the functional specification and the ensuing changes in the project implementation documentation based on a “structural alteration prior to completion“ are limited by site permit No. ÚPA - 3172-154/24/84 on the siting of structure No. 4144, the Bratislava’s zoning plan as amended, as well as the healthcare zoning master plan.

Where a significant change in the functional specification and the ensuing change in the project implementation document is in line with Site Permit No. ÚPA - 3172-154/24/84 on the siting of structure No. 4144, the change in the site permit will most likely be unnecessary, and the procedure under the Impacts Assessment Act will not have to be carried out either – a positive project scenario.

A prerequisite to building a new hospital in Rázsochy is to transfer all legal relations, including with respect to real estate – lands and the unfinished building at the Rázsochy site – to an autonomous quasi-government organisation for which a collective statutory body will be established, along with a wider supervisory body with strengthened powers during the preparation and construction works on the hospital.

The funding of the quasi-government organisation (both capital and operating costs) will be provided through the contributions from the Health Ministry’s budgetary chapter or, as the case might be, from loans (the size of loan will be specified based on a binding cost estimate after the preparation of an architectural study and project documentation, with the costs of financing prevailing at that time being taken into consideration). Several long-term loan resources are currently available, for example, the EIB. The calculated financial model includes a standard 4% discount rate of the state.

Given the scope of the project, it will be necessary to thoroughly prepare the tender documents for the public procurement procedure to select an advisor for the preparation of a functional model, architectural study of the nBUH to the extent allowed under the site permit, and project documentation for all stages of the authorisation process .

The concept will include:

- medical proposal (flows of patients, health workers and medical supplies and equipment),
- non-medical proposal (logistics, waste management, technological facilities, supplementary activities),
- architectural study (master plan - a key document according to which the project should be designed).

Based on the outputs from the concept and its optimisation, the advisor will prepare project documentation for individual stages of the authorisation process pursuant to the Building Act. The advisor will also be responsible for consulting the documentation with relevant public authorities and for obtaining necessary permits, approvals and valid decisions for the construction, and occupancy permits.

Afterwards, a general contractor for the construction works and technological equipment (including the removal of the necessary parts of the existing structure) will be procured.

With respect to as yet unidentified risks which may necessitate a new siting procedure, it is also necessary to foresee, within the authorisation process under the Building Act, a possible environmental impact assessment (EIA) procedure, as well as possible proceedings on the removal of the building and its actual removal – a negative project scenario.

The time needed for the construction works is specified in chapter 3.6 Timetable which also includes a time schedule that takes into account the aforementioned risks (EIA, proceedings on the removal of the building, the removal of the building).

3.5. Management and financing framework for the new Bratislava University Hospital

Based on the final step within the assessment of the individual project feasibility variants ([Chapter 5.1.4](#)), the so-called “integrated project management model” has been identified as the most effective and advantageous option for the state. The model was preferred over the standard PPP project or the implementation of the project by the state through separate – non-linked subcontracts for the planning and architectural services and construction works.

The integrated model is based on control and management of inpatient healthcare provision. Through a public procurement procedure, the state will designate the “healthcare management “ (hereinafter as “HCM”), i.e., a company which will closely cooperate with the Health Ministry in designing nBUH’s medical profile and prepare the architectural study, as well as project documentation. At the same time, the HCM will act as the Health Ministry’s advisor in dealings with the general contractor of the nBUH building with a view to supervising compliance in terms of performance and its scope in particular as regards meeting the overall expected functional, timeframe and economic assumptions. Once the nBUH construction is completed, the HCM will continue to act as the Health Ministry’s advisor for a period of five years of the hospital’s operation. The main goals of providing expert advice will be to set up internal processes, quality systems and the implementation of specialist knowhow in order to increase cost effectiveness. The HCM’s remuneration will be evaluated on an ongoing basis during the individual stages of the project based on contractually defined performance indicators. If the parameters are not complied with by the hospital’s management, a sanction system (personnel and financial) will be applied.

The general supervision over the entire course of the project will be carried out by the Ministry of Health. The Ministry will be checking the level of healthcare provision based on a pre-defined standard, the level of prevention services provision and it will also be overseeing postgraduate training of doctors.

The financing of the project will be provided by the state. A separate procurement procedure will be carried out to select the general contractor for the construction, with a focus on HCM’s shared responsibility for verifying the results of its contractual activities in order to optimise the individual stages of the implementation phase.

This model entails integration between the benefits of the PPP approach and the so-called traditional implementation of the project by means of awarding a public contract and the subsequent operation by the state. Based on economic analyses, this seems to be the most effective option of all available alternatives.

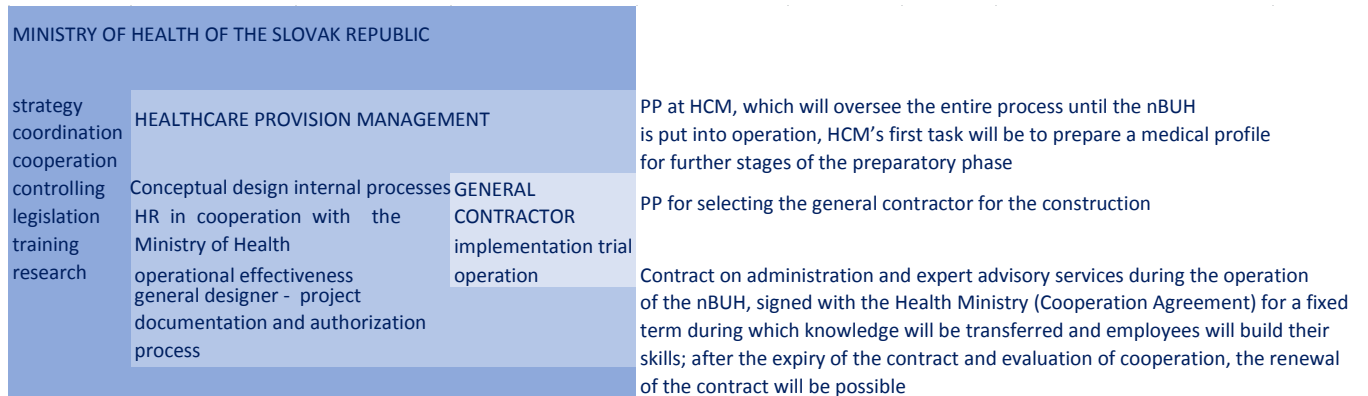


Figure 8 The management model of the nBUH

* the process and packages of tender documents for the public procurement procedure may vary depending on the status of the project in terms of its timeframe and the actual scope of public procurement

Correctly set up key performance indicators (KPI) represent the key parameter for ensuring effectiveness and benefits brought by the healthcare management entity. KPI will comprise a combination of indicators with different weights from various areas for the individual stages of the project, as shown on Figure 9. In terms of operation, the proposed KPIs include receiving the BREEAM and JCI accreditation and attaining a positive EBITDA. These indicators will also be the limiting factor for paying out the variable component of the HCM's remuneration. There are several hospitals which have already implemented similar projects to a certain extent; following the acceptance of the project, these will be analysed in detail and prepared as part of tender documents for the implementation of the nBUH.

The weights of KPIs for individual project stages will be determined after pre-competitive rounds with the tenderers for:

- pre-project preparation (PP)
- project stage (PS)
- implementation phase (IP)
- operation phase (OP)

The scope and weights of individual indicators in every phase will be determined at the next project stage. The HCM's overall success rate will be calculated as follows:

$$\sum(\text{indicator weight} \times \text{indicator performance score})_{PP} \times KPI_{PP} \text{ weight} + \sum(\text{indicator weight} \times \text{indicator performance score})_{PS} \times KPI_{PS} \text{ weight} + \sum(\text{indicator weight} \times \text{indicator performance score})_{IP} \times KPI_{IP} \text{ weight} + \sum(\text{indicator weight} \times \text{indicator performance score})_{OP} \times KPI_{OP} \text{ weight} = 100\%$$

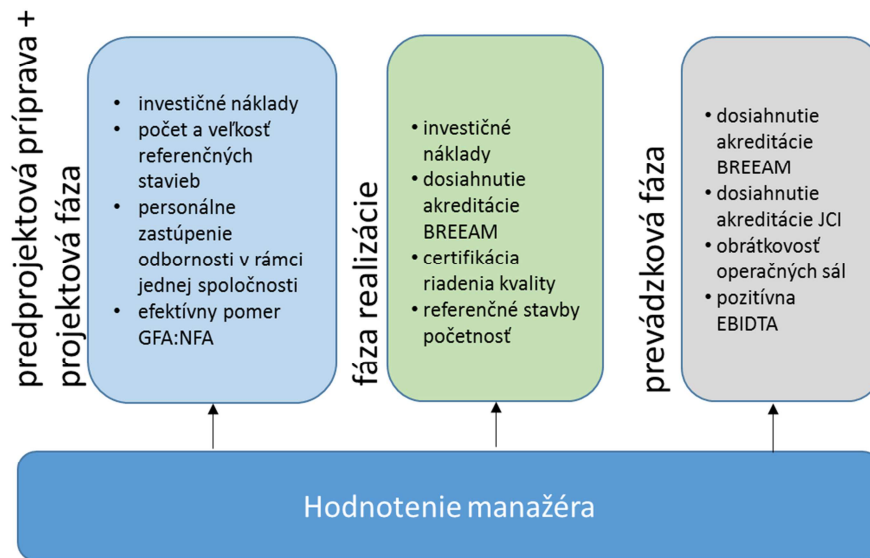


Figure 9 Proposal of key performance indicators

LEGEND:

predprojektová príprava + projektová fáza	pre-project preparation – project phase
investičné náklady	capital expenditures
počet a veľkosť referenčných stavieb	number and size of reference buildings
personálne zastúpenie odbornosti v rámci jednej spoločnosti	adequate staffing to concentrate competences and qualifications in a single company
efektívny pomer GFA:NFA	effective GFA:NFA ratio
fáza realizácie	implementation phase
investičné náklady	capital expenditures
dosiahnutie akreditácie BREEAM	receiving the BREEAM accreditation
certifikácia riadenia kvality	quality management certification
referenčné stavby	reference buildings
početnosť	number
prevádzková fáza	operational phase
dosiahnutie akreditácie BREEAM	receiving the BREEAM accreditation
dosiahnutie akreditácie JCI	receiving JCI accreditation
obrátkovosť operačných sál	turnover interval for operating rooms
pozitívna EBITDA	positive EBITDA
Hodnotenie manažéra	Assessment of the manager

The proposed scope of HCM's responsibility:

- preparation of the hospital's functional model and architectural study,
- obtaining all the required authorisations, consents and opinions which may be necessary for the commencement of construction,
- preparation of the project documentation, acquisition of the required expertise/competences and qualifications to act in accordance with the laws and legislative framework of the Slovak Republic,
- during the construction phase, HCM will be responsible for verifying its fulfilment and for identifying the risks with possible changes in the construction which would necessitate changes in the functional model, as well as risks associated with the timeframe and economic changes in the project,

- during the nBUH operation phase, the scope of responsibility will be determined by receiving and maintaining the JCI accreditation for the next five years and by implementing the quality systems,

On the Health Ministry's part, it will be necessary to ensure independent supervision over the entire project, with the primary role to oversee the performance of works and the financing of the project. Furthermore, the Health Ministry will ensure the provision of healthcare services and services related to training, science and research with the use of the required capacities.

DIVISION OF RESPONSIBILITIES	HZM	Ministry
Designing a functional model and architectural study necessary for the construction and operation	✓	
Preparation of the project documentation for the individual stages of the authorisation process	✓	
Obtaining all the required authorisations and consents for the design and construction of the nBUH	✓	
Obtaining all the required permits and licences necessary for the operation of the nBUH and the provision of healthcare		✓
Financing of the project		✓
Ensuring the design and management of the construction, as well as equipping the nBUH and ensuring the provision of supplementary services	✓	
Support financing during the operation of the nBUH		✓
Provision of healthcare		✓
Preparation of the transfer plan and ensuring the transfer of employees	✓	✓
Responsibility for patients		✓
Ensuring and supporting the training activities		✓
Providing and supporting the science and research services		✓
Receiving and maintaining the JCI accreditation for a period of five years	✓	
Responsibility for the nBUH's operation		✓
Conclusion of contracts with health insurance companies		✓
Quality control and determination of standards		✓
Introduction of quality systems	✓	

Table 24 Division of responsibilities between the HCM and the Ministry of Health

3.6. Timetable

Site A Rázsochy

unfinished BUH building

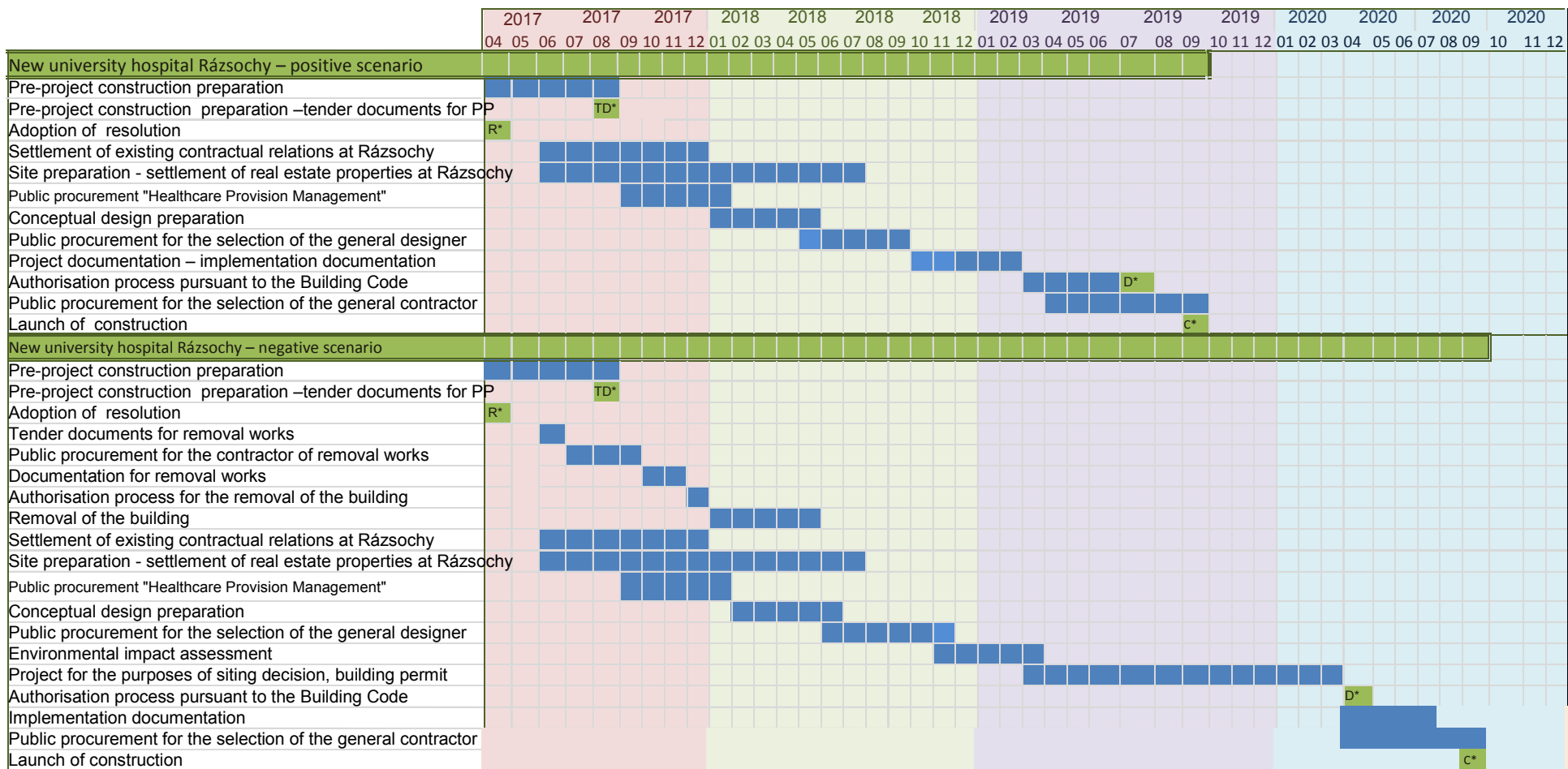


Chart 5 Timetable of the nBUH Rázsochy

*TD - tender documents; R - resolution; D - decision, C – construction

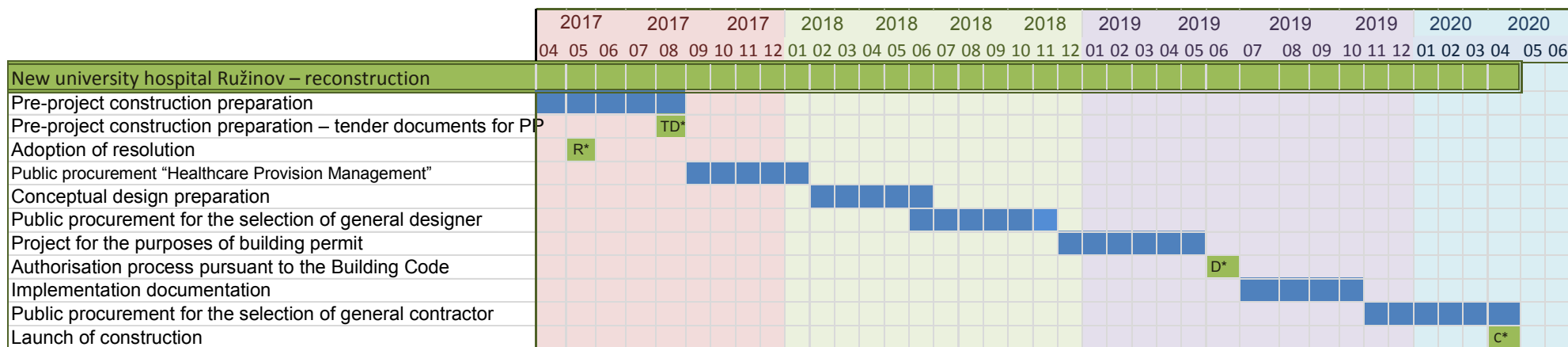


Chart 6 Timetable of the nBUH Ružinov

*TD - tender documents; R - resolution; D - decision, C – construction

3.7. Key risks of the project

During the preparation of the project, several risks associated with the construction of the nBUH and healthcare provision in Bratislava have been identified. The key risks, their impact and the measures aimed at eliminating the risks are shown in the table below:

Risk		Description	Risk occurrence probability	Potential risk impact	Measure to eliminate the risk
1.	Staffing of key health personnel	skilled health professionals are the cornerstone of a successful project	medium	high	integrating qualified personnel within the preparatory phase of the project, contracting the key personnel,
2.	The planned new hospital at the Bory site as communicated in the media	competitive environment in terms of health personnel	high	medium	gradual phasing out of operations at Kramáre and a managed transfer of employees to Rázsochy – in accordance with the “transfer plan”
3.	The planned new hospital at the Bory site as communicated in the media	competitive environment in terms of bed capacities	high	low	different composition of qualifications – profiling into a tertiary referral type of a university hospital; In connection with the publicised plan to build a new hospital at the Bory site which is located in the vicinity of the Rázsochy site, it is advisable to hold discussions regarding the overall plans of the private investor and align the needs of the Bratislava region in the area of inpatient healthcare provision in order to ensure the best use of additional private funding sources for these needs.
4.	Introduction of DRG	change in the payment mechanism within 6 years in accordance with the approved methodology – impossible to estimate the base rate	medium	medium	using the advisor’s know-how in optimising medical processes
5.	Duration of the preparatory phase of the project	public procurement, authorisation process, time for the settlement of disputed claims	high	high	creating packages within public procurement, approval of the major investment

Table 25 Description of project risks

4. Conclusion

The existing state of play in education, science and research, as well as the provision of health care in Bratislava has been wanting an essential conceptual change and a major investment of significant nature for several decades.

The outcome of this document is a proposal for:

- 1. reorganising the BUI's current profile,**
- 2. conceptualizing a new approach in training for health professionals in the university hospital**
- 3. investment activity:**
 - a. the construction of a new University Hospital at the Rázsochy site**
 - b. the reconstruction of the University Hospital in Ružinov.**

The basis for the new Bratislava University Hospital consists of healthcare re-profiling and changing the concept of health care provision. The construction of the new University Hospital represents an essential vehicle for implementing these changes. In the outcome, there will be high-quality and efficient health care provided in Bratislava and, consequently, in the Slovak Republic as a whole.

The presented solutions are, in the opinion of the Health Ministry, the most effective options that can be implemented within the shortest time possible and will provide, as part of cooperation with the academia and research, high-quality care, training and research for the future generations.

5. Annexes

5.1. Annex 1: Assessment of the variants for implementing the new Bratislava University Hospital

The assessment of nBUH implementation variants has been carried out as part of a process similar to that which was used for analysing the project in the original feasibility study ("Feasibility study on investments in acute healthcare beds in Slovakia in the context of the proposal for the construction of a new hospital in Bratislava - Summary Report – 5 June 2014, nBUH, Ernst & Young, adopted by Government resolution No. 296/2014) (Chart 7). The entire assessment process was repeated as a result of new information about the real possibilities for changes in the BUH obtained from tenderers within the competitive dialogue of the cancelled PPP project and due to updated data concerning the healthcare structure and demand in Bratislava.

The assessment was made in four steps which differ from the feasibility study in that they address, as the second step, the medical redesign of healthcare, i.e., re-profiling of healthcare. This step was neither identified in the study, nor in the competitive dialogue itself, which was seen as a significant downside.

Based on the results from the assessments of variants, the Health Ministry has arrived at a similar conclusion as the Financial Policy Institute²³ in its December 2015 analysis of the benefits brought by the nBUH project implementation. The PPP approach to implementing the project yielded a high negative net added value and, considering the funding costs and risks, it is not practicable for the project implementation purposes. Implementation of the project by the state has not yielded a positive net present value either. Due to insufficient experience and insight into capital and operational ineffectiveness, it is possible to expect worse effectiveness of the construction and operation in a situation where the project is implemented by the state through separate sub-contracts. This effectiveness is not offset by benefits arising from the financing of the project through a state subsidy.

The benefits of a full-PPP project²⁴, and the increased effectiveness in particular, can be replicated by applying the principle of external management for the operation of the project. Where a private partner designs the hospital and manages it externally for a few years based on pre-defined performance parameters, we may expect an effectiveness rate identical to that of a full-PPP project. The key performance indicators (KPI) will serve as the basis for remuneration paid to the partner. If this mode of hospital's operation is combined with funding by the state, we will get the best of both options. It is actually this alternative that yielded, as the only option, a positive net present value, thus confirming the feasibility of the new hospital.

The assessment has been carried out in four consecutive steps:

Step 1: Assessment of the need for, and possibilities of, modifying the BUH

The first step of the analysis examined the economic return from health care provision in the BUH and analysed the potential impacts in a situation where a) nothing has changed; b) inevitable

²³ Full – PPP, private partner bears the responsibility for all activities under the project.

²⁴ *Naša drahá nemocnica: Možnosti riešenia súčasného stavu Univerzitnej nemocnice Bratislava (Our dear hospital: Possibilities of addressing the current situation in the Bratislava University Hospital (Mach and Bojkovský, 2015)*

repairs have been carried out in the current organisation and c) what would be the impacts of across-the-board re-profiling and reconstruction, if carried out.

Step 2 : Analysis of options for BUH’s re-profiling

This assessment phase took into account the current profile of healthcare provision in the BUH and the demographic trends for the period between 2015 - 2050 while centralising, with the use of best practice, the provision of similar specialisations into separate hospitals. The goal of this step was to optimise the structure of health care provision with a view to attaining the highest possible effectiveness of individual facilities in line with the expected developments in healthcare demand.

Step 3: Analysis of the plots of land

The third part of the analysis took into account the spatial possibilities for implementing the nBUH plan. The analysis covered four sites which were given scores based on transport accessibility, civil engineering/structural assessment, and other factors.

Step 4: Analysis of the form of implementation

The final step of the analysis took into account economic differences of alternative project implementation and funding options.

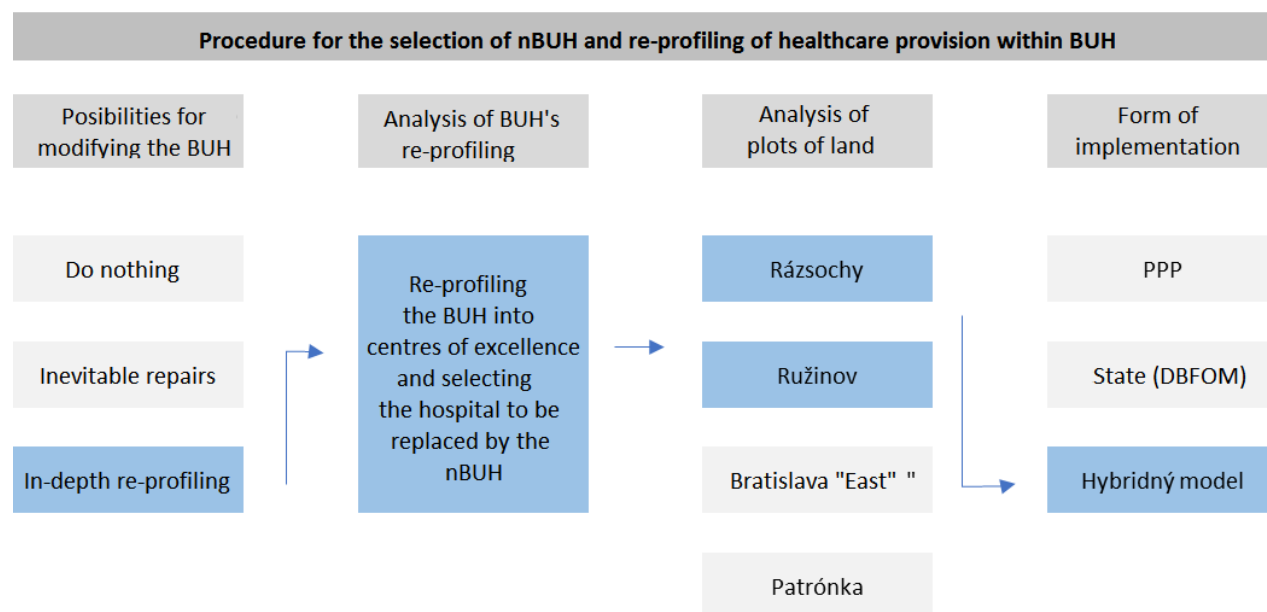


Chart 7 Variants assessment scheme

5.1.1. Step 1: Assessment of the need for, and possibilities of, modifying the Bratislava University Hospital

The assessment of possibilities concerning the modification of the existing state of play in the provision of health care has been defined in detail within three variants which yielded different expected impacts on the effectiveness of operation and the required capital expenditures for their implementation. These three variants are a combination of options ranging from a) no activity (Variant 1 “Do nothing”), b) carrying out the basic repairs so that the hospitals could continue providing healthcare (Variant 2 “Inevitable repairs”) through to deep changes in the provision of healthcare (Variant 3 “Re-profiling”).

In variants 1 and 2, healthcare demand and capacities of individual providers remained unchanged. Variant 3 foresees a change in the BUH's modus operandi, including the construction of the nBUH and the modernisation of the remaining hospitals in Bratislava. Of all options, Variant 3 is the most efficient in terms of operation, but this fact is also reflected in the required capital expenditures, as shown in Table 26 below.

Assumptions	Variant 1:	Variant 2:	Variant 3: Reprofiting
Operational efficiency	no impact, gradual worsening of the OpEx	a13% improvement ²⁶	12-25% improvement, significant personnel changes ²⁷
Input capital requirements	no capital requirements	EUR 31 million	EUR 360 million

Table 26 Variants for modifying the existing state of play in the BUH with financial indicators²⁵

These inputs were used in the economic modelling of the impacts of individual alternatives. The impacts of the assessment are shown in the table below. As can be seen from the table, only Variant 3 “Re-profiling” has the potential to yield a positive net added value from the project, without considering additional positive spill-over effects brought by the implementation of the project, such as improved mortality, quality and availability of healthcare.

	Variant 1	Variant 2	Variant 3
NPV @4% DR	EUR -305,230,000	EUR -70,000,000	EUR 6,970,000
IRR	N/A	N/A	0.28%
Annualised CaPex ²⁹	0 EUR	EUR 5,070,000	EUR 16,580,000
Annualised OpEx ²⁹	EUR 248,420,000	EUR 235,470,000	EUR 224,780,000

Table 27 Financial indicators of the variants subject to assessment

A positive EBITDA and NPV under Variant 3 was primarily achieved, against the existing situation, by improved effectiveness as presented in a 2013 BCG study which identified average potential savings of as much as 16.9% of the current operating costs without any need for reconstruction.

However, unlike the BCG's assumptions, the nBUH re-profiling project (Variant 3) counts on the renovation, re-profiling and construction of a new hospital which means that a significant improvement is expected in two parameters defining the effectiveness of inpatient care, i.e., average length of stay (ALOS) and bed occupancy rate. We expect that, by 2025, these parameters will be gradually improving to an OECD average at a natural pace, but better results can be achieved sooner with re-profiling and construction. Improved bed occupancy rate and turnover interval will facilitate the reduction of overcapacity in terms of the number of beds which

²⁵ Feasibility study, EY, 2014

²⁶ A 12% improvement is based on the original 16% average in the BCG study for the BUH in 2013. Based on information obtained from the Subordinate Organisations Management Section at the Ministry of Health, such savings are not possible without significant capital injections in hospitals; for this reason, the reduced 12% rate has been kept

²⁷ Savings in OpEx are based on Point 6, i.e., BCG study for hospitals which, according to various information, are not expected to undergo significant re-profiling (e.g. Petržalka, in which case the data has been changed based on the function), the higher amounts of savings are meant for other parts of the BUH and are based on conservative assumptions concerning savings (taken over from the competitive dialogue for the PPP project);

²⁸ The requests for capital injections are originating from BUH's individual workplaces and represent inevitable repairs that are necessary for ensuring safety at workplaces

²⁹ 30-year CaPex and Opex converted to one-year basis

is declining over time and, with the new, more efficient hospital coming into play, their number will be optimized even further. The smaller number of beds is directly linked with the need for personnel capacities which will be reduced proportionally in 2023 in comparison with 2013 also for this reason.

However, it must be noted that this process advances gradually over time and is natural, i.e., not involving forced reduction but a gradual optimization which is even further underpinned by the fact that a new hospital will be built. The new hospital even counts on increasing the number of nurses identified as significantly insufficient in the existing Bratislava University Hospital. The data on the development in the number of beds and headcount is presented in Table 28 for every hospital:

Number of employees	2018	2021	2022	2023	2024	2025	2030	2040	2050
nBUH	-	-	-	1,245	1,244	1,179	1,180	1,210	1,237
RUŽ	1,976	1,930	1,815	1,638	1,392	1,390	1,347	1,405	1,475
POD	260	271	287	284	369	373	371	396	496
KR	1,444	1,414	1,326	1,292	-	-	-	-	-
ST	712	730	735	731	930	917	843	888	1,052
PET	1,485	1,467	1,324	1,297	1,265	1,241	1,122	1,126	1,109
TOTAL	5,878	5,811	5,487	5,241	5,201	5,166	4,855	4,938	5,369

Beds	2015	2018	2021	2022	2023	2024	2025	2030	2040	2050
nBUH	-	-	-	-	578	578	547	548	562	574
RUŽ	848	828	779	760	646	645	622	625	652	684
POD	112	116	123	122	159	160	159	170	191	213
KR	620	607	569	554	-	-	-	-	-	-
ST	305	313	315	314	432	426	391	412	453	488
PET	637	629	568	557	543	533	482	483	481	476
TOTAL	2,522	2,493	2,354	2,306	2,357	2,341	2,201	2,239	2,339	2,436

Table 28 Development in the number of beds and personnel³⁰

The second group of key parameters set by the Ministry of Health covers savings expected from the BUH's re-profiling the BUH in terms of non-personnel costs. The savings achieved in comparison with the existing situation are based on two sources: a) the BCG study prepared in 2013 with regard to potential savings identified at 16.9% on average for individual parts of the services; b) expectations of tenderers in the PPP dialogue with regard to feasible savings in the nBUH as well as other parts of the BUH. The data is presented in the following table showing the impact on all non-personnel costs under the economic model (Table 29):

	Pessimistic	Realistic	Optimistic	Chosen
Savings in operating costs based on BCG	10%	13%	16,0%	13%
Savings – the new hospital	20%	22%	24%	22%
Savings – the rest of the BUH after the transformation of the nBUH	12%	14%	16%	14%

Costs in proportion to personnel costs	Existing BUH	BCG	nBUH	nRužinov
Medicinal products	16.3%	14.2%	12.7%	14.0%

³⁰ Source: Health Ministry's HPI, 2017

Blood	3.6%	3.1%	2.8%	3.1%
Diagnostic agents	1.3%	1.2%	1.0%	1.2%
Medical supplies	14.1%	12.3%	11.0%	12.1%
Other supplies	3.4%	2.9%	2.6%	2.9%
Energy consumption	4.3%	3.7%	1.5%	3.7%
Repair and maintenance	2.3%	2.0%	1.5%	2.0%
Other operating costs	13.7%	11.9%	5.0%	7.5%

Table 29: Overview of expected savings following the reconstruction and re-profiling of the BUH³⁰

As regards revenues, shared diagnostic and treatment services are expected to be returned to the university hospital, thus increasing the revenue side of the model. The new university hospital will also generate higher income from commercial activities which should account for as much as 1% of overall revenues from medical services. Neither non-standard hikes in prices for interventions, nor additional replenishment of funding for hospitals is contemplated under the project.

The above steps have together contributed to attaining a positive NPV of the entire project.

5.1.2. Step 2 : Analysis of options for BUH's re-profiling

In the second step, the analysis focused on the options for medical re-profiling of provided health care. Neither the original feasibility study, nor the descriptive document of the PPP project have actually addressed the issue of whether unnecessary duplicities exist in BUH's provision of services, or whether the existing portfolio of services is optimal and sufficient for the BUH's catchment area. The PPP project made extrapolations based on the current state of play in services which were to be replaced by the new BUH, and ignored other BUH's hospitals; according to the tenderers in the competitive dialogue, this constituted a significant limiting factor for achieving potential effectiveness in the provision of services.

The key prerequisite for medical reorganisation is achieving economies of scale by increasing the production volumes, as well as savings resulting from interchangeability of personnel, technology or other premises which is likely to be expected from concentrations of interlinked medical disciplines. The standard approach in the reorganisation of care is that departments are grouped based on morbidity, type of medical examination and the time needed for such examination as follows:

- specialised and highly specialised hospitals, with the minimum length of hospitalisations, so-called acute care beds,
- post-treatment centres with several levels, with beds for nursing care, for long-term patients, for rehabilitation, for patients with psychiatric conditions,
- special medical centres – specialised beds with a continuous transition to spa, nursing, rehabilitation and social care.

In analysing the possibilities of medical re-profiling, the Ministry of Health took into account the demographic development in the Bratislava region until 2050, as well as the discussions of expert groups set up to classify the departments into logical and functional units based on the parameters referred to above by using best practices that are currently available. The basic findings of the analysis are as follows:

- (I). The demographic development of the region is conducive to providing health care; given the ageing society, the demand for inpatient and outpatient health care will be growing. (Charts 8 and 9)

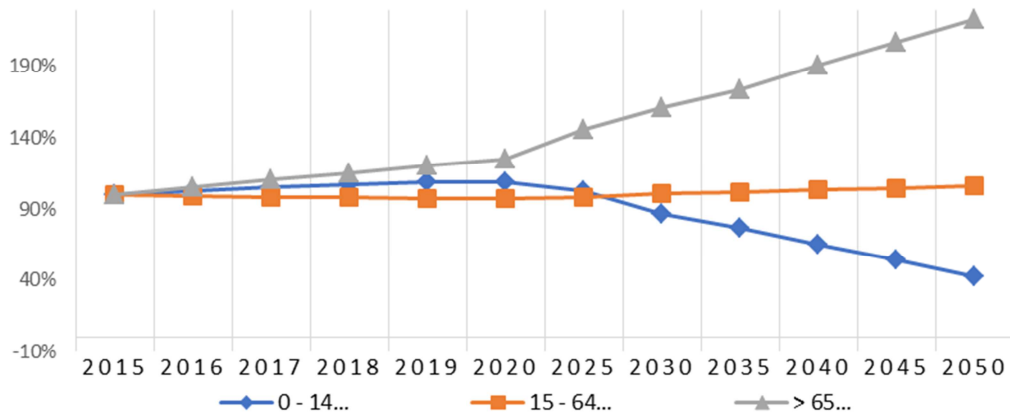


Chart 8 Demographic development in the Bratislava region between 2015 – 2050³¹

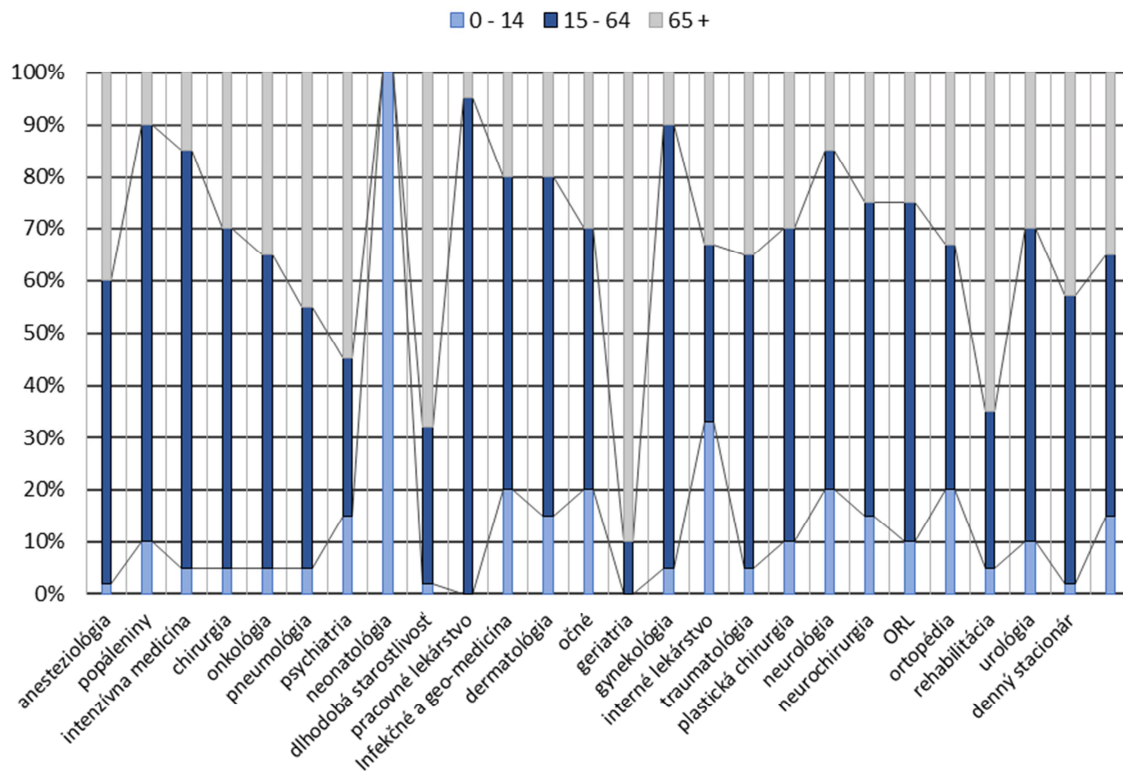


Chart 9 Expected impact of demographic changes on healthcare demand³¹

LEGEND:

anestéziológia	anaesthesiology
popáleniny	burns
intenzívna medicína	intensive care medicine
chirurgia	surgery
onkológia	oncology
pneumológia	pneumology
psychiatria	psychiatrics
neonatólogia	neonatology
dlhodobá starostlivosť	long-term care
pracovné lekárstvo	occupational medicine

31 Source: Infostat 2013

infekčné a geo-medicína	infectious diseases and geomedicine
dermatológia	dermatology
očné	ophthalmology
geriatria	geriatrics
gynekológia	gynaecology
interné lekárstvo	internal medicine
traumatológia	traumatology
plastická chirurgia	plastic surgery
neurológia	neurology
neurochirurgia	neurosurgery
ori	otorhinolaryngology
ortopédia	orthopaedics
rehabilitácia	rehabilitation
urológia	urology
denný stacionár	day care centre

(II). As shown by an in-depth analysis of demand broken down by specialisations, we may expect, by 2050, a growing need for acute-care, but also a significantly increasing demand for geriatric beds, long-term and nursing care beds, as well as other beds for the provision of chronic and follow-up care. (Chart 10 and Table 30)

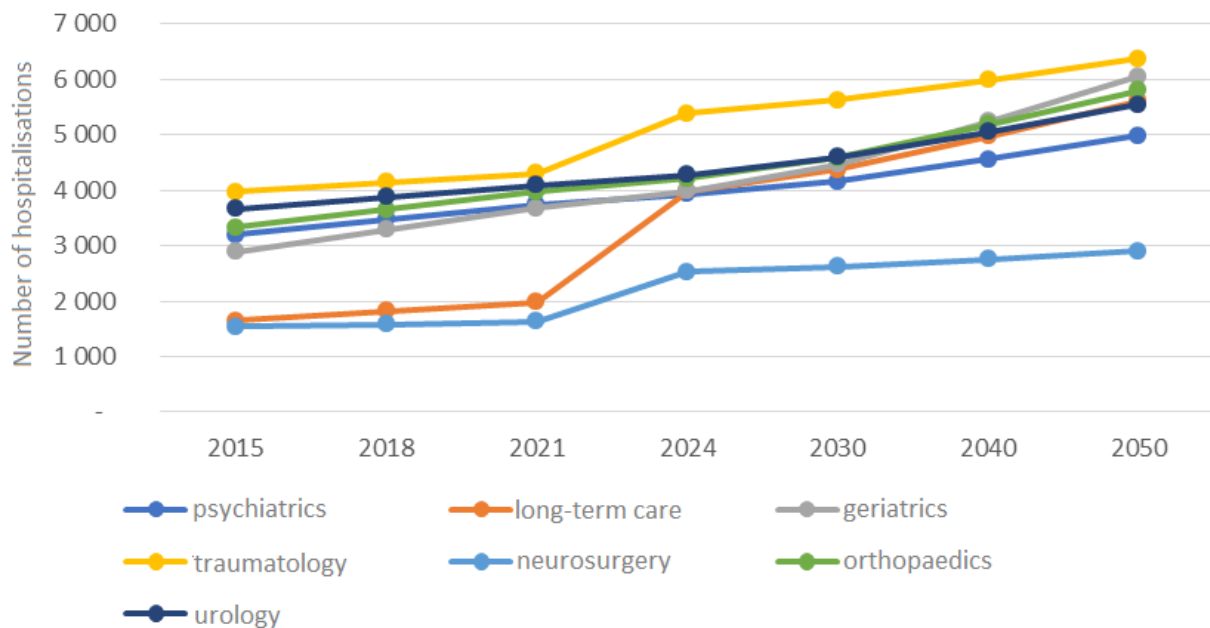


Chart 10 Development of the most rapidly increasing specialisations between 2015 - 2050³²

Specialisation	2015	2018	2021	2024	2030	2040	2050	2015 / 2050
Anaesthesiology	583	613	645	672	718	784	854	146.6%
Burns	321	323	326	329	336	344	353	110.1%
Intensive care medicine	851	860	873	888	921	961	1,005	118.1%
Surgery	9,437	9,789	10,151	10,478	11,021	11,789	12,613	133.7%

³² Source: Health Ministry's HPI, 2017

Oncology	840	879	918	951	1,005	1,084	1,168	139.0%
Pneumology	2,339	2,488	2,634	2,753	2,938	3,216	3,512	150.2%
Psychiatrics	3,193	3,482	3,742	3,925	4,149	4,531	4,934	154.5%
Neonatology	7,727	8,304	8,441	8,120	6,663	5,024	3,262	42.2%
Long-term care	1,652	1,819	1,982	2,111	2,315	2,631	2,966	179.5%
Occupational medicine	470	465	463	468	485	503	523	111.2%
Infectious diseases and geomedicine	2,690	2,781	2,853	2,899	2,930	2,991	3,057	113.6%
Dermatology	857	882	904	920	940	969	1,001	116.9%
Ophthalmology	1,400	1,472	1,532	1,571	1,604	1,666	1,732	123.7%
Geriatrics	2,891	3,289	3,675	3,979	4,466	5,237	6,053	209.4%
Gynaecology	13,260	13,290	13,372	13,550	13,973	14,463	15,002	113.1%
Internal medicine	13,764	14,398	15,037	15,589	16,476	17,762	19,138	139.0%
Traumatology	3,977	4,144	4,303	4,431	4,615	4,891	5,185	130.4%
Plastic surgery	1,849	1,896	1,930	1,952	1,962	1,985	2,011	108.8%
Neurology	6,937	7,201	7,431	7,602	7,801	8,118	8,458	121.9%
Neurosurgery	1,533	1,584	1,633	1,674	1,735	1,824	1,919	125.2%
Otorhinolaryngology	1,949	2,060	2,152	2,212	2,266	2,366	2,473	126.9%
Orthopaedics	3,324	3,652	3,967	4,211	4,579	5,158	5,772	173.6%
Rehabilitation	1,722	1,794	1,863	1,919	1,998	2,118	2,245	130.4%
Urology	3,670	3,880	4,095	4,279	4,584	5,028	5,503	149.9%
Day care centre	533	563	589	608	630	667	705	132.4%
Total	87,769	91,907	95,510	98,090	101,108	106,110	111,444	127.0%

Table 30 Expected demand for inpatient care modelled on the basis of BUH 2015 - 2050³²

- (III). An analysis of the trends in the average duration of care, occupancy rate of beds and the impacts of DRG has revealed a naturally declining need for acute care beds in the region; on the other hand, the need for long-term and specialised care is growing gradually over the analysed period (Chart 11)

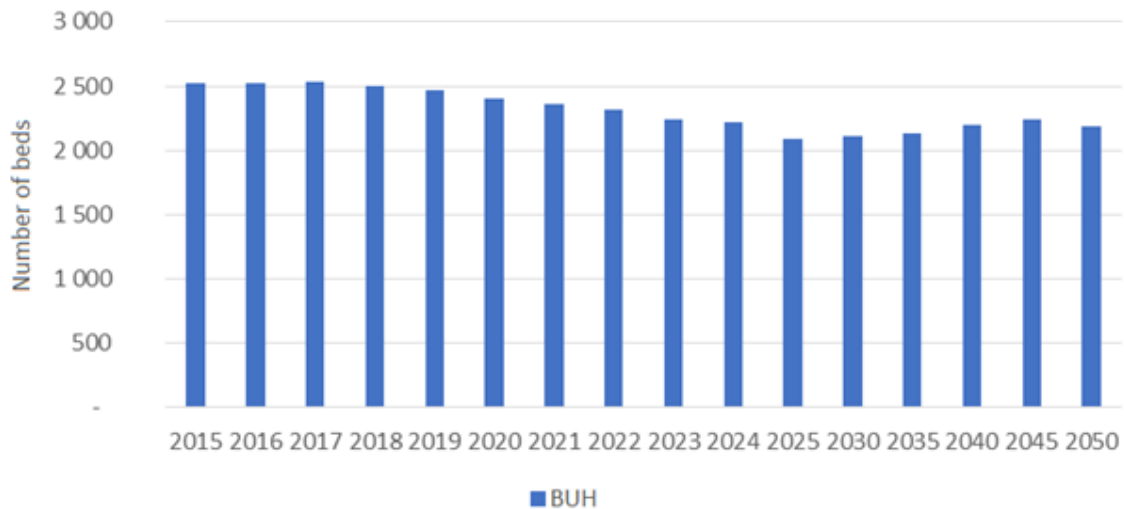


Chart 11 Expected trend in the number of beds in BUH 2015 – 2050³³

- (IV). Based on the above information, several rounds of expert meetings have been held and attended by the representatives of the BUH, academia and the Health Ministry with a view to reorganising healthcare into such groups that will provide the maximum bed occupancy rates

³³ Source: Health Ministry's HPI, 2017

and interchangeability of personnel and equipment, while at the same time strengthening the follow-up, geriatric and outpatient care. The outcome was a new medical profile of the Bratislava University Hospital, as shown in Figure 2.

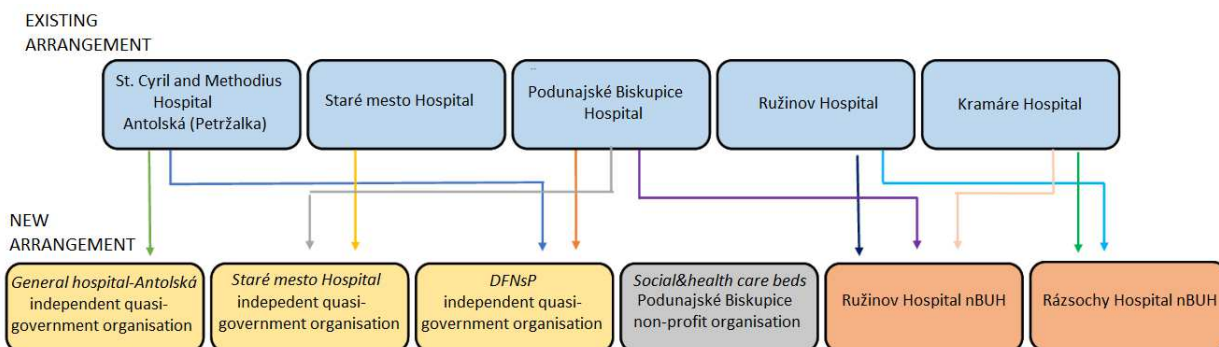


Figure 2 Proposal for a new organisational structure

The reorganisation is based on creating three acute-care hospitals in Bratislava: the construction of the new University Hospital, significant reconstruction of the Ružinov hospital and the renewal of the St. Cyril and Methodius Hospital (Petržalka).

When compared to original plans, the reasons for keeping the hospital in Petržalka are not subject to changes, which means that, for strategic reasons, it is inevitable to have a municipal type of hospital on both sides of the Danube.

The need for two acute-care hospitals on the other side of the Danube – the new University Hospital, as well as the Ružinov Hospital, was identified by expert groups as an option preferred over a single large hospital for the following reasons:

- improvement of the competitive environment,
- strategic substitutability,
- possibilities of expansion (the possibility of a partial transfer of operations from hospital A to hospital B during reconstruction, etc.),
- possibility of further specialisation of individual facilities,
- mitigating the financial and demand risks.

This proposal was also seen as the preferred solution by the majority of tenderers within the competitive dialogue process.

The key to the success of such specialisation will be to create two specialised workplaces which, acting as satellites, will facilitate a more efficient utilisation of the acute care beds, i.e. in the Staré mesto Hospital which will focus on geriatrics-neurology diseases, by setting up the Comprehensive Geriatric Care Pavilion directly linked with the shared diagnostic and treatment services (SVaLZ) which the Staré mesto Hospital directly provides. The Pavilion's capacities will fully correspond with the objective to centralise geriatric care services in Bratislava and its wider surrounding, thus contributing to higher quality and increased effectiveness in the provision of health care to geriatric patients with all its specific requirements..

From economic perspective, real estate properties of the Staré mesto Hospital may seem, at first sight, to be the best solution for a potential sale as a form of optimising the overall situation of the BUH. However, the legal situation concerning the property, as justified below, and its status in terms of urban planning represent significant limiting factors for determining the sales price. The Staré mesto site offers above-standard availability of transport services with high intensity of transport and excellent accessibility for pedestrians and cyclists. If the site is to be used for purposes other than that of a healthcare facility, the transport connections to the site are difficult

to implement while respecting the requirements of technical standards. At present, saturation in terms of parking already poses a high risk in this area.

Another reason for keeping the Staré mesto Hospital is its focus on patients above 65 years. Given the structure of the population, the hospital represents one of the best accessible locations for the targeted patients. Chart 12 Population structure by age categories as at 31 December (REGOB, 2016)³⁴

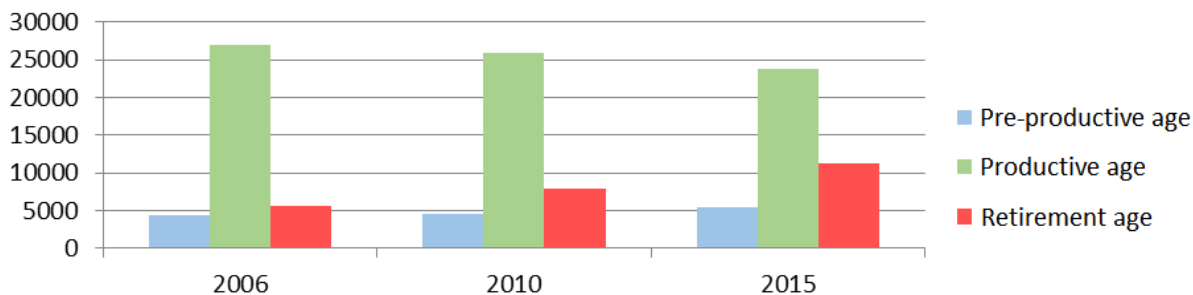


Chart 12 Population structure by age categories as at 31 December (REGOB, 2016)³⁴

More detailed information on age structure can be seen on the population pyramid in Chart 13.

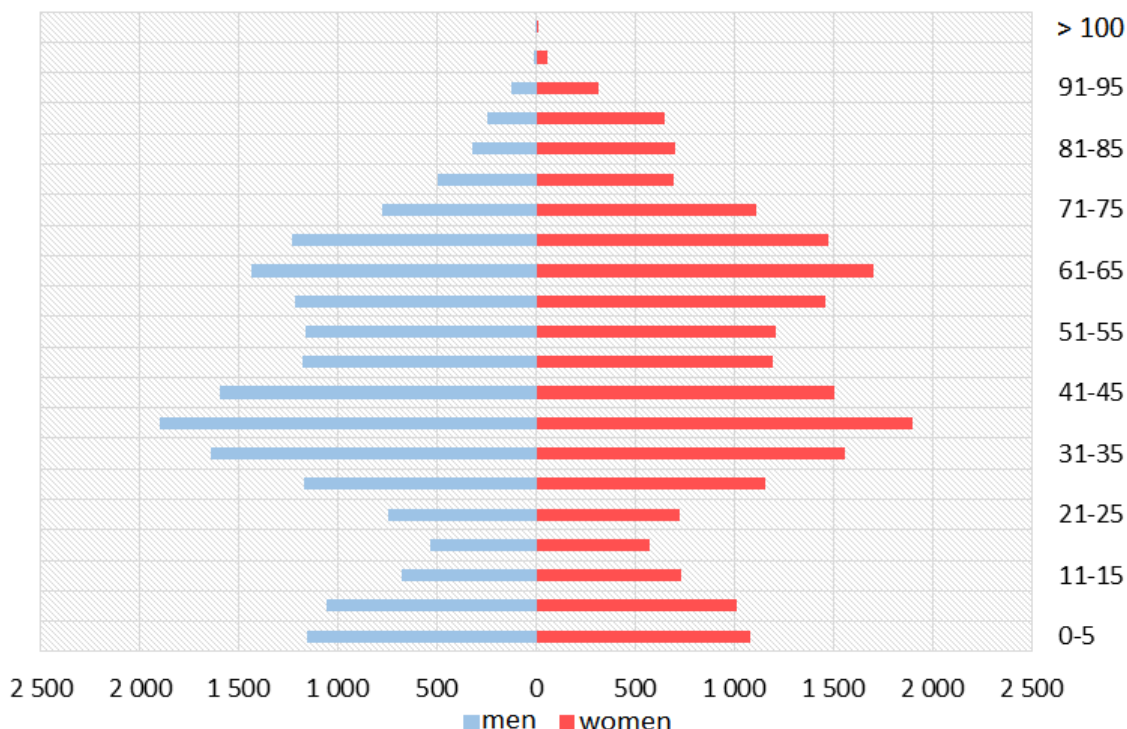


Chart 13: Population pyramid as at 31 December 2015 (Statistical Office of the Slovak Republic, 2015)³⁵

³⁴ Economic and Social Development Programme of the Staré Mesto city district for 2016-2023 with an outlook until 2040 – Centrum urbánnej bezpečnosti, o.z. (Urban Safety Centre)

³⁵ Economic and Social Development Programme of the Staré Mesto city district for 2016-2023 with an outlook until 2040 – Centrum urbánnej bezpečnosti, o.z.

From urban perspective, the Staré mesto Hospital is situated in a densely built-up area of the Bratislava's city part Stare mesto which is characterised by Bratislava's zoning plan as a stabilised area with public amenities. By Decision No. PUSR-2014/3053-10/26412/KIR of 25 April 2014, the buildings of the Staré mesto Hospital were declared national cultural monument. The reason why the hospital buildings were declared national cultural monument was the effort to preserve the adequate use of a cultural monument which, in the case of structures in the hospital grounds, would be ensured by their continued use as a healthcare facility, i.e., in line with the functions for which the structures were originally built. Changes or alterations of the premises in the buildings are not ruled out, but their scope must be assessed by the regional historic preservation authority on a case-by-case basis. Even in view of this information, the Staré mesto Hospital has been kept as BUH's partner.

The hospital in Podunajské Biskupice will play a similar role because, based on analyses, it is expected to preserve "chronic beds", i.e., a department for long-term patients (DLP), a post-treatment department, and a department of physical medicine, balneology and rehabilitation. In addition, outpatient offices (both general and specialised) of regional importance will be preserved in the polyclinic wing of the healthcare facility. The re-profiling will also preserve the laboratory which is capable of providing the basic haematological and biochemical testing of patients.

The resulting profile of provided health care is shown in Table 21 and the number of required beds in Table 22. The Ministry of Health compared this setup of the medical profile of individual hospitals with the proposals presented by tenderers in the competitive dialogue and, also for this reason, the Ministry holds the opinion that this would be the optimal distribution of services in Bratislava which will help maximise operational effectiveness of provided services.

Discharges 2023	Staré mesto		Kramáre		Petržalka		Pod. Biskupice		Ružinov		nBUH
	New	Originally	New	Originally	New	Originally	New	Originally	New	Originally	New
Anaesthesiology and intensive care medicine	-	392	-	285	451	451	-	-	419	419	670
Burns	-	-	-	-	-	-	-	-	-	328	328
Day care centre	603	-	-	-	-	-	615	603	-	-	-
Dermatology	-	916	-	-	-	-	-	-	916	-	-
Geriatrics	2,891	-	-	2,105	-	-	-	1,786	-	-	1,000
Gynecology	-	-	-	3,881	4,268	4,268	-	-	4,333	5,333	4,881
Infectious diseases and	-	-	-	2,889	-	-	-	-	-	-	1,889
Internal medicine	3,902	3,902	-	2,953	3,991	3,991	-	-	3,587	4,587	3,953
Long-term care	524	-	-	354	330	330	2,200	867	867	524	-
Neonatology	-	-	-	2,376	3,384	3,384	-	-	2,528	2,528	2,376
Neurology	3,288	3,288	-	1,409	882	882	-	-	1,981	1,981	1,409
Neurosurgery	-	-	-	1,663	-	-	-	-	-	-	2,513
Occupational medicine	-	-	-	466	-	-	-	-	-	-	-
Oncology	-	55	-	-	-	-	-	-	-	887	942
Ophthalmology	-	-	-	-	300	300	-	-	1,262	1,262	-
Otorhinolaryngology	-	-	-	-	1,683	1,683	-	-	516	516	-
Orthopaedics	-	-	-	-	852	852	-	-	2,293	3,293	1,000
Plastic surgery	-	-	-	-	-	-	-	-	1,947	1,947	-
Pneumology	-	-	-	-	-	-	-	-	2,721	2,721	-
Psychiatrics	2,966	1,750	-	-	914	914	-	-	-	1,216	-
Rehabilitation	-	-	-	-	827	827	-	-	777	1,077	300
Surgery	-	1,616	-	1,726	1,867	1,867	-	-	5,982	5,174	2,534
Traumatology	-	-	-	2,524	1,873	1,873	-	-	-	-	3,474
Urology	-	-	-	1,726	1,033	1,033	-	-	1,467	1,467	1,726

Table 21 Expected demand for inpatient care in BUH and nBUH in 2023³⁶

Beds in 2023	Staré mesto		Kramáre		Petržalka		Pod. Biskupice		Ružinov		nUNB	TOTAL	
	New	Originally	New	Originally	New	Originally	New	Originally	New	Originally	New	New	Originally
Anaesthesiology and intensive care	-	7	-	8	12	12	-	-	12	12	14	38	39
Burns	-	-	-	-	-	-	-	-	-	17	17	17	17
Day care centre	15	-	-	-	-	-	20	20	-	-	0	36	20
Dermatology	-	21	-	-	-	-	-	-	13	-	0	13	21
Geriatrics	74	-	-	54	-	-	-	46	-	-	26	100	100
Gynecology	-	-	-	65	72	72	-	-	67	82	75	213	218
Infectious diseases	-	-	-	59	-	-	-	-	-	-	39	39	59
Internal medicine	100	100	-	87	126	126	-	-	71	91	79	376	404
Long-term care	36	-	-	24	23	23	138	54	54	33	0	251	134
Neonatology	-	-	-	31	61	61	-	-	33	33	31	125	125
Neurology	60	60	-	40	23	23	-	-	54	54	39	176	176
Neurosurgery	-	-	-	49	-	-	-	-	-	-	73	73	49
Occupational medicine	-	-	-	11	-	-	-	-	-	-	0	-	11
Oncology	-	2	-	-	-	-	-	-	-	16	17	17	18
Ophthalmology	-	-	-	-	4	4	-	-	14	14	0	18	18
Otorhinolaryngology	-	-	-	-	38	38	-	-	8	8	0	46	46
Orthopaedics	-	-	-	-	19	19	-	-	44	64	19	82	82
Plastic surgery	-	-	-	-	-	-	-	-	24	33	0	24	33
Pneumology	-	-	-	-	-	-	-	-	69	69	0	69	69
Psychiatrics	147	87	-	-	45	45	-	-	-	64	0	192	196
Rehabilitation	-	-	-	-	28	28	-	-	25	35	10	63	63
Surgery	-	39	-	40	45	45	-	-	125	108	53	223	231
Traumatology	-	-	-	37	27	27	-	-	-	-	48	75	64
Urology	-	-	-	39	19	19	-	-	33	33	39	90	90
TOTAL	432	315	0	542	543	543	159	120	646	765	578	2,357	2,284

Table 22 Expected number of beds in BUH and nBUH in 2023³⁶

Besides the need to build a new hospital within the implementation of the above changes, the significant reconstruction of the Ružinov Hospital – the costs of which are estimated at EUR 80 million (gross estimate incl. VAT) – is necessary as well. Without such reconstruction, the hospital will not be capable of operating efficiently, nor will it be able to reorganise the profile of provided healthcare as planned. In proportion to the costs of reconstruction of the Ružinov Hospital and the construction of the nBUH, the funds needed for changes in other hospitals are not significant. However, more capital is expected to be invested in these hospitals in order to ensure their operational sustainability.

5.1.3. Step 3: Analysis of the plots of land

The following four sites were covered by an analysis of the potential sites for the construction of the nBUH: A – Rázsochy; B – Ružinov; C – Bratislava “East” and D – Patrónka. The individual plots of land were assessed from the viewpoint of urbanism, transport accessibility, civil-engineering/structural and legal assessment; as a result, they were given scores in order to determine the preferred variant for the construction of the nBUH.

Based on the results of the assessment of individual variants, Site A – Rázsochy received the highest score as the most suitable alternative. The site of the existing Ružinov Hospital has been confirmed as sufficient for reconstruction, but not for a further significant development. Other sites were rejected on the grounds of their non-compliance with regulations and rules of the zoning

³⁶ Source: Health Ministry's HPI, 2017

plan or due to high financial costs associated with the purchase of the relevant real estate property and its technical and transport infrastructure.

5.1.3.1. Site A – Rázsochy

URBAN ASSESSMENT

In the eastern and northern side, the healthcare facility's site is bordering with the Bratislava's city park Železná studnička which provides a unique natural vegetation scenery. The site will therefore be located in a unique environment that will benefit the well-being of patients. Quiet surroundings represent the most valuable asset of this site. The terrain of the site is on a south-facing slope. Sufficient area of the plot of land allows for several stages of construction works while being able to expand in the future, which is seen as a significant advantage given the size of this major project. The hospital grounds are in close vicinity of the D2 motorway. The strategic location of the hospital centre is further underlined by the close vicinity of the Lamač railway station. The functional use of the land is fully in line with the rules of functional and spatial use as prescribed by the Bratislava's zoning plan.

TRANSPORT ACCESSIBILITY

Collision-free accessibility of the Rázsochy site from superior transport infrastructure provides safe and direct access to the hospital grounds even during rush hours and crisis situations. When preparing a more detailed design of transport routes and parking, it will be necessary to carry out transport capacity assessment for the site in question while taking into account those areas which are intended for residential housing development. Parking is planned on the hospital grounds with sufficient capacity for the future.

CIVIL ENGINEERING AND STRUCTURAL ASSESSMENT

Full assessment and diagnostics of the existing condition of unfinished structures at the Rázsochy Hospital has been performed by court-registered experts. In their Expert Opinion No. 35/2017 they stated that the load-bearing structure, made of reinforced concrete, does not exhibit any defects that could pose a threat to structural stability and statics.

The minor defects which were found, such as corrosion of non-load-bearing elements, not maintained and unfinished building, obsolete and time-worn technology, do not have any significant impact on the overall technical condition of the structures. Any essential work on structures may be performed only following an assessment by qualified personnel.

The existing project documentation is 26 years old. The scientific and technological advancement, including the related development of new technologies and materials, has been very fast over the recent years, which means that the construction technology and materials become obsolete within very short periods of time. For this reason it is necessary to continue, on an ongoing basis, the harmonisation of the legal environment and regularly update the technical standards in the civil engineering sector so that it sufficiently responds to the current state of play or changes in the legislative framework. It is necessary to carry out a professionally qualified assessment as to whether the design of internal technical infrastructure is up-to-date in order to

ensure that the project respects the existing legal situation and corresponds with the technical standards.³⁷

REMOVAL

Taking into account the expected delays - due to administrative processes – in negotiations about the termination of contractual relationship with the general designer and contractor and the assignment of project documentation copyrights, the possibility of removing the building in its entirety has been evaluated as well. Indicative price quotations for the removal of the building, which consisted of demolition works, crushing of the rubble and due disposal of demolition debris at a managed landfill site, were ranging between EUR5-25 million (a gross estimate excl. VAT). The scope of removal of the building in the future cannot be unequivocally identified with such a range of price quotations resulting in particular from underground removal works.

Legal assessment

The real estate property and the unfinished building at the Rázsochy site are administered by the Bratislava University Hospital.

Part of the building and the construction site is situated on the plots of land where ownership has not been unequivocally identified, but this does not pose a risk to the implementation of the hospital project at the Rázsochy site.

The valid contractual relations also include contracts for the construction works and the related copyrights of the contractor to the complete documentation for the project. It is very likely that the existing contractual relations do not pose a significant risk for the construction of the Rázsochy hospital either.

In order to protect the interests of the state and the owner of the structure, the estimate of the amount of disputable claims is not published even due to their nature. Their publication would adversely affect the negotiating position of the state with respect to these disputed claims.

The risk that the disputed claims would not be settled, as well as their amount put into perspective with the total amount of the investment, is not seen by the Ministry of Health as an essential obstacle to the implementation of the project.

³⁷ Expert opinion 35/2017 by Ing. Miloslav Ilavský, PhD., 2017



Figure 10 Site A – Rázsochy

5.1.3.2. Site B – Existing general hospital in Ružinov

URBAN ASSESSMENT

The Ružinov Hospital is situated in Bratislava in a densely built-up area in the city district of Ružinov. The area of the Ružinov Hospital grounds is 13.5 hectares, bordered by the Ružinovská street on the north and the Ružinov Polyclinic and a lake on the east, by school, pre-school and sports facilities located along the southern border and by Winter Sports Stadium of V. Dzurilla on the west. The flat-terrain plot of land with complete engineering infrastructure is well served by several types of public transport. As regards accessibility from superior transport infrastructure, the hospital can be reached within 7 minutes if free flow of traffic is not hindered. The functional use of the land is fully in line with the rules of functional and spatial use under Bratislava's zoning plan. According to the applicable Bratislava's zoning plan, the site is defined as a stabilised area – which means that alterations are permitted on up to 15% of the total floor area (77,317 m²), i.e., 11,598 m².

TRANSPORT ACCESSIBILITY

The transport routes serving the area of the "Bajkalská corner zone" are, however, very congested and further urban development in this territory will increase the congestion even more. According to applicable standards, the parking facilities are insufficient. The current parking capacity will be saturated after reaching some 353 parking spaces. The projected capacities of moving traffic and parking for the area in question should be evaluated as part of a separate transport and capacity assessment.

CIVIL ENGINEERING AND STRUCTURAL ASSESSMENT

The layout of the Ružinov Hospital does not sufficiently allow for optimising the processes and effective management. Given the limitations arising from zoning regulations, the reconstruction and potential completion of the hospital represent a suboptimal variant in view of the existing state of play in the provision of healthcare in the Slovak capital. The removal of the existing Ružinov hospital in its entirety and the construction of a new one would be the optimal variant with a focus on economic and energy efficiency. Building a new hospital in the Ružinov site represents an optimal situation under ideal conditions which are as follows:

- saturated provision of healthcare services in other facilities within a sufficient scope and above-average quality, for the duration of:
 - o demolition of existing buildings in Ružinov,
 - o authorisation processes
 - o construction of a new hospital,
- sufficient funds,
- ownership of the property.

The reconstruction of the Ružinov Hospital – capital expenditures represent the reconstruction of 60% of the existing floor area (46,390 m²) at average costs per square metre which would equal to 70% of the new hospital (1,704 EUR/m²). The cost per sq. m. is high, but it reflects the fact that the reconstruction of Ružinov would involve a very deep renovation works starting almost from the basic building blocks of the affected parts of the hospital.

LEGAL ASSESSMENT

The completion or reconstruction may be greatly influenced by a litigation concerning the ownership of the plots of land on an area of 109,114 m² in the amount of EUR 7.24 million which is docketed with the Bratislava II District Court. As the plaintiff, the Slovak capital Bratislava proposes that it be determined by the court as the owner of the plots. The potential failure in the litigation concerning the determination of ownership would result in the loss of ownership title to the plots of land which are situated practically under the entire Ružinov Hospital's grounds. With its judgment of 4 October 2016, the first-instance court (the Bratislava II District Court) upheld BUH's petition and quashed the action. The Slovak capital Bratislava filed an appeal against the judgment.

In case the planned construction project is to be implemented before the decision in favour of BUH becomes final, it will be necessary to reach an agreement with the Slovak capital Bratislava concerning the implementation of the planned project. The building activity at the Ružinov site has not been subject to environmental impact assessment pursuant to the Impact Assessment Act in the past .

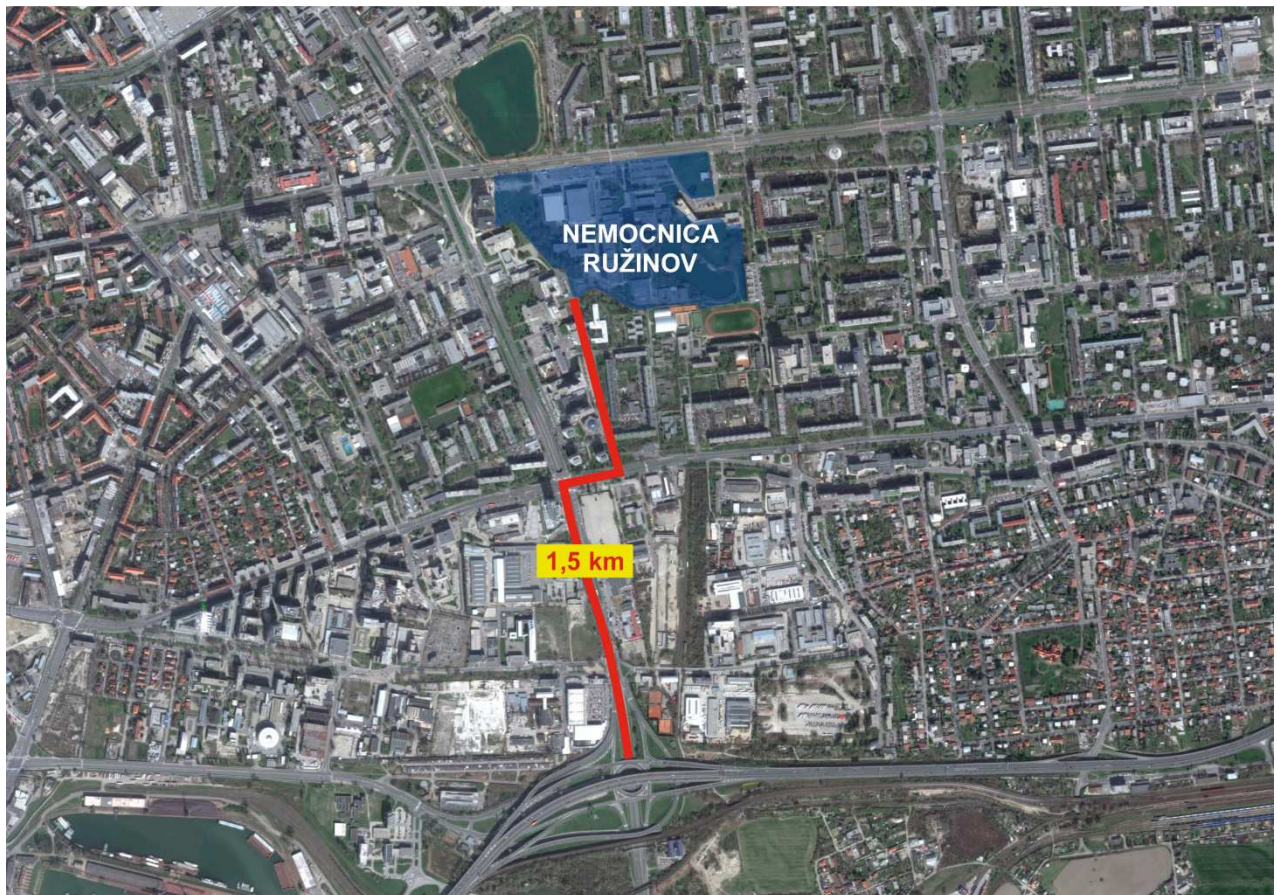


Figure 11 Site B – existing general hospital in Ružinov

5.1.3.3. Site C –Bratislava “East”

URBAN ASSESSMENT

The areas under review included *development areas* that are in line with the zoning plan, i.e., their functional use as public amenities of urban and extra-urban importance meets the requirements for the construction of a healthcare facility. Identified as a development area under the zoning plan, Area No. 6 falls under built-up areas.

The area of the former airfield in the Vajnory municipality was not subject to the assessment due to non-compliance between its functions (sports, recreational activities) and the required functional use as public amenities of urban and extra-urban importance. Using the area of the former airfield Vajnory for the construction of the hospital would require changes in the zoning plan, in which case the time needed for its amendments cannot be determined with certainty.

TRANSPORT ACCESSIBILITY

The duration of transport over the shortest route between blocks 1, 2 and the D1 motorway was approximately 10 minutes during the free flow of traffic. The traffic would be routed through a built-up area of the Vajnory municipality and the lane design of the access road is not ideal for bidirectional traffic in critical situations. Therefore, the criteria of collision-free access in crisis situations would not be met.

Access road to Area 4 and Area 5 would be routed through industrial zones and, in the case of Area 5, the hospital could also be accessed through a densely built-up area consisting of detached houses and, for the most part, one-way streets. The shape of the plot of land in Area 3

is not optimal and its unfavourable geological parameters would mean overrunning the costs of building foundations as well. Exposure to noise of temporary nature due to Areas 4, 5, 7 being in close vicinity to railroads has been assessed negatively as well. Transport connection between Area 6 and the radial road from the city centre would be technically very demanding. Intervals of public transport or municipal transport in these sites are very long.

LEGAL ASSESSMENT

The technical and legal aspects of the ownership of the plots of land were among the determining factors for the selection of the site. The technical aspect was assessed on the basis of the size and number of plots of land, whereas the legal aspect focused on the number of owners and the scope of co-ownership relations of different parties. The plots of land in Area 1 and 2 are owned by legal persons. The ownership (the legal aspect of the area) of quadrants 3, 4, 5, 7 is very scattered.

The acquisition price for real estate property in quadrants 1 and 2 is expected to range between EUR 200 – 300 per sq. m. As the total area necessary for quadrant 2 represents 85,370 m², the purchase price of the plot of land would be some EUR 21 million (without transport and technical infrastructure).

CONCLUSION

The Bratislava “East” site, despite being the strategically most suitable area in terms of its territorial location, was assessed as the second most expensive option in terms of capital expenditures. The reason is that it would be necessary to acquire new land and complete the transport and technical infrastructure of the required capacity. Transport accessibility has been assessed negatively as well. In terms of prevailing use by distribution centres of urban and extra-urban importance and the presence of industrial zones, the site “East” is not suitable for the construction of the new hospital.

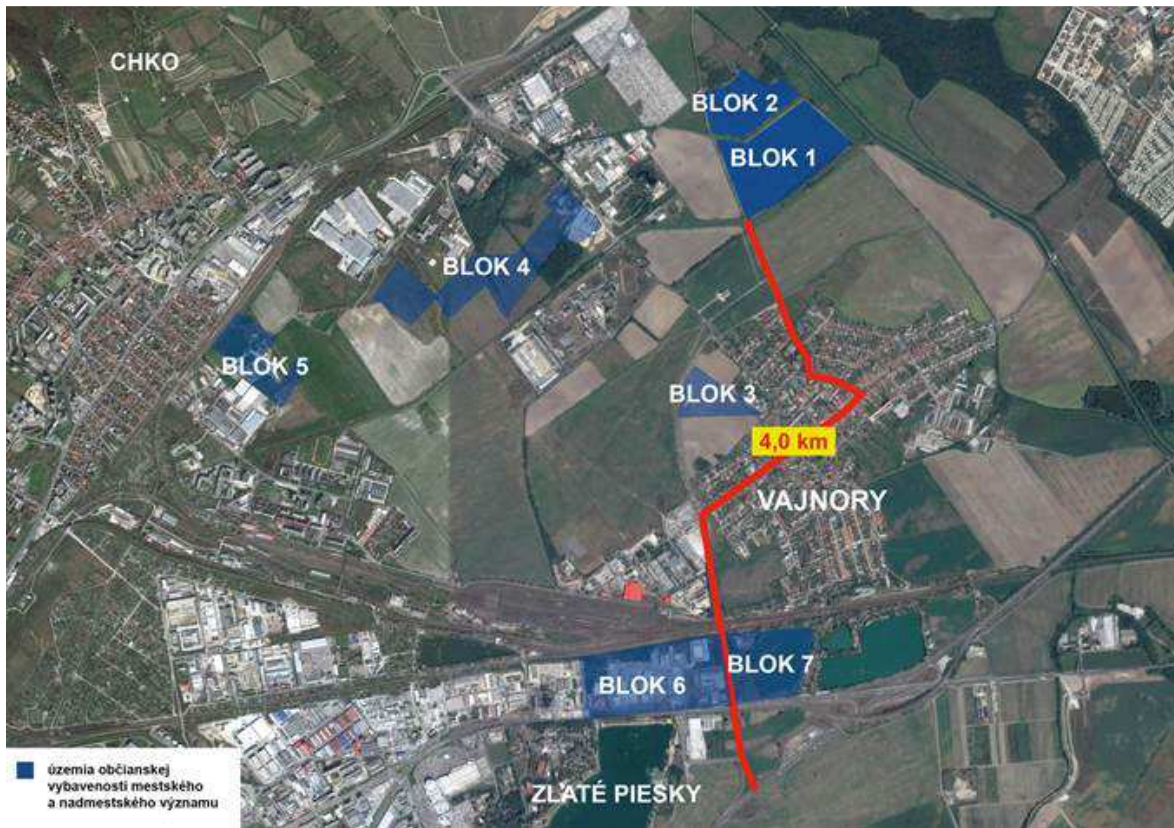


Figure 12 Site C – hospital location at the east of Bratislava

5.1.3.4. Site D – Patrónka

URBAN ASSESSMENT

The area itself is situated on the existing compound of a hospital with technical and transport infrastructure available. Situated in the north of the area under review, the Železná studnička city park is suitable for leisure and relaxation activities. The prevailing use of the functional areas of the site is determined by the existing healthcare facility, but the intensity of use of the functional area is limited, because this site represents a stabilised area. The permissible use rate within a stabilised area can be increased up to 15% percent. In order to overcome these limitations, it would be necessary to change the Bratislava's zoning plan so that the stabilised area is reclassified as development area. The time needed for changes in the zoning plan is very difficult to determine.

TRANSPORT ACCESSIBILITY

The hospital grounds can be accessed from a small roundabout. It is very likely that the current transport arrangement would hardly be able to accommodate the traffic generated in the vicinity of the new hospital in the future. The parking saturation criterion would also be difficult to meet given the intensity of the use of the territory.

A short distance to superior transport infrastructure, the Lamačská road, and excellent access to municipal transport are seen as positive aspects.

CIVIL ENGINEERING AND STRUCTURAL ASSESSMENT

The existing type of pavilions that are several-storeys high, including the layout of buildings, provide minimal opportunities for implementing the contemporary standards of a modern hospital. The existing buildings of the hospital would have to be redeveloped in full.

LEGAL ASSESSMENT

The owner of the former hospital grounds is the Ministry of the Interior of the Slovak Republic which valued the real estate property at EUR 32.2 million during the competitive dialogue. As at the date of this document (8 March 2017), the tendering procedure was not completed with success.

CONCLUSION

The site of the existing hospital grounds was assessed as the most expensive option in terms of capital expenditures. This is due to the acquisition of new land and extensive redevelopment works. In terms of the functional use of the area, the site is suitable as the location of the new hospital. However, the zoning plan describes this territory as a stabilised area. A change in the intensity of use of the area would be conditional upon changes in the zoning plan. The time needed for amendments in the zoning plan was estimated at 24 months under the most optimal variant.



Figure 13 Site D – Patrónka

5.1.3.5. Timetable

Site C Bratislava “East” green field

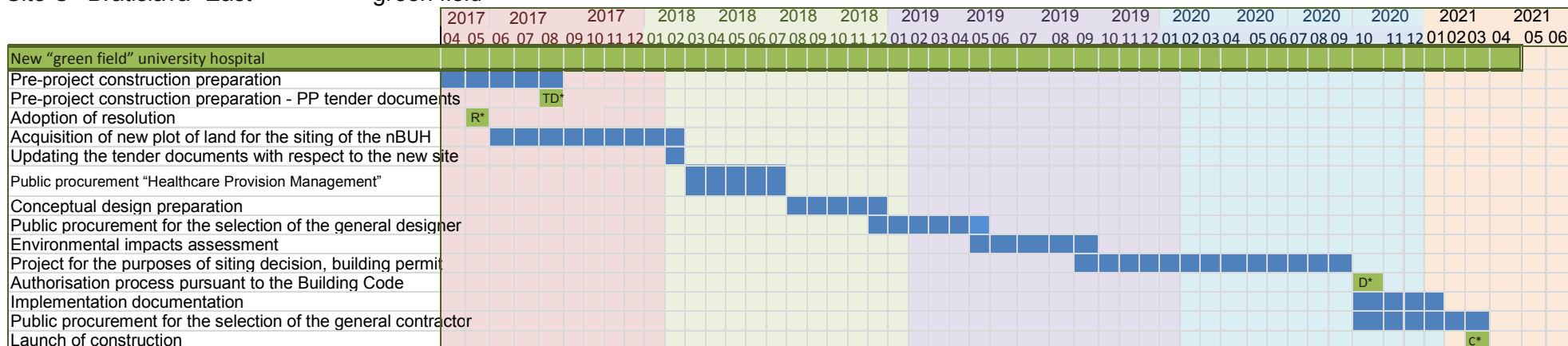


Chart 14 Timetable of the nBUH at the “East” site

Site D Patrónka removal of the building and construction

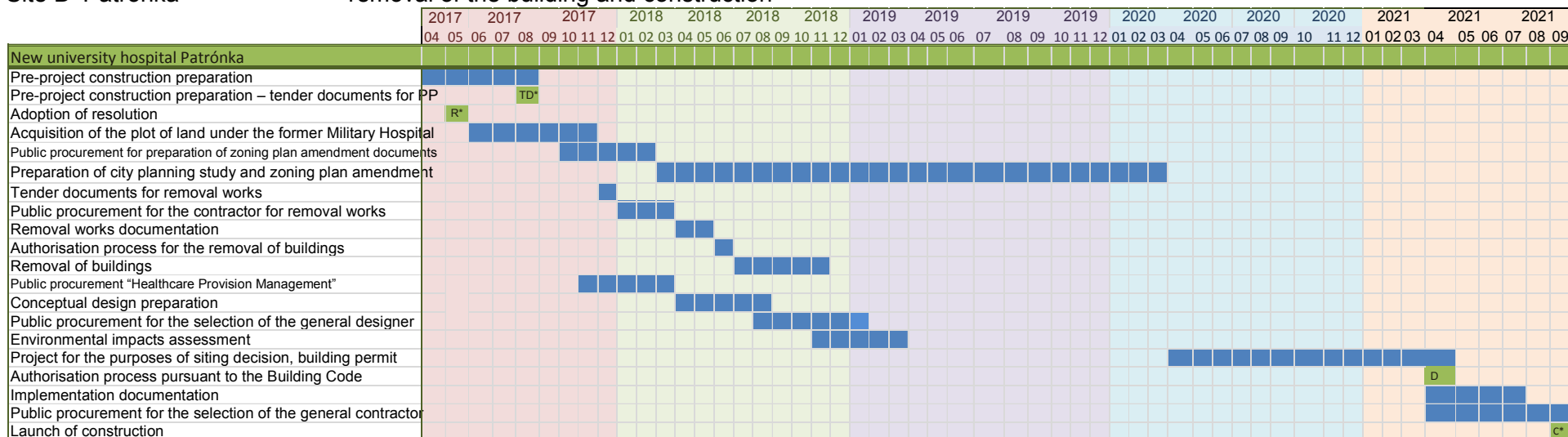


Chart 15 Timetable of the nBUH at the Patrónka site

*TD - tender documents; R - resolution; D - decision, C – construction

5.1.3.6. Conclusions from the assessment of sites

The assessment of individual sites is summarised in Table 24 as shown below. The scores and the above descriptions clearly indicate that the Rázsochy site is the best location for the construction of the new university hospital. This site was therefore selected as the primary plot of land for the implementation of the planned nBUH construction project.

Evaluation of variants and total scores		Site A – Rázsochy	Site B – Ružinov	Site C – East BA	Site D – Patrónka
Quality of the site under review	Ownership	4	2.5	-5	-5
	Compliance with the zoning plan	5	5	5	-5
	Contact with natural environment	5	2.5	0	2.5
	Strategic location within the territorial division	5	5	5	5
	Potential for expansion	5	2	3	0
	Collision-free accessibility from superior transport infrastructure	5	3	0	4
	Transport accessibility of the area	5	4	0	3
	Accessibility from public transport and bicycle paths	3	5	2	4
	Parking	5	2	3	1
	Technical infrastructure	5	5	n/a	4
	Location of landing area - heliport	5	4	4	5
	Authorisation process stage	5	0	0	0
	Existence of buildings qualifying for reconstruction, removal	-5	-3	5	-5
	Unspecified risks of legal nature	-2	-2.5	-1	-2
Quality of provided healthcare	Accessibility in terms of after-treatment and follow-up health care	4	4	2	4
	Linkage to science-research capacities	4	3	0	5
	Scope (market position) of health care provision	5	4	5	5
	Overall score	63	45.5	28	25.5
	Acquisition price of the plot of land, in EUR	0	0	21	32,2

Table 31 Assessment of the nBUH location variants³⁸

5.1.4. Step 4: Analysis of the forms of nBUH project implementation

There are two basic forms for implementing the nBUH construction project: public-private partnership (PPP), or implementation by the state where the individual parts of the project will be implemented as separate subcontracts. These two alternatives represent two extremes of a continuum of options for setting the form of implementation and funding for every infrastructural project.

The basic advantage of full-PPP projects is that the risk of operational non-efficiency is eliminated as a result of the full application of the concept and benefits of private ownership in generating profits. On the other hand, profit and the need to refinance inputs are the reasons why many PPP projects in the health care sector face problems and losses, or are no longer feasible. The

³⁸ Source: Health Ministry's Project Group, 2017

conclusions from the nBUH competitive dialogue have also confirmed these observations: the nBUH project will not be feasible without payments being guaranteed by the state.

Effectiveness in funding, control over the project and ownership of the entire infrastructure remain the biggest advantages of a project implemented by the state. However, there is evidence that the implementation of projects by the state comes at the cost of overrunning the budget for capital expenditures³⁹ and leads to lower operational effectiveness.

On the other hand, there are also hybrid models which combine the features and advantages of both variants. For instance, this alternative would involve a situation where the state procures a company that will design the medical processes in the hospital, oversee its construction and, during the period of operation, will act as an advisor on the basis of a contract. At the end of the contractual period, the scope of implementation of advisor's expertise will be assessed and, based on this assessment, the contract may be renewed or terminated. Both funding and procurement of the project is carried out by the state. This alternative therefore combines the "best of both worlds", i.e., cheaper financing by the state and potentially high effectiveness of cooperative operation by the public sector with consultancy provided by private partner. These three alternatives (Figure 14) come with different expected impacts on capital expenditures, time of implementation and operational effectiveness of the project.

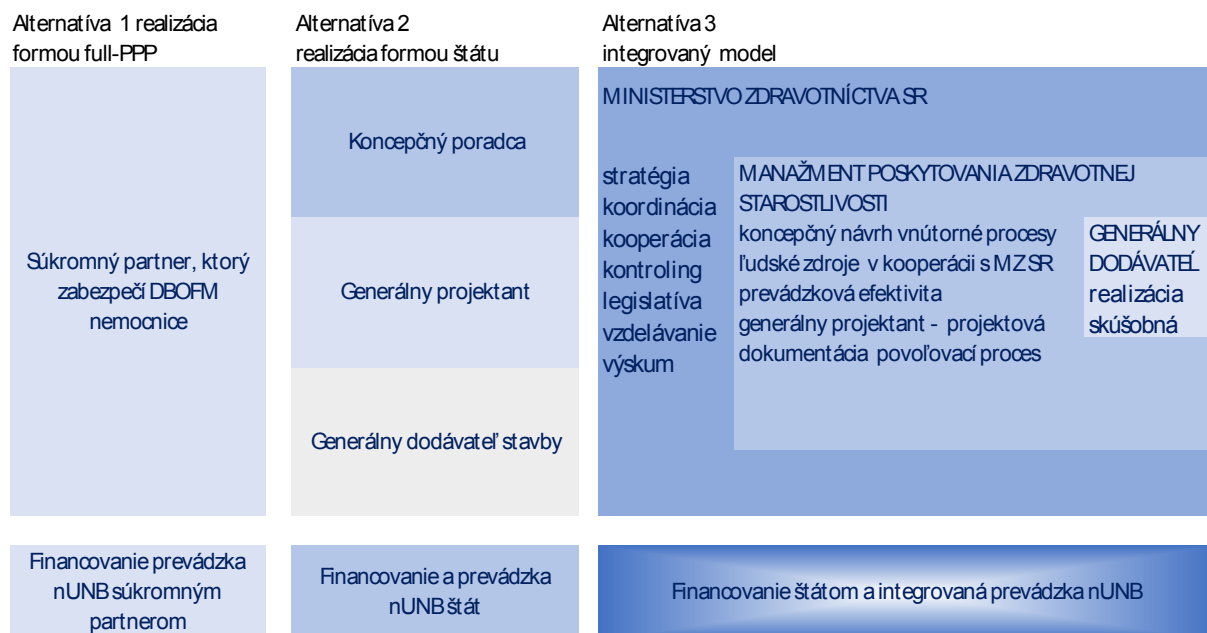


Figure 14 Comparison of analysed models in terms of funding and future operation of the nBUH project

LEGEND:

Alternatíva 1 realizácia formou full-PPP	Alternative 1 implemented by full-PPP
Alternatíva 2 realizácia formou štátu	Alternative 2 implemented by the state

³⁹ There are many analyses comparing the overrunning of capital expenditures by the state and by a private partner against the original budget, e.g., a study prepared by Mot MacDonald (2002), which served as the basis for the original nBUH feasibility study and identified that the project, if implemented by the state, would be overpriced by as much as 37.8%; however, there are also other analyses which have been prepared, such as the report on PPP in Australia (The Allen Report – between 11 and 30%, or The UK National Audit Office (NAO, 2001) – 20%)

Alternatíva 3 integrovaný model	Alternative 3 integrated model
súkromný partner, ktorý zabezpečí DBOFM nemocnica	Private partner to ensure DBOFM for the hospital
Financovanie prevádzka nUNB súkromným partnerom	nBUH financed and operated by the private partner
Koncepčný poradca	Concept advisor
Generálny projektant	General designer
Generálny dodávateľ stavby	General contractor for construction
Financovanie a prevádzka nUNB štát	nBUH financed and operated by the state
MINISTERSTVO ZDRAVOTNÍCTVA SR	MINISTRY OF HEALTH OF THE SLOVAK REPUBLIC
stratégia	strategy
koordinácia	coordination
kontroloing	controlling
legislatíva	legislation
vzdelávanie	education
výskum	research
MANAŽMENT POSKYTOVANIA ZDRAVOTNEJ STAROSTLIVOSTI	HEALTHCARE PROVISION MANAGEMENT
koncepčný návrh vnútorné procesy	conceptual design internal processes
ľudské zdroje v kooperácii s MZ SR	human resources in cooperation with the Health Ministry
prevádzková efektívnosť	operational effectiveness
generálny projektant – projektová dokumentácia povoľovací proces	GENERAL DESIGNER - project documentation authorisation process
GENERÁLNY DODÁVATEĽ	GENERAL CONTRACTOR
realizácia	implementation
skúšobná	trial
Financovanie štátom a integrovaná prevádzka nUNB	Financing by the state and integrated operation of the nBUH

In an analysis of financial impacts associated with the implementation of the nBUH project, the following assumptions were taken into account, with the key parameters being as follows:

All alternatives	Discount rate	4.0%
All alternatives	EUL of CAPEX	30 years
All alternatives	Share of commercial revenues in other	1.00%
ALT 1: state	CaPex overrun, %	1.15 x against PPP
ALT 1: state	operational effectiveness	1.1 x against PPP
ALT 2: PPP	CaPex overrun, %	no negative impact
ALT 2: PPP	operational effectiveness	no negative impact
ALT 2: PPP	Rate of return required by private partner	12.55%
ALT 2: PPP	Gearing ratio: equity	40%
ALT 2: PPP	Gearing ratio: debt	60%
ALT 2: PPP	Debt service	5.00%
ALT 2: PPP	Annual dividend	EUR 17,800,000 (necessary for IRR)
ALT 3: integrated	CaPex overrun, %	1.075 x against PPP
ALT 3	operational effectiveness	1.075 x against PPP
ALT 3: integrated	Payment to the partner for consultancy	EUR 2,500,000
ALT 3: integrated	Contract duration	5 years

Table 32 Selected financial indicators for the individual variants of funding and operation of the nBUH project⁴⁰

The need for capital expenditures was calculated based on the functional model of operation. The floor areas as well as functional division are based on the “layers” model and the summarised

⁴⁰ Source: Health Ministry's HPI, 2017

data obtained from tenderers in the competitive dialogue. Total values of the individual parts of hospital's operation are shown in Table 33.

Functional model	m ² (NFA)	m ² (GFA)	Total CapEx in EUR	Average price per sq. m. of
Hotel	11,611	21,249	51,390,857	EUR2,419
MSIC	13,187	23,603	78,182,825	EUR 3,312
Office	27,368	44,783	81,842,299	EUR 1,828
Factory	18,345	23,849	52,049,164	EUR 2,182
Total	70,512	113,484	263,465,145	EUR 2,322

Table 33 Division of the functional model into layers with estimated net floor area (NFA) and gross floor area (GFA), financial costs represent a gross estimate incl. VAT⁴⁰

The result of the economic analysis has confirmed the aforementioned assumptions as well as the conclusions of the original feasibility study and the PPP competitive dialogue. Implementation by means of a full-PPP project is not profitable given the risk of demand and financial costs. Implementation by the state in the standard form does not guarantee sufficient operational flexibility. The best solution with a positive net present value (NPV) of EUR 26 million can be achieved, even under conservative assumptions, by implementing the project in the hybrid form, i.e., Alternative No. 3.

	ALT 1: state	ALT 2: PPP	ALT 3: integrated model
NPV	EUR -33,760,000	EUR -17,200,000	EUR 26,750,000
IRR	-0.87%	-2.49%	0.67%
Annualised CAPEX	EUR 6,380,000	EUR 5,550,000	EUR 5,970,000
Annualised OPEX	EUR 131,200,000	EUR 119,270,000	EUR 128,220,000

Table 34 Financial indicators of the variants subject to assessment⁴¹

The Ministry of Health therefore suggests that the project be implemented by applying Alternative No. 3 where the preparation and construction of the project is financed from the state budget and the subsequent operation is ensured by the Ministry of Health with permanent consultancy provided by HCM specified by a contract, with HCM's remuneration based on contractually agreed KPIs. The rate and structure of project risks will be proportionally distributed between the private and public sector, thus increasing its value. The model involving two financing entities makes it possible to align different objectives and requirements of the public and private sector in terms of hospital and medical services. All of the financial indicators referred to above represent only a very rough estimation of the costs incl. VAT.

⁴¹ Source: Health Ministry's HPI, 2017

5.2. Annex 2: Details concerning LF UK's and LF SZU's practical training in the BUH

Clinical disciplines - practical training		teaching beds	
		LF UK	LF SZU
Kramáre Hospital	training	326	316
Geriatric Clinic, LF UK and BUH	Internal medicine	45	
Infectious Diseases and Geomedicine Clinic, LF UK, BUH and SZU	infectology, paediatrics	76	
3rd Internal Medicine Clinic, LF UK and BUH	internal medicine	40	
Neurosurgery Clinic, LF UK, BUH and SZU	neurosurgery	58	
2nd Neurology Clinic, LF UK and BUH	neurology	48	
Occupational Medicine and Toxicology Clinic, LF UK, BUH and SZU	internal medicine	14	
1st Internal Medicine Clinic, SZU and BUH			49
Surgery Clinic, SZU and BUH			42
Trauma Surgery Clinic, SZU and BUH			48
Urology Clinic, LF UK, BUH and SZU	urology	45	40
1st Gynaecology and Obstetrics Clinic, SZU and BUH			125
Anaesthesiology and Intensive Care Medicine Clinic, SZU and BUH			12
Staré mesto Hospital		295	0
Dermatology and Venereology Clinic, LF UK, BUH	dermatology	24	
1st Surgery Clinic, LF UK, BUH	surgery	46	
1st Internal Medicine Clinic, LF UK, BUH	internal medicine	91	
1st Neurology Clinic, LF UK, BUH	neurology	64	
Psychiatry Clinic, LF UK, BUH	med. psychology, psychiatry	70	
Ružinov Hospital		482	221
1st Anaesthesiology and Intensive Care Medicine Clinic, LF UK and BUH	AIM	16	
2nd Gynaecology and Obstetrics Clinic, LF UK and BUH	gynaecology	136	
Thoracic Surgery Clinic, SZU and BUH			32
4th Surgery Clinic, LF UK and BUH	surgery	60	
5th Internal Medicine Clinic, LF UK and BUH	internal medicine	86	
Ophthalmology Clinic of the LF UK and BUH	ophthalmology	14	
1st Orthopaedics and Traumatology Clinic of the LF UK, BUH, SZU	surgery	101	
Clinic of Pneumology and Phthisiology, LF UK, BUH and SZU	internal medicine	23	77
Children's Pneumology and Phthisiology Clinic, SZU			22
Burns and Reconstructive Surgery Clinic, LF UK and BUH	surgery	30	
Clinic of Oral and Maxillofacial Surgery, LF UK and BUH	stomatology	19	
Psychiatry Clinic, SZU			34
Neurology Clinic, SZU			56
St. Cyril and Methodius Hospital		325	120
4th Internal Medicine Clinic, LF UK, BUH	internal medicine	53	
2nd Surgery Clinic, LF UK and BUH	surgery	48	
2nd Orthopaedics and Traumatology Clinic, LF UK and BUH – Orthopaedics Department	orthopaedics	63	
Clinic of Otolaryngology, Head and Neck Surgery, LF UK and BUH		37	
1st - Gynaecology and Obstetrics Clinic, LF UK and BUH	gynaecology	100	
Newborn Medicine Clinic of M. Rusnák, SZU and BUH			72
Children and Adolescents Clinic of A. Getlík, SZU and BUH			19
Gastroenterology Clinic, SZU and BUH			29
Haematology and Transfusion Medicine Clinic, LF UK, BUH, SZU	haematology	24	
Specialised Geriatric Hospital in Podunajské Biskupice			50
Geriatric Clinic, SZU and BUH			50
Total teaching beds		1,428	707
			2,138

Table 35 Scope of studies at the LF UK BA and LF SZU – practical training broken down by individual BUH's clinics⁴²

5.3. Annex 3: Specialist study programmes for the medical professions of doctors and dentists at the LF UK Bratislava

SPECIALIST FIELD	2009	2010	2011	2012	2013	2014	2015	2016	Total	studying as at 12/2016
Anaesthesiology and intensive care medicine	0	0	0	0	0	0	0	0	0	17
Dermatovenereology	0	4	2	4	2	3	4	2	21	10
Paediatric surgery	0	0	0	0	0	0	0	4	4	8
Child psychiatry	0	0	0	4	0	0	6	0	10	20
Endocrinology	0	0	0	3	0	3	0	1	7	16
Audiology	0	0	0	1	0	2	0	1	4	12
Gastroenterology	0	0	0	0	1	0	0	2	3	13
Geriatrics	0	0	0	2	0	0	1	2	5	15
Obstetrics and gynaecology	0	9	8	5	2	9	7	7	47	36
Surgery	0	5	1	4	4	0	7	4	25	17
Clinical oncology	0	0	12	12	11	6	6	5	52	48
Maternal-foetal medicine – doctor	0	0	0	0	0	0	0	1	1	6
Maxillofacial surgery - doctor	0	0	0	1	0	0	1	0	2	2
Maxillofacial surgery – dentist	0	0	2	1	0	0	3	0	6	21
Neurosurgery	0	0	0	0	7	2	3	5	17	17
Neurology	0	0	0	0	1	1	3	3	8	24
Ophthalmology	0	0	4	3	2	1	8	4	22	9
Gynecologic oncology	0	0	0	0	0	6	0	1	7	138
Orthopaedics	0	3	11	9	7	13	17	7	67	26
Otorhinolaryngology	0	0	0	2	2	3	3	1	11	12
Pathological anatomy	0	0	0	0	0	0	0	1	1	78
Paediatrics	2	0	3	3	5	3	5	8	29	4
Paediatric endocrinology and diabetology; metabolic and nutritional disorders	0	0	0	0	0	0	0	0	0	6
Paediatric gastroenterology, hepatology and nutrition	0	0	0	0	1	0	0	0	1	5
Paediatric haematology and oncology	0	0	0	2	2	0	4	0	8	8
Paediatric cardiology	0	0	0	3		4	0	0	7	11
Paediatric neurology	0	0	5	3	0	0	0	0	8	14
Plastic surgery	0	0	2	7	5	4	5	7	30	23
Psychiatrics	0	0	0	0	1	0	2	1	4	13
Radiodiagnosis	4	2	3	5	6	7	16	7	50	58
Reproductive medicine	0	0	0	0	0	0	1	0	1	9
internal medicine	0	0	6	5	8	5	10	4	38	58
Clinical management and financing (doctor, dentist)	0	0	0	0	0	0	55	37	92	31
TOTAL	6	23	59	79	67	72	112	78	588	785

Table 36 Further training– LF UK BA, the number of specialist study graduates in individual specialisations⁴³

⁴² Source: LF UK BA, 2017

⁴³ Source: LF UK BA, 2017

5.4. Annex 4: Number of PhD graduates in individual fields of study at the LF UK Bratislava

Field of study	Number of students					
	full-time			part-time		
	2014	2015	2016	2014	2015	2016
Dermatovenereology	5	2	1	7	6	8
Physical medicine, balneology and rehabilitation	0	0	0	1	0	0
Obstetrics and gynaecology	5	3	5	10	10	5
Hygiene	4	4	1	5	5	6
Surgery	6	2	2	31	33	29
Clinical pharmacology	1	1	1	2	2	2
Neurology	5	3	5	7	4	7
Ophthalmology	0	0	0	14	11	7
Oncology	13	11	6	15	17	13
Orthopaedics	0	0	0	11	9	10
Otorhinolaryngology	0	1	0	5	7	4
Paediatrics	6	7	5	14	11	8
Normal and pathological physiology	43	46	46	19	18	14
Pathological anatomy and forensic medicine	13	7	3	26	26	34
Psychiatrics	0	0	0	8	5	5
Radiodiagnosis	0	0	0	9	10	8
urology	2	2	2	2	5	5
Internal medicine	15	8	1	47	44	33
Dental medicine	2	2	1	16	16	15
TOTAL	120	99	79	249	239	213

Table 37 Number of PhD graduates in individual fields of study at the LF UK BA⁴⁴

⁴⁴ Source: LF UK BA, 2017

List of acronyms

BMC	Biomedicine Centre
DFNsP	Children's Teaching Hospital with Polyclinic
FBLR	Physical medicine, balneology and rehabilitation
FNsP	Teaching Hospital with Polyclinic
FN NR	Teaching Hospital in Nitra
FN TT	Teaching Hospital in Trnava
FOaZOŠ	Faculty of Nursing and Professional Health Studies
GFA	Gross Floor Area
IBV	residential housing area
IZP	Health Policy Institute
IRR	Internal Rate of Return
JLF UK	Jessenius Faculty of Medicine of Comenius University in Martin
KPI	Key performance indicators
KÚNZ	Regional Institute of Public Health
LF SZU	Faculty of Medicine of the Slovak Medical University
LF UK BA	Faculty of Medicine of Comenius University in Bratislava
LF UPJŠ	Faculty of Medicine of the Pavol Jozef Šafárik University in Košice
MČ Lamač	Local authority of the City District Lamač
MZ SR	Ministry of Health of the Slovak Republic
HCM	Health Care Management
NHIC	National Health Information Centre
NFA	net floor area
NOÚ	National Oncology Institute
NPV	Net present value
nBUH	new Bratislava University Hospital
NUSCH	National Institute of Cardiovascular Diseases
DLP	department for long-term patients
ENT	otorhinolaryngology
OÚsA	St. Elisabeth Cancer Institute
PPP	Public Private Partnership
SAV	Slovak Academy of Sciences
STU	Slovak University of Technology
SValZ	shared diagnostic and treatment services
SZU	Slovak Medical University
BUH	Bratislava University Hospital
UNsP	University Hospital with Polyclinic
ÚVO	Public Procurement Office
ZP	zoning plan
HC	health care

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