

**Brief number UP 17-021-SP**  
**Ljubljana, January 2019**

**COMPETITION BRIEF FOR**  
**DIMNIKCOBAU BUSINESS**  
**PARK CONSTRUCTION**



Competition Brief for the invited international single-stage urban and architectural design competition for selection of technically most appropriate solution and selection of the Project Architect for the purpose of:

## **DIMNIKCOBAU BUSINESS PARK CONSTRUCTION ALONG LESKOŠKOVA CESTA STREET IN LJUBLJANA**

### **COMPETITION BRIEF**

Employer:

**DIMNIKCOBAU nepremičnine inženiring d. o. o.**  
**Leskoškova cesta 9D**  
1000 Ljubljana

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Ljubljana, January 2019

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## I INTRODUCTION

The subject-matter of this design competition is the creation of urban-development concept for the Dimnikcobau building complex along Leskoškova cesta and architectural design for the Dimnikcobau III commercial building.

An existing multipurpose office building Dimnikcobau I (hereinafter referred to as DCB I) stands on the plots of land owned by the investor, and in immediate vicinity there is an existing office and production building Dimnikcobau II (hereinafter referred to as O-DCB II) which the investor will use temporarily for its own needs. The investor wishes to use the larger undeveloped part of land where parking lots are made at present, to build a new commercial building Dimnikcobau III (hereinafter referred to as DCB III) with garage. During a later phase, it is planned to remove the existing O-DCB II building and to build a new office and warehousing building Dimnikcobau II (hereinafter referred to as DCB II) in its place.

The purpose of this design competition is to obtain a solution most appropriate in expert terms for comprehensive planning of this area and architectural solution for the DCB III building which should be, in terms of both architecture and design, an internationally recognizable building with identity of its own.

This office building should be maximally flexible and functional in its use and rental, rational in the concept of building constructions and energy concept, sustainable and rational as regards maintenance and operation. The concept should be modern, suitable for the 21st century; response to the new innovative forms of work and/or rental such as co-working, meeting room, and sharing spaces.

The investor wishes to leave an architectural and design emphasis in this place in space giving it the identity of a modern office building.

## II DESIGN COMPETITION AREA

### 1. POSITION



Figure 1: Design competition area position in the map of Ljubljana (Source: zemljevid.najdi.si)

The design competition area is located on the inside of the ring road in the north-eastern part of the city. The area has good transport accessibility. It lies to the west of the eastern motorway (A1) and to the south of the northern ring road (H3). To the north along the ring road there is also a public pedestrian and cycling track called "Memories and comradeship path" (Pot spominov in tovarštva) which falls within the area of natural values and cultural heritage protection.

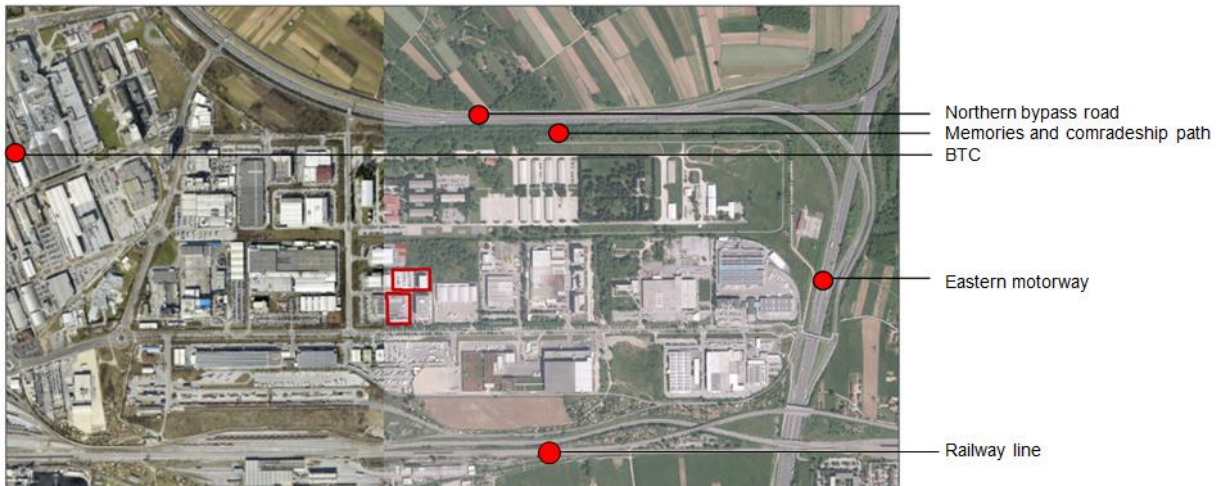


Figure 2: Design competition area in aerial photo of a broader area (Source: OPN MOL ID)

The area lies within an economic zone comprising a mixture of commercial, crafts and industrial activities (mixed zone). Located to the west of the design competition area is the “BTC City Ljubljana” commercial zone where trade, services, catering and other non-residential activities are concentrated.

## 2. BASIC DATA

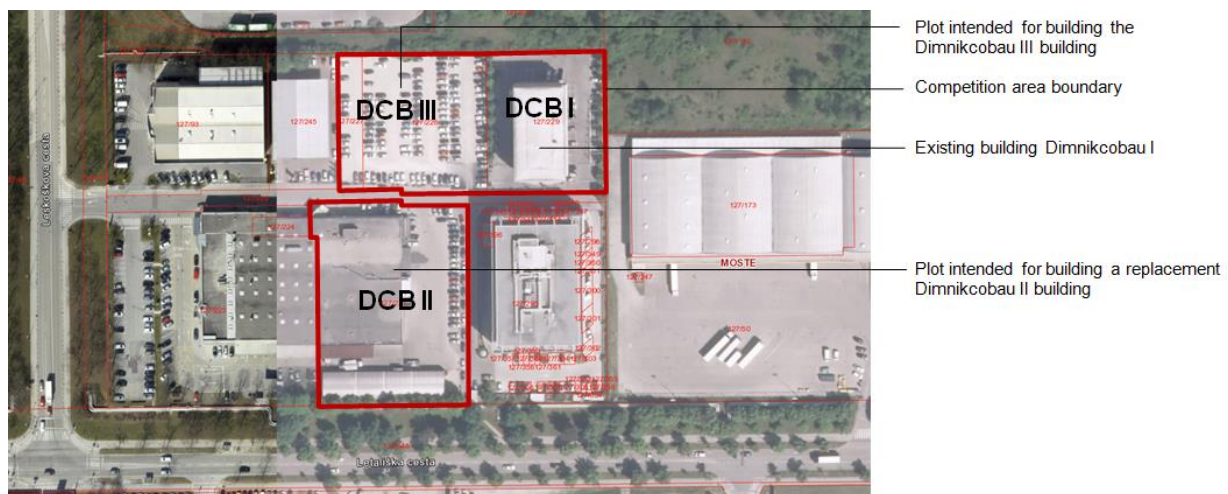


Figure 3: Design competition area in aerial photo of a narrower area (Source: OPN MOL ID)

The competition area covers land plots with parcel numbers 127/225, 127/227, 127/228 and 127/229, all in cadastral municipality 1730 Moste. The existing DCB I building stands in the north-eastern part of the area. The north-western part is an unbuilt land which is used as a temporary parking lot. In the southern part of the area there is the existing O-DCB II building which is to be removed and replaced by a new building. The competition area is cut into two parts by an access road which is co-owned by the owners of buildings along the road. The terrain within the area is predominantly level. The surface area of the entire competition area totals 12,439 m<sup>2</sup>, 3,037 m<sup>2</sup> of which is the surface area of the plot intended for building the DCB I; 5,291 m<sup>2</sup> is the area of the plot intended for building the DCB II building, and 3,617m<sup>2</sup> is the surface area of the plot intended for building the DCB III building. The remaining part of the land is intended for access road reconstruction.



### 3. VIEWS AND EXISTING BUILDINGS IN THE AREA

#### 6.1 Characteristic Views



Figure 4: Presentation of views



1. View along Leskoškova cesta from south to north



2. View from the internal access road – first building on the right is O-DCB II, and on the left the DCB I building



3. View over competition area from the existing building.



4. View westward from the northern side of existing DCB I building.

## CONSTRUCTION OF DIMNIKCOBAU BUSINESS PARK ALONG LESKOŠKOVA CESTA IN LJUBLJANA



5. View from the roof of existing DCB I building towards O-DCB II and O4 building



6. View from the roof of existing DCB I building north-westward.



7. View from the roof of existing DCB I building north-eastward.



8. View from the roof of existing DCB I building eastward.



9. View from the DCB III site and Leskoškova cesta street towards the site and existing O-DCB II building



10. View of existing O-DCB II building and DCB III plot of land from access road



## 6.2 Existing Buildings in the Area

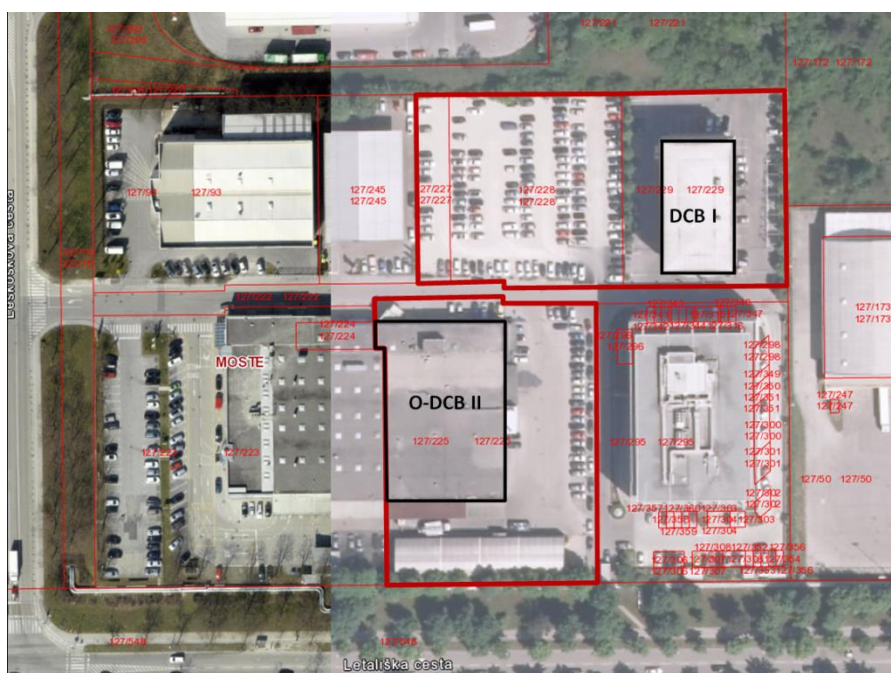


Figure 5: Site plan with marked existing buildings

### DCB I building (existing DCB I building)



Parcel No.	127/229
Height, No. of levels	G+4
Use	Office and warehouse building

#### The building accommodates the following activities:

Business premises – offices, warehouse for pharmaceutical products, healthcare premises, trade premises.

### O-DCB II building (existing O-DCB II building)



Parcel No.	127/225
Height, No. of levels	G, G+1
Use	Office and warehouse building

### 6.3 Existing Buildings in Adjacent Land Plots



Figure 6: Site plan with existing neighbouring buildings marked

Building designation	Activity*
Building O1	Vulco center; Carwash, tire shop, exhaust systems
Building O2	Empor hladilni sistemi d. o. o.; Office and warehouse building
Building O3	Distribucijski center Radenska, Laško, Union, C & A moda d. o. o...; Office and warehousing building
Building O4	Technical inspection, insurance and registration of vehicles, Subaru centre, AMBA group d. o. o. management and Production, coffee shop
Building O5	Antaro restaurant, Everet Internacional d. o. o., warehouse of cosmetic products; Office and warehouse building
Building O6	Rastoder – Derby, foodstuff shop; Maxxis, družba za projektiranje in inženiring d. o. o.
Building O7	Building under construction

At the time when the Competition Dossier was under preparation, the construction of building marked O7 began. This building is shown in the design competition templates, but not in all of the figures which constitute parts of the Competition Brief.

New buildings with similar or related functions and outer dimensions as the existing buildings are permitted to be built in land plots north and west from the site concerned.

*\*Data on activities in neighbouring buildings are taken from Google maps pages on 7 November 2017. The main activities in a building are listed.*



### III EXTRACT FROM STRATEGIC AND IMPLEMENTING SPATIAL PLANNING DOCUMENTS

#### 1. APPLICABLE SPATIAL PLANNING DOCUMENTS

- Ordinance on the City of Ljubljana Municipal Spatial Plan – Strategic Part (Official Gazette of RS, No. 78/10, 10/11 - NSP, 72/13 - NSP, 92/14 - NSP, 17/15 - NSP, 50/15 - NSP and 88/15 - NSP)
- Ordinance on the City of Ljubljana Municipal Spatial Plan – Implementing Part (Official Gazette of RS, No. 78/10, 10/11-NSP, 22/11– amend., 43/11-ZKZ-C, 53/12 – mandatory explanation, 9/13, 23/13 - amend., 72/13-NSP, 71/14-revised, 94/14-NSP and 17/15-NSP, 88/15-NSP, 95/15, 38/16 – authentic explanation, 63/16 in 12/17 – amend.), hereinafter referred to as: OPN MOL ID.



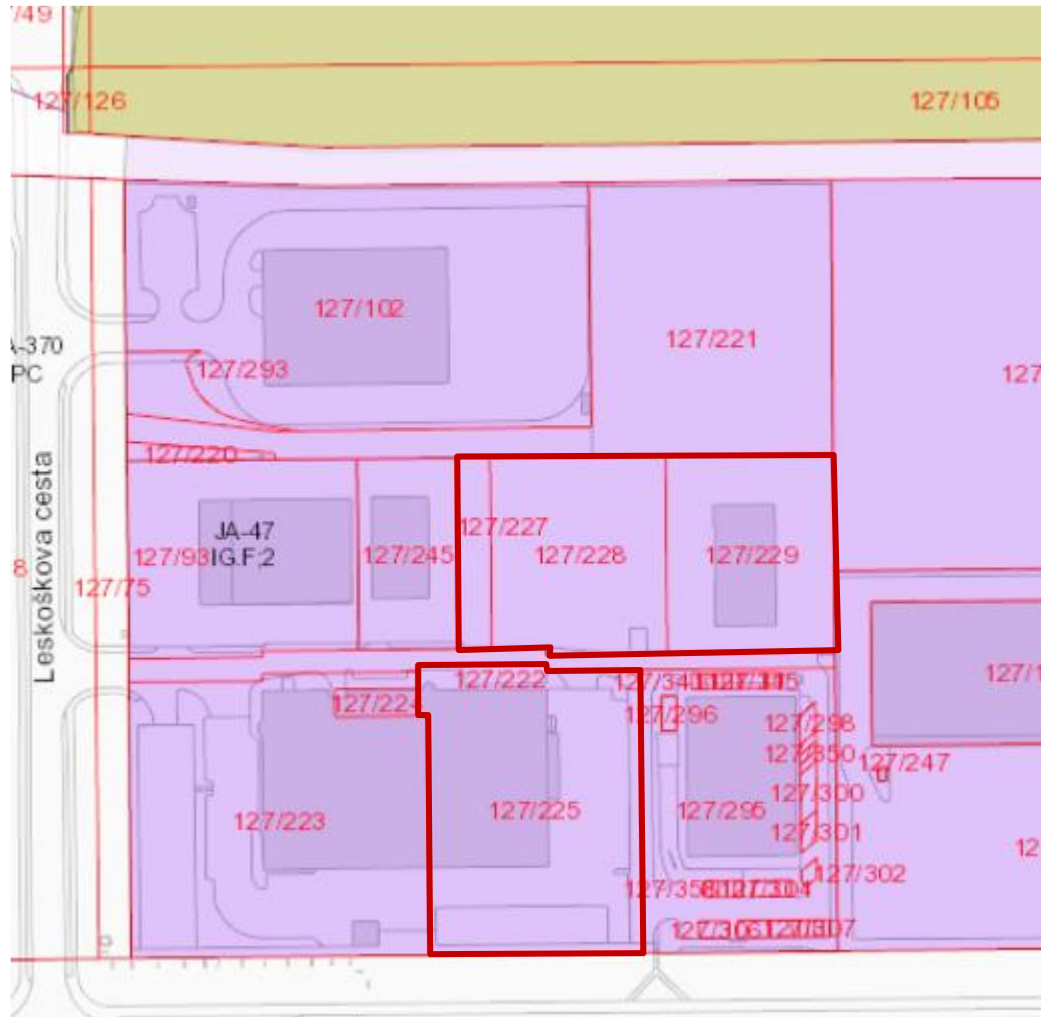
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span> Housing zones	<span style="display:inline-block; width:15px; height:15px; background-color:lightgrey; border:1px solid black;"></span> Transport surface zones
<span style="display:inline-block; width:15px; height:15px; background-color:lightcoral; border:1px solid black;"></span> Central activities zones	<span style="display:inline-block; width:15px; height:15px; background-color:grey; border:1px solid black;"></span> Energy infrastructure zones
<span style="display:inline-block; width:15px; height:15px; background-color:lightblue; border:1px solid black;"></span> Production activities zones	<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span> Green area zones
<span style="display:inline-block; width:15px; height:15px; background-color:orange; border:1px solid black;"></span> Special zones	<span style="display:inline-block; width:15px; height:15px; background-color:lightyellow; border:1px solid black;"></span> Agricultural land zones
<span style="display:inline-block; width:15px; height:15px; background-color:lightyellow; border:1px solid black;"></span> Zones for the needs of defence	<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span> Forest area zones

Figure 7: Land use in a wider area – segment from OPN MOL ID (Source: OPN MOL ID)

#### 2. PROVISIONS FROM OPN MOL ID FOR COMPETITION AREA

Pursuant to the provisions of OPN MOL ID, the land plots concerned are located in a spatial planning unit (hereinafter referred to as EUP JA-47).

Land use EUP JA-47: IG – Economic zones (Areas intended for technology parks, production activities with industrial buildings and warehouses, as well as with accompanying buildings for service activities).



- F Zone for the needs of defence in the district
- IG Economic zones
- PC Road surfaces
- Competition area

Figure 8: Land use in the narrow area – segment from OPN MOL ID (Source: OPN MOL ID)

## 2.1 Permissible Facilities and Activities

The following facilities and activities are permissible in the area of IG – Economic zones:

- 12201 Public administration buildings,
- 12510 Industrial buildings,
- 12520 Reservoirs, silos and warehouses,
- 12303 Service stations,
- 12304 Buildings for other service activities
- 12203 Buildings used as places of business, for clerical and administrative purposes, e.g., banks, post offices, insurance companies etc.
- 12301 Wholesale (up to 2000.00 m<sup>2</sup> GFA of facility or part thereof),
- 12112 Inns, restaurants and bars
- 12650 Sports halls
- 12740 Other non-residential buildings: only fire stations with accompanying program,
- 12420 Garage buildings



- 24203 Waste dumps: only waste collection centre,
- 21301 Airfield runways and platforms: only heliport,
- 21110 Highways: only parking for vehicles and freight vehicles, trailers of these motor vehicles, buses and vans,
- 12630 School, university and research buildings: only for pre-school education and scientific research work for the needs of technology park,
- supply points for alternative fuel vehicles,
- waste collection centres.

## 2.2 Detailed criteria and conditions:

OPN MOL ID specifies the following detailed criteria and conditions for the design competition area:

Use	IG – Economic zones
Typology	F – large-scale facility and technology building
Floor space index of parcel designated for development	
FZ – footprint index (maximum %)	60
FZP – open green-space index (minimum %)	15
Height of buildings	Cornice height of buildings along Letališka cesta road is 20.00 m maximum, and in the interior of the area (in the direction towards the 'Vojašnica Franca Rozmana – Staneta' barracks, now renamed to 'Vojašnica Edvarda Peperka') 40.00 m maximum.

OPN MOL ID specifies the type of building as F – large-scale facility and technology building (large-span single-storey buildings such as production halls or sports halls, shopping centres, fairgrounds and amusement parks (halls), infrastructure facilities and the like).

Also permissible in F typology areas are:

- V – Tall stand-alone building  
Towers: tower block, multi-storey building  
High-rise buildings of various forms: basic, narrow, deep, atrium, low-rise, short, tall, stepped, cluster, villa block, etc.
- C – Unique building  
Building with singular building design and site concept design (such as church, building for educational purposes, scientific and research work, healthcare, commercial buildings and other buildings which cannot be classified among other types of buildings because of their unique design)

Detailed criteria and conditions referring to the competition area are summed up in Chapter VII. Planning Guidelines – Architecture.

## IV OWNERSHIP

### 1. PARCEL PARTITIONING AND OWNERSHIP

The Investor has the following plots of land at its disposal – all in C.M. 1730 Moste:

Parcel number	Surface area in m2
127/225	5,652
127/227	600
127/228	3,150
127/229	3,037
Total	611,839

Surface areas of the land plots are taken from GURS- PROSTOR (Surveying and Mapping Authority of the Republic of Slovenia) web application. Actual surface areas and surface areas taken from GURS data are not always consistent.

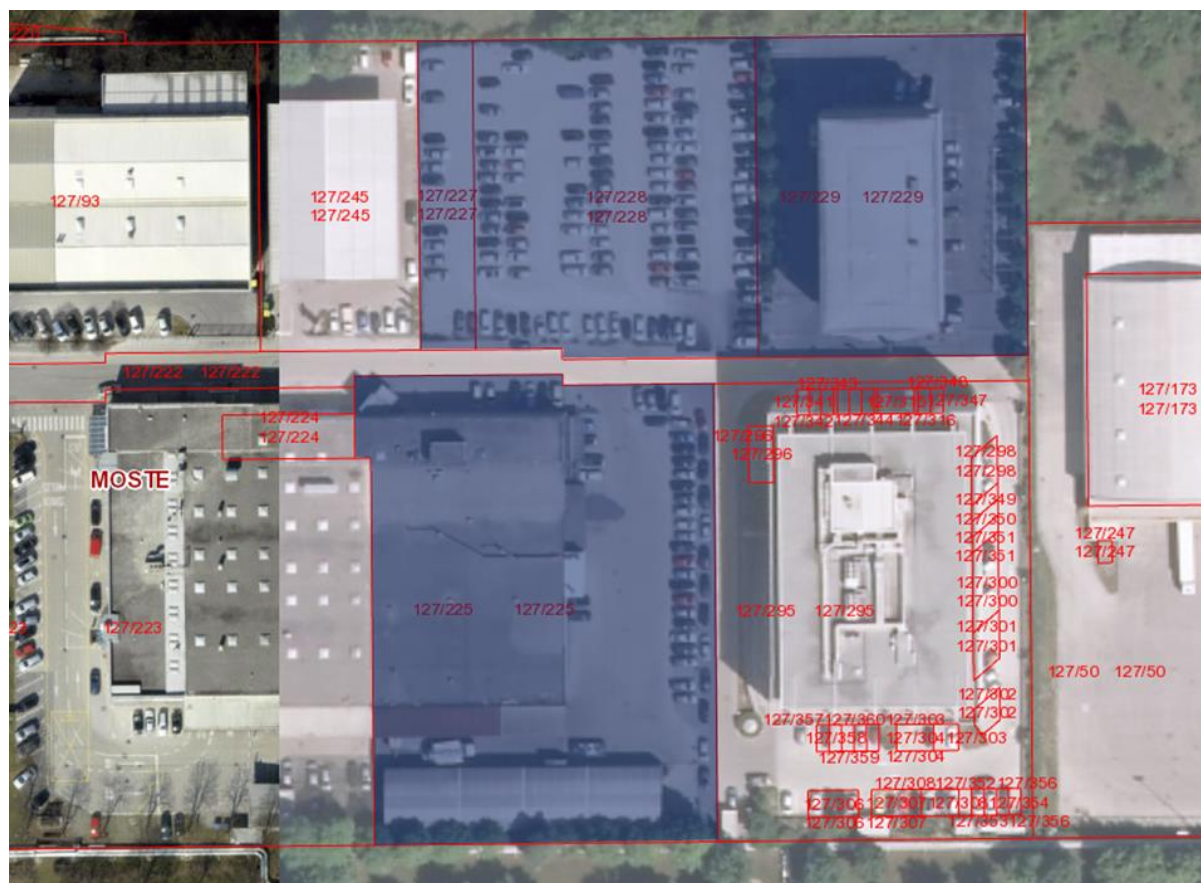


Figure 9: Land at the Investor's disposal, in cadastral plan

## V ANALYSES

### 1. ANALYSIS OF NATURAL CHARACTERISTICS

#### 1.1 Relief

The competition area is situated on more or less level ground, and there are no significant landforms in the vicinity. The level area adjacent to the existing building is approx. 1.50 m higher than the car park on the western side and undeveloped plots of land on the northern and eastern sides.



Figure 10: The relief of the area concerned (Lidar shading) – wider area (Source: <http://gis.arso.gov.si/atlasokolja>)

#### 1.2 Insolation

The land concerned is exposed to sun quite well since it is situated on level terrain, and the sun exposure is somewhat reduced only by the buildings on the adjacent plots of land.

#### 1.3 Soil

A heterogeneous soil composition is expected in the sense of interchanging sandy gravel, silty clay and clayey gravel with conglomerate insets. Lens-shaped conglomerate formations appear in various depths and in highly variable thickness, and therefore conglomerate cannot be considered as a continuous layer. A sand silt layer of uneven thickness may appear at a greater depth and then, in underlying depths, silty clayey/sandy gravels.

It is expected that the architectural solution will propose diversified vertical dimensions of the building which will cause uneven load on the foundation structure. To avoid differential subsidence in the area of high superstructure or over the entire layout, foundations shall therefore be deep and designed with drilled reinforced concrete piles.

Seepage capacity of gravel sand is good, while the layers of silt clay and highly silty and clayey gravel are poorly permeable. Planning of seeping, if any, shall observe the conditions of the approving authority and shall be checked with hydrogeological investigations on an obligatory basis.

Continuous level of underground water is anticipated in the depth between 15.00 m and 20.00m.

Assessment of geotechnical properties of soil is made on the basis of nearby boreholes which reached down to a depth of 12.00m. Further detailed investigations with exploratory boreholes shall be carried out in the next phase of the project.

#### 1.4 Water Protection Zone

The entire competition area falls within the Ljubljansko polje water protection zone under the water protection regime III A, which is a subzone subject to a milder regime.

#### 1.5 Green Areas

The site concerned is situated in the economic zone. In its immediate proximity, there is a spacious partly overgrown green area which is defined as a developable land according to OPN MOL ID.

Main roads (Leskoškova ulica road, Letališka cesta road) are tree-lined avenues. There is no green area within the competition area.



Figure 11: Green system – narrow area *Zeleni sistem - ožje območje*

At a distance of approx. 550m north of the competition area, there is a Memories and Comradeship Path (PST), tree-lined cycling and walking path, is a green line encircling the city. PST is a natural value and a cultural monument of local significance.



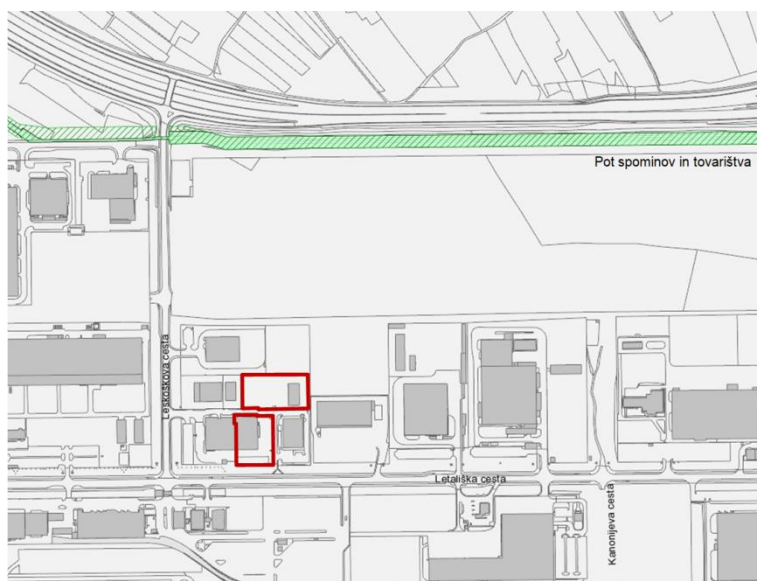


Figure 12: Pot spominov in tovarištva (Memories and Comradeship Path) – PST (Source: OPN MOL ID)

## 1.6 Landscape Characteristics and Views

The landscape image of the area results from land use. This is urban space of lesser quality, built up mainly with production, warehousing and industrial facilities. Due to good transport connections and accessibility, companies with business and trading activities have found their place in the wider area. There are also hotels and a variety of service activities which are reflected in individual higher-quality facilities in the surroundings.

Since the site is more or less of flatland type, the outward views are blocked by the surrounding buildings. If, however, we go to the level of the roof of the existing DCB I or O-DCB II building in both parts of the competition area, beautiful panoramic views of the range of hills in the background open up. The Šmarna gora hill with its height and contour particularly stands out from the surroundings. The views of the higher buildings of the town silhouette are likewise interesting.

Due to little variation in height, the area is not overly exposed either to views from direct vicinity or from a greater distance.

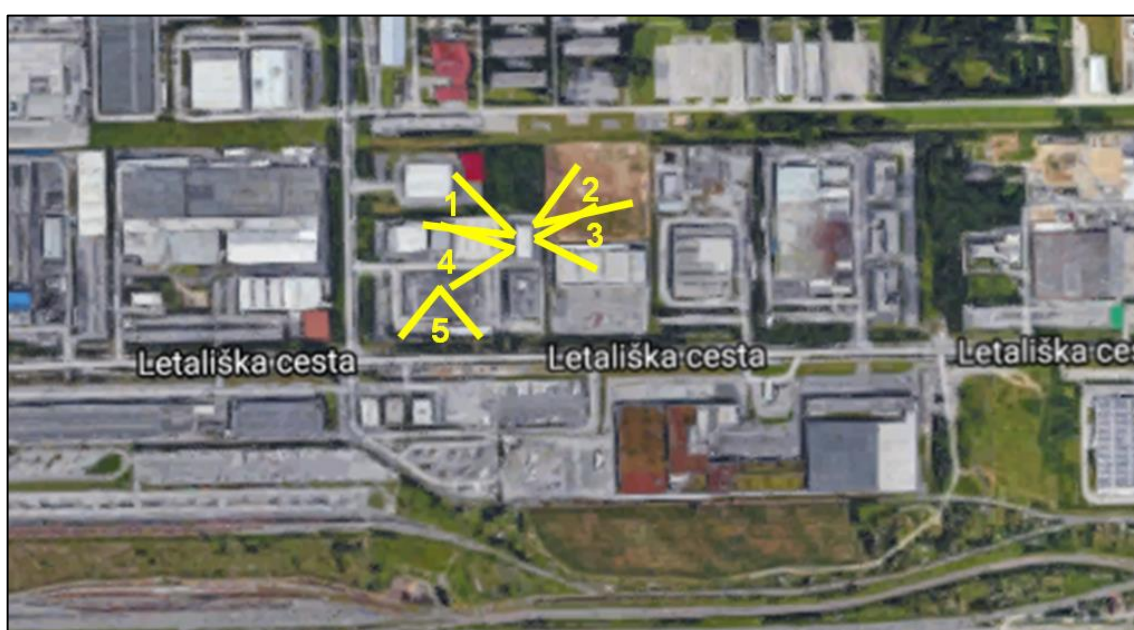


Figure 13: Presentation of views

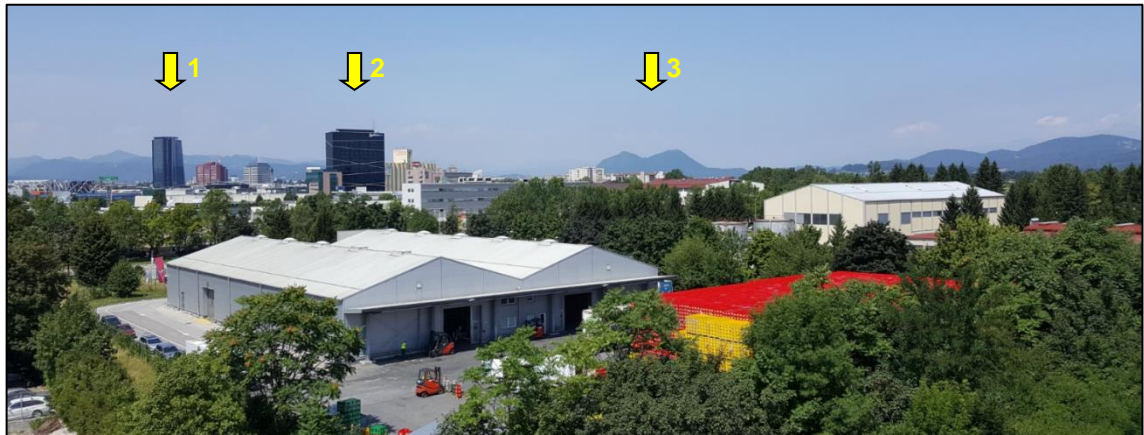


Figure 14: View no. 1 towards Chrystal Palace (1), Plaza Hotel (2) and Šmarna gora hill (3)



Figure 15: View no. 2 north-eastward



Figure 16: View no. 3. Eastward view



Figure 17: View no. 4. Westward view – to the heating plant chimney (1) Chrystal Palace (2) and Plaza Hotel (3)





Figure 18: Southward view

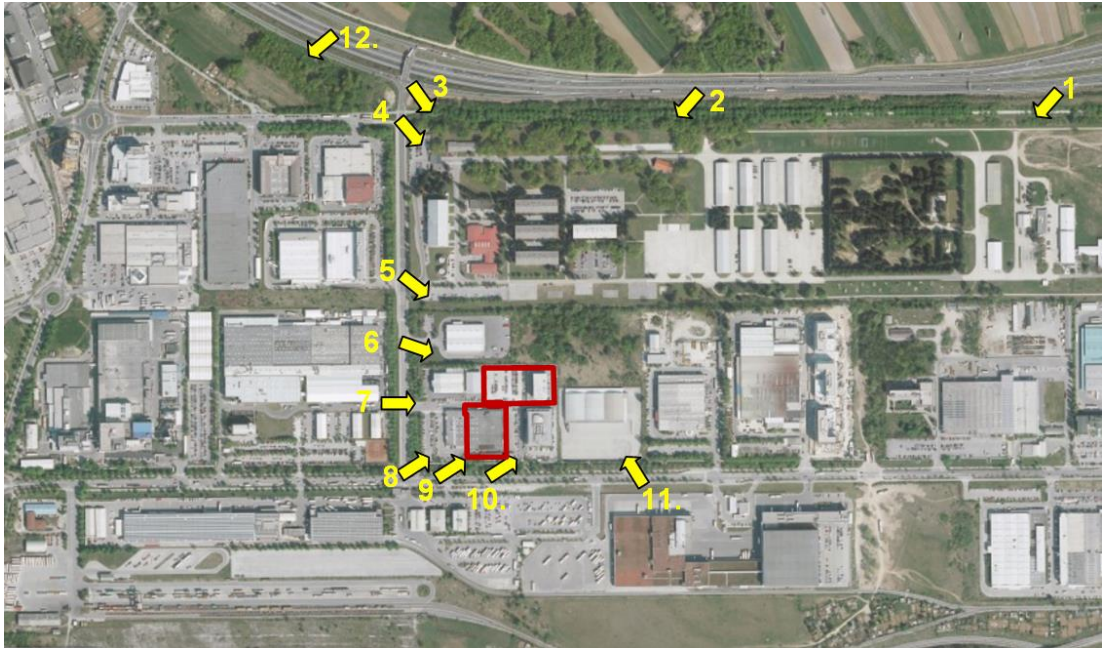


Figure 19: Views of the area under consideration



View 1 from ring road to the site



View 2 from ring road to the site



View 3 from feeder road to ring road north of the site



View 4 from Leskoškova ulica road



View 5 from Leskoškova ulica road



View 6 from Leskoškova ulica road



View 7 from Leskoškova ulica road



View 8 from Leskoškova ulica road



View 9



View 10



View 11



View 12 (Plaza Hotel, silos and Chrystal Palace)



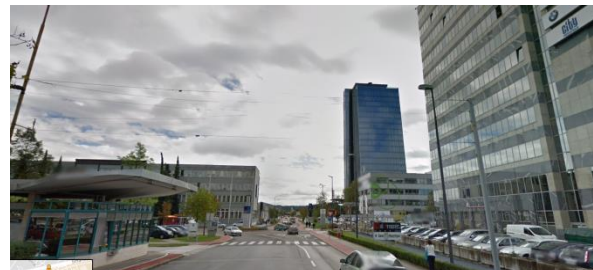


Figure 20: High-rise buildings in a wider area

- A - Plaza Hotel
- B – Chrystal Palace (G+20)
- C - BTC tower
- D - Emona commercial building (G+11)
- E – Žito silos
- F – heating plant chimney



View of Emona complex and BTC building from the crossing of Šmartinska road and Ulica Ambrožiča Novljana street



View of Chrystal Palace from Ameriška ulica street



View of Plaza Hotel and Žito silos from Leskoškova ulica street

## 2. ANALYSIS OF MAN-MADE ENVIRONMENT

### 2.1. Historical Spatial Development

In 19<sup>th</sup> century, the area has not been settled as yet. In the wider space, the area was covered by agricultural production land with intermediate patches of woods and fruit trees.

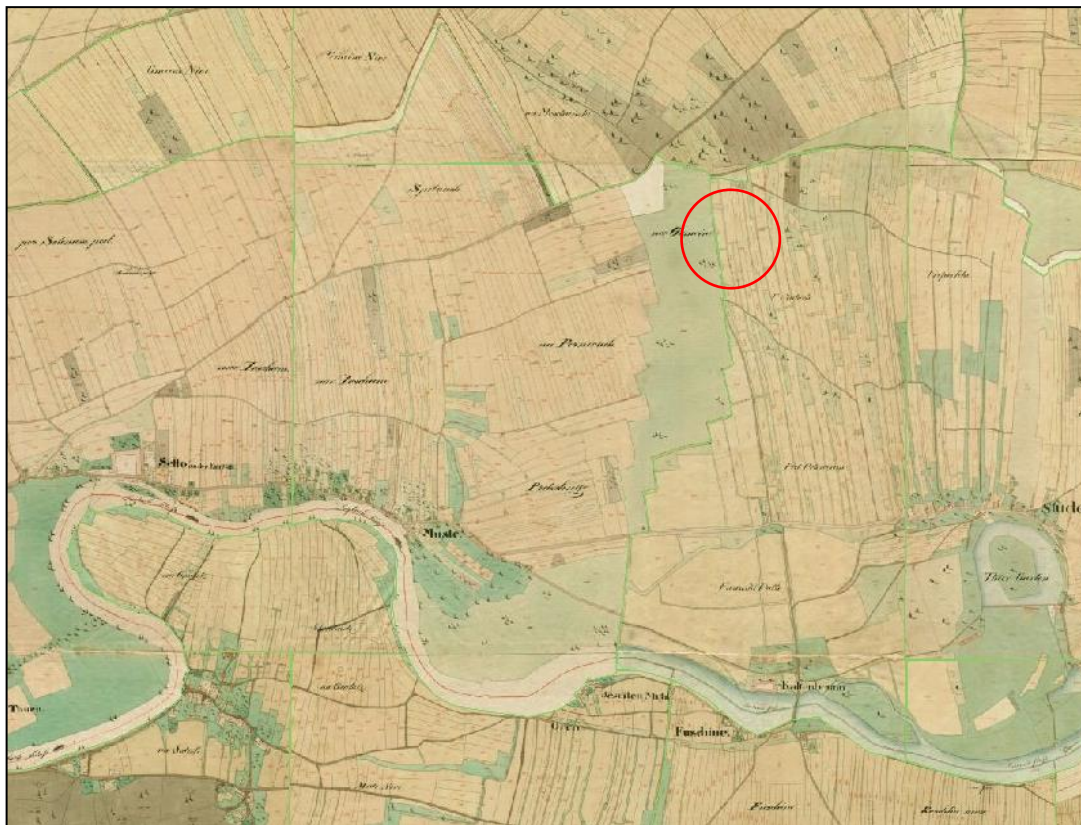


Figure 21: Presentation of OPPN site in the Franciscan cadastre of 1826

Construction on the site has only begun to become widespread as late as in the second half of 20<sup>th</sup> century.

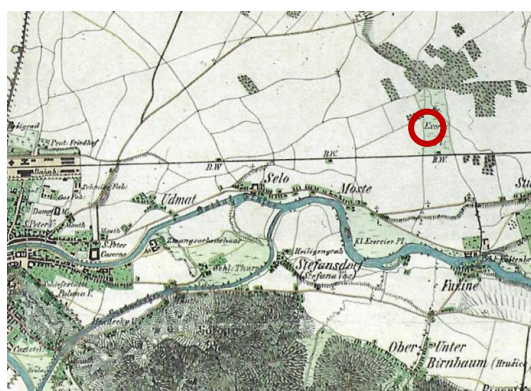


Figure 22: Presentation of the site in 1856 (source: Ljubljana through centuries)

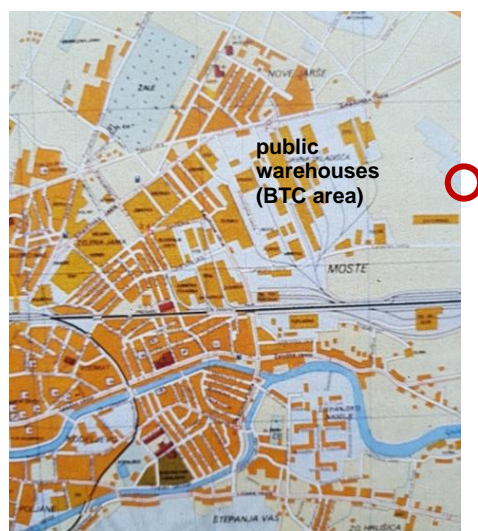


Figure 23: Presentation of the site in 1976 (source: Ljubljana through centuries)



In 1954, a company named Centralna skladišča (Central Warehouses) was founded to the west of the site concerned. In 1975, the company became the largest goods and transport centre in former Yugoslavia. In 1990, the company changed its name to Blagovno trgovinski Center (Goods and Trade Centre). At the same time the company, which, up to that point, managed warehousing space, was transformed to a public limited company, which became responsible for the selection of new programmes and business contents, as well as for a suitable infrastructure. In the same year, first individual stores started opening in the area of the “BTC City Ljubljana” commercial zone (summarized according to Wikipedia).

From 1933 to 1963, first a military airport and then a civil airport were located to the east of BTC. Later on, only light-sport airplanes were landing there, and in time it was entirely closed. After shutting down of the airport, construction in this part of the town grew denser, particularly with warehousing and production facilities. Over the past decades, the number of production facilities has dwindled; while nowadays warehousing and logistic activities prevail, and the number of office buildings is on the increase.

## 2.2. Characteristics of Construction in the Space – Wider and Narrower Area

Competition area is located within the economic zone. Construction is characterized by orthogonal geometry and north-south orientation; facilities are large-sized.

In the wider surroundings, the surfaces to the north and south of competition area are built up by more or less unorganized single-family (detached) houses (Šmartno ob Savi, Sneberje, Polje), while to the south and north-west, organized construction of a larger size is to be found – apartment blocks and tower blocks of Nove Fužine and Nove Jarše housing districts.

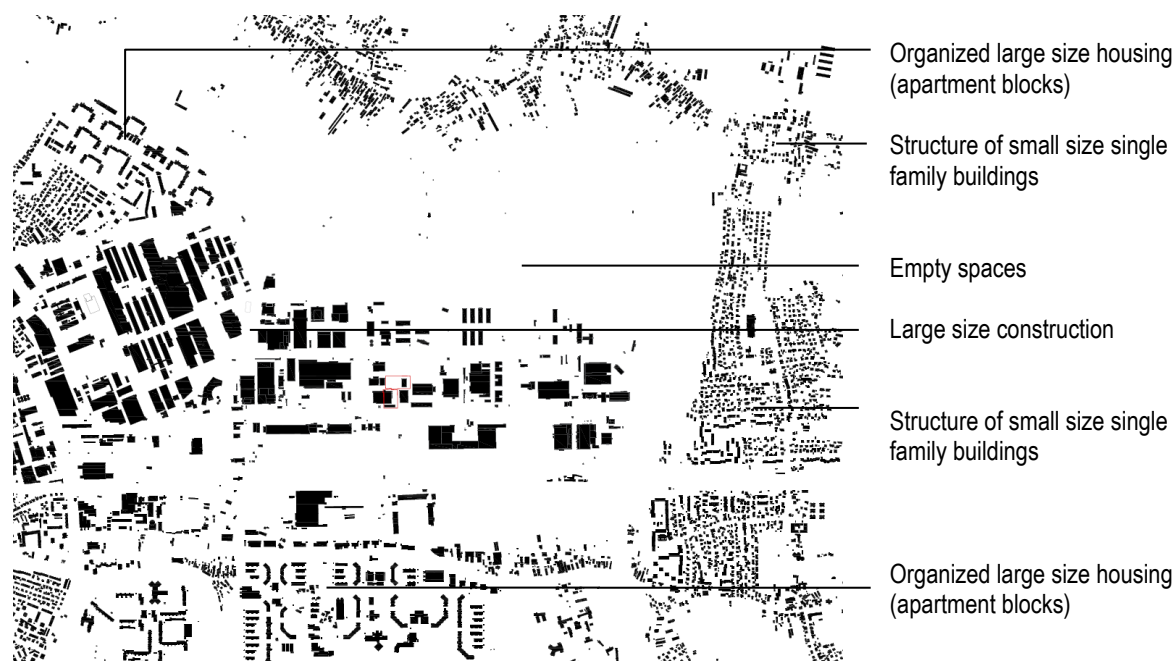


Figure 24: Structure of construction in a wider space

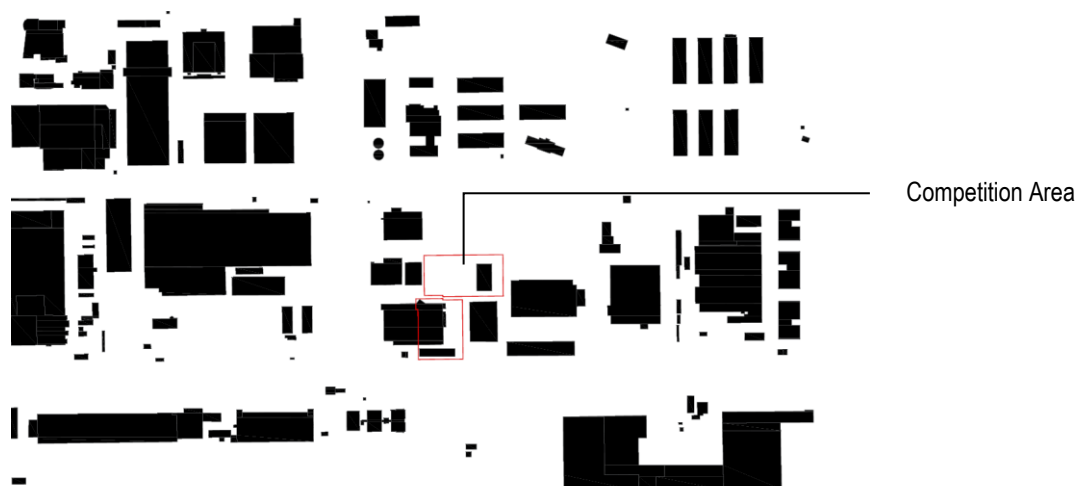


Figure 25: Structure of construction in a narrower space

### 2.3. Traffic

The area is situated to the south of the northern ring road (H3) and to the west of the eastern ring road (A1). On the southern side of the ring road, there is a public path for pedestrians and cyclists, the so-called Pot spominov in tovarštva (Memories and Comradeship Path – PST). Letališka cesta road runs to the south of the area and Leskoškova cesta runs to the west of it. Both roads are tree-lined avenues featuring two lanes, sidewalks on both sides and cycle lanes.

The site concerned is accessible by local access road joining Leskoškova ulica road.

To the south of competition area, there is a public bus transport line running along Letališka cesta road. The closest stop is 200m away.

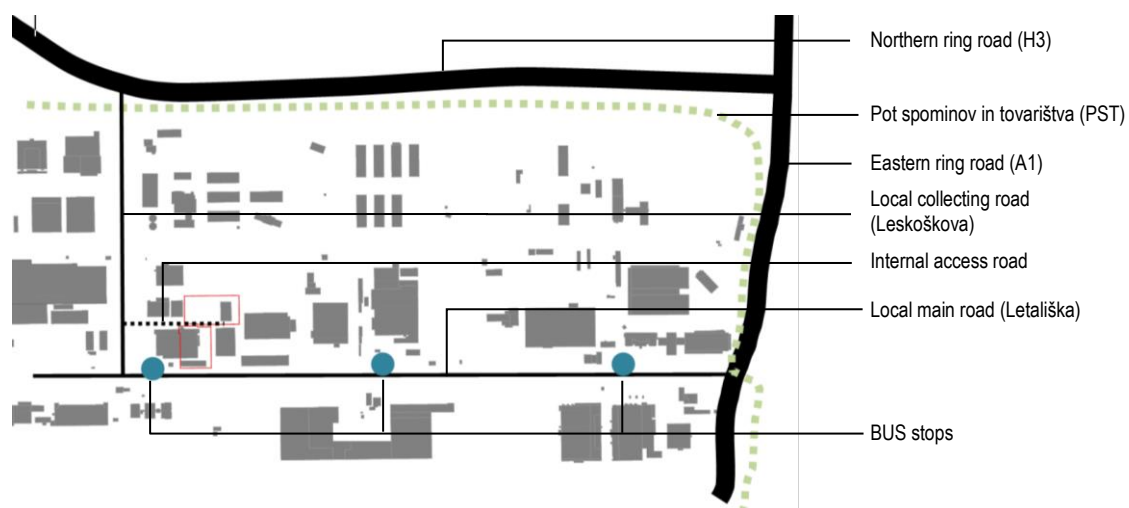


Figure 26: Traffic infrastructure and arrangements of the area



## 2.4. Utility and Energy Infrastructure

The area avails of public water-supply, sewage, district heating, gas, electricity and telecommunication networks.

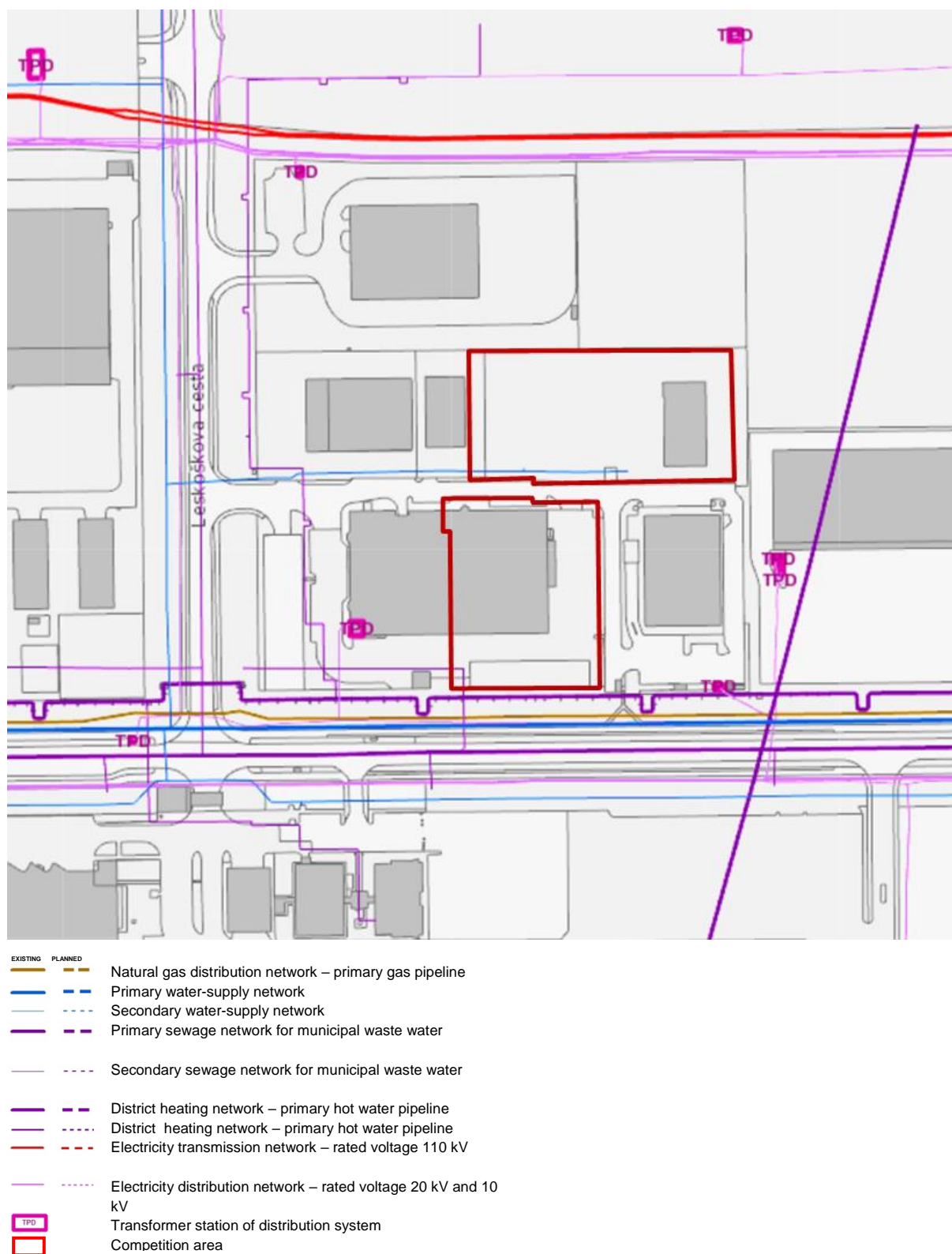


Figure 27: Utility and energy facilities of the area (Source: OPN MOL ID)

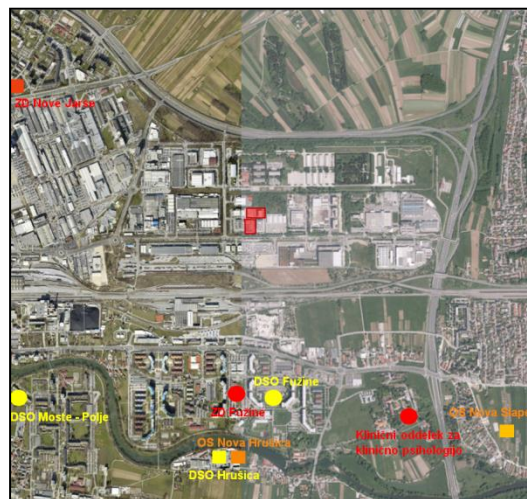
## 2.5. Social Facilities and Supply of Public Services

In immediate vicinity of the competition area there is no social infrastructure and no public services. The closest facilities are situated at the following distances:

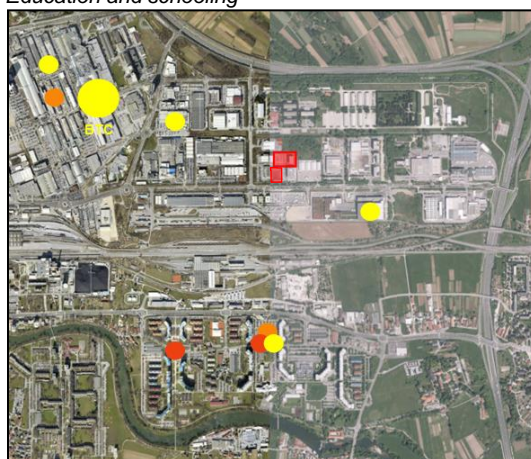
- education and schooling at least 1200 m,
- health care and social welfare at least 1100 m,
- basic public services (shops, post, bank) at least 500 m,
- service activities (cosmetics, hairdressing, cleaner's, garage...) at least 1200 m,
- sports areas at least 300 m, and
- libraries at least 900 m.



*Education and schooling*



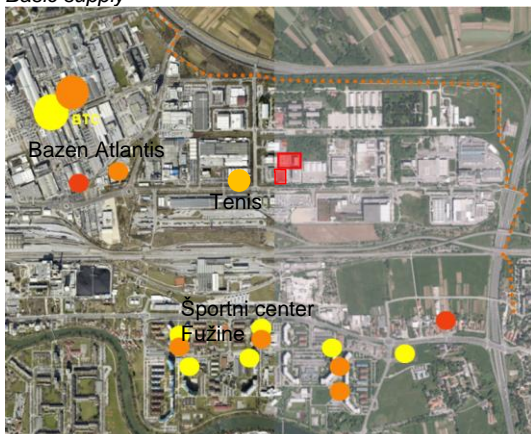
*Health care and social welfare*



*Basic supply*



*Service activities*



*Sports areas*



*Library*

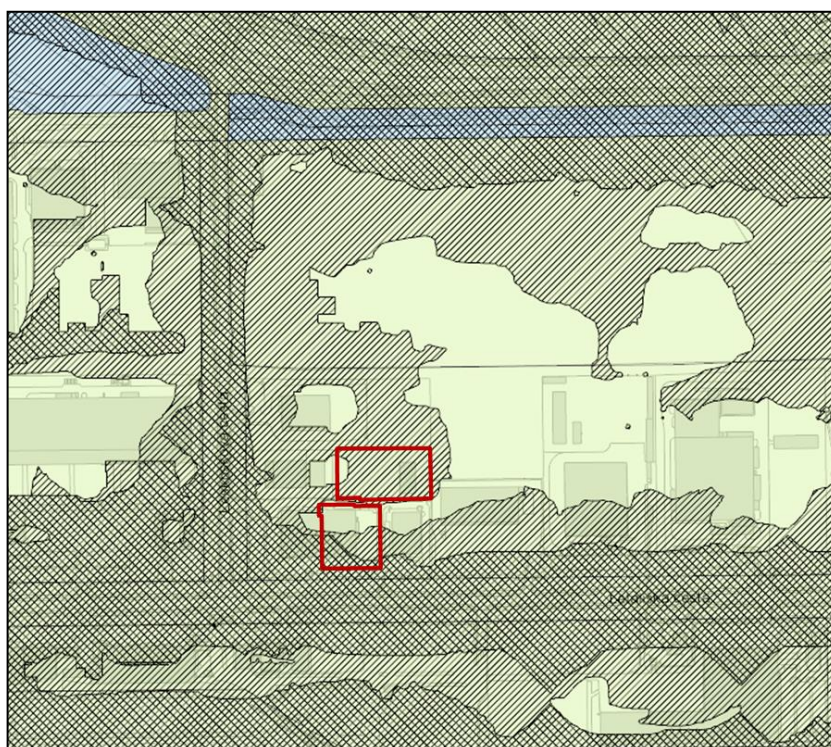
Figure 28: Locations of social facilities and supply of public services in the area (Source: OPN MOL ID and Google maps on 7 November 2017)



Shortage of social facilities and public service activities represents a potential for provision of programmes in the planned building. Despite the needs, the range of admissible activities is limited for reasons derived from the basic intended use of the area. Considering the requirements, the placement of a kindergarten, a hotel, health care activities etc. in the planned building would be quite reasonable, but these programmes are not compatible with the surrounding activities. The planned building shall be located in the economic zone, prevalently built up with production, warehousing and commercial facilities, where even higher values of noise emissions are also permissible.

## 2.6. Noise Pollution

Competition area is situated in the noise protection area of level IV. In addition to the noise caused by activities in the surroundings, the land is further polluted by noise caused by traffic along the motorway, Leskoškova cesta, Letališka cesta and railway line.



- Area of level III of noise protection
- Area of level IV of noise protection
- Exceeded noise value of level II
- Exceeded noise value of level III
- Competition area

Figure 29: Noise protection area (Source: OPN MOL ID)

### 3. SPATIAL EVALUATION AND SUMMARY OF CONSTRUCTION GUIDELINES

#### 3.1. Spatial Evaluation

The land addressed here is situated within industrial zone with predominantly manufacturing and warehousing facilities. According to their layout, the buildings concerned are of large-size low-rise type and no communication with the street space, except for the requirements of manufacturing process. In the wider surroundings, gradual construction of commercial buildings is also taking place; but these buildings only function within their own land.

On the north-west side of the addressed area there is a car wash facility; other facilities in immediate vicinity are, as far as their intended function and appearance are concerned, more compatible with the planned building. On the north side of the undeveloped land, it is permitted to build a new facility, which may serve for manufacturing, warehousing or business activities. After removal of the O-DCB II building on the south-west side, on the border of the competition area, a part of the building on the adjacent land will be preserved.

Access road which splits the competition area is merely a transport route and does not represent a high-quality street space. Narrowing and dead end of the road which is also intended for trucks are the cause of traffic jams principally in the eastern section of the road, in front of the entrance into the existing DCB I building.

Since buildings in the immediate vicinity are lower than the maximum admissible dimensions for the area, the higher storeys allow for beautiful long views of the city and the remote mountains.

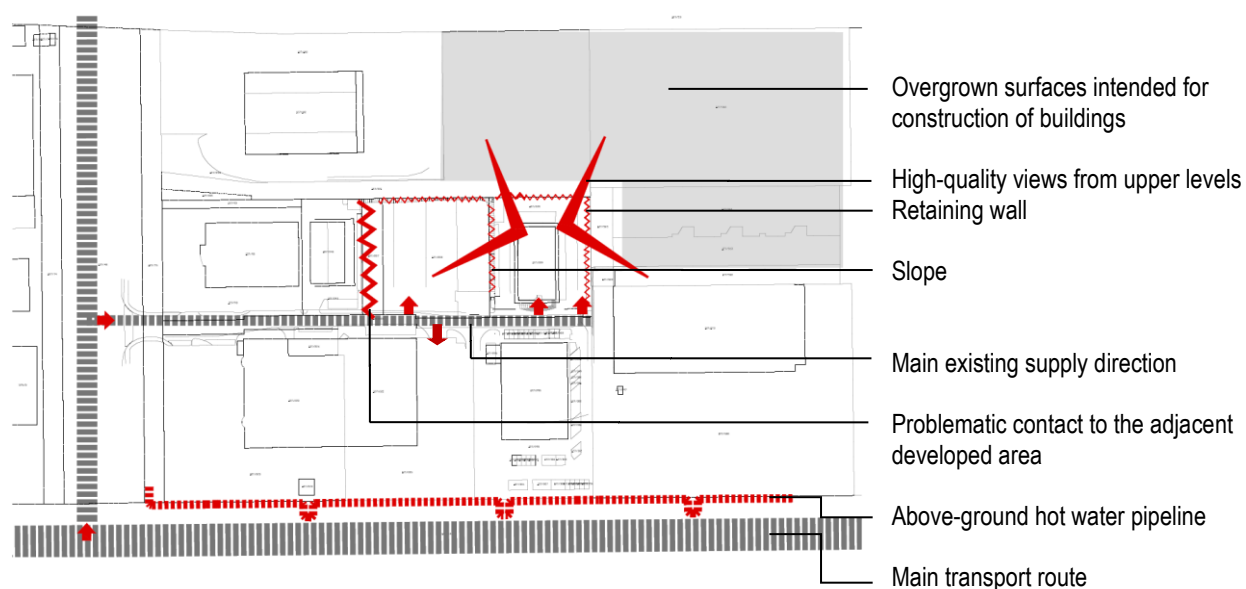


Figure 30: Spatial evaluation map of the area

The figure below shows the relationship between buildings to be constructed and the existing surrounding buildings. In the lower storeys, it makes sense to orient the planned building inward, while outward orientation of the higher storeys levels is also suitable because of the fine views.

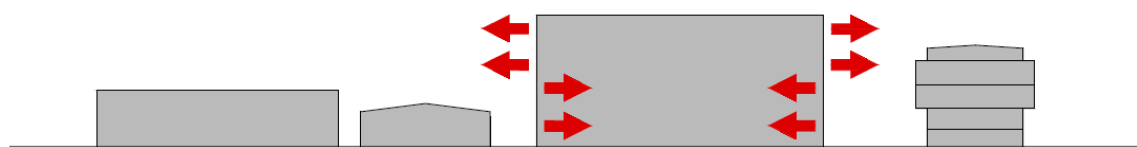


Figure 31: Contact between the existing and planned buildings



## VI PLANNING GUIDELINES – URBAN PLANNING

### 1. GENERAL

DCB III office building is planned to be built in the competition area on land plots with parcel numbers 127/227 and 127/288, both in the Moste cadastral district. In the next phase, the existing O-DCB II building will be removed and a new office and warehousing building DCB II is to be constructed in its place. The existing DCB I building was constructed in 2001 and adequately serves its purpose. In the medium term, however, the building will need energy efficiency renovation in the scope of which visual improvement of the external appearance of the existing building is foreseen. Parking capacities for the needs of this area will be provided in the subterranean levels of the planned buildings and partly also outside.

The subject-matter of design competition solution shall be:

#### 1. Urban-planning part of design competition:

- design and placement of new DCB II office building with pertaining outdoor facilities and landscaping, traffic arrangements and public utilities development,
- design and placement of new DCB III office building with pertaining outdoor facilities and landscaping, traffic arrangements and public utilities development,
- proposal for visual improvement of the existing DCB I building exterior with a view to design the competition area as a recognizably designed whole,
- outdoor design and traffic regulation of the entire competition area.

#### 2. Architectural part of design competition:

- architectural design of DCB III building

This design shall take into account the phases of implementation:

- in the first phase, construction of the new DCB III building with pertaining arrangements and facilities is to be carried out,
- in the second phase, construction of the new DCB II building with pertaining arrangements and facilities is to be carried out,
- visual improvement of the existing DCB I building will be carried out either simultaneously with construction of the new DCB III building, or subsequently.

When all the planned development activities are completed, the entire competition area should work, in function and design, as an integrated whole. Functional links between buildings DCB I and DCB III (below or above the ground) are desirable, but the concept must allow both buildings to function completely separately as well. Direct links between the DCB II building and buildings on the northern side of the access road are impossible because of mixed ownership of the land parcel where the road is situated. Nevertheless, the DCB II building must be conceived and situated in such a way that it is integrated with the remaining two buildings into a recognizable commercial complex. The land parcel of DCB II will also provide a part of parking capacities for the needs of DCB III building.

### 2. COMPETITION AREA

The area dealt with by the competition solutions covers all land parcels owned by the investor, and is marked in competition templates:

- No C-02 Site parameters
- No C-03 Orthophoto with marked competition area

### 3. LAND PLOTS INTENDED FOR CONSTRUCTION OF BUILDINGS

The parcel intended for construction of the building of DCB III covers the land with parcel No 127/227 and the major part of the land with parcel No 127/228, both in the cadastral district 1730 Moste. The minor part of the land with parcel No 127/228 represents the reservation intended for construction of internal access road.

The existing building DCB I and the planned building DCB III should function independently, each on its own parcel, and at the same time a link between the two buildings should be provided.

The planned building shall not extend to land outside the parcel intended for construction, except on the east side where construction pit protection and possible links to the existing building may be planned between the cellar of the existing building and the parcel boundary.

The parcel intended for construction of the building of DCB III has a surface area of 3,617 m<sup>2</sup>. All the urban planning parameters shall be recalculated according to such surface area (footprint index, green space index etc.).

The parcel intended for construction of the building of DCB II covers the greater part of the land with parcel number 127/225 in the cadastral district 1730 Moste. The minor part of the land on the north and east part is intended for construction of internal access roads. The parcel intended for construction of the building of DCB III has a surface area of 5,291 m<sup>2</sup>. All the urban planning parameters shall be recalculated according to such surface area (footprint index, green space index etc.).

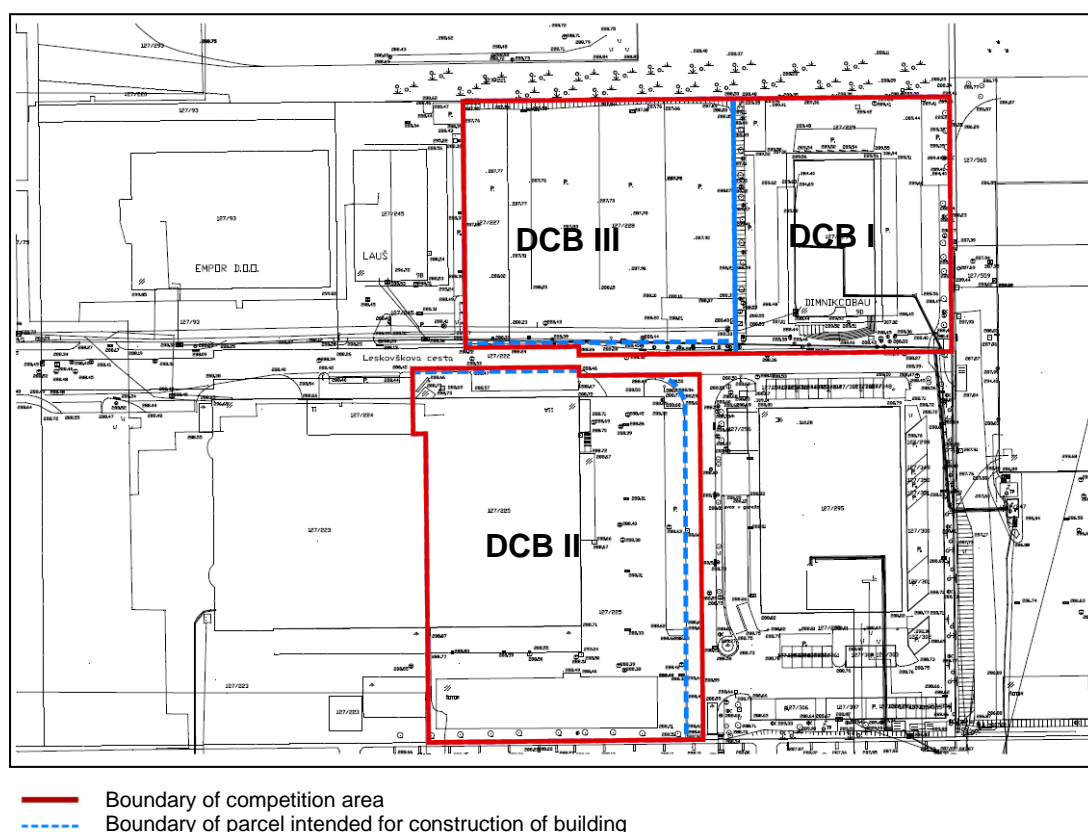


Figure 32: Survey plan of the site showing competition area and land plots intended for construction of DCB II and DCB III buildings

#### 4. SITE CONCEPT DESIGN

Placement and concept of new buildings shall correspond to boundary conditions of the land as closely as possible and shall create a corresponding communication with the surrounding space:

- the buildings must be conceived and situated in such a way that they form a recognizable commercial complex,
- in the wider area, this is a rather degraded location, therefore the planned building should be oriented inward, particularly at the level of the lower storeys,
- in the higher storeys, the buildings should take advantage of impressive views of the wider surroundings,
- in the area of the entrance, the buildings should establish a suitable relationship with the street space, e.g. by opening up toward the street space, keeping distance from the edge of the road, creating a public parterre and the like,

- in the relation to the existing buildings, the buildings should observe the existing height dimensions; but at the same time the DCB III building in particular should be designed so as to demonstrate a recognizable image in the wider environment as well,
- the two buildings should establish a suitable communication with the existing DCB I building.

## **5. DESIGNING THE VOLUME OF BUILDINGS**

The volume of the DCB II and DCB III buildings should be designed so as to form a compositional whole together with the DCB I building; at the same time, however, the DCB III building in particular should be designed so as to demonstrate a recognizable image in the wider environment as well. In designing the volume of buildings, it is necessary to also observe, in addition to programming and functional requirements described in chapter VII. PLANNING GUIDELINES – ARCHITECTURE:

- the maximum permissible height of the building,
- the maximum permissible footprint index, and
- the required clearances from the adjacent land plots and buildings.

### **Height of the buildings**

The maximum height of buildings prescribed in OPN MOL ID, may be:

- for the DCB II building, 20.00 m
- for the DCB III building, 40.00 m. The above provision notwithstanding, the competent MOL services have proposed the height of 25 m and the number of levels of the building up to G+6. It shall be the task of the competitors to take a correct stand with respect to the height and to substantiate it.

The height of the building is the distance between the level of the ground at the entrance into the ground-floor and the highest point of the cornice of a flat-roof building or, in the case of a terrace level, the cornice of such terrace level. Permissible height of the building may be exceeded by: chimney, installations, solar captor or solar cells, roof access, railing, electronic communication infrastructure.

### **Footprint Index**

Footprint index FI may be max. 60%.

Footprint index is the ratio of vertical projection of the external dimensions of the building (including most exposed parts of the building) onto the ground and the area of plot intended for construction.

The plot intended for construction of DCB III building covers 3,676 m<sup>2</sup>. Floor-plan projection of the most exposed parts of the building above the ground (built-up area) may not exceed: 3,676 m<sup>2</sup> x 60% = 2,205 m<sup>2</sup>.

Parcel intended for construction of DCB II building covers 5,291 m<sup>2</sup>. Floor-plan projection of the most exposed parts of the building above the ground (built-up area) may not exceed: 5,291 m<sup>2</sup> x 60% = 3,174.60 m<sup>2</sup>.

Balconies and overhangs shall not be taken into account in floor-plan projection of external dimensions of the most exposed parts of the building. However, floor-plan projections of maximum external dimensions of all auxiliary buildings above the ground as well as areas of driveways to and from the basement shall be taken into account.

### **Clearances**

Clearance between DCB III building and adjacent land plots above the ground shall be at least:

- 5.00 m from the boundary of plots on the north, south and west side
- 3.00 m from the boundary of plots on the east side

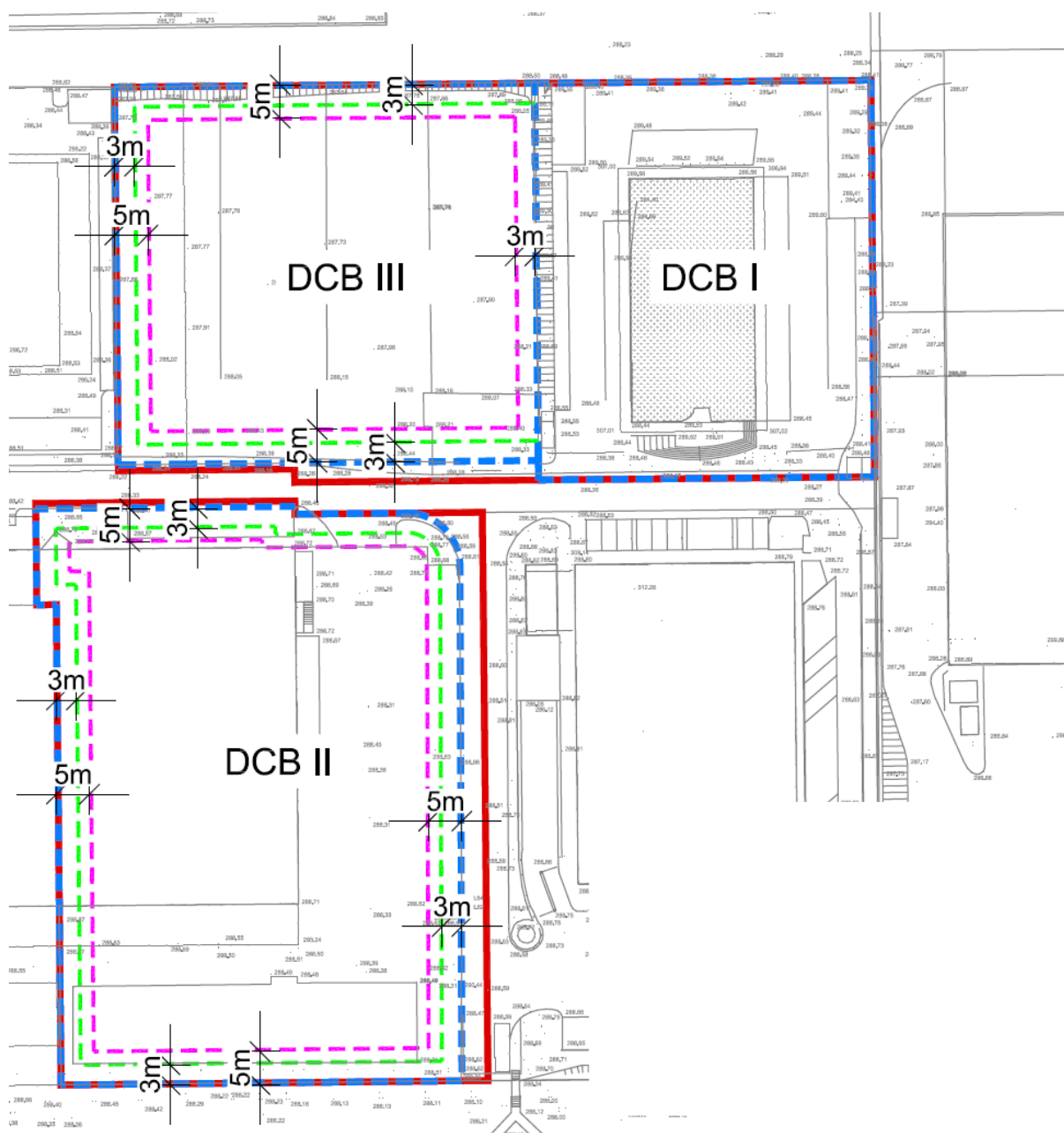
Clearance between DCB III building and adjacent plots under the ground shall be at least:

- 3.00 m from the boundary of plots on the north, south and west side,
- On the east side, the clearance may be 0.00 m.



Clearance between DCB II building and adjacent plots above the ground shall be at least 5.00 m.

Clearance between DCB II building and adjacent plots under the ground shall be at least 3.00 m.



#### LEGENDA / LEGEND:

- MEJA NATEČAJNEGA OBMOČJA / COMPETITION AREA BOUNDARY
- MEJA PARCELE, NAMENJENE GRADNJI / BOUNDARY OF PARCEL INTENDED FOR CONSTRUCTION
- ODMIK STAVBE OD SOSEDNIJH ZEMLJIŠČ NAD TERENOM / CLEARANCE BUILDING AND ADJACENT LAND PLOTS ABOVE GROUND
- ODMIK STAVBE OD SOSEDNIJH ZEMLJIŠČ POD TERENOM / CLEARANCE BUILDING AND ADJACENT LAND PLOTS UNDER GROUND

Figure 33: Clearance between the building and adjacent land plots

Distance between the building and the adjacent plot boundary is the shortest distance between the adjacent parcel boundary and external point of the most exposed part of the building which comes closest to such boundary (e.g. overhang, cantilevered structure, balcony and similar).

**Clearance between the planned building and the neighbouring buildings shall be at least equal to or larger than one half of the height of the higher building, measured up to its cornice!**

## 6. EXPECTED LAND USE

Utilization of land use is determined by:

- maximum footprint index,
- maximum permissible height,
- green-space index,
- required number of parking places, etc.

Based on the previously performed analyses, the following GFA (gross floor areas) are expected for DCB III building:

- expected GFA of the building above ground is 11,000 m<sup>2</sup> with deviation of up to  $\pm 10\%$ ,
- indicative GFA of the building underground (in two levels) is 5,600 m<sup>2</sup>.

In case of DCB II building the utilization of land is determined by the expected capacity of the building which shall be:

- approx. 3500 pallet spaces in the warehousing part of the building
- at least 170 parking spaces in basement levels of the building
- as many office premises as possible.

Investor would not like to build more than two underground floors.

## 7. OUTDOOR DESIGN

The outdoor design should be conceived as an overall design for the entire competition area. The design must also include the outdoor areas near the existing building DCB I.

The walk-on surfaces must be suitably paved, and access to the building must also be provided for persons with functional disabilities.

At least 15% of green areas over original ground must be provided on the plots intended for construction of new buildings (i.e. at least 543 m<sup>2</sup> for the DCB III building and at least 794 m<sup>2</sup> for the DCB II building). Original ground means external areas which preserve direct contact with bedrock and hence the ability to retain and sink water and enable planting of high vegetation.

The area will be partially fenced on the external borders. The position of the fences is shown in the figure below. As a rule, the fences will be transparent with the exception of the fence on the north-west side, which also serves as a visual barrier. Construction of a fence on the east side of the DCB II plot is also permitted/optional.

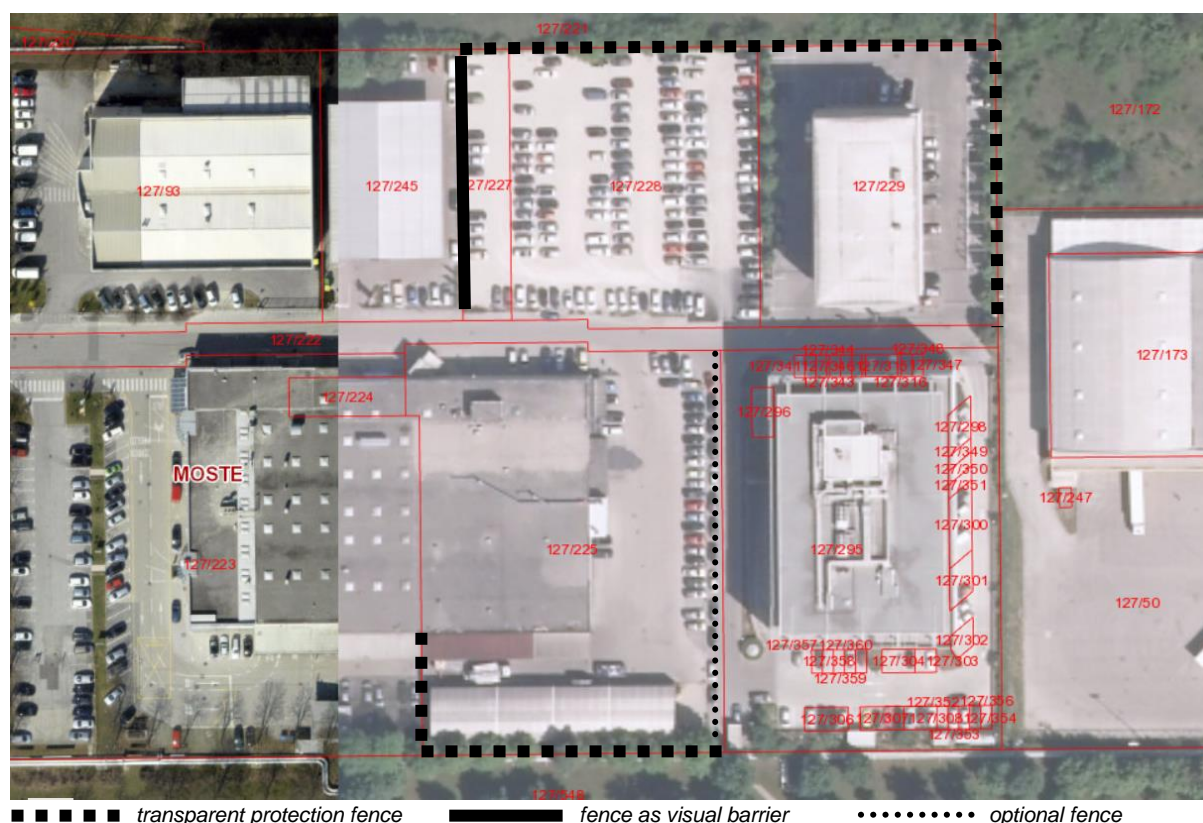


Figure 34: Fencing

A retaining wall up to 1.50 m high and a fence of up to 2.20 m high may be constructed along the border with the adjacent parcel, but its construction must not affect the adjacent plot. For higher fences a consensus of the neighbour is required.

The landscaping process must take into account the requirement that there must be at least 25 trees planted per ha of these plots of land. This means that there have to be at least 10 trees on the plot intended for construction of the DCB III building and 14 trees on the plot intended for construction of the DCB II building. Up to 30% of the trees to be planted on the plot intended for construction can be replaced by high shrubs.

The conditions for the construction in the impact area of trees and other vegetation:

- If the areas around the trees are to be paved, it is necessary to ensure appropriate soil quality and quantity, water and aeration of the soil above the root system. The opening for the absorption of air and water must be at least 3.00 m<sup>2</sup> large.
- The distance between the tree trunk and the underground utility lines must be at least 2.00 m.

Roofs with net surface of more than 600.00 m<sup>2</sup> (excluding rooflights, engine rooms and other facilities on the roof) must be constructed as green/living roofs. An exception to this are roofs that cannot be constructed as green roofs due to the technological process.

## 8. TRAFFIC REGULATION

### 8.1 Access

#### Motor traffic

Access to the complex will be arranged on the existing internal access road that connects to Leskoškova cesta. This is a narrow dead-end road with frequent traffic jams at the end. If possible, access to the plot for personal cars should be planned on the west side of the plot where the traffic situation is less chaotic. In addition to the entry for personal vehicles, it is also necessary to provide access to buildings for delivery and intervention vehicles.



Delivery for the DCB II building will be carried out in the basement by means of vans. Appropriate access for larger trucks and articulated trucks has to be provided for DCB II building at ground level.

Access for utility vehicles collecting waste will be provided at the ground level via access road, with turn-around point at the end of the internal access road on the east side of the existing DCB I building.

In a later phase and by obtaining respective consents of competent authorities, the Investor wishes to provide for a direct connection to Leskoškova cesta via co-owned access road (entry/exit by turning right). The design competition solution should abide by the existing situation (dead-end access road without direct connection southward), and the competitors, while making the designs, should also consider the possibility of such connection in the future.

#### Pedestrian traffic

Pedestrians will access the building via the pedestrian passage, a part of which already exists on the north side of the internal access road. In the area of the plot intended for construction of the DCB III building, the pedestrian passage has to be constructed and connected to the existing pedestrian areas on the east and west side of the plot. A continuous pedestrian passage to the entrance into the building must be constructed on the north side of the plot intended for construction of the DCB II building.

#### Cyclists

Cyclists will access the planned building via the carriageway of the existing internal access road. No cycle lanes are envisaged in the competition area.

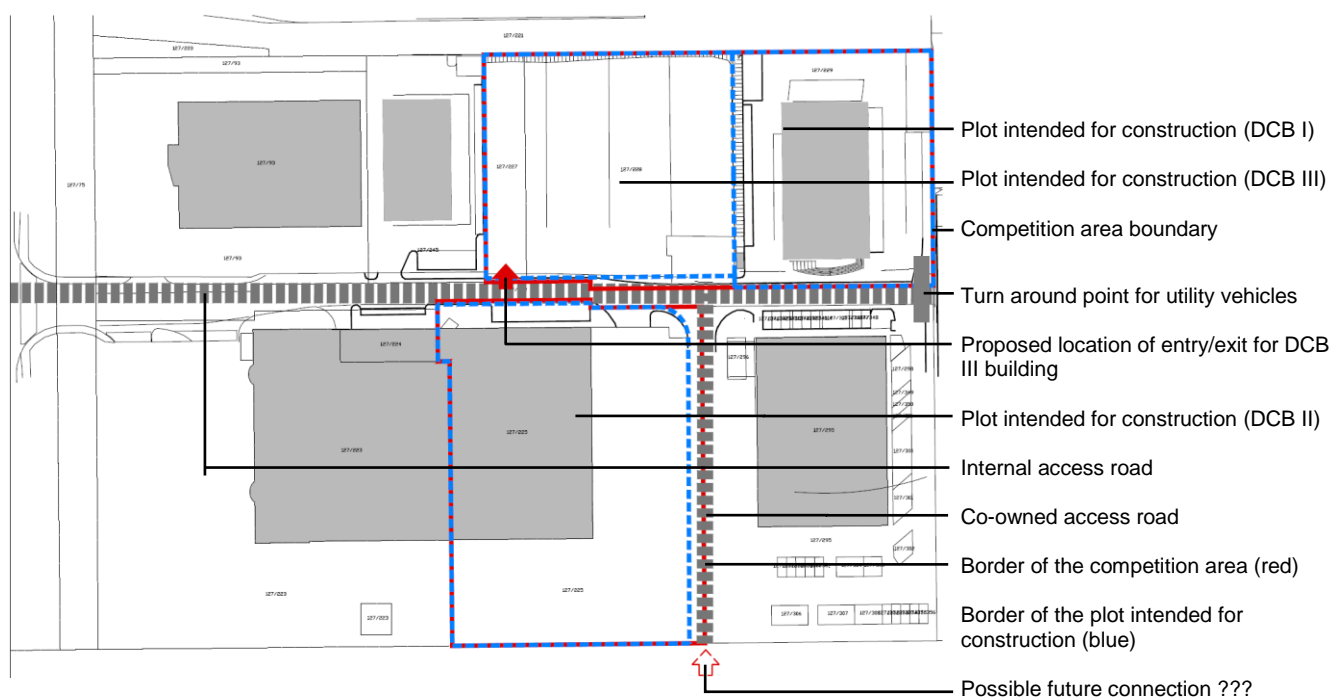


Figure 35: Access to building

## 8.2 Parking Areas

At least the following number of parking spaces (PS) has to be provided on the competition area:

DCB II building:

Intended use of premises	Number of PS for motor vehicles	Number of PS for cyclists
Business part	1PS/60 m <sup>2</sup> of building GFA	1 PS/200,00 m <sup>2</sup> of building GFA
Warehouse part	3 PS	2 PS

DCB III building:

Intended use of buildings	Number of PS for motor vehicles	Number of PS for cyclists
Office storeys *	1 PS/25.00 m <sup>2</sup> of net office area,	1 PS/200.00 m <sup>2</sup> of building GFA
Other auxiliary commercial activities and common programmes in the building (reception part, catering, conference rooms, etc.)	1 PS/60.00 m <sup>2</sup> of building GFA	1 PS/200.00 m <sup>2</sup> of building GFA

\* When calculating the number of parking spaces for office storeys or parts of the building intended solely for offices in DCB III building, only office premises shall be considered in the calculation of net floor areas, while auxiliary premises (communications, restrooms, kitchenettes, etc.) shall not be taken into account.

When calculating the number of PS, GFA intended for servicing areas (garages, bicycle sheds and installation rooms) shall not be taken into account in the building's GFA.

Of the total number of parking spaces, 5% must be allocated to persons with disabilities using wheelchairs.

Each parking area with more than 100 parking spaces must have one space with electric car charging station.

Cycle parking spaces for employees and visitors must also be envisaged. At least 25% of the parking spaces for bicycles must be covered (protected against precipitations).

In addition to the required number of PS for motor vehicles, additional 5% of parking spaces shall be provided for two-wheeled motor vehicles.

A maximum possible number of parking spaces for motor vehicles must be provided in the pertaining basement storeys of the building and partially outdoors. A part of parking capacities for the needs of the DCB III building may be provided in the basement of the DCB II building.

In addition to the required number of parking spaces, parking area for company vehicles shall also be provided near the DCB II building: 10 PS for vans.

## 9. MUNICIPAL UTILITY CONNECTIONS

### 9.1 Utility and Energy Infrastructure

The planned building DCB II must be connected to the public water supply mains and sewer mains, as well as power distribution network. Connection to district heating network is mandatory for energy supply. Connection to the gas distribution network is also possible for the needs of cooking and technology.

The existing building DCB I is connected to public district heating pipes, water supply mains, power supply mains, telecommunications network and sewer mains. Fecal wastewater is conducted into the internal wastewater collection tank. Rainwater from the roof is sunk while surface runoff is conducted to the internal storm collection sewer. Prior to the connection to the public sewer mains, the internal wastewater canal and the internal storm collection canal are merged, while rainwater is previously cleaned through the oil trap.

Public water supply mains run across the competition area. The width of the protection belt into which the planned building must not reach is 3 m.

The primary district heating pipes run across the southern part of the DCB II area. The width of the protection belt into which the planned building DCB II must not reach is 3 m.

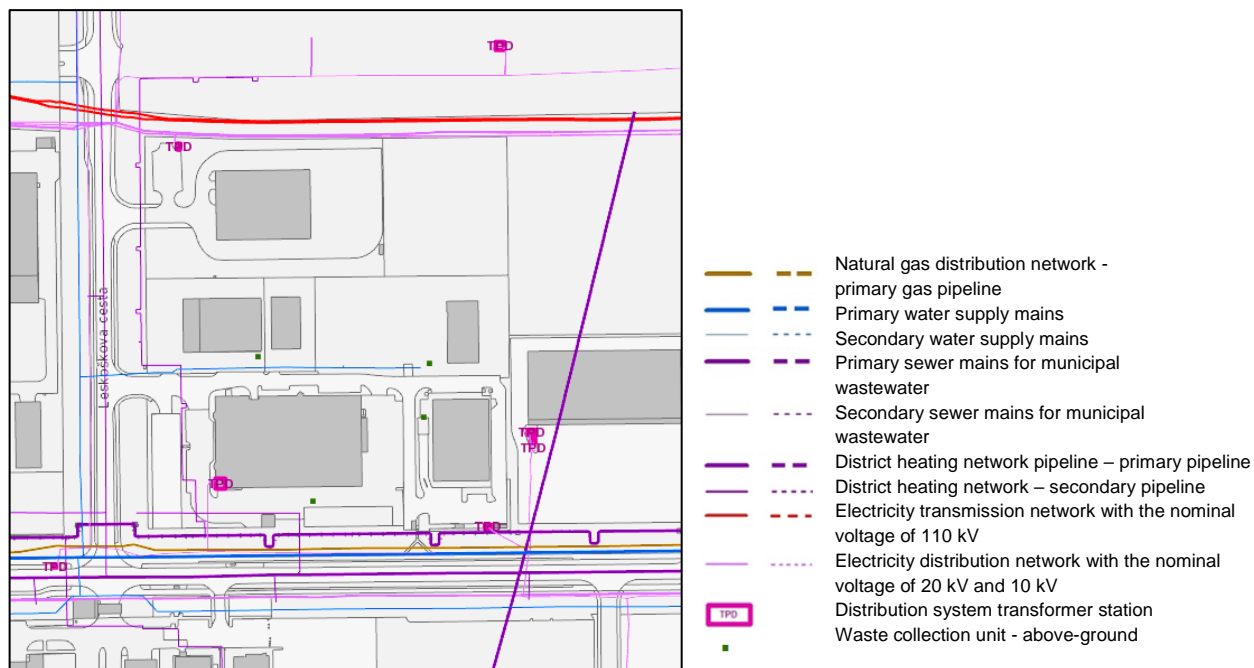


Figure 36: Public utility and energy infrastruktura (Source: OPN MOL ID)

## 9.2 Waste Collection

An area for separate collection and removal of waste has to be foreseen on the plots intended for construction of buildings DCB III and DCB II.

The existing waste collection and removal area for DCB I building is located at the east end of the internal dead-end access road.



Figure 37: Existing waste collection and removal area for the DCB I building



### 2.3 Water Protection Zones

The entire competition area is situated within the Ljubljansko polje water protection zone with the water protection regime III A, a subzone with a less strict water protection regime.

Development activities in a water protection zone are only permitted in accordance with the conditions and limitations of applicable national decrees and municipal ordinances on the protection of water sources and with the consent of the authority in charge of waters. No changes to the intended use of buildings are allowed in the water protection zones, if they cause severe potential risk for the deterioration of underground water in comparison with the current use. No industrial and other activities are permitted in the narrow water protection areas in case dangerous and harmful substances are used in the production processes that can pollute the underground water.

### 2.4 Noise Protection Zones

The competition area is situated within Level IV noise protection zone. Almost in the entire area, noise exceeds the values for level II noise protection zone and on the south side even the values for level III noise protection zone.

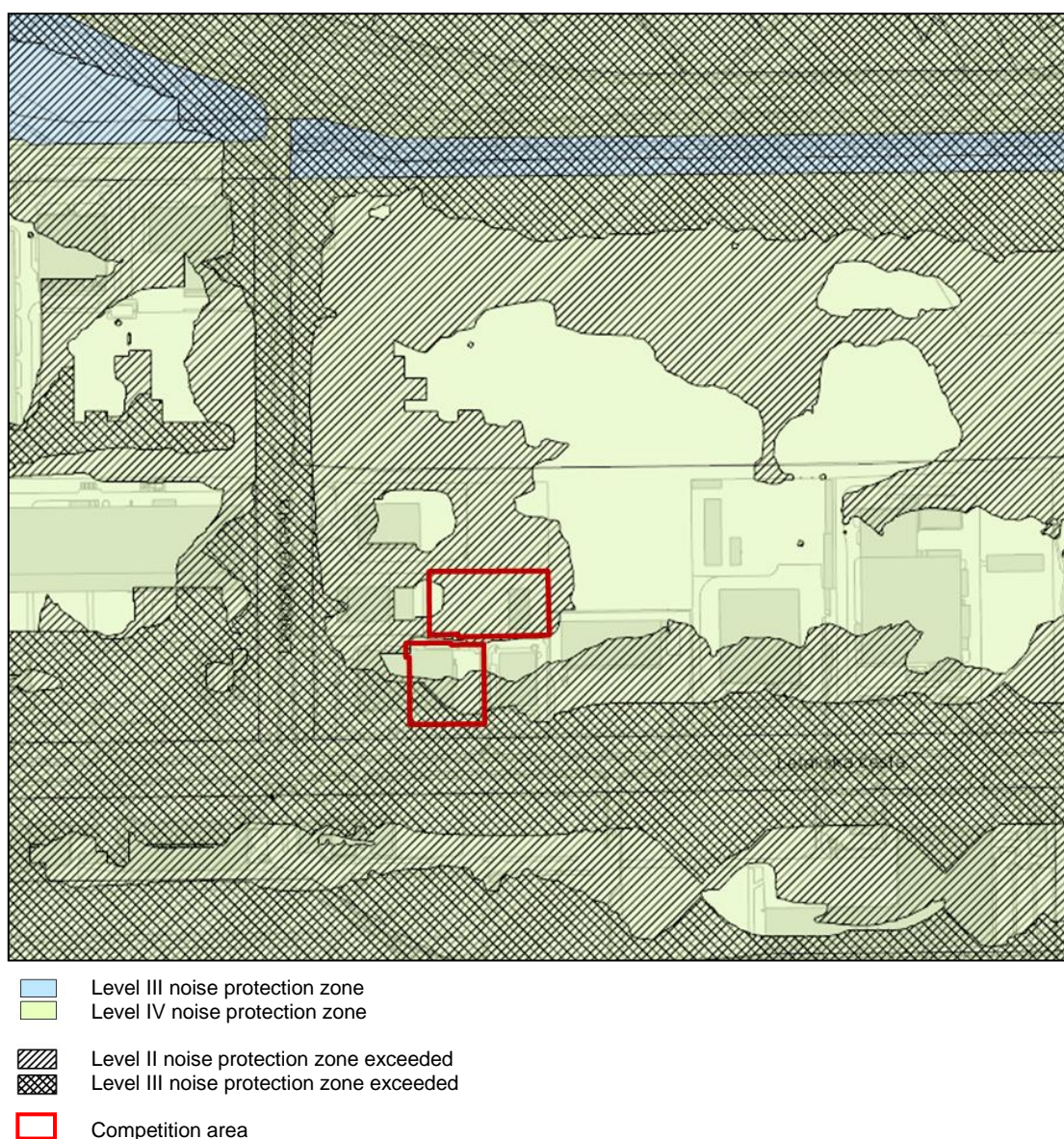


Figure 38: Diagram of the noise protection zone (Source: OPN MOL ID)

## VII PLANNING GUIDELINES - ARCHITECTURE

### 1. GENERAL INFORMATION

The Dimnikcobau Business Park consisting of buildings DCB I, DCB II and DCB III must be understood as an integral whole which will outwardly express its integrity with its recognizable and uniformly designed appearance, and inwardly with the idea of a modern commercial zone.

In the existing building as well as both newly designed buildings, the Investor wishes to offer the market adaptable business premises which will offer their users primarily:

- adaptable conditions,
- space for growth / reduction,
- servicing activities within the building,
- friendly environment.

All three buildings must function in such a way that they can be managed completely separately. It shall be permissible, however, to jointly use servicing and auxiliary programmes, such as:

- auxiliary programmes in DCB III building (catering, sports programme, conference rooms, etc.) can also be used by the users of buildings DCB I and DCB II,
- parking spaces in the garage of DCB II building can also be rented by the users of buildings DCB I and DCB III...

### 2. DCB I

The DCB I building is a multi-purpose office building used for the company's own purposes and for renting out. Energy efficiency renovation of the building is planned. The building's internal organisation is not the subject of design competition solution. In the scope of the competition solution it is necessary to check the possibility of a link with the planned DCB III building (in the basement or above ground?) and propose visual improvement of the building (e.g. a new façade sheath) so as to incorporate it to the maximum possible extent into the overall image of the Dimnikcobau Business Park.

The necessary parking areas for the DCB I building are provided on the external areas along the building, a total of 43 PS. The external parking and driving areas on the east and north side of the building should be preserved, if possible. The external areas on the west side of the DCB I building should be connected to the arrangement of external areas near the planned DCB III building. The existing parking spaces on the plot of the DCB I building, which might be abolished due to the new outdoor design, must be replaced within the competition area.

### 3. DCB II BUILDING

#### 3.1 General Information

In the scope of this design competition, the DCB II building has to be designed at the conceptual and programme level. The purpose of the design is to check the capacities, and to design the volume and external appearance of the building that will in a later phase complement the Dimnikcobau Business Park.

The following programme sets are planned in the building:

- warehouse,
- offices and
- parking area.

The maximum possible area of the ground floor should be allocated to the warehousing activity; parking garages should be in the basement storeys of the building and business premises in the storeys above the warehouse.

The final building capacity is not specified in the Competition Brief. The competitors are expected to propose a solution that will offer an optimal land use, taking into account the following requirements:

- The capacity of the warehouse must be maximised, expected capacity is about 3,500 pallet spaces;
- The capacity of the offices must be determined proportionally to the building volume and the total balance of the parking areas in the competition area;
- The capacity of the garage must be maximised, and its minimum capacity must be 170 PS.

The warehouse and the office section must have separate entrances.

### **3.2 Warehouse**

The warehouse shall be intended for the storage of the pharmaceutical products, medicines and accessories. The warehouse shall comprise the following sections:

- Goods acceptance areas (quarantine);
- Warehousing areas;
- Goods issue areas, and
- Auxiliary premises.

Due to the nature of the goods storage, the areas are subject to strict conditions regarding the storage process and temperature in the premises. There should be no daylight in the storage premises since some products are subject to the “protected against light” regime. However, natural daylight in the warehouse office premises is desirable.

Goods are stored on pallets. The dimensions of individual pallet space are:

- length 1.20 m;
- width 0.80 m;
- height 1.60 m.

Pallets are stored on top of each other in pallet racks. The planning process must take into account the gross height of a pallet space (including the load-bearing structure of the pallet rack) which is 1.85 m. In the floor plan arrangement, a spacing of 0.10 m must be foreseen for the load-bearing structure of the pallet rack, as well as at least 0.10 m of clearance from the walls and other structural elements of the building.



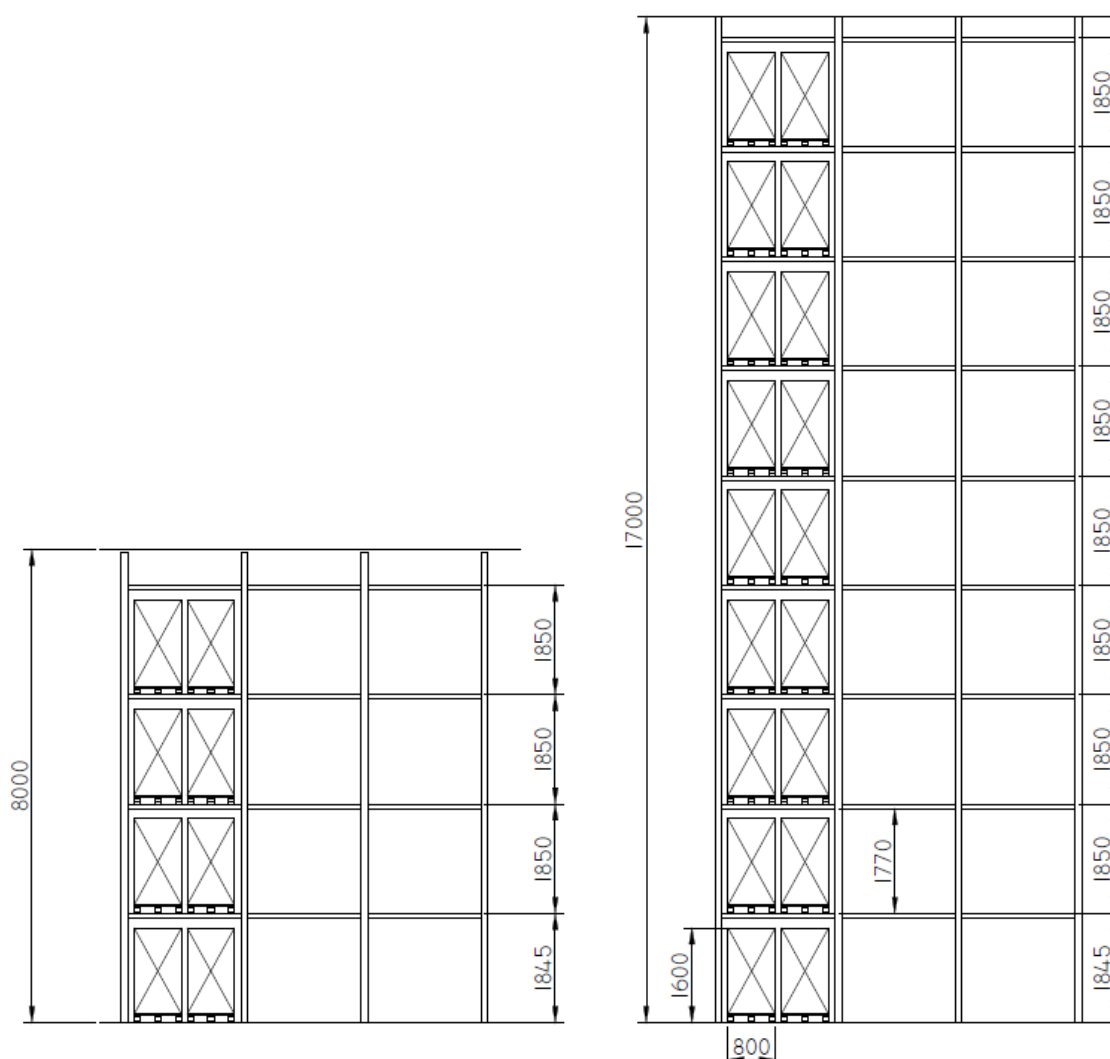


Figure 39: Presentation of pallet stacking - through standard rack warehouse (left) and high bay warehouse (right)

The following people are planned to be employed in the warehouse:

- 1 head of the warehouse
- 6 drivers and
- 5 warehouse workers

The descriptions of the required premises are provided below.

### 3.2.1 Goods acceptance areas ("quarantine")

The suppliers shall deliver the goods with large trucks and towing vehicles. The following must be provided in the premises for the acceptance of goods, officially called "quarantine":

- **Unloading ramp** on which the truck (articulated truck) will be parked during the unloading process so as not to obstruct other functions on the plot;
- **Access platform** that will allow for the unloading of the goods in the premises with controlled temperature,
- **Handling enclosure for forklifts** that take over the goods from the truck and move it to the initial acceptance area. The area must be large enough to allow for passing-by and operation of at least two forklifts (a 3.20 m wide communication path);
- **Initial quantitative acceptance:** this is the area where goods are accepted and the transportation wrapping (sometimes dirty) is removed. The goods are then moved to the final detailed acceptance area. There must be pallet racks with a total capacity of at least 130 pallet spaces in the initial acceptance area. In this area, pallets are stacked on pallet racks with a maximum height of four levels and the area between the pallet racks must be sufficient to allow for forklift operation (minimum clearance 3.20 m);

- **Final detailed acceptance:** this is the area where accepted goods are checked and prepared for dispatch to the rack warehouse or production. There must be pallet racks with total capacity of at least 130 pallet spaces in the final acceptance area. In this area, pallets are stacked on pallet racks with a maximum height of four levels and the area between the racks must be sufficient to allow for forklift operation (minimum clearance 3.20 m). There must be a refrigerator (dim. 0.6 x 0.6 x 2.00 m, 2-8 degrees C) and a freezer (dim. 0.6 x 0.6 x 2.00 m, -20 degrees C) in the final acceptance area;
- **Production:** in the production areas, goods are equipped with labels and declarations and prepared for dispatch to the rack warehouse. The production section comprises the following areas:
  - anteroom**, for forklift access. The anteroom must be connected with the premises for final acceptance and rack warehouse
  - 2 separate production areas**, accessible from the anteroom. There are 4 desks in each production area, dimensions 1.00 m x 2.00 m, installed as a single island workbench (total dimensions 2.00 m x 4.00 m). In addition to the desks, there are also shelves in each production area (length approx. 5.00 m depth 0.60 m, height 2.00 m), a refrigerator (dim. 0.6 x 0.6 x 2.00 m, 2-8 degrees C) and a freezer (dim. 0.6 x 0.6 x 2.00 m, -20 degrees C).
  - office for the Head of Production** with one workplace and
  - wardrobe area** with two toilet cubicles, a shower and wardrobe cabinets for 6 persons.

### 3.2.2 Warehousing premises

The warehousing premises comprise:

- rack warehouse, and
- special storage rooms

Maximum storage capacity of the warehousing premises should be aimed for, but about 3,500 pallet spaces are desirable.

There shall be two types of rack warehouses suitable for the warehousing activity that will take place in the building, namely:

- standard rack warehouse, and
- high bay warehouse

#### Standard rack warehouse

The standard rack warehouse shall be 8.00 m high with pallets stacked on pallet racks with a maximum of 4 levels. A standard forklift shall be used for goods handling, with a height reach of up to 8.00 m. As a rule, there will be four standard forklifts operating in the standard rack warehouse. The minimum clearance between the pallet racks must be 3.20 m. The advantage of storage in a standard rack warehouse is quick access to individual articles, which is why at least 2/3 of the total pallet spaces must be stored in that warehouse. Taking into account the expected loads in the standard rack warehouse, there can be a basement area constructed under the warehouse level.

In addition to the pallet racks, there must be enough room for 50 cabinets for manual commissioning of goods in the standard rack warehouse. The dimensions of individual cabinets are:

- length 1.00 m;
- width 0.60 m;
- height 2.50 m.

There must be sufficient room in front of the cabinets to allow access by forklift and commissioning trolley, with a total width of the communication path at least 3.20 m.

There must be room in the standard rack warehouse for the freezer (dim. 0.6 x 0.6 x 2.00 m, -20 degrees C).

It shall be necessary to also envisage 4 recharging stations for electric forklifts. The premises must be positioned in such a way that transport paths in the warehouse are not obstructed in any way.

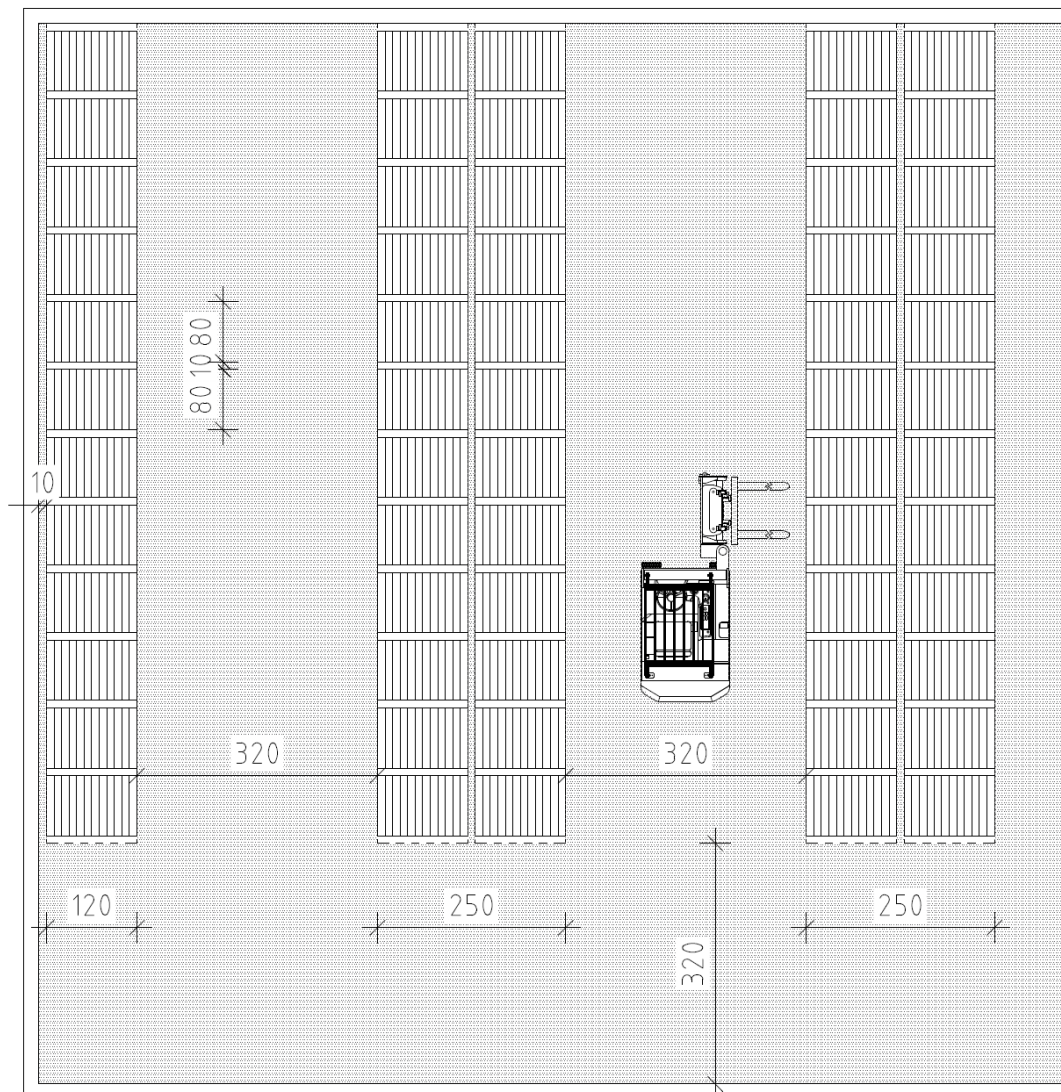


Figure 40: Presentation of pallet stacking in a standard rack warehouse - floor plan

### High bay warehouse

In the high bay warehouse a high-bay forklift shall be used for goods handling. One forklift with the reach of 17.00 m is planned for operation in the high bay warehouse. The minimum width of the area between the pallet racks shall be 1.80 m. Due to the compact storage method, the capacity of the high bay warehouse per m<sup>2</sup> of the storage area is significantly higher compared to the standard warehouse. The weakness is a somewhat hindered access to goods and high load, which is why no basements can be constructed beneath the high bay warehouse.

The high bay warehouse can better utilize the building height. It is also permissible to lower it (the altitude of the final paving can be lower than the altitude of the ground floor level, even by several storeys). Due to reduced accessibility, the high bay warehouse shall be used for storing goods surpluses, which represents about 1/3 of the total warehouse area.



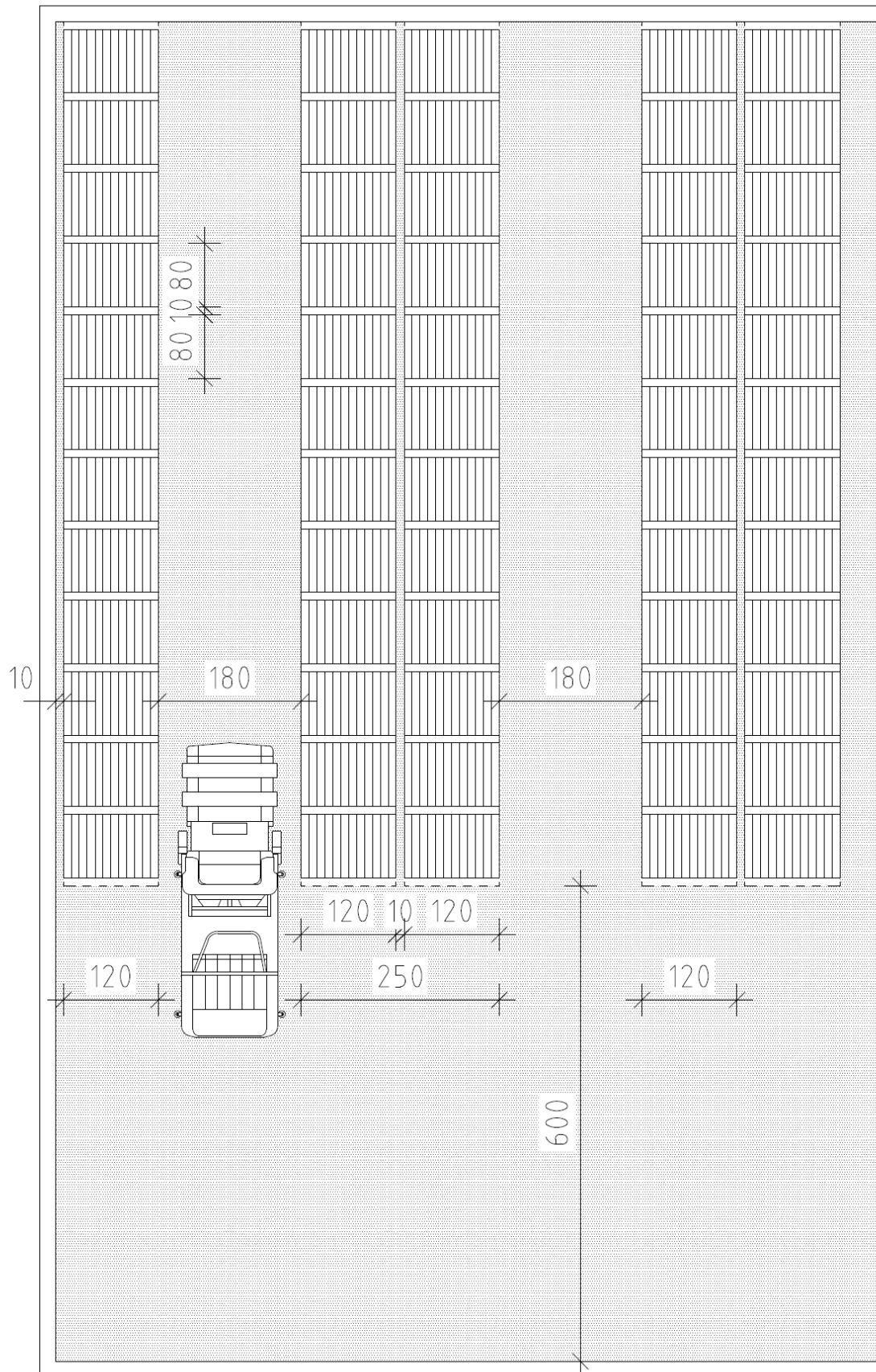


Figure 41: Presentation of pallet stacking in high bay warehouse – floor plan

In a high bay warehouse, a transport path must be provided on one side, at the beginning of the pallet rack row for the purpose of forklift operation; it must be 6.00 m wide and there must also be a forklift recharging station.

There must be a direct connection between the standard rack warehouse and the high bay warehouse.

### Special storage rooms

In addition to the rack warehouse, special storage rooms must also be constructed:

- room for storing narcotics: sufficient space for 10 pallet spaces with a height of up to 4 levels, and appropriate handling enclosure allowing forklift access;
- cold store of about 20 m<sup>2</sup>.

Both areas (narcotics storage room and cold store) must be at least 3.00 m high and directly connected to the standard rack warehouse.

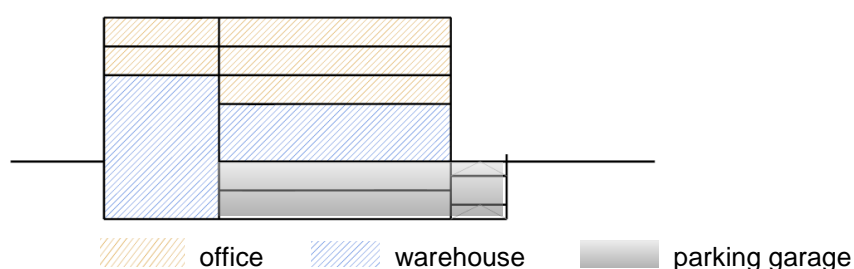


Figure 42: Example of a combination of standard and high bay warehouse – sectional view

### 3.2.3 Goods issue areas

Goods issue areas comprise:

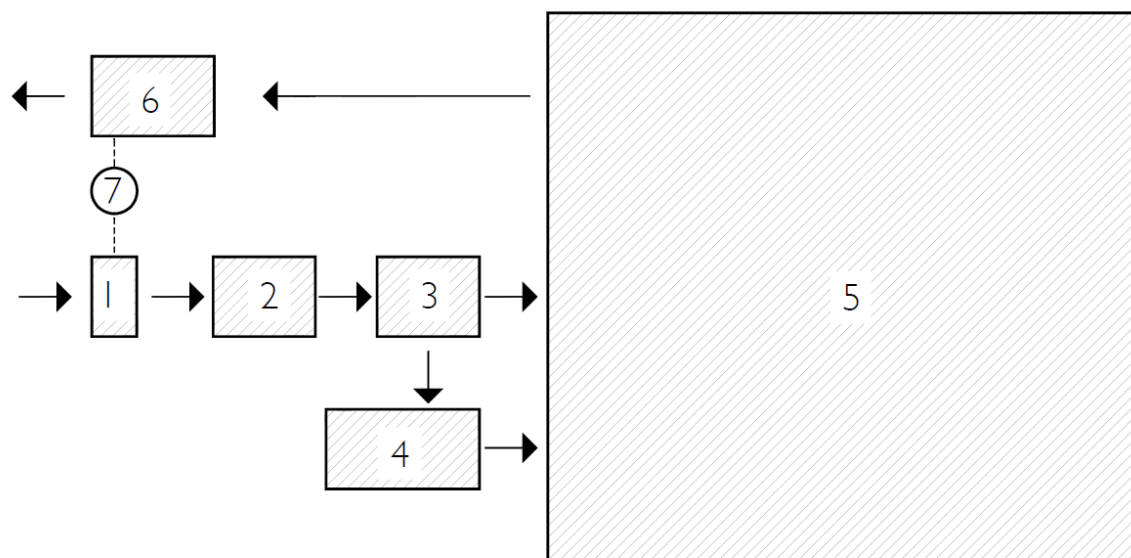
- the commissioning area (goods collection) that can be either within the rack warehouse or directly connected to it. There must be enough room for about 30 pallet spaces in the commissioning area. In this area, pallets are stacked on pallet racks with a maximum height of three levels and the area between the pallet racks must be sufficient to allow for forklift operation (minimum clearance of the transport path 3.20 m). The commissioning room must accommodate a refrigerator (dim. 0.6 x 0.6 x 2.00 m, 2-8 degrees C) and a freezer (dim. 0.6 x 0.6 x 2.00 m, -20 degrees C). Goods stacked in pallets are moved from the commissioning premises to the dispatch premises.
- In the dispatch premises, goods are wrapped and prepared for transportation. There must be at least 20 pallet spaces in the dispatch area allowing for three-level stacking and sufficient room for forklift operation (minimum transport part clearance 3.20 m). The dispatch room must have a direct exit outside. Goods shall be dispatched with vans. The door shall allow for simultaneous loading of two vans. The opening of the exit door must be equipped with a thermal curtain in order to maintain the required temperature conditions that also apply to the dispatch area.

### 3.2.4 Auxiliary premises:

Auxiliary premises shall be:

- **office for the Head of the warehouse** that must allow for a good view over the premises for goods acceptance and issue, area of approx. 10.00 m<sup>2</sup>;
- **office for warehouse workers** with five workplaces (a desk and a computer), near the office of the Head of the warehouse,
- **wardrobe for the Head of the warehouse and the warehouse workers** located in the vicinity of the workplaces. The wardrobe shall comprise a changing room with six wardrobe cabinets, two toilet cubicles and a shower.
- **room for van drivers** located near the goods issue premises. Van drivers shall not enter other warehouse premises. The room shall be equipped with two workplaces (a desk and a computer) and a small table with four seats;

- van drivers' wardrobe which shall have a changing room with six double wardrobe cabinets (separate for personal and work clothes), two toilet cubicles and a shower,



- 1 acceptance of goods
- 2 initial quantitative acceptance
- 3 final detailed acceptance
- 4 production
- 5 warehouse
- 6 goods issue
- 7 Head of warehouse

Figure 43: Organisational chart of the warehouse

### 3.3 Business Premises

Business premises will be rented out. The design must allow for maximum flexibility and possibility of subsequent adaptation of the size of premises based on the needs of the tenants. The premises must enable separation into individual units to be leased to companies. A minimum area of such unit shall be 200 m<sup>2</sup>. In addition to premises intended for offices, each unit shall also have a kitchenette. Conference rooms, communication facilities and restrooms may be used jointly by several units.

The design must also allow for the option of combining several units into larger departments (1,000 m<sup>2</sup> or more) to be leased out to large companies.

Entrance and front desk shall be foreseen at the ground-floor level. Appropriate external areas of the building (terraces, lounges, recreation rooms, etc.) shall also be provided in the storeys and/or on the roof.

When planning the office premises, the guidelines for the DCB III building provided below should be taken into consideration as appropriate.

### 3.4 Parking Garage

The maximum possible number of parking spaces should be provided in the two basement storeys (at least 170 PS). The design should take into account the width of the parking space, i.e., at least 2.50 m, and the length, i.e. at least 5.00 m. The driving lane must be dimensioned in accordance with the applicable standards. Internal height of basement garage should be 2.30 m.

### 3.5 Technical Construction and Energy Guidelines

The planning process should take into account the technical construction and energy guidelines specified for the planning of the DCB III building.



## 4. DCB III BUILDING

*DCB III building planning guidelines have been summed up from the DIMNIKCOBAU Competition Brief drawn up by Nina Meško, univ. dipl. inž. arh., in March 2018.*

*Energy, sustainability and installations design consultant: Mirt Martelanc, univ.dipl.inž.str.*

### 4.1 Technical Construction Guidelines

#### 4.1.1 General Guidelines

Innovative proposals for planning solutions are expected, aiming to create a modern building with emphasis on flexible use of commercial building, use of office premises of the future such as co-working, share meeting rooms and adaptable premises which will result in simple, rational and minimized building technique. The building's energy-saving design should contribute to reducing investment cost and building operation cost.

The building must be designed so as to enable a functional connection with the existing DCB I building in the first basement level and perhaps also in ground-floor level. It must also be taken into consideration that both buildings can be marketed jointly or completely independently of each other.

When planning, relevant standards and rules applicable in Slovenia and/or standards recognized in Europe (Eurocodi, EN, DIN, Önorm) should be observed. When planning fire safety, it shall be necessary to observe the Technical Guideline TSG-1-1001:2010 "Fire safety in buildings" and/or other measures in accordance with provisions of Article 8 of the Rules on Fire Safety in Buildings (e.g., NFPA, VKF, MBO and others). The competitors shall state which regulations or standards have been complied with in their Competition Briefs.

#### 4.1.2 Structural Design

The building is situated on flat ground in the area of Ljubljanska kotlina valley. According to applicable legislation/standard SIST EN 1998-1:2005 (Eurocode 8), seismic risk is determined according to the "Seismic hazard map of Slovenia – design ground acceleration map" for the return period of 475 years (Lapajne, 2001).

The building in question is located in the area where earthquake with ground acceleration of 0.250 g is anticipated. The abovementioned and all applicable legislation in the field of earthquake engineering needs to be complied with when planning the seismic resistance of the building/structure/facility.

Economic structural design of the structure shall be produced (simple construction, reduced number of different structural elements, long life, low maintenance cost). Particularly demanding structures in architecturally exposed parts of the building shall be shown separately, such as:

- glass roofs of halls or atria
- structural solutions to achieve longer spans without columns

A structural engineer should be engaged when designing the Competition Entry.

Regarding geomechanical and hydrogeological guidelines the preliminary geomechanical and hydrogeological report in Appendix »D-01-Geotechnical Report" should be taken into consideration.

### Requested dimensions

Façade grid: 1.20 to appx. 1.35 m

Average depth of premises / useful depths in office areas

- offices/combined offices: approx. 4,50 m
- team offices approx. 6,00 m
- open-plan offices (open space offices) depth of the building
- depth of the office wing of the building approx. between 11.00 m and max. 15.00 m, approx. 13.50 m on average

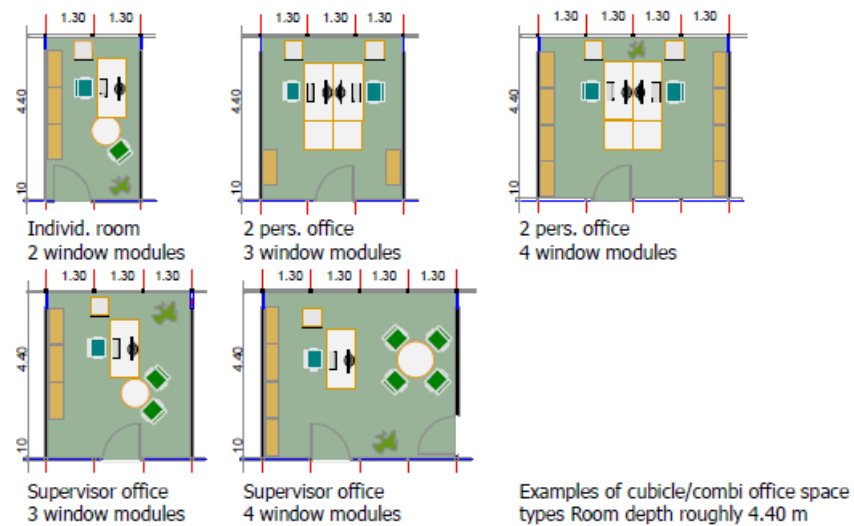


Figure 44: Principles of designing office space (Source: Erste campus design competition)

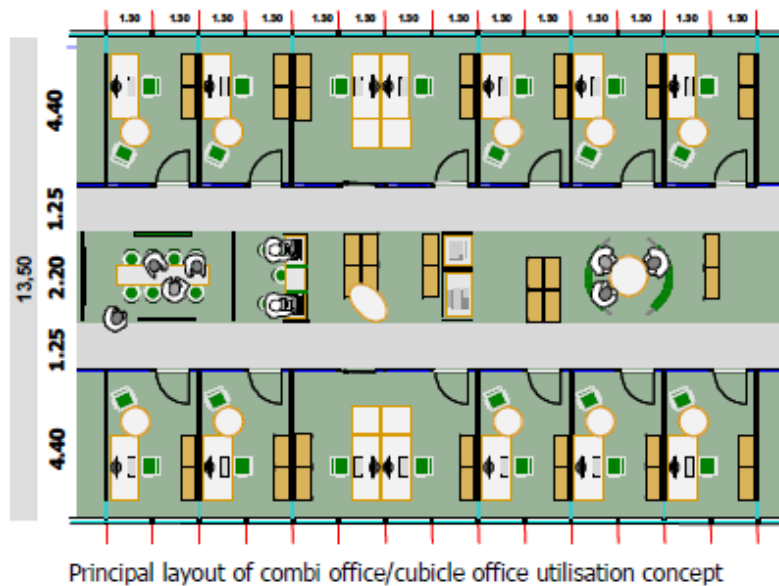
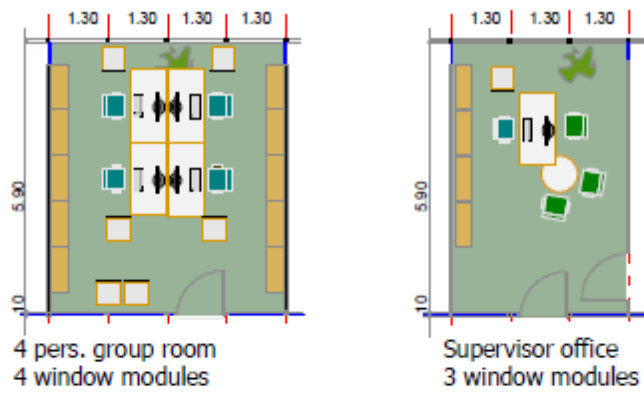


Figure 45: Principles of designing office space (Source: Erste campus design competition)



Examples of team office space types, room depth roughly 5.90 m

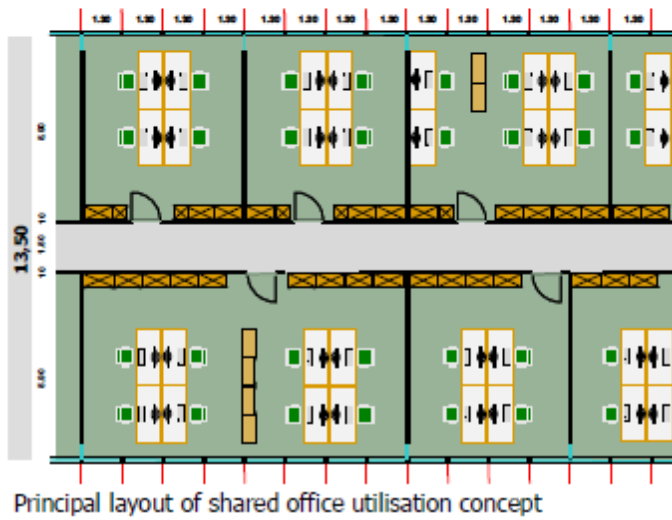


Figure 46: Principles of designing office space (Source: Erste campus design competition)



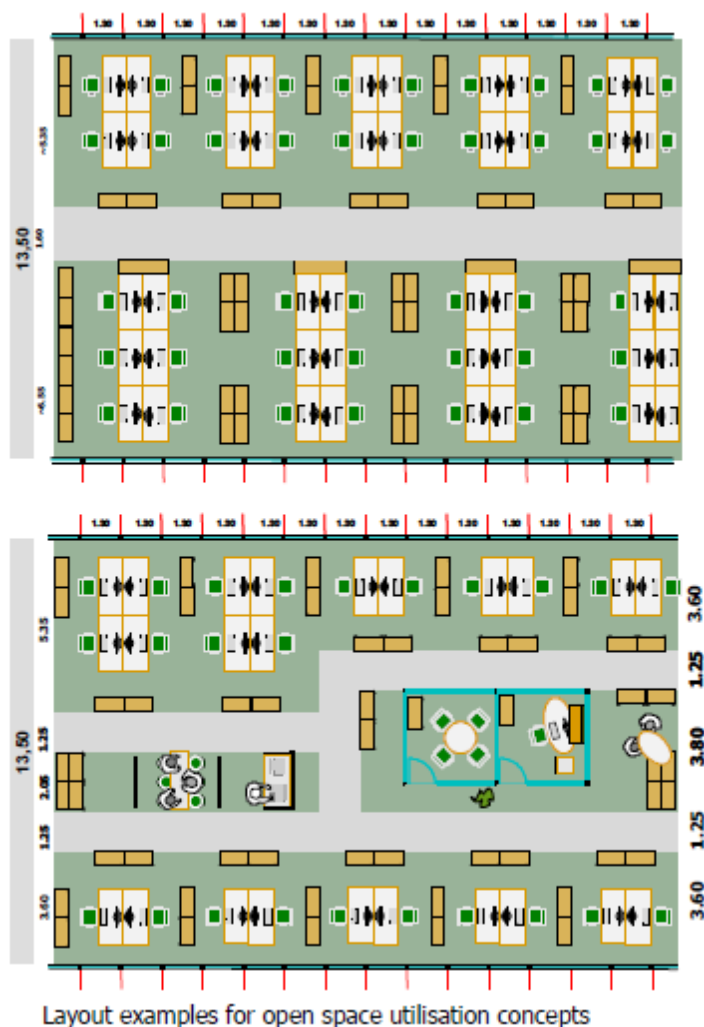


Figure 47: Principles of designing office space (Source: Erste campus design competition)

### Organization of premises in typical office levels

Typical office levels shall be designed so that it is possible to divide them into closed office units (independent units for renting out) with the surface area of at least 200.00 m<sup>2</sup> per unit.

The design shall also enable integration of office units into larger departments (1,000 m<sup>2</sup> and more) to be rented out to large companies.

Optionally, typical levels with different organization of offices should also be shown in the Competition Entry:

- offices / combined offices
- team offices
- open space offices

The alternative consisting of 1/3 of each type of office organization within the building should be used to calculate surface areas (Competition template C-08-02 - surface areas and volumes calculation form for DCB III building).

Within an office unit, 12.00 m<sup>2</sup> of office area should be envisaged for each workplace.

Additionally, envisaged should be:

- common special areas (meeting rooms, convenient stockrooms, IT room, etc.) with surface area of approx. 1.50 m<sup>2</sup> per each workplace, and

- pertaining areas for communication with surface area approx. 0.50 m<sup>2</sup> per workplace.

Common special areas (meeting rooms, convenient stockrooms, IT room, etc.) should be sensibly dimensioned and arranged as:

- a combined zone/multi-purpose zone within a particular office unit and/or
- common premises within an office department for several office units.

The mentioned areas do not include restrooms which can be organized for several units together, depending on the number of employees.

It is estimated that approximately up to 450 office workplaces could be provided in the DCB III office complex.

Additionally, up to 10 VIP offices with surface area of approx. 40.00 m<sup>2</sup> each should be envisaged in the last storey. Pertaining department special premises for VIP offices should be envisaged: secretariat or reception area with surface area of approx. 30.00 m<sup>2</sup> and restrooms (including showers), kitchenettes and meeting rooms. Exit to the terrace is desirable.

#### 4.1.3 Heights of levels

Internal height of ground floor is specified as 4.00 – 4.50 m. In the part of entrance lobby and in connection with the 1<sup>st</sup> floor it may be even higher. Level height of other storeys shall be dimensioned so that efficient utilization is achieved overall, taking into account level heights prescribed by technical standards and the aspect of flexible use of office spaces.

#### 4.1.4 Internal height of premises

##### Office area

Internal heights of premises in the office areas in case of individual offices and open space offices must be at least 3.00 m. In the area of communication in typical levels the internal level height can be lowered due to the course of installations to 2.80 m in the parts of secondary areas, and exceptionally to at least 2.60 m. Raised floor shall be planned for technical provision of workplaces with installations. Internal height of raised floor shall be at least 15 cm.

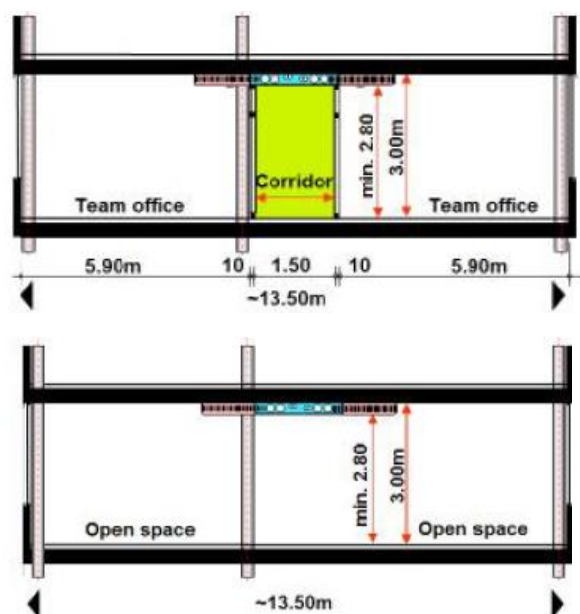


Figure 48: Internal heights of offices (Source: Erste campus competition)

##### Secondary useful areas (wc, archives, kitchenettes, etc.)

Internal heights shall be dimensioned in accordance with individual purpose of use and by taking account of minimal technical standards.

#### 4.1.5 Column grid of the building's structure

##### **Office areas**

External columns shall be as close as possible to the façade to ensure, in this way, the maximum possible free volume for equipment. Alternatively, the façade can be designed as load-bearing (façade with openings). Internal columns shall be adjusted to the spatial system, typology of premises and requirements regarding flexibility of floor plans in typical levels (e.g., they shall be designed in the plane of partition walls).

##### **Structures between storeys**

Reinforced concrete slabs between levels shall be constructed as smooth slabs without visible trusses.

#### 4.1.6 Facade

The design of façade shall be harmonized with the technical and structural physical design taking into consideration the criteria of energy efficiency and sustainable construction. The following shall be taken into consideration in the design:

- Offices must have a part of windows that can be opened to enable natural ventilation,
- Glazing shall take into account requirements for energy efficiency and protection against sunlight,
- Position and type of protection against sunlight and glare,
- Depth of façade structure (structural surface),
- Fastening of façade to the structure of the building,
- Method of cleaning windows and maintenance (this also applies to the glass roofs of halls or skylights of atria) shall be simple,
- Measures for increasing the noise protection level due to the building's location (industry in immediate vicinity),
- Proportion of transparent and non-transparent surface areas in m<sup>2</sup> (compliance with relevant rules on thermal protection)
- Presentation of measures on façade which contribute to reducing the need for forced ventilation and cooling (e.g., natural ventilation and discharge of air, overnight cooling, discharge of accumulated heat)

#### 4.1.7 Lifts / transport systems

Concepts of lifts which save space and enable fast filling and emptying of levels shall be proposed.

##### **Design requirements:**

- five-minute transport capacity: approx. 20% of the total number of workplaces
- average waiting time in seconds: < 30 s

##### **Personal lifts**

Groups of lifts for access to upper storeys shall be arranged in such a way that they are easily found. Internal door opening of freight lifts must be at least 1.00 m.

#### 4.1.8 Fire protection

The competition solution must address the concept of fire safety of the building which shall comprise:

- requirements for the use of flammable and non-flammable materials of all elements of the building structure,
- fire compartmentation according to vertical and horizontal division of the building,
- fire resistance of materials,
- escape routes and staircases,
- smoke and heat discharge systems, systems of technical protection against fire,
- intervention routes and accesses for firefighters,
- alarm systems,
- requirements for mechanical and electrical installations,



- requirements for fire protection during the use of the building,
- special requirements for special premises depending on their purpose and use.

## 4.2 Standard of Equipment in Office Areas

### 4.2.1 Floors

All office areas shall be equipped with double floors, possibly a combination of raised (cavity) and truss floors to allow for distribution of installations. Internal height of double floor shall amount to 15 cm. In the event that air communication and distribution is carried out predominantly in the raised floor, the storey height must be adjusted accordingly.

### 4.2.2 Walls

Partition walls of offices shall be carried out as modular partitions. The walls of office corridors should be prefabricated, predominantly by glazing. Acoustic requirements between offices and communication areas should be complied with.

Modular partition walls must be such that they enable joining and separation of offices within grid sections into bigger and smaller ones. Joining and separation of meeting rooms into bigger and smaller ones shall also be made possible.

### 4.2.3 Ceilings in office area

When designing ceilings in the office areas the spatial acoustic requirements and the requirements of house technology system design and energy design must be taken into consideration. In the event of suspended ceilings the required minimum internal level height of 3.00 m shall be adhered to because of the flexibility of setting up workplaces.

## 4.3 Parking Design / Basement Parking Garage

Entrance to parking garage and basement garage can be designed in a version where they are functionally linked with the basement of the existing building, or completely independently of the existing building. In the event of a link, it must be possible to use them independently in the future which must also be shown in the Competition Entry. The buildings can be marketed completely separately or together. The maximum possible number of parking spaces must be provided for in accordance with the relevant norms set forth in Chapter VI. "PLANNING GUIDELINES – URBAN PLANNING", Section 8.2. "Parking Areas". Parking areas shall be envisaged in appropriately dimensioned basement garage (2 basement garages are envisaged). The parking space width must be at least 2.50 m. The size of a parking space should be based on 25 m<sup>2</sup> / parking space (including traffic route) of net useful parking area. Delivery by means of small delivery vehicles of max. 2.30 m in height to the first basement level is foreseen; the internal height of the first basement level should be at least 2.35 m. Internal height of other basement levels should be 2.30 m to 2.35 m.

It is also necessary to plan for 20 VIP PS (wider than 2.50 m) in 1<sup>st</sup> basement, in the vicinity of lifts. Parking spaces along full walls must also be wider (at least 2.75 m).

Parking spaces for disabled persons must be dimensioned in accordance with SIST ISO 21542: 5.4 m x 3.9 m (2.4 + 1.5 m).

A part of parking spaces shall also be provided at ground level (outdoor). The minimum number of parking spaces at ground level (short-time parking) for the needs of delivery, taxi service, disabled persons etc. shall be 3-5 PS, 1-2 of which shall be for the disabled.

The ramp to the basement garage may not serve for delivery and municipal waste collection.

Delivery and municipal waste collection shall be organized at the ground level. Separated waste collection can also be organized in the 1<sup>st</sup> basement level if appropriate waste transport route to the collection point at ground level at the time of collection is provided for, separately from the main ramp to the basement garage.

Traffic routes of personal vehicles must be strictly separated from pedestrian lanes.

Care should be taken to ensure simple orientation in the basement garage. Exits and escape routes must be marked visibly and well.

The 1<sup>st</sup> basement level should also accommodate all technical premises, and it shall also be permissible to design IT rooms, furniture storages, other storerooms and archives.

Storerooms and archives altogether represent up to 10% maximum of the office areas (this share shall also include convenient stockrooms and archives in each level).

#### **4.4 Central Special Areas**

##### **4.4.1 Main entrance / lobby**

Ground floor with its main entrance and entrance lobby shall take the central and communication function in the building. Passages to individual functional areas, such as coffee shop/restaurant or other central functional areas must be smooth, clear and representative.

In addition to the function of representative entry, the main entrance area or entrance lobby must invite people to hang around in this area and communicate. Separation between internal communication and visitors must take place in this area. On the whole, a lot of daylight and outward contact should serve to create transparency, clarity, openness, airy spatial atmosphere, and to achieve high quality experience.

##### **4.4.2 Function of reception area (front desk)**

A constantly manned front desk is foreseen to control access (visually) and receive visitors. The front desk can also be intended for reception to DCB I building.

##### **4.4.3 Reception area / special functions**

In the area of the front desk and near the access, a room should be foreseen where the front desk personnel can stay (back office, security station and auxiliary premises). For safety reasons, the access to office areas in other storeys from the common area of the lobby must be designed so that they can be accessed only through respective access control devices, and uncontrolled access is prevented.

Restrooms for visitors must also be planned for in the ground floor.

##### **4.4.4 Gallery**

The Investor loves art, and therefore a space for permanent art collection must be planned for in the area of the entrance to the building. Works of art can be exhibited in the lobby and other premises in the entrance part of the building. Access to the most valuable works of art should be somewhat restricted, or the possibility of adequate surveillance must be ensured.

##### **4.4.5 Coffee Shop / Restaurant**

The entire catering complex must serve the employees in the building as well as visitors and employees in this section of the commercial zone during working hours and after the end of working day. The catering complex should be presented as a context-rich social area providing opportunities for meeting and hanging about, as well as serving the communications of employees. On the basis of the “eat and meet” principle these areas should be available to employees also after regular opening hours and shall be used for catering to the employees, for discussions etc.

The area with the capacity of approximately 100 people (standing and sitting places together) should be oriented towards the lobby so that it can open up to the lobby or be integrated with the lobby into a common event venue.

This area should also be connected to the conference hall, a large room for meetings/receptions and premises for permanent art collection exhibition.

The function of entrance lobby, restaurant, conference hall and gallery should be integrated into a whole which enables major events as well. Conference hall and large meeting/reception can be partly also in the 1<sup>st</sup> storey but visually connected to the ground floor.

The area must become an attractive place for meetings and central point for employees and visitors. It must be designed so that it can be operated independently from the office part of the building even after the end of the office working hours. For this reason there must be an additional separate entry

This area must also be provided with an exit out of the building and an option of service on the outdoor terrace.

The coffee shop/restaurant surface area shall be 350 m<sup>2</sup>.

#### 4.4.6 Premises for conference halls and large meeting rooms outside office levels

It shall be necessary to plan 4 rooms of 25 m<sup>2</sup> each for 8-10 persons; 3 rooms of 100 m<sup>2</sup> each for 30-40 persons, and one room of 250 m<sup>2</sup> for 100 persons. The rooms should be oriented towards the lobby and located in the vicinity of the restaurant. The option of merging the rooms into one large conference hall shall be planned for. These premises shall serve for meetings, education, and IT training. Additionally to these areas, it is necessary to provide the necessary auxiliary premises which can be of multi-purpose type or can be merged or shared, such as: the lobby area can serve as the foyer in front of the conference part, visitors' restrooms in the ground floor can be shared, service from the restaurant and attendance from the front desk.

Location: ground floor and 1<sup>st</sup> floor.

#### 4.4.7 Recreation facilities

Areas for recreation of employees and outside visitors should also be planned for in the ground floor. The recreation facilities shall be equipped with fitness equipment, yoga mats, perhaps also table tennis table and the like. The recreation facility should also operate after the end of the usual working hours and before the beginning of working hours. For this reason it should be provided with an additional direct entry from outside, separately from the reception.

Recreation facilities can be partly linked to the 1<sup>st</sup> basement and 1<sup>st</sup> floor. The surface area of recreation facilities shall be 250 m<sup>2</sup>.

Additionally, external areas on the roof of the building can also be intended for the recreation of employees.

### 4.5 Aspects of Economy

#### 4.5.1 Cost-efficiency of surface areas

An important criterion of the project evaluation is the achievement of optimal cost-effectiveness (economy) of surface areas. The project should strive for the ratio of net usable floor area (NUFA = primary-NPUFA + secondary-NSUFA) and gross floor area (GFA) above ground level. Usable floor areas (UFA), technical floor areas (TFA) and communication floor areas (CFA) should be dimensioned rationally, but by complying with all technical regulations and guidelines.

#### Net primary usable floor area (NPUFA):

The net primary usable floor area (NPUFA) comprises areas which serve the basic use of the building:

- usable office area
- a combined zone/multi-purpose zone within a particular office unit: meeting rooms, IT rooms, kitchenettes, convenient stockrooms, archives in individual office units
- on-floor special areas: meeting rooms, common IT rooms for several office units (department) within the office part of the building,
- central special areas: common conference premises, restaurants, archives, storerooms, recreation facilities which serve centrally, i.e., to everybody in the building.

#### Net secondary usable floor area (NSUFA)

The net secondary usable floor area (NSUFA) comprise restrooms, service areas, parking areas.

#### Net usable floor area (NUFA) = NPUFA + NSUFA

#### Net communication area (NCFA)

The net communication floor area (NCFA) comprises corridors, lifts, entrance lobby and foyer.

**Net technical floor area (NTFA)**

The net technical floor area (NTFA) comprises technical premises such as heating station, transformer substation, mechanical rooms etc.

**Net floor area (NFA) = NUFA + NCFA + NTFA.****Structure area**

Structure area comprises walls and façade.

**Gross floor area of the building (GFA) = NFA + Structure area.**

Space scheme as per ÖNORM 1800

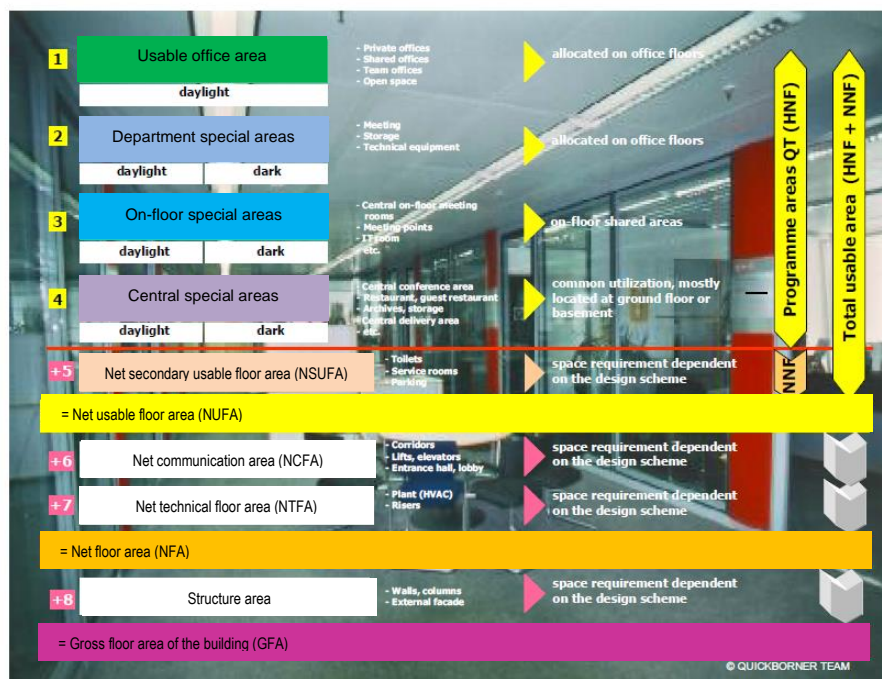


Figure 49: Diagram of areas (Source: Erste campus competition)

It is necessary to achieve at least the following area efficiency ratios:

- |   |                |
|---|----------------|
| 1. NPUFA to GFA (without NSUFA) ratio                                   | minimum 65-70% |
| 2. NSUFA (without parking areas!) to GFA (without parking garage) ratio | maximum 5%     |
| 3. NTKP to GFA ratio  | maximum 20%    |
| 4. NTPP to GFA ratio  | around 5%      |

When calculating the mentioned ratios, account shall be taken of both closed and covered areas (e.g., loggias, covered terraces), without parking garage areas. When calculating NFA, the following areas are not taken into account:

- open-air areas (e.g., open-air terraces and balconies),
- external fire-escape staircases, terraces and landings,
- installation shafts,
- lift shafts,
- external ramps.

**4.5.2 Investment costs, usage costs**

The building must be designed, both in terms of construction costs as well as operation and maintenance costs (cost of usage), in such a way that high cost-efficiency is achieved. The anticipated construction, craft and installation costs of the building including finishing should not exceed EUR 1.400 (without VAT)/m<sup>2</sup> for GFA of the above-ground part of the building. The basis is the middle price standard.



When designing the building and during further design planning, it shall be necessary to take into consideration not only investment costs but also operation cost and costs of capital repairs. The aim is to design and construct a high-quality and low-operation cost building of high design quality and functionality, but in spite of that low investment cost.

By appropriate standardization of architectural and technical areas of the building (parts of building, staircases, toilet areas, structural elements, prefabricated elements, structures, details, equipment, technical installations etc.), for instance, a great number of various parts can be reduced which directly affects subsequent cost of cleaning, maintenance, renovation, moving and reconstruction, purchase of replacement/wearing parts and materials for maintenance etc.

If on the one hand, thematically, the aim is to achieve a favourable energy balance of the building, on the other hand (in case of construction-related solutions and solutions related to technical equipment of the building) this also concerns topics such as good maintenance and cleaning, as well as useful life of devices, structures and materials.

The anticipated low cost of operation and maintenance shall have considerable significance in evaluation. The project authors are expected to clearly show the elements which make their project effective from the point of view of anticipated operation and maintenance costs. The aim is to achieve that incidental expenses (charges, insurances, corrective maintenance, electricity, heating, water, wastewater, cleaning, building management) are under the average.

#### **4.6 Ecology and Sustainable Aspects of the Building**

When conceiving the project, in considerate treatment of energy, selection of materials etc., special attention must be devoted to ecological aspects. The planning process should take into consideration the following aspects, in particular:

- construction method that is friendly to energy and environment during construction, operation and demolition,
- construction method permitting natural lighting and ventilation
- saving of energy, energy circuits,
- favourable orientation, ratio between envelope surface and volume,
- long life of materials, structures, technical systems,
- use of construction materials produced by proven low energy consumption, preferably and can be produced from renewable sources,
- ecologically acceptable construction materials which can be simply and with little harmful substances recycled or easily removed (separation into individual components, avoidance of problematic composite materials) and the use of which represents no hazard to health.

#### **4.7 Requirements for Energy Design and Technical Equipment of Building**

##### **4.7.1 Integrated approach to planning**

In case of planning obeying the principles of building management, the designs, systems and subsequent solutions for implementation must be, considering superior requirements, integrated into a technically and constructional comprehensive design (e.g., energy, ventilation) based on integrated approach.

Architectural design and building constructions must be “intelligent”, i.e., they must be used for physical and physical construction purposes so that in this way the necessary share of technical systems in the building is decreased to indispensable extent (technologically undemanding building) which contributes to considerable reduction in the cost of life cycle

On the other hand it must be made possible for the building to “adapt” to the changing requirements of the environment (e.g., building which regulates itself in the day-night cycle and the cycle of seasons with respect to the sun position, intensity of solar radiation, lighting conditions, acoustic impacts, etc.).

**Examples:**

- use of internal heat sources in the building to “recover” energy (e.g., exploitation of waste heat),
- use of big share of the building’s masses to accumulate heat or reduce needs for cooling,
- use of passive solar systems (e.g., heat accumulation, transparent thermal insulation),
- reduction of internal pressures (e.g., by means of daylight directing systems, illumination control depending on daylight and occupancy of rooms),
- integrated sun protection systems (e.g., glass protecting against sun, sun-screen installations which do not darken rooms).
- glare preventing installations as a façade-integrated function (e.g., protection against sun and glare may not close off the users’ outward view)
- reduction of heat losses of ventilation and discharge of hot air from the building by means of naturally rising hot air
- supply of cooler air to the building at night (free night-time cooling)
- structures which accumulate humidity / materials for regulation of room humidity inside the building
- green spaces which provide humidity and have positive effect on microclimate (e.g., cooling by evaporation, use of materials which are capable of absorbing and emitting moisture)

**4.7.2 Energy design guidelines****General guidelines**

Innovative integral energy design is expected, distinguished by low energy consumption and economical, human-friendly technical concepts, ensuring by relatively minor technical measures a high friendliness of use and quality of living in the building. This presumes that by means of integrated planning approach the building design and its technology are intensively harmonized already in the phase of conception to bring about in this way the optimum of innovation and economy in later phases of use of the building.

An overall technical concept of ventilation of premises is expected meeting the latest discoveries, and taking into consideration in planning the system of regulation of the total energy consumption for the building. In the sense of low-energy building it is necessary to implement, if it is economically viable, the concepts of rational use of active and passive solar energy as well as of utilization of available internal heat pressures.

The proposed concepts shall meet the generally recognized rules and state-of-the-art, particularly Directive 2002/91/EC on the energy performance of buildings.

The entire concept of house technology must meet to the largest possible extent the requirements described in previous chapters and comply with special requirements of individual functional areas – units for renting out or office area units. This applies in particular to office areas with their planned variable mixed structure and possibility of various spatial typologies.

In general, technical solutions must be planned to be energy efficient, requiring as little maintenance as possible and allowing the lowest possible number of defects.

**Innovative integrated energy design**

Energy design shall be presented in the Competition Entry in a concise and comprehensible manner in words and drawings in the scope of the written clarification of the Entry and/or in the form of schematics on posters.

When using thermal or light-technical simulation programmes, the boundary conditions of calculations such as internal pressures, elevation characteristics and others, shall be presented, to facilitate understanding, in the form of summary of the most important data.

Net floor area (NFA) situated within the thermal envelope of the building shall be selected as the reference quantity. The time from 07.00 to 19.00 hrs shall be used as standard working hours.

**Building envelope**

The building envelope must have an adequate continuous thermal insulation level. Thermal bridges must be minimized, and unavoidable thermal bridges must be designed so as to prevent problems concerning construction physics and comfort.

The façade must ensure the necessary acoustic protection for office work, the windows must be of the type allowing opening. Concerning thermal protection for the facade, the following values of heat transfers must be complied with:

- areas of parapet walls/lintels  $\leq 0.25 \text{ W/m}^2\text{K}$
- remaining non-transparent façade areas  $\leq 0.20 \text{ W/m}^2\text{K}$
- windows (glass with frame and frame-glass transfer)  $\leq 1.30 \text{ W/m}^2\text{K}$

To ensure comfort, an additional condition to be considered is that each façade cut-out of the level height and grid width must have the mean value of heat transfer lower than  $0.95 \text{ W/m}^2\text{K}$  (including glass, frame, frame-glass transfer and the area of parapet wall/lintel). Comfort must also be ensured in corner spaces, if the emission of heat by the heating system is interrupted, and likewise in high spaces (more than one level).

The following values of heat transfer must be complied with in case of other external construction elements:

- roofs/roof terraces  $\leq 0.15 \text{ W/m}^2\text{K}$
- floor against outside air  $\leq 0.20 \text{ W/m}^2\text{K}$
- construction elements against unheated basement premises and soil  $\leq 0.35 \text{ W/m}^2\text{K}$

**Sun protection**

Sun protection requires special attention. Powered storm-safe sun-screens shall be planned for outside the plane of thermal insulation, on the sun-exposed sides of the building, whereby the total energy transmittance of windows and sun-screen shall be  $g \leq 0.15$ . Additionally and independently of the façade orientation, glare protection shall be planned for all workplaces. Attention should be paid to optimum use of daylight. Sun protection facilities should be conceived so as to minimize breakdowns and maintenance, and that they can be combined with respect to the optimal use of daylight, by light redirecting measures, if possible (reduction of artificial light costs).

**4.7.3 Guidelines for technical equipment of the building****Ventilation and cooling installations**General

Overall, an integrated spatial technical design is expected, which corresponds to the latest discoveries, is innovative and future-oriented, exploits and efficiently uses existing resources, and in planning, addresses the building as an integrated energy regulation system.

The aim must be to achieve, by economically justified costs, such climate in the working premises that optimum comfort in the building is ensured (room temperature, room humidity, air exchange, air movement etc.).

The solution must comply with the relevant regulations, standards and guidelines, and consider the findings of occupational medicine. The offered concept must be planned in such adaptable manner that it can be implemented without difficulty.

Ventilation and cooling

In offices with mechanical ventilation (utilizing waste heat and latent energy) support by natural ventilation must be made possible. Designing of devices and their operation must be in conformity with the relevant labour regulations. It is necessary to consider, for instance, that the rooms with computer data processing distributors (server rooms) in various floors must always be cooled.

Reversibility / flexibility

When planning and allocating ventilation devices and installation routes, it shall be necessary to take into consideration reversibility and flexibility of different possible office typologies and forms of rooms

within individual areas of use, adjust installation routes and regulation (changing of regulation zones within one unit of use) with various possible cases of use. It must be possible to efficiently implement changes without a lot of work and cost

#### Technical premises

Technical premises should be designed, if it is rational in terms functionality and cost-effectiveness, in a decentralized manner for individual wings of the building or areas of use in order to ensure the shortest possible installation lines. According to the designing rules, technical premises should be designed on the roof or in the basement, if at all possible.

#### Shafts

The main shafts of house technology shall be designed with walk-on covers. Access and inspection openings to shafts shall be located in auxiliary premises. Access from office premises is not permitted. The shafts should be planned as centralized as possible, whereby approximately 30% spare shall be planned for

#### Cooling (cooling at peak (full) load)

Cooling shall be dimensioned by taking into consideration simultaneous needs for cooling power. The option of free cooling and other options of passive cooling shall also be utilized.

Cooling plants shall be designed, if it is rational in terms functionality and cost-effectiveness, in a decentralized manner for individual wings of the building or areas of use in order to ensure the shortest possible installation lines.

#### **Restrooms**

Restrooms shall be designed, if it is rational in terms functionality and cost-effectiveness, in a decentralized manner for individual wings of the building or areas of use in order to ensure the shortest possible installation routes. The number of restrooms in levels shall be determined according to the number of users expected every time in the areas of employees and/or in other areas. Restrooms shall be planned in accordance with the requirements, standards and planning guidelines. The number of toilets in the building shall be determined according to the following key: one toilet per 30 men or 20 women; a urinal must be foreseen next to the men's restroom.

The common design shall plan for sufficient number of restrooms for disabled persons.

Within the entire building, appropriate pressure zones shall be provided for since any drop of pressure in each level is undesired for energy reasons.

The sewage system of the building shall therefore be implemented as a separate network (separation of wastewater from rainwater).

#### **Heating of the building**

Heating plants shall be designed if it is rational in terms functionality and cost-effectiveness, in a decentralized manner for individual wings of the building or areas of use in order to ensure the shortest possible installation routes. For the needs of heating, the building must be connected to the district heating system. Based on this, it is necessary to develop heating supply and distribution concepts meeting the state-of-the-art in this field, requiring minimum surface area and minimizing operation cost.

This concept should include, if economically feasible, e.g., the possibility of active and passive utilization of solar power as well as rational utilization of heat loads in the building by means of suitable future-oriented waste heat utilizing system.

#### **Electric power distribution**

The electric power distribution shall be carried out in the form of internal loops. The following must be ensured:

- simple maintenance and control of devices
- modular distribution of electric power



Medium- and low-voltage distribution shall be designed, if it is rational in terms functionality and cost-effectiveness, in a decentralized manner for individual wings of the building or areas of use in order to ensure the shortest possible installation lines.

Appropriate sub-distribution boards shall be planned for each level and area. Sub-distribution boards in office areas (level-specific distributors) can be incorporated in the computer data processing distribution rooms whereby adequate spare space (>10%) must be taken into account. IT and electric power supply must be always located in separate shafts for riser conduits.

#### **Electric power supply to workplaces**

Installations shall be distributed over separate routes (electricity, IT, etc.) within raised floor. 1.5 floor connection boxes shall be planned per each window axis (1.35 m) for supply to workplaces. The basis for equipment of floor connection boxes shall be 4 outlets (230V) with at least 2 circuits and 4 IT ports.

#### **Fire extinguishing devices, fire alarm and technical security**

The systems of devices of this kind shall be planned for and included in the design in accordance with respective legal, technical and safety regulations to suit the building construction and relevant requirements.

#### **Energy management and building management system**

All the systems of devices, detection, control and safety systems shall be incorporated in the central concept of the building management and control system to such extent as it proves rational from the viewpoint of economy in order to optimize subsequent operation and minimize operation costs.

This type of concept of the system should be designed on state-of-the-art basis and described in the written clarification of the Competition Entry.

All indications shall be collected in the planned building management centre.