

author's vision



The New National Gallery and Ludwig Museum will form a vital part of Budapest's city life. Working in complement with the symbolic and historic importance of its setting, which is also the main green area of the city, presents incredible possibilities for leisure and recreational activities, attracting both local and international attention.

Within this potent situation, the New National Gallery and the Ludwig Museum's combined classic and modern art exhibition is strategically integrated to provide space for continual reflection, enlightenment and exchange, inspiring further creative dialogue, while enhancing a cultural experience for all visitors. The new museum must at once create a new identity, and respect its surroundings, enhancing Budapest's heart and soul of arts and culture, within a tranquil park setting.

Designed in the early 19th century, City Park was developed in the tradition of the romantic city parks of the 19th century, with their belvederes, and their crystal palaces. It was establshed to provide a space of higher exchange amidst a leisurely outdoor setting.

At the present time, the park lacks a relevant destination point that captivates both a local and international audience. To do this, the relationship between architecture and landscape must be explored as well as the power that lies in respecting their reciprocal language. As with the belvederes and crystal palaces of the past, a contemporaneous architectural gesture must be similarly effective.

Set amidst the landscape of Varosliget Park, with its dappled walkways and processionals, our proposal for New National Gallery and Ludwig Museum - the 21st century belvedere of City Park, Budapest. A graceful beacon, it neither challenges nor exists in abrupt contrast with project site's trees and expansive grounds, but instead becomes a backdrop feature of the landscape, harnessing the gravitas of this form so akin to high culture, intellectual discourse and articulated landscape experience.

The building is designed to facilitate an experience of the landscape. It is not a building that is visited once every few years, but one that is regularly used, forming an integral part of the cultural topogoraphy of Budapest.

## LIGET BUDAPEST MUSEUM

author's vision



orthophoto

### II Architectural concept

### LIGET BUDAPEST MUSEUM

*II Architectural concept* 





In order to form an integral part of the cultural topogoraphy of Budapest, it is crucial for the building to become an integral part of the topography of the site itself. Like an undulating hill, it rises gently up from the landscape, and then returns again to it. Its volume is reduced via the repetition of smaller elelments - specifically, the cupola. This element not only defines the building's relationship with its surroundings, but it also defines its exterior while also facilitating interior qualities and experiences which connect visitors with the landscape.

Contemplated while enjoying a peaceful summer picnic on the mossy lawn encircled by Liezen-Mayer Stny and Winston Churchill Stny, the museum's form is defined by a horizontally extended plinth, and crowned with a sculptural roof scape composed of an undulating aggregation of cupolas. This cloud-like aggregation defines the building; it changes in scale in order to address the site context, rising and falling with the surrounding trees. It operates both as an attraction and as a backdrop feature, drawing visitors through the landscape to the museum, simultaneously merging with it. Interior columns, visible through the perimeter glazing, facilitate the blending of the building into the tree stand, blurring interior and exterior boundaries.

This connection is both directly visual and yet also experiential. The aggregated cupola dynamically filter light into the museum's second floor, which houses the Ludwig Museum's contemporary art collection, as well as its dramatic central staircase, creating an interior experience delicately impacted by variable environmental conditions. This renders the contemporary art exhibition experience temporal, and cupola geometry, which can potentially be optimised through parametric manipulation of wall angles and lengths, curating a multisensory experience of contemporary art, culture, space, and light. fig.02 View from the park.

### LIGET BUDAPEST MUSEUM

*II Architectural concept* 



<image>

The building's entrance façade incorporates the Hungarian style of roof tiling typical of late 19th century, in order to create a decisive visitor entrance from the main processional. This is distinct from the façade when experienced from the lawn's expanse.

Due to the colourful material nature of the ceramics and the scale of their geometrical patterns, the building reads as a singular element, with a definitive character that is complementary to traditional Hungarian styles.

Facing the public square, the mosaic offers a warm welcome for visitors while also inserting an iconic element directly illustrative of the Liget Budapest Museum's combined museum programme.

The use of eosin in the process of manufacturing the tiles' glaze, renders iridescent metallic in the porcelain. Its colours change with the angle of reflection, creating a dynamic and exciting entrance experience that is distinct from the experience of the building from other vantage points.



fig.03 Entrance square.

### III

*Site relations* 

Viewed from the expansive lawn, the South façade presents a reciprocated relationship with the landscape that is most clearly articulated in its plinth that fuses with the surrounding tree stand, and a volume that is modest, and approachable in scale at its perimeter, and yet also iconic and attractive. It inspires both curiosity and reflection, while facilitating a dialogue between the building and the landscape.

Staff have their own dedicated access point which sweeps through the trees of the Northwest side of the site. This is a romantic park route with uniquely designed ground vegetation that provides a quiet repose for museum staff to enjoy throughout the work day.

Enveloped by the century-old trees, the North-facing façade is experienced from the walking and cycling paths that surround it, as well as the vehicular processional along Kos Karoly Stny. It is a curiosity glimpsed occasionally between the leafy crowns. As visitors progress down Zichy Mihaly Ut., a resplendent tiled façade invites attention, pinning back the main entry to the vertex of a triangular plaza and event space. This is demarcated by a distinct paving pattern that

complements the inviting façade and recollects the Zsolnay ceramic roof tiles of celebrated Budapest art-nouveau buildings.

The processional pedestrian (via electric bus), cycling and vehicular access routes are drawn from Andrassy Ut. to Olof Palme Stny., then down Zichy Mihaly Ut.. These visitor mobility profiles are equally afforded by this celebrated reception, with bicycle parking, direct bus connection and parking (located beneath the public entrance programme of the museum) equally accommodated in order to integrate with the City Park's comprehensive circulation infrastructure.

Surrounded by a sculpture garden, the logistical access road leads to the artefact entrance. Here the landscape gently undulates and is designed to have minimal impact on the root systems of the old growth trees on the project site. It is also functional, with direct connection to Kos Karoly Stny. and city infrastructure north of the City Park. Back of House support functions are located in the Northeast zone of the building plan to facilitate efficient operation and a functional layout of museum programme.



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## LIGET BUDAPEST MUSEUM

IIISite relations



fig.05 Landscape plan

III Site relations

fig.06 View of building from Winston Churchill Stny.

Site relations



# LIGET BUDAPEST MUSEUM

III

fig.07 Front facade from park.

IVTechnological operation

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### LIGET BUDAPEST MUSEUM

IVTechnological operation

The general organization of the collection's galleries is strategically organised to enhance visitor experience. Permanent exhibitions present a journey of exploration into Hungarian art, culture and creativity alongside international parallels.

### Functional layout

Exhibition galleries are organized into 4 different districts:

- National Gallery
- Ludwig Gallery ٠
- Temporary Exhibition Galleries
- Articulation Gallery

In section, the building reflects these programming assignments. Its main extruded cupola form, houses support staff office programme, from Floor -01 to Floor +08.

The Ludwig Museum's contemporary art collection is located on Floor +01, with natural light enhancing the experience of its exhibition spaces. Along with the public reception and learning space, which includes lecture halls to host large public gatherings, the New National Gallery displays relics of European and Hungarian art history from the beginning the 19th century. These are exhibited in a traditional format, with light-controlled spaces on the ground floor. In this location, the foundation of Hungary's 19th to mid-20th century art and cultural history is effectively rooted within site, and operates as the conduit between the Temporary Exhibition Galleries on Floor -01, and the Ludwig Gallery programme on Floor +01.

A grand central staircase draws natural light into the building, providing a welcoming intermediary space, while also functionally connecting these discrete programmes. With its location and scale, it plays an essential role, uniting





fig.08-09 Central atrium stairs





fig.10 Longitudinal section

fig.11 Ground level main axis

IVTechnological operation

### LIGET BUDAPEST MUSEUM

IVTechnological operation

### the galleries and the park in one gesture.

In plan, the building is organised in three key zones along two clear functional axis: initially directing visitor circulation into the museum programme through threshold space directly behind ticketing; perpendicular to this, the axis of the articulation gallery space itself, which is a dramatic interior volume that can accommodate largescale temporary exhibitions that provoke and entice, acts as an interior threshold between the two collections. Its two wings lead to secondary controlled entrances from outdoor programme spaces, such as the restaurant terrace looking to the expansive lawn. From the entry hall, these three zones include: 1. museum learning, public exhibition and ticketing, articulation gallery space blurring the divide between formal museum programme and the public entry; 2. museum exhibition; 3. back of house / support spaces and logistics.

Exhibition paths are fluidly articulated to facilitate discovery of the collections. Where possible, large and un-partitioned galleries with flexible, movable partition walls offer the opportunity to interconnect galleries and curate sequential experiences with the creation of smaller spaces inside a larger space. This creates optimal climates and conservation conditions for sensitive artworks and for interpretation of special artefacts.

With these movable partitions, exhibition renewal and reconfiguration is possible, ensuring long term resilience and flexibility. Taking place in the form of an annual rehanging

and reconfiguration, this will maintain the interest of the public, affording both new perspectives and new dialogue to enhance the curatorial work of the museums.

As an invitation to explore the collection in depth, a "highlights gallery" can be located in the "circulation" areas around the staircase with the intent that it is reimagined on a regular basis.

Permanent galleries have an important educational function, providing spaces for study, gathering, and contemplation for both individual visitors and groups. As a general principle, the galleries will offer a great variety of experiences as a means of accommodating different ways that an exhibition can be both communicated and experienced within the museum.

In this functional layout, emphasis is placed on visitor interpretation. Aesthetic display modes with a low density of objects are anticipated together with the creation of visible storage and study galleries. This interpretation is primarily meant to encourage the visitor to explore the arts and will reflect the museums' vision and the richness of its collection. Chronological and thematic approaches are envisioned for the National Gallery, whereas the Ludwig collection incites an interdisciplinary approach. Both galleries emphasise curatorial work that offers unique groupings and arrangements, with the intent being that visitors interpret the works beyond historical period terms and instead facilitate conceptual comparison and context.





fig.12 Zoning section

fig.13 Zoning and relations scheme

IVTechnological operation





# LIGET BUDAPEST MUSEUM

IVTechnological operation



fig.13

This rendering illustrates the overview of the central atrium space which operates not only as a display area, but also as the main orientation space for visitors. One of the challenges involved in designing a musuem of this scale is ensuring a high degree of navigation through the museum's complex programme. The plan must not only be flexible, but exciting for the visitor.

This was achieved by introducing a large central circulation space that articulates a visual connection between all galleries. This not only provides a momentary respite from the linear path of the museum's chronological programme, but also reorients visitors with a return to a familiar location. It is a space of dialogue between the two museums, which present two important facets in Hungarian art.



### fig.14 zoning plan level -01

As on all floor levels, level -01 is organised in three distinct functional areas. These include: museum learning with event and lecture halls; lobby (brown); temporary exhibitions (pink) and back of house (green).

The lobby space articulates the two core functional zones of the building: the museum learning area, open to the public and the exhibition spaces which have controlled access. In order to maximise programmatic relationships, temporary exhibitions are immediately adjacent to back of house facilities.



fig.15 circulation plan level -01

The red path in the illustration to the right, indicates the main visitor circulation path into the museum's programme. Visitor circulation is designed in order to facilitate maximum flexibility. As on other floor levels, the museum curator will be able to implement several exhibitions simultaneously. In the heart of the plan is the central staircase, around which a hybrid zone provides an opportunity for museum curators to create different visitor experiences and attractions. This area could form part of the New National Gallery permanent exhibition or could function as a reception space for large scale, temporary events.

The grey path in the illustration to the right, indicates the circulation of museum staff and artefacts.

> fig.16 illustration to the left

Lobby placed in level -1, these generous space articulates the museum learning with the temporary exhibitions.



*IV Technological operation* 



# LIGET BUDAPEST MUSEUM

### *IV Technological operation*

### fig.16 zoning plan ground level

As on all levels, the ground floor is organised in three distinct functional areas. These include: entrance and hospitality; exhibitions; back of house.

The entrance and hospitality zone contains museum shops, restaurants, cafés and brasseries as well as ticketing, and wardrobes. The exhibition zone on the ground floor level includes the New National Gallery exhibition spaces. Back of house on this level includes: artefact arrival and handling, as well as all restoration and workshop areas.



back of house

fig.17 circulation plan ground level

The red path in the illustration to the right, indicates the main visitor circulation path into the museum's programme. Visitor circulation is designed in order to facilitate maximum flexibility. The museum curator will be able to implement several exhibitions simultaneously.

The grey path in the illustration to the right, indicates the arrival and circulation of artefacts and museum staff. Organised perpendicular to visitor circulation, these two path systems never conflict.



exhibitions

entrance and hospitality

*IV Technological operation* 



# LIGET BUDAPEST MUSEUM

## *IV Technological operation*

fig.18 zoning plan level +01

As on all levels, the floor plan for level +01 is also organised in functional areas. These include: exhibitions; back of house; offices; GAIA.

On level +01, the permanent exhibition of the Ludwig Museum is directly connected to the back of house area. GAIA is located above the main entrance lobby and although it is located on the same level, it has no direct relationship with nor access to the other areas on this level. It is independently accessible from the exterior. Located in the tower, the offices relate to the museum programme on level +01.



back of house

fig.19 circulation plan level +01

The red path in the illustration to the right, indicates the main visitor circulation path into the museum's programme. Visitor circulation is designed in order to facilitate maximum flexibility. The museum curator will be able to implement several exhibitions simultaneously. Also in the heart of the plan is the central staircase, around which a hybrid zone provides an opportunity for museum curators to create different visitor experiences and attractions, potentially forming part of the Ludwig Museum's permanent exhibition or functioning as a reception space for large scale, temporary events.

The grey path in the illustration to the right, indicates the arrival and circulation of artefacts and museum staff. Organized perpendicular to visitor circulation, these two path systems never

conflict.



exhibitions

GAIA



IVTechnological operation

fig.20 This rendering illustrates the qualities of a typical exhibition space for the New National Gallery; large and flexible, they are controlled by artificial lighting.

# LIGET BUDAPEST MUSEUM

IVTechnological operation



fig.21 In contrast to the requirements of the New National Gallery, the Ludwig Museum's spaces offer a variety of display solutions with indirect and controlled daylighting.

IVSupporting structure

### LIGET BUDAPEST MUSEUM

IVSupporting structure

### Load-bearing structures

The eye-catching roof of the museum poses the most interesting structural challenge.

Starting from the top, the skylights themselves – square cones of pyramid with a 8m x 8m base - consist of lightweight steelwork frames supporting lightweight sandwich panels that form the external, internal and insulation layers. The length of the sides and the slope angles can be parametrically adjusted to suit a variety of purposes, first of all optimized daylighting conditions.



Below the skylight an integrated holistic solution is developed which minimizes the depth of the structural zone and which allows the horizontal distribution of building services into such zone, and at the same time hides it from sight.

Such solution consists of two steelwork trusses running in parallel - the gap in between is used for services distribution above the exhibition halls.



The trusses are supported by steel columns which are hidden within the rooms' partition walls.

The partitions walls use the same integrated principle and provide cavity walls where vertical services distribution can occur.

The floors of the main exhibition floors consist of lightweight steel trusses or composite cellular beams up to 1m deep spanning in the long direction (up to 16m), between which pre-tensioned and prefabricated concrete hollow core planks are placed (spanning 8m in the short direction).



Alternatively to the concrete hollow core planks, and where a high level of future flexibility of use is desired in the exhibition rooms, the gap between the steel trusses/cellular beams can be closed with a prefabricated steel grillage as shown in the image.

This leads to a dry type of construction which can then be temporarily dismantled and removed, making room for example for double-storey high spaces to host special large exhibits.

The floors of the underground levels consist of a standard reinforced concrete flat slab construction without downstands, supported on a regular grid of concrete columns with spans of 8m x 8m.





fig.23 Service ducts integrated within strucutural solution

### V

Sustainability

## LIGET BUDAPEST MUSEUM

VSustainability

### **Environmental Concept**

The environmental concept for the museum has allowed the architecture and engineering to combine to produce a low energy and sustainable design solution.

The key design features for the project are as follows:

Excellent daylighting achieved through rooflights, design to provide controlled daylighting to the gallery spaces and deep into the buildings internal spaces.

Use of natural ventilation to create a passive design • solution to internal spaces

Highly insulated building envelope, providing low • thermal conductivity and high levels of air tightness

Use of internal thermal mass of the concrete to help • stabilise internal environment passively.

### Indoor Climate

The general circulation and entrance areas shall be heated using an underfloor heating system, linked to the ground source heat pumps, to provide a good indoor climate. The underfloor heating shall be enhanced using perimeter trench heaters adjacent the glass facade. The underfloor heating shall provide heating to the spaces, and linked to the ground source heat pumps, delivering efficient low grade heating.

The use of phase change materials (PCM) within the wall construction shall provide good indoor climate for the gallery and museum spaces.

During warm weather, the ventilation system will operate overnight to purge residual heat from building and pre-cool the exposed thermal mass, giving it maximum capacity to absorb heat gains during the following day. This will help stabilise internal temperatures, improving thermal comfort and maximising the period the building can operate for periods without any requirement for mechanical cooling.

Energy

Ground source heating and cooling will be provided to meet at least 50% of the energy demands of the building, in order to meet the 2020 EU Directive Nearly Zero-energy Buildings.

The series of boreholes within the substructure will provide free cooling to the close control gallery spaces and provide a source for heat pumps to meet the energy demand. Solar PVs will be integrated within the rooflights to provide supplementary energy generation

A central energy centre will be provided within the basement, allowing the energy generation and delivery to be optimised.

### Lighting

Excellent provisions of controllable natural light shall be provided in the museum spaces to produce good indoor climate and to reduce the energy consumed by electric lighting. The roof daylight openings are optimized to suitable the orientation and the designation of the internal spaces.

The energy target for artificial lighting will be an to achieve a lighting power density <2.5W/m2/100lux.

LED light sources would use for all general lighting systems. Intelligent lighting controls will be used to maximise daylight harvesting opportunities and occupancy sensors will be used to reduce the unnecessary use of electric lighting when rooms are unoccupied.

### Distribution of MEP Services

Within the main gallery and museum spaces, the integrated holistic solution is developed which minimizes the depth of the structural zone and which allows the horizontal distribution of MEP building services into such zones, and at the same time hides it from sight. Such solution consists of two steelwork trusses running in parallel - the gap in between is used for services distribution above the exhibition halls.

