Integration of Historical Manor Complexes into the Urban and Suburban Infrastructure

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Abstract. The article is focused on the issues pertaining to capitalization of historical manor complexes within the framework of the "Smart City" concept. Information is provided regarding the major law acts on protection of architectural monuments, current programs of public and private partnership, as well as on the problems that reduce the influx of investments. Basing on the analysis of theoretical R & D of the last years, exploration of the domestic and foreign periodicals as well as on the experience gained in the best practices of capitalization of architectural heritage, the authors identified the possible options for the modern use of manor complexes. Having identified the major features of manors that predetermine the further selection of the option to be used, the authors offer the methodology helping to define the most effective option for the modern use of each particular manor depending on its features. The result of the study is presented in the Matrix, which automatically produces the multi-factor analysis for selection of the more rational option of using the given facility. This makes it possible to reduce the risks of potential investors, to attract the influx of investments in the given sphere, and thus to contribute to salvation of manors by their integration in the current life of the country.

1. Introduction

Architectural monuments form a material platform for cultural identity of nations and cities. Their preservation is laid in the bases of sustainable development principles for architecture and the society [1].

At the present time, Russia is faced with such problem as rapid destruction of untended historical manor complexes [2]. This poses a threat of losing not only the architectural and historical heritage but also the important asset that can bring profit and cause considerable influence on the economic development of cities and suburbs.

The importance of preserving the architectural and historical Heritage is reflected in the RF Constitution [3], while restoration of the architectural monuments is fixed as one of the Clauses in the "Russia's Culture" Federal Target Program [4]. The Law "On the Objects of Cultural Heritage" [5] provides restoration of monument buildings under the supervision of the respective government bodies. However it does not appear possible to restore all manners at the expense of the government budget. In this connection privatization of historical and cultural monuments was allowed in Russia in 1994 [6]. At the present time, it is evident that the correct modern use of manors is the only way to preserve them [7]. The RF Government has developed such programs as the "Green Corridor" [8], "Manors of the Moscow Countryside" [9], and others. These programs opened new prospects for public and private partnership through attracting potential owners and renters by the symbolic price to
be paid for square meters of monument buildings. However the problems holding back the influx of investments remain unresolved [10]. The first of such problems is seen in the low yield of investments. The circumstances usually appearing in the course of restoration works make them more expensive and therefore it is quite difficult to calculate the cost of refurbishment works in advance. Therefore banks are unwilling to take the risk and the to credit the projects, for which the economic return and the payback period cannot be calculated.

The "Smart City" concept implies the rational use of all assets in agglomerations by accommodating the out-of-former-function buildings for the modern needs. Development of methodology for universal selection of the most rational option of use for each particular manor would contribute to the higher profitability of the given project, influx of investment therein, and hands to revitalization and integration of manors into the modern infrastructure of the country’s regions.

2. Methods

Basing on the analysis of theoretical R&D done in the last years [11-14], as well as on the study of the best practices available in capitalization of historical buildings [15-20], we lined up the options for modern use of historical manor complexes (HMC hereinafter) – such as: business center, sanatorium, hotel, hospital, kindergarten, high school, university-level institute, music school or art school, elite-class real estate with the function of the urban or suburban real estate facility, hospice, concert hall, municipal facilities and co-working.

Russian manors, being extremely diversified, range from the space-saving urban mansions through to huge countryside complexes with regular parks and cascades of ponds. In order to structure the HMC descriptions, we identified the major features of HMC and structured the latter by the quantitative and qualitative characteristics. The diapason of values for each characteristic was distributed by levels (Table 1). The quantitative characteristics include:

- distance from big population clusters
  (7 levels, from "less than or equal to 1 km" through to "over or equal to 20 km");
- minimal usable floor area of the building
  (3 levels, from "over or equal to 100 m²" through to "over or equal to 500 m²");
- minimal area of the land-plot
  (4 levels, from "less than or equal to 6 hundred m²" through to "over or equal to 50 hundred m²")

The qualitative characteristics, such as: presence of the garden-and-park area, presence of forests, presence of water pools good for swimming and / or fishing, presence of mountains/hills (potential mountain-skiing slopes) were considered at 4 levels: "does not matter", "may be", "desirable", and "compulsory". The levels of such characteristic as “environmental situation” have been formulated in conformity with their significance for different options for the further use of the given HMC, i. e.: “doesn't matter”, “desirably favorable”, “favorable”, and “excellent”.


3. Results

Table 1. Systematization of Basic Characteristics of HMC

| Characteristics | Levels: |
|-----------------|---------|
| distance from big population clusters (km) | ≤1  |
|                  | ≤5  |
|                  | ≤15 |
|                  | ≤20 |
|                  | ≤30 |
|                  | ≥15 |
|                  | ≥20 |
| minimal usable floor area of the building (m²) | ≥100 |
|                  | ≥200 |
|                  | ≥500 |
| minimal usable floor area of the building (m²) | ≥6  |
|                  | ≥10 |
|                  | ≥20 |
|                  | ≥50 |
| presence of the garden-and-park area | 1 - doesn’t matter |
| presence of forests | 2 - may be |
| presence of water pools good for swimming and / or fishing | 3 - desirable |
| presence of mountains/hills (potential mountain-skiing slopes) | 4 - compulsory |
| environmental situation | 1 - doesn’t matter |
|                         | 2 - desirably favorable |
|                         | 3 - favorable |
|                         | 4 - excellent |

Some indices of the HMC characteristics are important for each option of the modern use (Table 2). For example, if and when the manor is used as a business center the decisive indices include: the distance from big population clusters (no more than 15 km), usable floor area (no less than 200 m²), as well as the space of the land plot for parking (no less than 10 hundred m²). In the given case the ecological situation, as well as the presence of forests, water pools, and mountains are of no special importance. But if the manor is used as a sanatorium, the ecological situation and other qualitative characteristics are extremely important, while the distance from big cities, on the contrary, must be no less than 15 km.

The characteristics' importance rating must be set for each possible option of the HMC modern use. Based on the numbers of characteristics as offered in Table 1 (3 quantitative and 5 qualitative), the percent proportion between the group of quantitative and group of qualitative characteristics has been adopted respectively as 35% to 65% for all options of the modern use. If / when some new characteristics of the HMC are introduced, the percent proportion would change depending on the weight of each characteristic.

Within each group, characteristics shall be distributed in the order of their percentage value for each option of the modern use. The sum of the indices, too, must be equal to 100% (for a case in point, see Table 3; for the full version, see Table 4).
**Table 3. The HMC Characteristics’ Importance Rating for the Option of Modern Use as a Business Center**

| Quantitative Characteristics’ Importance Rating (35%): | Qualitative Characteristics’ Importance Rating (65%): |
|------------------------------------------------------|------------------------------------------------------|
| ➢ distance from big population clusters (km) – 50%   | ➢ presence of the garden-and-park area – 41%          |
| ➢ minimal usable floor area of the building (m²) – 25% | ➢ presence of forests – 41%                         |
| ➢ minimal floor area of the land-plot (100 m²) – 25% | ➢ presence of water pools good for swimming and/or fishing – 6% |
|                                                      | ➢ presence of mountains/hills (potential mountain-skiing slopes) – 6% |
|                                                      | ➢ environmental situation – 6%                       |

Total: 100%  
Total: 100%

On the basis of Table 2 and Table 4 we devised the MS Excel Matrix being capable of producing the automatic multiple-factor analysis. The Matrix shall identify the optimal option for use of the HMC depending on the facility characteristics (Table 5).

### 4. Discussion

In order to demonstrate the Matrix operation, we would introduce the characteristics of the manor of the 18th–19th centuries in the Vorontsovo pole Street (the city of Moscow):

- distance from big population clusters (km) – 0;
- usable floor area of the building (m²) – 400;
- floor area of the land-plot (100 m²) – 15;
- presence of the garden-and-park area – Yes;
- presence of forests – No;
- presence of water pools good for swimming and/or fishing – No;
- presence of mountains/hills (potential mountain-skiing slopes) – No;
- environmental situation – Satisfactory (corresponds to the level of “doesn’t matter”).

Loaded into the Matrix, the restrictions-related additional information would enable the analysts to conduct analysis in the two options:

**Option 1:** Quantitative characteristics MAY NOT be violated;

**Option 2:** Quantitative characteristics MAY be violated;

This is the result to the most rational options have been offered for use of the facility in question: a concert hall and a business center. As for the rest option, the percentage of their compliance with the set characteristics of the facility is presented in the respective boxes.

The devised Matrix makes it possible to identify the efficient option for the modern use of each particular manor with due account of its characteristics and thus to reduce the risks for potential investors. This would contribute to the higher attractiveness and stability of the given sphere for the public-and-private partnership.

As an ample evidence of the productivity of this R & D, we would draw some examples of the successful revitalizing of manor complexes, such as:

1. accommodation of the Znamenskoye-Gubailovo manor for the office center (Krasnogorsk town, the Moscow Oblast);
2. accommodation of the manor of the 18th – 19th centuries for the conference center and head office of the Russian Society of Historians (Vorontsovo pole Street, the city of Moscow).

The modern functions of the above-cited facilities were selected on the base of the customer's wishes but the selection fully coincided with the results of the analyses conducted under the afore-offered methodology. That these facilities have been revitalized successfully is confirmed by their smooth functioning for the time being.
### Table 2. Part 1. Characteristics of historical manor complexes (HMC) and options for modern use.

|   | HMC Characteristics | Type of constraint | Options for modern use of HMC |
|---|---------------------|--------------------|-------------------------------|
|   |                     |                    | Business Center | Sanatorium |
| 2 | Quantitative        |                    | MAX | MIN |
| 3 | Distance from big population clusters (km) | Over or equal | 15  | 15  |
| 4 | Usable floor area of the building (m²) | Over or equal | 200 | 500 |
| 5 | Minimal area of the land-plot (100 m²) | Over or equal | 10  | 50  |
| 6 | Qualitative         |                    |                 |             |
| 7 | Presence of the garden-and-park area (from 1 to 4)* | Logical field | 2   | 2   |
| 8 | Environmental situation (from 1 to 4)** | Over or equal | 2   | 4   |
| 9 | Presence of forests* | Logical field | 1   | 3   |
| 10| Presence of water pools good for swimming and/or fishing* | Logical field | 1   | 3   |
| 11| Presence of mountains/hills (potential mountain-skiing slopes)* | Logical field | 1   | 3   |

**NB:** 1 - doesn't matter; 2 - may be; 3 - desirable; 4 - compulsory

**For clarity purpose, the article contains a short version of the Table (8 out of 14 options of modern use of HMC).**

### Table 2. Part 2.

|   | Hotel | Hospital | Kindergarten | High School | University-level institute | Music School or Art Center |
|---|-------|---------|--------------|-------------|---------------------------|---------------------------|
| 2 | MAX   | MAX     | MAX          | MAX         | MAX                       | MAX                       |
| 3 | 5     | 1       | 1            | 1           | 5                         | 0                         |
| 4 | 200   | 500     | 100          | 500         | 500                       | 0                         |
| 5 | 10    | 10      | 10           | 10          | 0                         | 0                         |
| 6 | Qualitative |        |              |             |                           |                           |
| 7 | 2     | 4       | 3            | 3           | 3                         | 1                         |
| 8 | 2     | 1       | 3            | 3           | 2                         | 1                         |
| 9 | 1     | 1       | 2            | 2           | 2                         | 1                         |
| 10| 2     | 1       | 2            | 2           | 2                         | 1                         |
| 11| 2     | 1       | 1            | 2           | 2                         | 1                         |

**NB:** 1 - doesn't matter; 2 - may be; 3 - desirable; 4 - compulsory

**1** - doesn't matter; 2 - desirably favorable; 3 - favorable; 4 - excellent
**Table 4. Part 1.** The HMC Characteristics' Importance Rating

|   | HMC Characteristics       | Default Values | Business Center | Sanatorium |
|---|---------------------------|----------------|-----------------|------------|
| 2 | Quantitative Characteristics | 35%            | 35%             | 35%        |
| 3 | Distance from big population clusters | 40%            | 50%             | 40%        |
| 4 | Usable floor area of the building | 30%            | 25%             | 30%        |
| 5 | Minimal area of the land-plot   | 30%            | 25%             | 30%        |
| 6 | Qualitative Characteristics    | 65%            | 65%             | 65%        |
| 7 | Presence of the garden-and-park area | 20%            | 41%             | 20%        |
| 8 | Environmental situation       | 20%            | 41%             | 20%        |
| 9 | Presence of forests           | 20%            | 6%              | 20%        |
| 10| Presence of water pools good for swimming and/or fishing | 20%            | 6%              | 20%        |
| 11| Presence of mountains/hills (potential mountain-skiling slopes) | 20%            | 6%              | 20%        |
| 12| **Total (must be equal 100%)**| **100%**       | **100%**        | **100%**   |

**Table 4. Part 2.**

|   | Hotel | Hospital | Kindergarten | High School | University-level institute | Music School or Art Center |
|---|-------|----------|--------------|-------------|---------------------------|----------------------------|
| 2 | 35%   | 35%      | 35%          | 35%         | 35%                       | 35%                        |
| 3 | 40%   | 40%      | 40%          | 40%         | 40%                       | 40%                        |
| 4 | 30%   | 30%      | 30%          | 30%         | 30%                       | 30%                        |
| 5 | 30%   | 30%      | 30%          | 30%         | 30%                       | 30%                        |
| 6 | 65%   | 65%      | 65%          | 65%         | 65%                       | 65%                        |
| 7 | 20%   | 20%      | 20%          | 20%         | 20%                       | 20%                        |
| 8 | 20%   | 20%      | 20%          | 20%         | 20%                       | 20%                        |
| 9 | 20%   | 20%      | 20%          | 20%         | 20%                       | 20%                        |
| 10| 20%   | 20%      | 20%          | 20%         | 20%                       | 20%                        |
| 11| 20%   | 20%      | 20%          | 20%         | 20%                       | 20%                        |
| 12| **100%** | **100%** | **100%**     | **100%**    | **100%**                  | **100%**                   |

**NB:** For clarity purpose, the article contains a short version of the Table (8 out of 14 options of modern use of HMC).
Table 5. Part 1. Analysis Matrix (using the example of the manor of the 18th–19th centuries in the Vorontsovo pole Street, Moscow)

|   | HMC Characteristics | Input Parameters | Business Center | Sanatorium |
|---|---------------------|------------------|-----------------|------------|
| 2 | **Quantitative Characteristics** |                  |                 |            |
| 3 | Distance from big population clusters (km) | 1 | 100% | 0% |
| 4 | Usable floor area of the building (m²) | 400 | 100% | 0% |
| 5 | Minimal area of the land-plot (100 m²) | 15 | 100% | 0% |
| 6 | **Qualitative Characteristics** |                  |                 |            |
| 7 | Presence of the garden-and-park area | NO | 82% | 40% |
| 8 | Environmental situation (from 1 to 4)** | 1 | 0% | 0% |
| 9 | Presence of forests | YES | 6% | 60% |
| 10 | Presence of water pools good for swimming and/or fishing | NO | 0% | 0% |
| 11 | Presence of mountains/hills (potential mountain-skiing slopes) | NO | 0% | 0% |

12 Option 1: Quantitative characteristics MAY NOT be violated
13 Compliance with the characteristics (absolute) | 34% | 0% |
14 TOTAL: compliance with the characteristics (relative)* | 100% | 0% |

15 Option 2: Quantitative characteristics MAY be violated
16 Compliance with the characteristics (absolute) | 57% | 13% |
17 TOTAL: compliance with the characteristics (relative)* | 100% | 23% |

**NB:** Table 1. Part 2 - see next page.
Table 5. Part 2. Analysis Matrix (using the example of the manor of the 18th–19th centuries in the Vorontsovo pole Street, Moscow)

|   | Hotel | Hospital | Kindergarten | High School | University-level institute | Music School or Art Center | Concert Hall |
|---|-------|----------|--------------|-------------|-----------------------------|---------------------------|--------------|
| 2 |       | **Quantitative Characteristics** |
| 3 | 100%  | 100%     | 100%         | 100%        | 0%                          | 0%                        | 100%         |
| 4 | 100%  | 0%       | 100%         | 0%          | 0%                          | 100%                      | 100%         |
| 5 | 100%  | 100%     | 100%         | 100%        | 100%                        | 100%                      | 100%         |
| 6 |       | **Qualitative Characteristics** |
| 7 | 40%   | 0%       | 60%          | 60%         | 60%                         | 20%                       | 0%           |
| 8 | 0%    | 100%     | 0%           | 0%          | 0%                          | 100%                      | 100%         |
| 9 | 20%   | 20%      | 40%          | 40%         | 40%                         | 20%                       | 20%          |
| 10| 0%    | 0%       | 0%           | 0%          | 0%                          | 0%                        | 0%           |
| 11| 0%    | 0%       | 0%           | 0%          | 0%                          | 0%                        | 0%           |
| 12|       |          |              |             |                             |                           |              |
| 13| 12%   | 0%       | 20%          | 0%          | 0%                          | 0%                        | 24%          |
| 14| 35%   | 0%       | 59%          | 0%          | 0%                          | 0%                        | 71%          |
| 15|       |          |              |             |                             |                           |              |
| 16| 43%   | 40%      | 48%          | 38%         | 38%                         | 39%                       | 51%          |
|   | 75%   | 70%      | 84%          | 66%         | 66%                         | 69%                       | 89%          |

NB: **1 - doesn't matter; 2 - desirably favorable; 3 - favorable; 4 - excellent.**

For clarity purpose, the article contains a short version of the Table (9 out of 14 options of modern use of HMC).

**Conclusions:**
Based on the results of the performed analysis a conclusion can be made that the best option for the modern use of the facility is **Business Center**.

Besides that, the facility in question can also be used as a **Concert Hall**.
References

[1] Esaulov G V *Ustoichivaya arkhitektura - ot printsipov k strategii razvitiya* [Sustainable Architecture: From Principles to Development Strategy] 2014 Vestnik TGASU 6 15

[2] Komech A I Pravovaya situatsiya v oblasti okhrany arkhitekturnogo naslediya [Legal Situation in the Sphere of Architectural Heritage Protection] Okhrana i restavratsiya arkhitekturnogo naslediya Rossii. Organizatsionno-pravovye i ekonomicheskie problemy: materialy Vserossiyskoy konferentsii. [Protection and Restoration of Russia's Architectural Heritage. Organizational, Legal and Economic Problems: Proceedings of the All-Russia Conference] 2000 Moscow: Information and Publications Department Russian Academy of Architecture and Construction Sciences. p. 24

[3] Constitution of the Russian Federation of 12.12.1993 Article 44 Clause 3

[4] "Russia's Culture (2012-2018)" Federal Target Program of the RF

[5] Federal Law of 25.06.2002 73-FZ (revision of 29.07.2017) "On the Cultural Heritage Objects (Historical and Cultural Monuments) of the Peoples of the Russian Federation"

[6] Federal Law of 11.08.1994 26-FZ. "On Introduction of Amendments and Changes to the Russian Federation Law" "On Privatization of the Housing Stock in the Russian Federation"

[7] Shvidkovskiy O I *Ispol'zovanie pamyatnikov kak glavnoe uslovie ikh sokhraneniya. [Use of Monuments as the Major Condition for Their Preservation] // Problemy okhrany i sovremennogo ispol'zovaniya pamyatnikov arkhitektury [The Problems in Protection and Modern Use of Architectural Monuments]: Proceedings of the ICOOMS/Estonian SSR International Colloquium Tallinn June 4-7 1985 Tallinn: Valgus 1987 Pp. 68-72

[8] Executive Directorate of the RF Ministry of Culture. Access mode: http://rdmicult.ru/ Date of reference: 20.09.2017

[9] Official Information Resource of the Moscow Region Government. Access mode: http://mosreg.ru/ Date of reference: 21.09.2017

[10] Zabytyy aktiv [A Forlorn Asset] 2014 Proekt Rossiya 74 177-191

[11] Fedorova Yu S *Tipologiya turistskikh obyektov na osnove ispol'zovaniya istoriko-arkhitekturnogo naslediya* (na primere Penzenskoy oblasti) [Typology of Tourist Facilities Based on the Historical and Architectural Heritage: the Case of the Penza Oblast] Dissertation for Ph.D. Degree in Architecture: 18.00.02. Moscow 1998

[12] Ageev S A *Sokhranenie lokal'nykh istoricheskikh kompleksov metodami gradostroitel'nogo regulirovaniya. [Preservation of Local Historical Complexes by the Methods of Regulated Town-Planning]: Dissertation for Ph.D. Degree in Architecture: 18.00.04 Moscow 2005

[13] Krasnobaev I V *Arkhiitekturnoe nasledie sel'skikh dvoryanskikh usadeb Kazanskogo Povolzh'ya: potentsial sokhraneniya i ispol'zovaniya. [Architectural Heritage of the Nobles’ Manors in the Kazan Area of the Volga River Basin: Potential for Preservation and Use]: Dissertation for Ph.D. Degree in Architecture: 18.00.01 Kazan 2009

[14] Aksenova I V and Klavir E V *Problemy okhrany i sovremennogo ispol'zovaniya zagorodnykh dvoryanskikh usadeb* [The Problems in Protection and Modern Use of Nobles’ Countryside Manors] 2014 Vestnik MGSU 11 14-25

[15] Krasnobaev I V K voprosu o sovremennom ispol'zovani sel'skikh dvoryanskikh usadeb. Opyt Velikobritanii [On the Use of Nobles’ Countryside Manors: The British Experience] 2008 Izvestiya Kazanskogo gosudarstvennogo arkhiitekturo-stroitelnogo universiteta 2(10) 28-32

[16] The SPAB Manifesto and the short text ‘SPAB’s Purpose’ Access mode: www.spab.org.uk/what-is-spab. Date of reference: 20.09.2017

[17] Douglas Kent «Conservative Repair» «Cathedral Communications Limited». Access mode: http://www.buildingconservation.com/articles/conservative-repair/conservative-repair.htm. Date
of reference: 20.09.2017

[18] Orbasli A *Architectural Conservation: Principles and Practice* Blackwell Oxford 2008

[19] Michael Davies «New Life for Old Ruins» «Cathedral Communications Limited». Access mode: [http://www.buildingconservation.com/articles/life-for-ruins/life-for-ruins.htm](http://www.buildingconservation.com/articles/life-for-ruins/life-for-ruins.htm). Date of reference: 20.09.2017

[20] Richard MacCullagh «Extending Listed Buildings: Principles and Practice». Access mode: [http://www.buildingconservation.com/articles/extending-listed-buildings/extending-listed-buildings.htm](http://www.buildingconservation.com/articles/extending-listed-buildings/extending-listed-buildings.htm). Date of reference: 20.09.2017