EXECUTIVE SUMMARY

State Party of the Convention

- Russian Federation

State, Province or Region

- Republic of Tatarstan, Kazan, Zelenodolsk municipal district

Name of Property

- Astronomical Observatories of Kazan Federal University

Geographic coordinates (to the nearest second)

ID no.	Name of the component part	Region(s)/ District(s)	Coordinates of the Central Point	Area of the nominated component of the Property (ha)	Area of the Buffer Zone (ha)
001	Kazan City Astronomical Observatory	Kazan, Tatarstan	N55°47'27.27» E49°07'08.75»	0.34	6.80
002	Engelhardt Astronomical Observatory	Zelenodolsk district, Tatarstan	N55°50'23,67» E48°48'44,69»	18.68	436.84
Total area (in hectares)				19.02 ha	443.64 ha

Textual description of the boundaries of the nominated property

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Description of the boundaries of the nominated property "Astronomical Observatories of Kazan Federal University":

The nominated property comprises two components: Kazan City Astronomical Observatory (001) and Suburban Engelhardt Astronomical Observatory (002).

001– Kazan City Astronomical Observatory

Textual description of the boundary of the component of the nominated property

The boundary of the nominated site passes: from point 1 at 13.93 m to point 2 (azimuth 45°08'37.00") towards the north-east; from point 2 at 1.15 m to point 3 (azimuth 114°39'53.14") towards the east; from point 3 at 10.6 m to point 4 (azimuth 111°55'06.20") towards the east; from point 4 at 1.51 m to point 5 (azimuth 102°00'54.38") towards the east; from point 5 at 1.55 m to point 6 (azimuth 118°46'51.34") towards the east; from point 6 at 1.1 m to point 7 (azimuth 240°16'19.75") towards the south-west; from point 7 at 1.4 m to point 8 (azimuth 114°24'08.35") towards the east; from point 8 at 57.05 m to point 9 (azimuth 112°06'27.82") towards the east; from point 9 at 3.68 m to point 10 (azimuth 147°00'37.88") towards the south-east; from point 10 at 3.52 m to point 11 (azimuth 196°52'33.60") towards the south; from point 11 at 25.17 m to point 12 (azimuth 231°14'08.44") towards the south-west; from point 12 at 11.75 m to point 13 (azimuth 244°35'32.63") towards the south-west; from point 13 at 14.82 m to point 14 (azimuth 291°45'30.75") towards the north-west; from point 14 at 4.0 m to point 15 (azimuth 293°39'12.16") in a north-west direction; from point 15 at 6.79 m to point 16 (azimuth 266°41'55.85") in a west direction; from point 16 at 3.12 m to point 17 (azimuth 288°28'48.06") towards the north-west; from point 17 at 3.62 m to point 18 (azimuth 296°56'12.84") towards the north-west; from point 18 at 8.96 m to point 19 (azimuth 283°38'51.37") in a north-west direction; from point 19 at 6.52 m to point 20 (azimuth 291°00'47.93") towards the north-west; from point 20 at 15.79 m to point 21 (azimuth 293°40'44.24") towards the north-west; from point 21 at 18.25 m to point 22 (azimuth 347°36'47.91") towards the north; from point 22 at 21.49 m to point 1 (azimuth 53°18'36.29") towards the north-east.

002 – Engelhardt Astronomical Observatory

Textual description of the boundary of the component of the nominated property

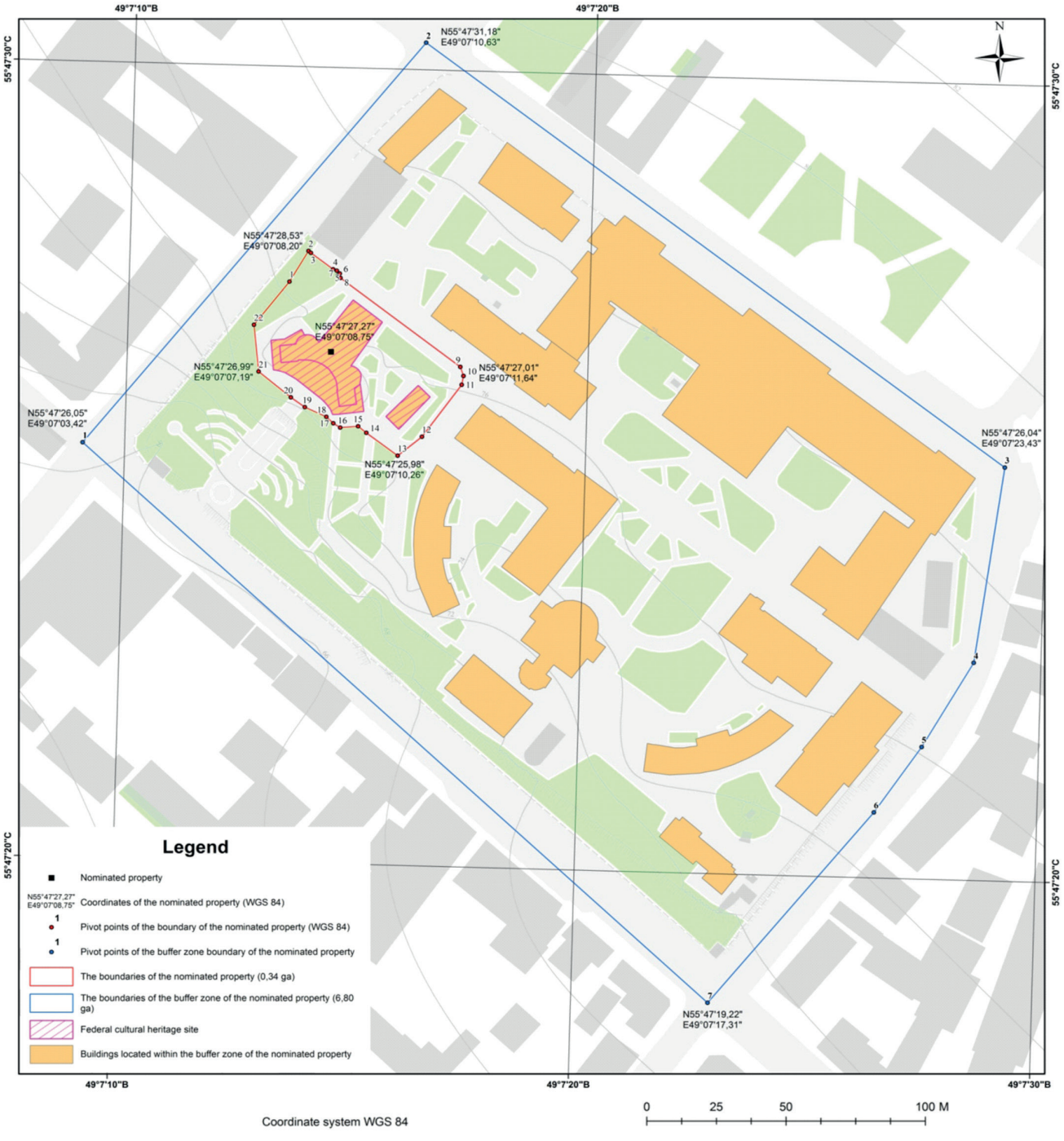
The boundary of the nominated site passes from point 1 at 57.56 m to point 2 (azimuth 268°32'54.97") towards the west; from point 2 at 10.42 m to point 3 (azimuth 215°53'13.27") towards the south; from point 3 at 18.37 m to point 4 (azimuth 197°06'17.58") towards the south; from point 4 at 25,67 m to point 5 (azimuth 269°18'51.77") in the direction of the west; from point 5 at 18,79 m to point 6 (azimuth 176°47'12.75") in the direction of the south; from point 6 at 77,79 m to point 7 (azimuth 96°37'35.80") in the direction of the east; from point 7 at 40.27 m to point 8 (azimuth 200°04'40.28") in the direction of the south; from point 8 at 454.16 m to point 9 (azimuth 274°03'44,16") in the direction of the west; from point 9 at 118.08 m to point 10 (azimuth 20°29'12.45") towards the north; from point 10 at 121.4 m to point 11 (azimuth 18°30'52.18") towards the north; from point 11 at 244.58 m to point 12 (azimuth 35°11'40.93") towards the north-east; from point 12 at 155.07 m to point 13 (azimuth 92°58'29.29") towards the east; from point 13 at 26.02 m to point 14 (azimuth 175°12'46.63") in a southward direction; from point 14 at 88.58 m to point 15 (azimuth 90°31'22.81") towards the east; from point 15 at 47.87 m to point 16 (azimuth 173°12'12.38") in a southward direction; from point 16 at 67.35 m to point 17 (azimuth 94°46'48,18") towards the east; from point 17 at 5.94 m to point 18 (azimuth 91°16'52,36") towards the east; from point 18 at 5.5 m to point 19 (azimuth 176°47'16.51") towards the south; from point 19 at 24.01 m to point 20 (azimuth 94°08'07.25") towards the east; from point 20 at 101.39 m to point 21 (azimuth 200°12'31.21") towards the south; from point 21 at 27.62 m to point 22 (azimuth 194°02'06.72") towards the south; from point 22 at 34.12 m to point 23 (azimuth 198°27'53.67") towards the south; from point 23 at 3.74 m to point 24 (azimuth 104°33'54.78") towards the east; from point 24 at 21.12 m to point 25 (azimuth 128°49'01.05") towards the south-east; from point 25 at 31.9 m to point 26 (azimuth 98°45'22.07") towards the east; from point 26 at 74.74 m to point 27 (azimuth 200°04'44.71") towards the south; from point 27 at 30.34 m to point 28 (azimuth 275°43'46.00") towards the west; from point 28 at 13.02 m to point 29 (azimuth 219°20'03.68") towards the south; from point 29 at 6,37 m to point 30 (azimuth 185°14'29,17") in the direction of the south; from point 30 at 32,37 m to point 31 (azimuth 94°58'57,15") in the direction of the east; from point 31 at 28,17 m to point 1 (azimuth 200°04'41,12") in the direction of the south.

Criteria under which the property is nominated

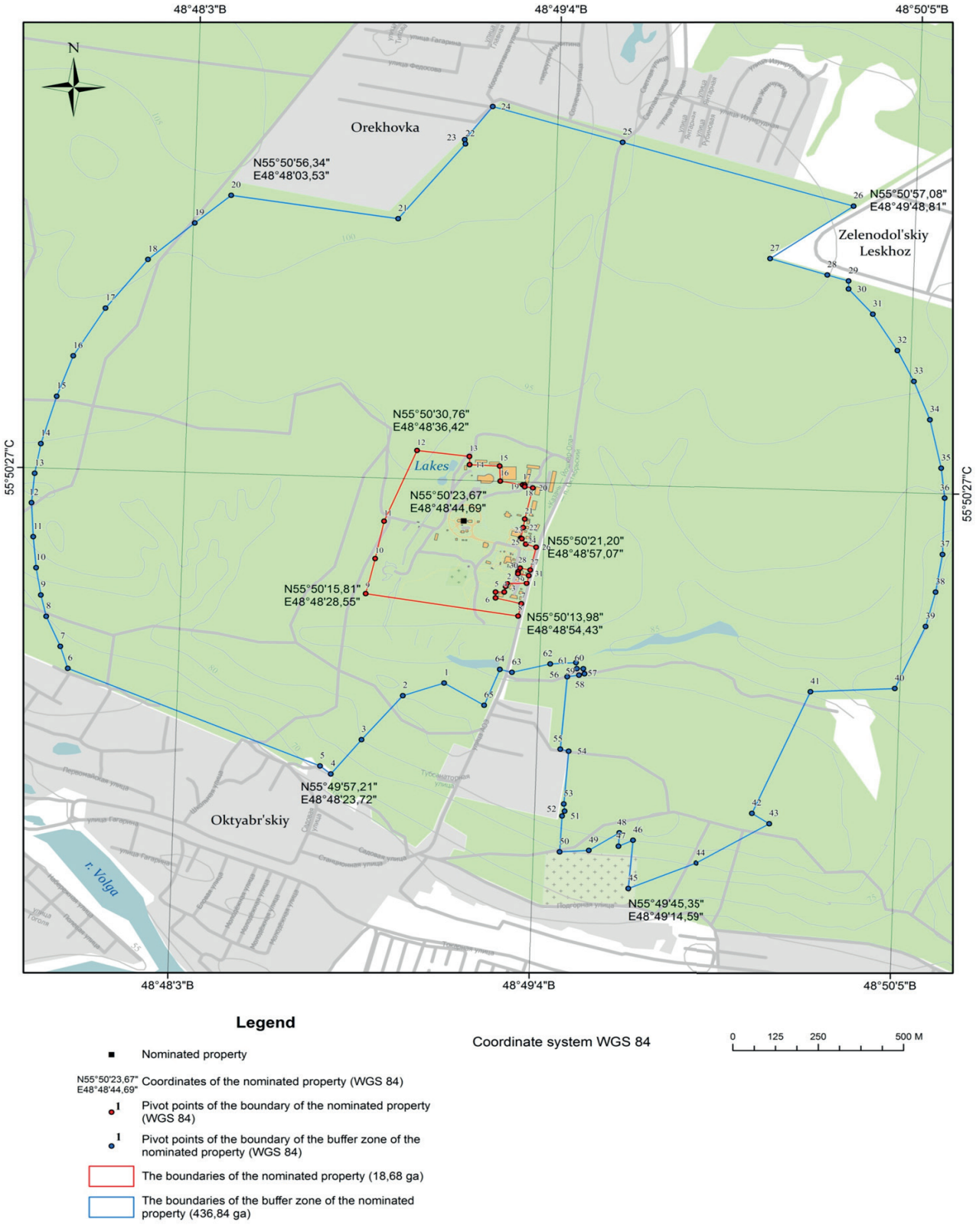
I, II and IV

Maps of the territories of the nominated property

001– Kazan City Astronomical Observatory



002 – Engelhardt Astronomical Observatory



DRAFT STATEMENT OF OUTSTANDING UNIVERSAL VALUE

Brief synthesis

The nomination "Astronomical Observatories of Kazan Federal University" comprises two components. The first is Kazan City Astronomical Observatory (1837) with authentic astronomical instruments. It is a part of Kazan University ensemble, comprising multi-temporal buildings of 19-20 centuries and enclosed by a fence in the centre of Kazan. Kazan University, founded in 1804 by the decree of Emperor Alexander I, was the third university of the Russian Empire created to spread knowledge in the eastern part of Russia - Kazakhstan and Central Asia. The construction of the ensemble was performed by the architects P. Pyatnitskiy and M. Korinfsky under the supervision of Lobachevsky, Chairperson of the Construction Committee.

The second component is Engelhardt Astronomical Observatory (1899-1901) with authentic instruments. The observatory includes 8 historical buildings of the 19-20 centuries with necropolis and planetarium that are located 24 km away from the city of Kazan in the territory of Zelenodolsk municipal district. The construction of the complex was performed according to the projects of the architects F. Malinovsky and K. Myufke under the supervision of D. Dubyago.

The astronomical observatories of Kazan Federal University represent historical and cultural monuments - the values of universal outstanding significance associated with the history of astronomy (historical, architectural and landscape constructions, tools, outstanding scientific research and discoveries of scientists that influenced the development of world science). In the world's cultural heritage, they have become a unique phenomenon, characterized by a combination of authentic and integral complexes and the work of outstanding scientists on these sites who have made discoveries of global significance. The stages in the development and construction of the observatories reflect the milestones in the development of astronomical science worldwide. The consistent development of new scientific approaches, which required new facilities and instruments, was reflected in the extant instruments, structures and the library of the KFU Observatory. The astronomical centre established in Kazan occupies a special place in the system of observatories of the world, having become the first easternmost point in the world to conduct the advanced research of the Earth, Space and its exploration and the Universe, which currently is scaled up in the scientific research of Kazan astronomers and represent its continuity.

The works of N. Lobachevsky on the creation of non-Euclidean geometry and explanation of hyperbolic space, the works of astronomer I. Simonov, the discovery of the sixth continent and the South Pole, as well as the development of the theory of galaxy evolution (the Kowalski-Erie method) and others, became the basis for the first man to enter Space and land on the Moon. These remarkable achievements were based on the visionary work and creative genius of the astronomers and engineers, whose names are repeatedly found in the over 200-year history of KFU and world astronomy. 21 celestial objects are named in honour of Kazan astronomers. A manifestation of human genius is the Kazan school of astronomers, which is still operating at the most advanced level, carrying out fundamental scientific research in space studies with the world's leading research centres.

The observatory buildings represent outstanding examples of classical and neoclassical architecture with astronomical instruments of the 19th-21th centuries. These constructions are built into the urban historical landscape of Kazan observatory and naturally integrate with the surrounding landscape, astropark and planetarium on the territory of Zelenodolsk municipal district.

The unique buildings and structures of the 19th-early 20th centuries on the territory of both the City Observatory and the Suburban Observatory preserved in the integrity and unity of the attributes are an example of an outstanding architectural and technological ensemble. It illustrates a significant period in the history of the development of astronomical science laying a foundation for outer space exploration, the discovery of new planets and galaxies. Owing to unique and intricate architectural solutions, the volumetric instruments ensured the maximum accuracy of research, functionality and high professionalism. The building of Kazan City Observatory was one of the key sites of Kazan University ensemble, an innovative solution of urban space arrangement of the 19th century.

Along with a physics room, a chemical laboratory, an anatomical theatre and a scientific library buildings, the Astronomical Observatory has become a magnet for young people thirsty for knowledge. The University initiated novel forms of the social and cultural life of the city. Acting as an accumulator of ideas and attracting the youth from Russia and the world, the University contributed to the shaping of new cultural and social ties.

Fitted in the landscape, the buildings of Engelhardt Astronomical Observatory ensemble serve as a shelter for some astronomical instruments and are part of them at the same time being inextricably linked with the man-made elements of the landscape. From the point of view of building technologies, the pavilions in which the astronomical instruments are located are unique building structures reflecting the development of advanced engineering and design ideas of the late 19th and early 20th centuries. Engelhardt Astronomical Observatory is a genuine monument that has developed over the course of a century while maintaining the general idea and purpose. Among the neoclassical complexes, Engelhardt Astronomical Observatory occupies a special place as an example of a unique cultural landscape, the world's first observatory park, as an independent genre dating back to the ideas of the Enlightenment. In this capacity, the site influenced the formation of similar complexes in Europe and the world. The embodiment in the architectural forms of the English park with classical buildings demonstrates the successive connection with the City Observatory of Kazan University. Together, these two complexes illustrate a significant period in the history of the formation of public architectural and landscape complexes.

The Astronomical Observatories of Kazan Federal University are distinguished by the unique authentic instruments of the 19th-20th centuries which are a complete set of optical instruments not to be found anywhere else in Russia in such a number; they are carefully stored in the Museum of the History of Astronomy and the Museum of the University History. For 200 years they were direct participants of practical observations and today continue to perform their educational and scientific function in teaching the history of astronomy to students and postgraduates of the Department of Astronomy and Space Geodesy (KFU), schoolchildren and visitors to the Museum of the History of Astronomy and Planetarium.

The Astronomical Observatories of Kazan Federal University possess the Outstanding Universal Value since they are the sites of the ancient and great science of astronomy of the optical period, they illustrate the long period of thematic architectural and landscape complexes formation, being closely related to the historical and cultural heritage of the world. With the example of the Astronomical Observatories, one can trace the subtle connection between science and culture, the evolution of which took place during the 19th-21st centuries in several stages. Kazan University joined a large-scale Russian-German project to compile an X-ray map of the sky, discover new objects, and study black holes, thus continuing the traditions of optical astronomy to this day.

Both the observatories are unique monuments of science and technology. The activity of these sites, involving a wide range of research in various fields of astronomy, demonstrates important changes in the development of science and technology in the world. Achievements, research, discoveries made in these observatories testify not only to development and to increase in the level of scientific and astronomical knowledge in Russia, but also to close cooperation with Western European countries on science, technology, culture and the enormous contribution of Kazan University scientists to the world astronomical science. The observatories carried out breakthrough studies in determining the structure of our Galaxy, astrometry, fundamental studies of the shape of the Moon, its physical libration, astrophysics, gravimetry, planetary selenodezia, the study of minor planets, comets and binary stars. Scientific data collected by Kazan astronomers were used in the preparation of spacecraft launches to the Moon and Mars.

Criteria by which a property is nominated for inclusion in the World Heritage List Justification for Criteria

Criterion i

The Astronomical Observatories of Kazan Federal University are the outstanding examples of high scientific and technological achievements that became revolutionary ideas in our understanding of the Universe. The observatories, as a "collective tool", are a masterpiece of human creative genius of N.

Lobachevsky, I. Simonov and other scientists, showcasing revolutionary advances in culture, science, engineering and technology.

The Astronomical Observatories of Kazan Federal University are vivid evidence of the emergence and development of optical astronomy, astrophysics and space geodesy which had an important impact on the development of sciences related to earth and universe, spiritual and material culture of the vast geo-cultural region of Eurasia.

Criterion ii

The Astronomical Observatories of Kazan Federal University are the examples of scientific and cultural space focused on step-by-step development, evolution and continuity in architecture, culture and astronomical research that demonstrate important changes in human values during the 19th - early 21st centuries, as well as changes in the cultural environment, architecture, technology, art, environmental design and city structure in this geo-cultural region and the whole world. They are the vivid evidence of the synthesis of scientific and cultural traditions, mutual influence of human values and the mutual enrichment of cultures.

Criterion iv

The Observatories of Kazan Federal University are unique examples of classical and neoclassical buildings linked with the technological ensemble represented by the set of instruments as well as the landscape aimed at astronomical research and discoveries; they illustrate more than 200 years of human history. The design and construction of Astronomical Observatories of Kazan Federal University in the style of classicism and neoclassicism, an astropark and a planetarium are a milestone in the development of European and world astronomical observatories. A special location within the ensemble of Kazan University, historic and cultural landscapes, and unique architectural and planning solutions determine the uniqueness and characteristic features of the Outstanding Universal Value.

Statement of Integrity

The complex of Astronomical Observatories of Kazan Federal University is an integral part of the development of astronomical science in the east of Russia.

The integrity of the Complex of Astronomical Observatories and the preservation of attributes expressing their Outstanding Universal Value are ensured by the established boundaries of the sites and their buffer zones. The boundaries of the urban and suburban astronomical observatories cover a sufficient area. The boundaries of the buffer zone are set to cover all important viewpoints and eliminate multi-storey construction, which could disrupt the visual perception of the sites. Besides, owing to protective measures that were undertaken in the 20th – early 21st centuries, establishment of a museum, a planetarium and an astropark which aimed at the presentation and popularization of astronomy as an important scientific discipline as well as due to the world discoveries that were made in these buildings, the state of their preservation and the state of astronomical instruments are good. The preservation of the integrity of the observatories is facilitated by being a part of Kazan Federal University.

Statement of Authenticity

The complex of the Observatory in Kazan and Engelhardt Observatory have a high degree of authenticity, as well as the preservation of the original forms, use and content of the sites. The scientific community has sufficient documentary evidence of the design, creation and condition of the monuments in different periods of their existence. The authentic instruments have been preserved intact; they were used by the scientists in the 19th-20th centuries allowing them to carry out revolutionary observations and discoveries for their time. Without losing their uniqueness and relevance to this day they are still used for education and training of bachelor's, master's, and graduate students, as well as for fundamental research and popularization of astronomy, space and the Universe.

For safety reasons, a part of the equipment and instruments of the 19th century has been transferred to Lobachevsky Museum and the Museum of University History where they are exhibited today. There are guided tours for visitors where one can get acquainted with the unique authentic instruments of a high level of preservation and study the history of the development of astronomy in Kazan and the contribution of Kazan scientists to domestic and world astronomical science along with the life and work of N. Lobachevsky, a great mathematician and Rector of Kazan University, and other scientists. In the building of Kazan City Astronomical Observatory, authentic cabinets and tables of the 19th century have been preserved; they were made by order specifically for Observatories; they contain a unique library of authentic books of the 19th - 20th centuries mostly in German, Russian, French and English; some books have survived in a single copy. Moreover, journals of observations compiled by Kazan scientists starting from 1814 are kept there too.

The pavilions with the telescopes are in good condition; the mechanism opening the shutters for observation and rotating the telescope is in good order. It should be noted that the original handle, which opened the shutters by manual rotation, was replaced by a mechanism in the 20th century.

The architectural monuments of both Observatories underwent conservation and maintenance. A museum on the history of Kazan Astronomical School was established in the building of Engelhardt Observatory. The attributes inherent in the complex of the astronomical observatories, including form and design, building materials and substances, use and function, location and environment, etc., are ensured by meeting the necessary requirements for conservation and maintenance. The degree of management of the buildings of Kazan City Astronomical Observatory and Engelhardt Observatory inscribes it in the historical urban landscape, they are a part of the ensemble of Kazan University and the naturally developing landscape with forest surroundings.

Requirements for protection and management

The Astronomical Observatories of Kazan University are legally protected in accordance with the Resolution of the Council of Ministers of the RSFSR "On further improvement of the protection of cultural monuments in the RSFSR" No. 1327 dated August 30, 1960 and the Resolution of the Cabinet of Ministers of the Republic of Tatarstan "On inscription in the State Protection Registers of historical monuments, urban planning and architecture of Republican significance, additionally identified properties and the transfer of historical and cultural monuments to the operational management of the Main Directorate of State Control over the Protection and Use of Historical and Cultural Monuments under the Ministry of Culture of the Republic of Tatarstan" No. 318 dated June 4, 2001.

The City Observatory is located within the territory of Kazan State University, the cultural heritage site of federal significance, and within the protective zone of Kazan Kremlin ensemble, which covers the main part of the historical centre, in accordance with the Order of the Ministry of Culture of the Russian Federation No. 845 of July 28, 2020 "On the Boundaries of the Protection Zones of the Federal Cultural Heritage Site "Kazan Kremlin ensemble", 15th - first quarter of the 20th centuries. (the Republic of Tatarstan (Tatarstan)), included in the World Heritage List, and the requirements for urban planning regulations within the boundaries of the territories of these zones" and the Resolution of the Cabinet of Ministers of the Republic of Tatarstan of August 20, 2020 No. 715 "On the protection zones of cultural heritage sites in Kazan".

The legal and institutional framework for effective protection and management of the facility is established by legal and regulatory acts of the Russian Federation and the Republic of Tatarstan. The status of the monuments of federal significance, which are under state protection, and a particularly valuable site of the cultural heritage of the peoples of the Russian Federation, made it possible to preserve the Astronomical Observatories of Kazan Federal University in good condition. To preserve the attributes of the Observatories and their historical and cultural surroundings, buffer zones have been allocated.

The property is managed and operates on the basis of the stakeholder interaction system enshrined in the Management Plan in accordance with the Strategy for the Conservation and Use of Astronomical Observatory Complexes of Kazan University designed for a period up to 2043.

The site management focuses on preservation, scientific conservation and study of the Astronomical Observatories of Kazan Federal University, organization of museum affairs, harmonious combination of academic and educational activities and tourist guiding, effective risk management, interaction with the local community in order to preserve all the characteristics of the site, its integrity and authenticity. In order to prevent possible threats and provide safety of the Astronomical Observatories, when planning any new projects within the boundaries of the buffer zone, a thorough analysis and assessment of the impact on the Outstanding Universal Value of the site is carried out.

The regulation of urban planning and economic activities within these boundaries is an essential condition for the preservation of the Outstanding Universal Value of the World Heritage site. Urban planning and economic activities are to be carried out taking into account the fact that this territory is located in the zone of historical, cultural, visual and emotional influence of a unique historical, architectural and scientific complex. For that purpose the Concept of Sustainable Development of Kazan historical settlement was prepared. This strategy paper defines the conservation of identity and compositional and spatial integrity of the historical centre as an urban planning policy priority.

In order to ensure the preservation and the most complete disclosure of the Outstanding Universal Value of the World Heritage site, the Management Plan also envisages adjusting the Spatial Development Plans of Zelenodolsk district of the Republic of Tatarstan and the general plans of individual settlements.

Name and contact information of the local official organization / institution

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