



2022 HeritAP Chat on Impact of Ground Transportation Infrastructure at World Heritage Sites

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BOOKLET



2022 HeritAP Chat on Impact of Ground Transportation Infrastructure at World Heritage Sites

Gamini WIJESURIYA, LI Hong, WHITRAP Shanghai; WU Yimeng, Fudan University

On April 28, the World Heritage Institute of Training and Research for the Asia and the Pacific Region under the auspices of UNESCO (WHITRAP Shanghai) organized the first Heritage Asia and the Pacific (HeritAP) Chat on **"Impact of Ground Transportation Infrastructure at World Heritage Sites"**. Under the theme, three case studies from China, the Philippines, and Pakistan, were presented. And six experts, from WHC, ICOMOS, WHITRAP Shanghai, Chinese Academy of Cultural Heritage, the National Commission for Culture and the Arts (NCCA) of the Philippines, and ICOMOS Pakistan were invited to attend. In total 482 audiences participated online.

Heritage practitioners, senior professionals, Heritage practitioners, senior professionals, and institute representatives across the world, particularly those from the Asia-Pacific region, focused on the impacts of ground transportation infrastructure on the

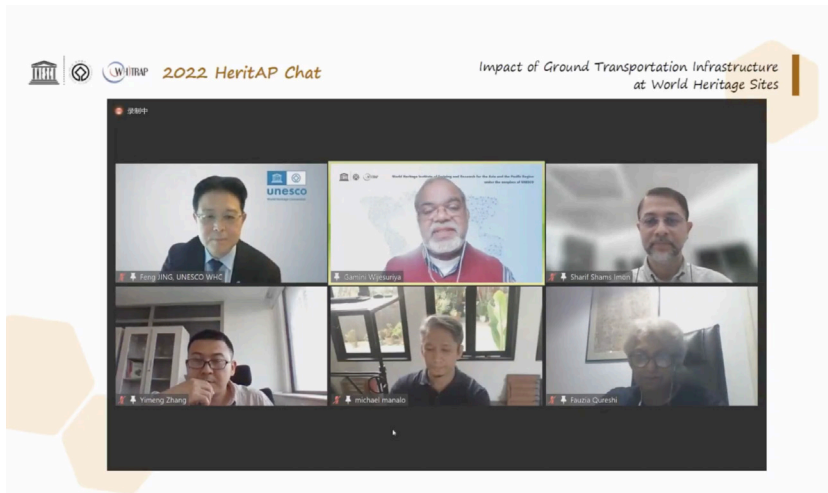


Fig1. 2022 HeritAP Chat Live
(Participants: Feng JING, Gamini WIJESURIYA, Sharif Shams IMOM, Yimeng ZHANG, Michael MANALO, Fauzia QURESHI)

heritage sites and shared feasible measures and solutions for countries in response to this factor and its positive and negative impacts. Gamini WIJESURIYA, Special Advisor of WHITRAP Shanghai and ICCROM, and LI Hong, Programme Specialist of WHITRAP Shanghai were moderators for the HeritAP Chat.

Three cases, which are the Great Wall (China), Baroque Churches of the Philippines (Philippines), and Fort and Shalamar Gardens in Lahore (Pakistan) respectively, were presented. Based on SOC reports and WH Committee decisions, members of HeritAP provided a brief synthesis of the processes followed and the current situation of these sites and exploring the way ground transportation infrastructure projects have influenced their heritage conservation, and measures taken to address the issues. for consideration and discussion. Then Gamini WIJESURIYA (Special Advisor of WHITRAP Shanghai and ICCROM), JING Feng (Chief of Asia and the Pacific Unit, WHC), Sharif Shams IMON (President, ICOMOS Bangladesh), ZHANG Yimeng (Associated Researcher, Chinese Academy of Cultural Heritage), Michael MANALO (Head, National Committee on Monuments and Sites, National Commission

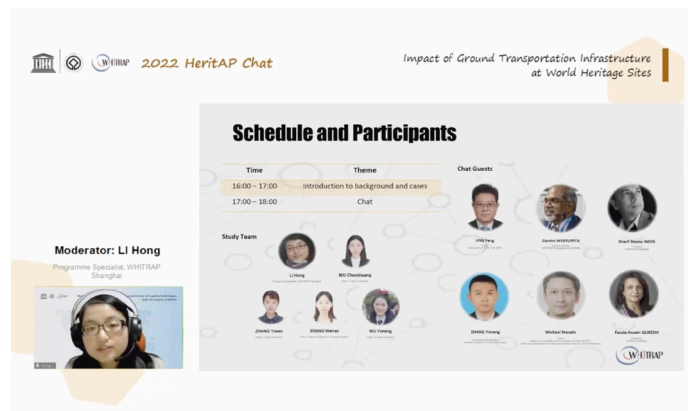


Fig2. 2022 HeritAP Chat Live
(Moderator: Li Hong)

for Culture and the Arts (NCCA) of the Philippines), and Frauzia Husain QURESHI (President, ICOMOS Pakistan) deepened substantive discussions on this HeritAP chat's theme. A brief summary of their discussion is provided below.

JING and IMON, as representatives of advisory bodies, emphasized the importance of discussing the impact of ground transportation infrastructure on the world heritage sites, which was supported by a large number of SOC reports reviewed in recent years, and the potential of the discussion to provide a framework for addressing similar issues of similar nature together. They agreed that **ground transportation infrastructure will change the movement dynamics and bring problems to surroundings in a cumulative way**, therefore, it is linked with a broader debate around the challenges of combining necessary infrastructure and facilities, improvement for the well-being of populations, adapting to economic evolution, and the need to conserve vital heritage. Though among corresponding solutions, reactive monitoring, periodic reporting, and SOC all played an indispensable role in world heritage conservation, they agreed on the importance of building an intricate management system to proactively identify the infrastructure issues and steps taken for heritage impact assessments, hold consultation with relevant departments beforehand as prevention, and monitor the compliance to the guidelines.

Ground transportation infrastructure being a double-edged sword, JING underlined that the **key principle in building it was to find the balance between the protection and development**, addressing the transport needs of the local population and heritage conservation simultaneously. He thought the key to doing so was to maintain the OUV. But besides OUV, the aesthetic value, noise pollution, structural risks, and other repeated vibrations should also be taken into consideration for heritage conservation.

The principle of striking a balance between development and conservation was shared by representatives of the three cases, which are ZHANG, MANALO, and QURESHI respectively. Based on their participation in the projects, **they all**



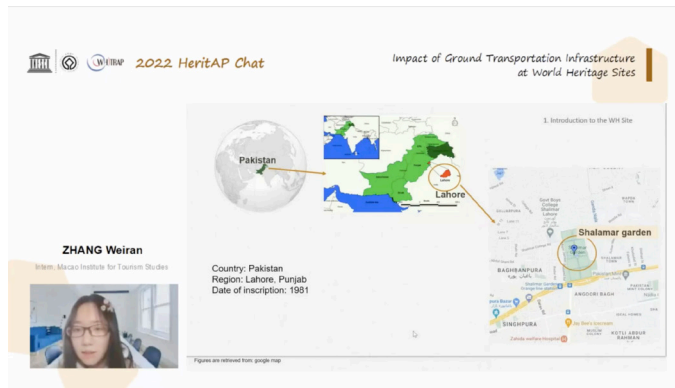


Fig3. 2022 HeritAP Chat Live
(Case of Fort and Shalamar Gardens in Lahore by
ZHANG Weiran)

stressed the importance of taking proactive measures, involving stakeholders in consultation, introducing relevant regulations, and monitoring compliance beforehand.

According to QURESHI, due to lack of proactive measures, the case of Pakistan has been delayed for 2 years due to the results of heritage impact assessment and has failed to consider incorporating the technology of tunnel to build a metro underground to solve current issues. She particularly pointed out that in the case of Fort and Shalamar Gardens in Lahore, where the weakness of the Department of Archaeology as against a strong government was a concern but agreed that **heritage impact assessment is an effective tool for consultation between all stakeholders.**

While the case of the Great Wall is a paradigm for holding early consultation, ZHANG said that he was involved in a 6-year proactive activity organized by the Chinese government called the Great Wall Resource Survey which started in 2006. Subsequently, China launched its ***national Regulation on the Protection of the Great Wall*** in the same year and updated the **overall conservation and management plan of the Great Wall (2019-2035)**. Hence, even though

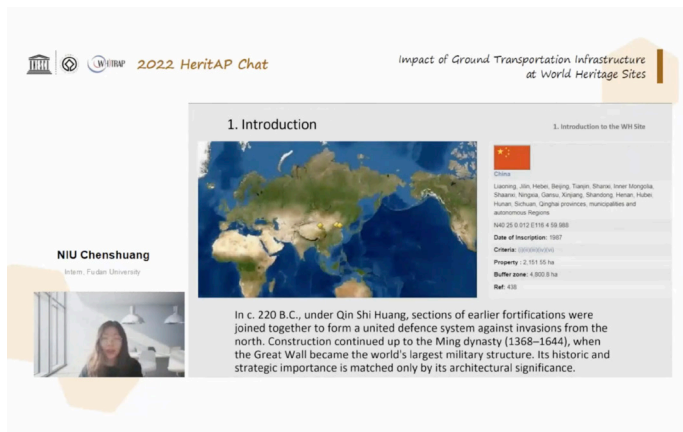


Fig4. 2022 HeritAP Chat Live
(Case of the Great Wall by NIU Chenshuang)

there already were constructions of high-speed transportation and oil pipelines, the heritage can be conserved properly with least impacts.

The case of the Philippines exemplified the efficacy of heritage impact assessment in minimizing the negative impact of ground transportation infrastructure on heritage conservation. In around 2018-2019, it was temporarily suspended and resumed later due to the impact of the ongoing construction of ground transportation infrastructure. Referring to the results of heritage impact assessment, the design of the bridge was changed and the height of the bridge now has been lowered by about 20-30 meters compared with the original design. And according to MANALO, NCMS of the Philippines is trying to work with the department of environment and natural resources to **seek a combination of the heritage impact assessment system with the environmental impact assessment system**, and talking to the department of public works and highway as well. Currently, the government is also considering introducing a long-term management plan, thus balancing development and conservation. MANALO

as well acknowledged the importance of the transfer of the regulatory functions from another branch of government to NCMS.

Importance of proactive planning before projects are commenced, applications of the HIA tool, considering both positive and negative impacts of ground transportation and infrastructures and the need for broader consultations were some of the highlights of the chat. Importance of focusing on the OUV of sites and following the guidelines such as 172 of the OG were emphasizes.

This HeritAP Chat was concluded with a reflection on existing solutions and an appeal for more collective discussion on the significant theme of ground transportation infrastructure. HeritAP will continue to focus on more heated topics of world heritage protection and reinforce the platform for further discussion. We expect to see more exemplary cases across the Asia-Pacific region that will be discussed in the HeritAP Chat in the following quarters, and more experiences can be shared to reach a larger audience.

The screenshot shows a virtual meeting interface. On the left, a video feed of ZHANG Yiwen from Xiamen, Tongji University is visible. The main screen displays a presentation slide titled "2022 HeritAP Chat" with the subtitle "Impact of Ground Transportation Infrastructure at World Heritage Sites". The slide content includes a table for the "Baroque Churches of the Philippines" and a map of the Philippines highlighting specific heritage sites.

Baroque Churches of the Philippines	
Relevant to the Key theme(s)/ threat(s)/ indicator	(2) Ground transport infrastructure + impacts of tourism/ visitor/ recreation + earthquake
Name of the world Heritage property	Baroque Churches of the Philippines (Unesco-4)
Date of inscription	1993
State Party	Philippines
Factors affecting the property	Housing (2) Ritual / spiritual / religious and associative uses (2) Ground transport infrastructure (2) Water (rain/water tables) (2)
Status of SOC	still ask for SOC, meet SOC Dec 2022

1. Introduction to the WH Site

Map labels: Church of San Sebastian (Panao), Church of La Natividad de la Asuncion, Church of the Immaculate Conception of San Agustin (Panao), Church of Santa Teresa de Avila.

Fig5. 2022 HeritAP Chat Live
(Case of Baroque Churches of the Philippines by ZHANG Yiwen)

Great Wall of China

NIU Chenshuang, Fudan University

The Great Wall, with a total length of more than 20,000 kilometers, begins in the east in Liaoning province and ends in the west in Xinjiang province. Build in c. 220 B.C., under Qin Shi Huang, sections of earlier fortifications were joined together to form a united defence system against invasions from the north. Construction continued up to the Ming dynasty (1368–1644), when the Great Wall became the world's largest military structure. Its historic and strategic importance is matched only by its architectural significance. The Great Wall fulfills the (i) (ii) (iii) (iv)(vi) criteria of the Outstanding Universal Value.^[1]

The infrastructure project concerns the Great Wall is the construction of a high - speed railway between Beijing and Zhangjiakou and build a station at Badaling. The stakeholders involved in the project are composed of two levels: the national level and the local level. From the national level, The Beijing - Zhangjiakou High - Speed Railway is a national railroad construction project that traverses Beijing and Hebei Province, the project must be approved by the Ministry of Transport, National Development and Reform Commission before its implementation. Since this railway goes through the Badaling section of the Great Wall, National Cultural Heritage Administration of China, which is governed by Ministry of Culture and Tourism participated in the project initiation in the early stage and organized experts to carry out more than 10 research and argumentation activities, providing technical guidance for the project. From the local level, it is the China State Railway Group company limited, under the management of and in cooperation with the Beijing Municipal Government, which is responsible for the implementation of the project. As this section of the railway was built with the aim of introducing the green, safe and environmental friendly means of transportation to alleviate the

traffic jam around the property and improve the air quality, this will bring benefits to tourists and local residents.

In response to the construction of the project, in 2017, the World Heritage Committee urges the State Party of China to submit a Heritage Impact Assessment Report(HIA) which must include physical impacts from tunnelling and construction activity, visual impacts on sightlines and views, and alternative options which can reduce such impacts. The impacts caused by tourism are emphasized in 2017 and reiterated by the World Heritage Committee in 2019.

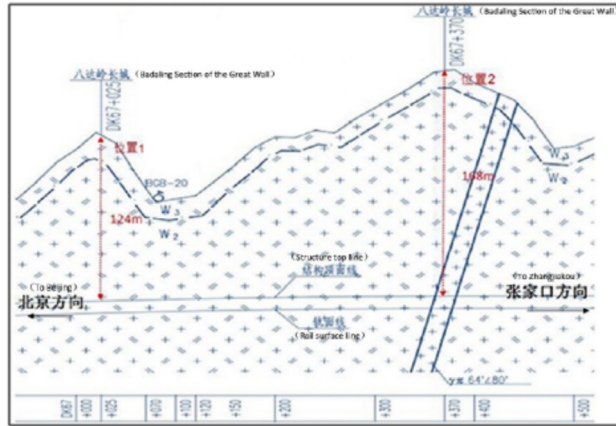


Fig. 1: Sketch map for the spatial relation between the proposed tunnel and the Great Wall

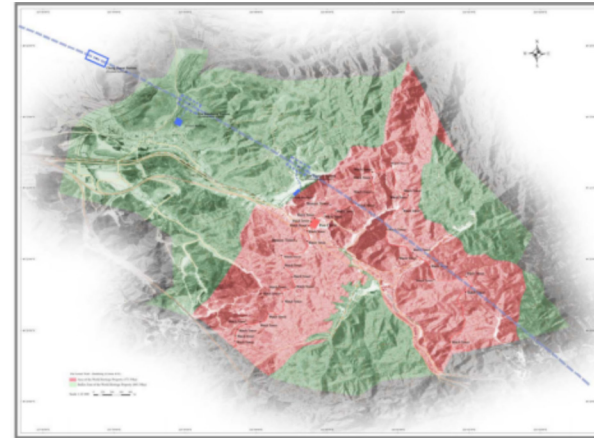
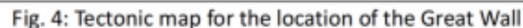


Fig. 2: Sketch map for the positional relation between the proposed railway and station and the property area and the buffer zone

Source: Report on the State of Conservation of the Great Wall (China) 2017

First, for possible physical impacts, the Chinese government has demonstrated that the site has excellent geological conditions and it is concluded after assessment that the construction and the normal operation of the planned tunnel will not threaten the physical fabric of the Great Wall and can ensure safety of the world heritage.



Source: Report on the State of Conservation of the Great Wall (China) 2017

Next, for possible visual impacts, according to the proposed draft plan, it is planned to adopt the underground tunnel design for the proposed Beijing - Zhangjiakou Railway. Therefore the railway will not have any impact to the landscape of the Great Wall. The proposed the underground station and its ground building, namely Guntiangou Station, Chadaocheng Station and Chengjiayao Station, are all out of the property area of Badaling Section of the great wall. Of that, the proposed Chadaocheng Station and Chengjiayao Station are out of the range of visibility, thus they will not have any direct impact to Badaling Section of the Great Wall from the perspective of the landscape impact. However, Guntiangou Station has some adverse landscape impact if observed from the highest point of the south wing of Badaling Section of the Great Wall (i.e. South No. 4 Watchtower).



Fig. 6: Visual line analysis to the ground building of proposed Guntiangou Station- Sketch map of the impact assessment



Fig. 5: Visual line analysis to the ground building of proposed Guntiangou Station- Picture of site survey

Source: Report on the State of Conservation of the Great Wall (China) 2017

In the SOC report, the Chinese government outlined many of the mitigation measures it has taken to mitigate negative impacts. The ground building of the Guntiangou station does not exceed the height of the adjacent Great Wall Museum. What's more, sheltered by the mountain, only the roof at the southeast corner of the building is visible. Therefore, the impact can be minimized or eliminated by reducing the number of storey and the storey height of the building and other measures. And at the same time, it could bring positive effects, for example, at the site where the ground building of the proposed Guntiangou Station is planned, some tourist service facilities without any historical value will be first removed. In this way, the ambient environment of the Great Wall will be improved to some extent. In addition, the construction project will also help improve early warning and control of visitor flow at the Badaling Pass scenic area the partial landscape at the Guntiangou parking area, traffic conditions from Beijing to Zhangjiakou and the Badaling Pass Scenic area, and imbalanced development among various areas in the region.

In addition, the State Party has reported that several measures have been taken to ensure sustainable tourism in the Badaling Section of the great wall, including the establishment of a daily optimum carrying capacity of 65,000 visitors since 1 June 2019, the introduction of an online ticket booking system, and an early warning response system to enable real-time management responses.

The State Party of China has also improved the Management planning, for example, the Ministry of Culture and Tourism and the National Cultural Heritage Administration co-issued the Master Plan for the Conservation of the Great Wall; under the arrangement and guidance of the National Cultural Heritage Administration, all provinces (including autonomous regions and municipalities directly under the central government) along the Great Wall have prepared and completed provincial-level conservation plans; Beijing Municipality has prepared and publicized the Conservation and Development Plan of the Cultural Belt of the Great Wall

Further efforts taken by the State Party of China include consolidation of the legal basis, capacity building, its fully recognition of the values of the participation of all stakeholders. And we saw significant progress in international dialogue and cooperation.

Finally, in 2021, the World Heritage Committee takes note with satisfaction of the measures taken by the States Parties concerned to address its previous requests to mitigate the threats on the Outstanding Universal Value of the Great Wall and no longer requires SOC report from it.

[1] <https://whc.unesco.org/en/list/438/>



Baroque Churches of the Philippines

ZHANG Yiwen, Tongji University

The Baroque Churches of the Philippines is a serial inscription consisting of four Roman Catholic churches constructed between the 16th and the 18th centuries in the Spanish period of the Philippines. They are located in separate areas of the Philippine archipelago, two at the northern island of Luzon, one at the heart of Intramuros, Manila, and the other in the central Visayas island of Iloilo.

The Church of the Immaculate Conception of San Agustin is located in Metro Manila, and it proudly stands as a symbol of the Philippines' historical and cultural richness. Not only can it adapt to the physical condition in the Philippines, which had a very important influence on later architecture design, but also represents the fusion of the European Baroque style of churches design and construction using local material and decorative motifs. There are more details and criteria on the website: <http://whc.unesco.org/en/list/677/>.

The Binondo-Intramuros Bridge (BIB-project) was proposed in 2018 as an alternate route crossing the Pasig River. The planned BIB location is on the north edge of Intramuros (approximately 550m away from San

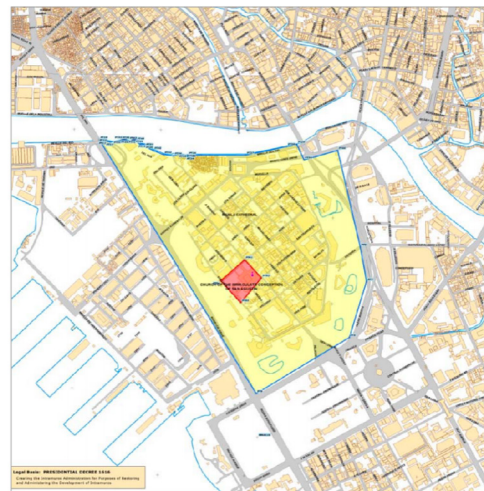


Fig1. Location of the San Agustin Church
(Source: http://whc.unesco.org/en/list/677/multiple=1&unique_number=1955)

Agustin Church, a component part of the property), which is included in the buffer zone of the property. The proposed bridge will span from Solana St. to Riverside Drive in Intramuros to San Fernando St. in Binondo. The total length of the bridge will be 710m, with the main bridge measuring 90m. A viaduct structure will also be built over Estero de Binondo.

The stakeholders for the BIB project and San Agustin Church can be classified at the national and local levels. On the one hand, the National Commission for Culture and the Arts (NCCA), the National Museum (NM) and the National Historical Commission of the Philippines (NHCP) are in charge of conservation and

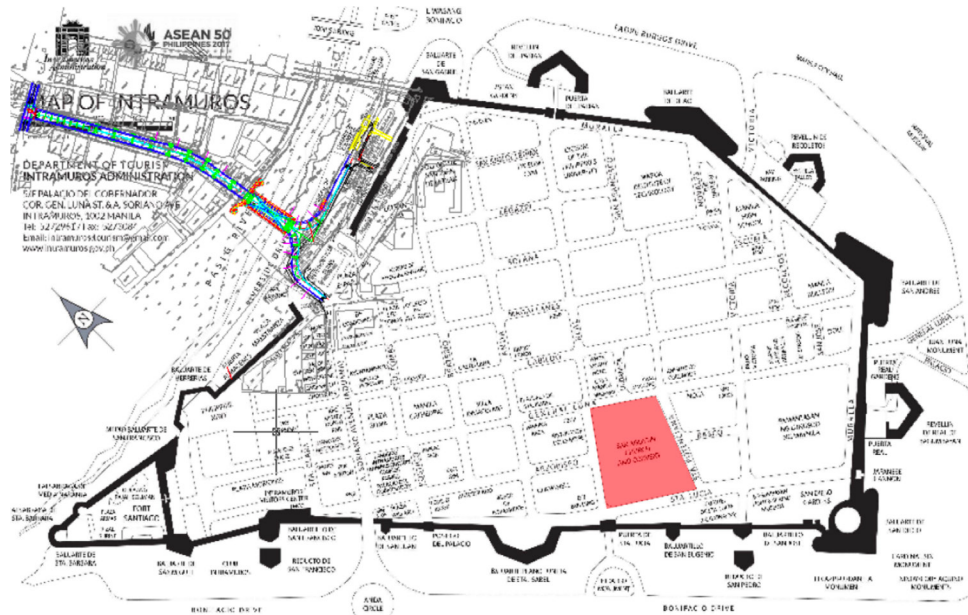


Fig2. Location of the Binondo-Intramuros Bridge project
(Source: <http://whc.unesco.org/document/185204> p.128)

management of the World Heritage, while the National Economic and Development Authority, Department of Public Works and Highways (DPWH) and Unified Project Management Office (UPMO) are in charge of Operator and Construction of BIB Project Cooperating with China Road and Bridge Corporation (CRBC). On the other hand, the Roman Catholic Archdiocese of Manila which belongs to the Order of Saint Augustine takes charge of day-to-day management for San Agustin Church, and it is under the manipulation of Intramuros Administration (IA) by the overall management plan.

It is obvious that the BIB project would alleviate traffic congestion and contributes to the improved capacity of the road transport network in Metro Manila, and even increase the number of

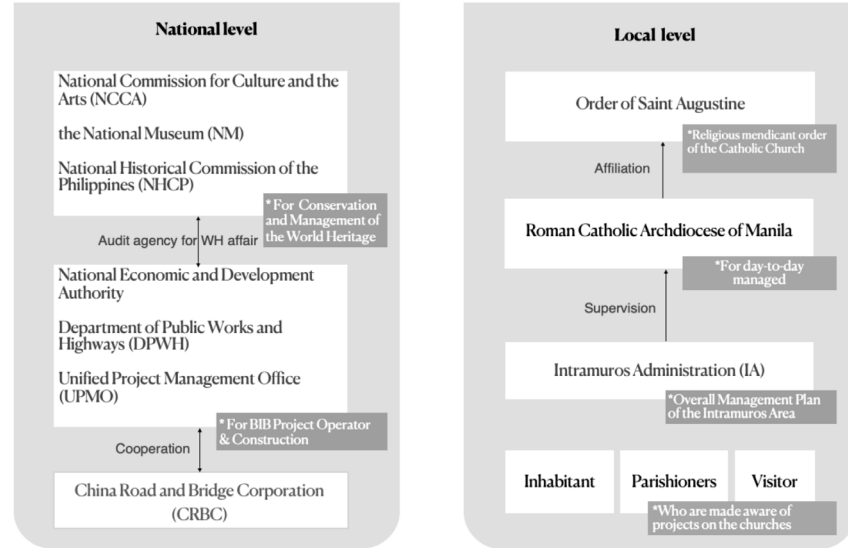


Fig3. Diagram of Stakeholders
(Source: Self-drawn)

positions in the area. However, according to World Heritage Center, the negative effects of this project are also clear. For example, physical or visual impact threat to the continued existence of the church, the larger volume of vehicular traffic leading to more vibration and air pollution, and the possibility to threat the safeguard human lives in and around, which would definitely destroy authenticity and integrity of the property.

In this situation, the State Party takes some mitigation measures to decrease the negative effects. In 2019, in parallel with the AHIA, it puts forward to continuously ensure that only light vehicles are allowed to pass through Intramuros, pedestrianize the road adjacent to the church to mitigate the negative impact of additional traffic, consider the protection of nearby heritage structures using a mechanically stabilized earth wall, not compromise the river and its promenade and equipping the bridge with walkways and bike lanes, and integrate open spaces into the project design. In the next year, according to the HIA report, the State Party was planning to reroute traffic and impose vehicular weight limits in the church vicinity, conduct a structural assessment and retrofitting of the church, repair the drainage system along the junctions of General Luna, remove the car park in front of the church, adapt the bridge approach design to the character of Intramuros, prepare a Conservation Management Plan (CMP) for Intramuros to provide a long-term plan on the development and preservation of the core and buffer zone of the San Agustin World Heritage Site, and so on.

Although the State Party did a lot to decrease the threat, and all these actions were effective in the HIA report. Still, the World Heritage Center and World Heritage Committee thought the BIB project would have a direct visual impact on the overall setting and sense of place of the property, which will be directly and physically impacted by the Intramuros portion of the bridge. As a result, the Committee request the State Party to reconsider the design of the bridge,



including its location and the possibility of a 'no-project option; Notably consider converting the surrounding streets and roads of the San Agustin Church into pedestrian areas; Conducting structural assessment of the Church and adapting the design of the bridge approach to the character of Intramuros. Last but not least, the State Party need to update report on the state of conservation to World Heritage Center by 1 December 2022.



Fort and Shalamar Garden in Lahore Pakistan

ZHANG Weiran, Macao Institute for Tourism Studies

The Fort and Shalamar Gardens^[1] is located in Pakistan, in the capital city of Punjab province, Lahore. It has been inscribed as a world heritage site since 1981, and fulfils the Outstanding Universal Value (OUV) criterion (i), (ii) and (iii): The Fort and Shalamar Gardens is an outstanding example of Mughal architecture, which constitute a masterpiece of human creative genius. The Mughal forms, motifs and designs developed at the place have a great influence of artistic and aesthetic expression throughout the Indian subcontinent, and the design and the features bear a unique testimony to the Mughal civilization.

The management system for the property is mainly divided into two levels: national level and provincial level. From national level, the Department of Archaeology takes an overall administration for the heritage site. In provincial level, the Directorate General of Archaeology in Punjab (DGoA,P) have an overall responsibility for management, and the government of Punjab is mainly in charge of project financing and funding. Under the directorate general, the steering committee guides implementation of planned projects, and technical committee develops conservation plans and supervise conservation activities.

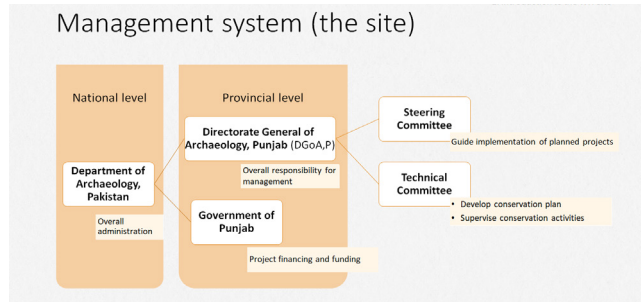


Fig1. Management system of the heritage site
(Source: Figure made by the author)

Ground transportation project: Orange Line Metro (OLM)

The ground transportation project, Orange Line Metro (OLM), was constructed in order to solve the public transportation issue in Lahore. It would pass by Shalamar Gardens on elevated viaduct girders, the proposed location of OLM will pass 12m away from the Shalamar Gardens' entrance. It was questioned whether the actual location of elevated viaduct girders would impact negatively the OUV of the property, and also potentially threat the integrity and authenticity of the World Heritage property. Thus, starting from 2016, the World Heritage Committee put "ground transport infrastructure" as a factor that might affect the property.

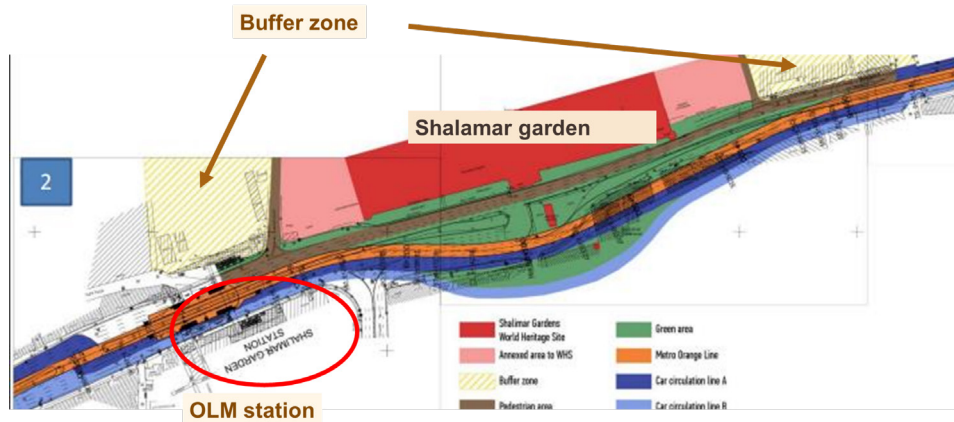


Fig2. Plan for the property and OLM
(Source: Bhutta et al., 2020)

For the project's stakeholders, the operator of OLM is Punjab Mass Transit authority. the DOA is the construction audit agency. There are two constructors in total, at the first phase starting from Oct. of 2015, it was Habib Construction Services. After Oct of 2016, it was ZKB Engineers and Constructors'. Both Chinese and Pakistan government are the sponsors of the project. Besides, the project also influences tourists and local residents.

OLM's impact to the site

Negative impacts:

As the Orange Line Metro will pass by Shalamar Gardens on elevated viaduct girders, it might cause negative visual impact and impact of vibrations.

Besides, because of this location, the committee consider that the construction of the OLM might cause irreversible impacts on the attributes relating to the artistic and aesthetic accomplishments.

Also, there is a lack of a comprehensive management mechanism between the State Party and the committee, as their ideas cannot support each other. For instance, as for the influence of the metro to the heritage site, in 2016, the State Party consider that there would be no mentionable impact, possible negative impacts can be mitigated, and visual impacts are acceptable and can be minimized; while the committee consider that the HIA that submitted by State Party was not line with internationally recommended standard.

Positive impacts:

The State Party mentions that this metro line offers opportunities to improve conservation and interpretation of heritage sites.

Also, relevant studies done by the State Party confirmed that OLM can reduce the vehicular traffic and congestion, solve the public transportation issue in Lahore.



Mitigation measures

Several possible studies including Heritage Impact Assessment, Environmental Impact Assessment, Visual Impact Assessment and Vibration Analysis, have been done by the State Party, concluded that there would be no adverse impact on the World Heritage Property that could compromise its OUV, and the implementation of the project would reduce the traffic congestion near the Property.

Also, the State Party had invited a joint the World Heritage Centre/ICOMOS Reactive Monitoring Mission to examine the OLM project and to discuss with the relevant government authorities and to review the management and protection arrangements of the property. They conclude that there was no infirmity in HIA on this account. The Orange Line Metro Train Project (OLMTP) stands executed in front of the property and no adverse environmental impacts are noticeable on ground.

In addition, the visual impact studies have been done by the third-party consultants, conclude that visual impact can be minimized by planting high trees and by integrating the colour and material of the Orange Line structure with the surrounding buildings. The State Party has developed a green area with trees and when these trees grow to its full height, it will form a natural “mask” for the newly-constructed OLMTP, and indicates that landscape of the



*Fig3. Visit of Advisory Committee at Shalamar Gardens to ensure the Safety Measures during the construction of OLM
(Source: SOC report by State Party)*



*Fig4. Monitoring Visit of Special Committee of Experts
(Source: SOC report by State Party)*

area surrounding orange line structure in front of Shalamar Gardens will be decorated with motifs and other similar features.

The World Heritage Committee Acknowledges the efforts made by the State Party in relation to the construction and operation of the OLM project, such as the planting of trees which may screen the view of the OLM from the property and the test operations to evaluate vibration levels. However, Advisory Bodies, including World Heritage Center, ICOMOS, and ICCROM, point out that the State Party implemented the OLM project without satisfactory technical and planning studies, and without informing the Committee. Also, the HIA that produced in April 2016, was not in line with internationally recommended standards, and does not address the full range of impacts of the project on the OUV of the property. In addition, although the State Party has made some progress in addressing some recommendations made by the 2018 Reactive Monitoring mission, but regrettably has not actively engaged with the World Heritage Centre or ICOMOS, nor provided

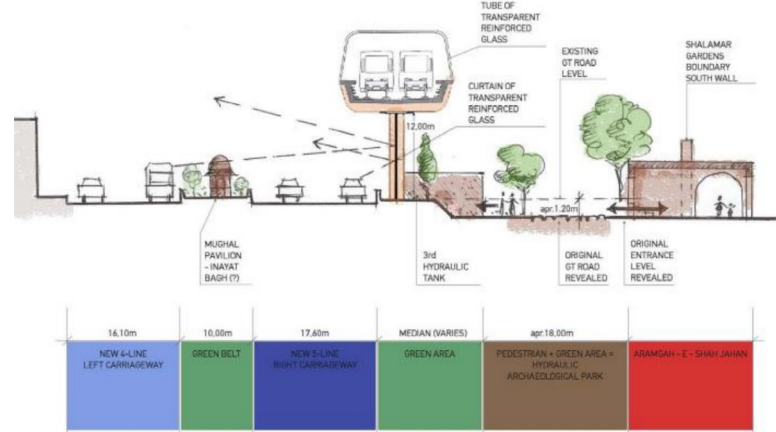


Fig5. Plan for tree's planting
(Source: Bhutta et al., 2020)



Fig6. Street view for green area
(Source: SOC report by State Party; Google Map screenshot)

sufficient information about projects at the property. Thus, the Committee also urges the State Party to implement all of the recommendations of the 2018 Reactive Monitoring mission and reiterate its request that detailed designs for the implementation of mitigation measures be submitted to the World Heritage Centre for review by the Advisory Bodies, in conformity with Paragraph 172 of the Operation Guidelines, and that projects only proceed once positive feedback has been received.

Current situation

In 2021, the World Heritage Committee suggests that the State Party should have more conversation with WHC and ICOMOS, work in close to assess all OLM-related operations and future projects, in order to prevent any damage to the property's OUV; and also work with ICOMOS to do feasibility study of recommendations that put forward in April 2018 Reactive Monitoring mission, and submit the review to World Heritage Center.

The State Party has submitted an updated SOC report in January 2022, and consultants awarded works to conduct feasibility studies.

[1] Detailed OUV can be accessed from: <https://whc.unesco.org/en/list/171/>

