

# Heritage Impact Assessment (HIA) as an Alternative Evaluation Tool for Historical Built Heritages in Lahore, Pakistan

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**Abstract:** Heritage Impact Assessments (HIAs) are progressively needed to investigate potential impacts and outcomes of development on the Outstanding Universal Value (OUV) of world heritage properties. However, many key stakeholders involved in implementing the World Heritage Convention lack the management system, methodological tools, and guidelines to conduct effective impact assessments in areas without these resources. The paper explores the successful utilization of the Heritage Impact Assessment (HIA) tool to address concerns raised by UNESCO and civil society. This occurred when the Punjab government initiated the Orange Line Metro Train Project (OLMT) near the World Heritage Shalimar Garden and other historic monuments in Lahore. The project aimed to meet the daily transportation needs of around 2.5 million commuters.

**Keywords:** Heritage Impact Assessment (HIA); Mughal Architecture; Shalimar Garden; Outstanding Universal Value (OUV); Lahore; Pakistan

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## 1. Introduction

Lahore, a city with a thousand landmarks dating back a thousand years was at risk of being disrupted from its “saved” perch due to a seemingly straightforward elevated metropolitan train project. Indeed, almost all historical sites were on the verge of destruction due to the completion of the twenty-seven-kilometer elevated Orange Line Metro Train (OLMT) project. The OLMT track starts from Ali Town, passing through Thokar Niaz Baig, a significant entry point into Lahore from the south/west; Chauburji, an intersection leading southward to Multan city and connecting with Bahawalpur city in Punjab. It crossed Band Road, passes by the Anarkali area, Lakshmi Chowk roundabout, University of Engineering and Technology (UET) Lahore, and the world heritage Shalimar Garden, ultimately ending at Dera Gujran. According to heritage experts, more than twenty-six protected historical sites and monuments, including the world heritage Shalimar Garden, the Supreme Court

building, the Post Office and High Court, Mauj Darya Shrine, and Chauburji monument, were expected to be affected by the OLMT project. In light of the consequences of heavy construction along with monuments, a writ petition was filed on 16th December 2015 by a civil society organization in court. The petition challenged the development project close to historical landmarks. The Supreme Court released legal notices to concerned departments such as National Engineering Services Pakistan (NESPAK), the Planning and Development Commission, and the Department of Environment and Archaeology <sup>[1]</sup>.

In 2015, the Punjab government initiated an elevated train project in Lahore, Pakistan, catering to over 2.5 million daily commuters. UNESCO and civil society raised concerns about potential damage to heritage sites. In August 2016, the Lahore High Court halted the OLMT project within 200 feet of eleven historic sites. However, in April 2017, the Supreme Court overturned this decision within two weeks, expressing concerns about the Lahore High Court’s judgment, which lacked input from heritage experts <sup>[2]</sup>. The World Heritage Committee (WHC) of UNESCO expressed concerns about the incomplete work on the water tank near Shalimar Garden. The committee recommended suspending work around the site until the relevant government departments submitted a complete technical detail report, including the Heritage Impact Assessment (HIA) report. This requirement aimed to assess the potential impact of proposed projects on the Outstanding Universal Value (OUV) of heritage landmarks <sup>[3]</sup>. **Figure 1** shows the monuments’ condition during the construction of the elevated train in Lahore.



**Figure 1.** Condition of monuments during construction <sup>[4]</sup>

## 2. Methodology

Assessing the potential effects of hazards on the OUV of World Heritage properties is a recurring challenge in many regions worldwide. The WHC has consistently expanded its range of decisions, including requirements for HIAs. The methodology also elucidates some fundamental assumptions guiding HIA operations and addresses common inconsistencies that arise when applying the strategy to real-world issues.

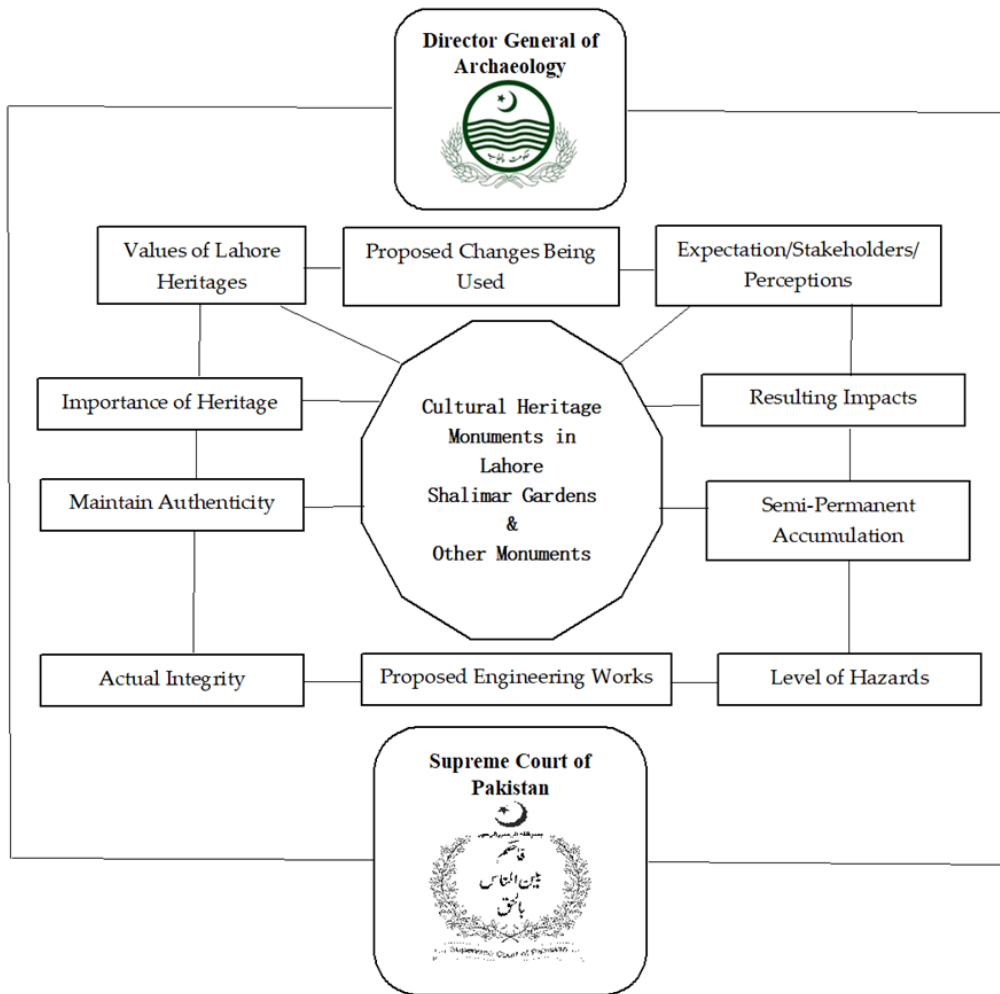
### 2.1. Objective

The primary objective is to preserve and distinguish the heritage sites in Lahore. Any alterations, essential maintenance activities, development projects, or modernization should never compromise the significance, uniqueness, and essential values for which they were inscribed, maintaining their OUV.

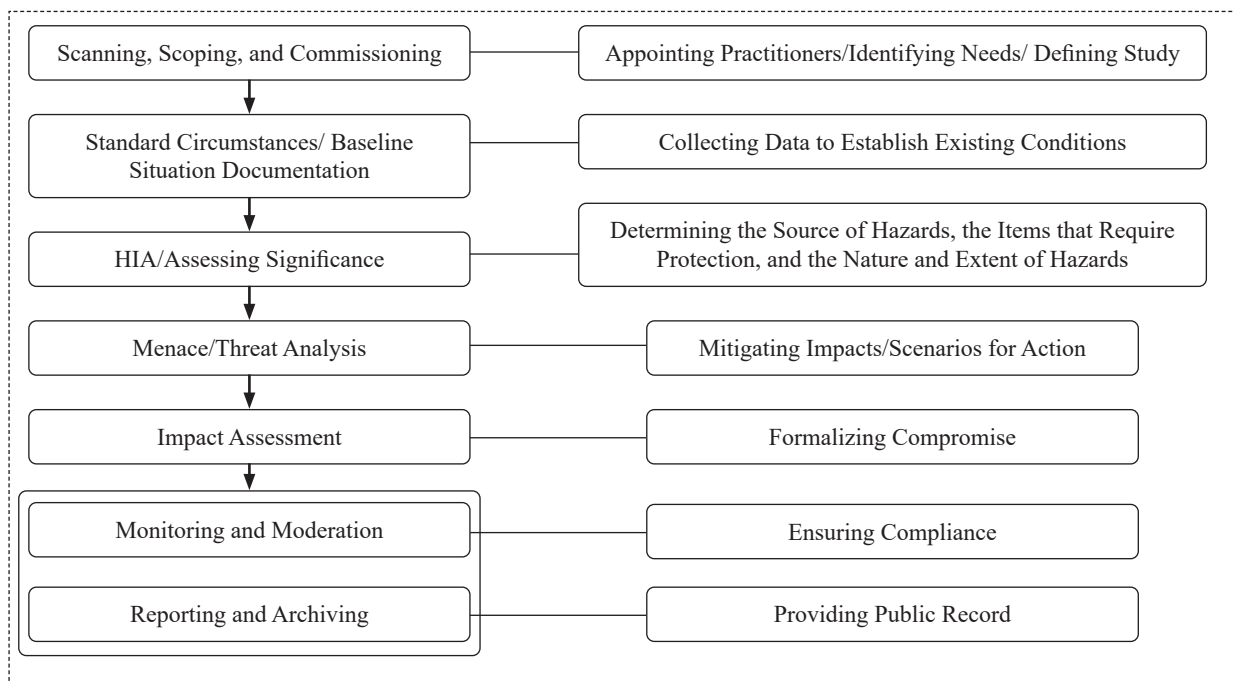
### 2.2. Process and purpose of HIA

In 2001, Jon Hawkes proposed a significant advancement to address the need for a method of operationalization. Hawkes suggests that the idea of sustainability, as well as broader visions of the future, is deeply rooted in social values. In its most basic form, the concept of sustainability reflects the aspiration for future generations to inherit a world that is at least as abundant as the current one. However, the path to achieve this has been a subject of ongoing debate, primarily centered around cultural values<sup>[5]</sup>. Highlighting the potential negative impacts of development guidelines on culture, the proposed comprehensive assessment tools for evaluating the livelihoods and cultural impact of a society aim to prevent the loss of valuable cultural identities, skills, and resources. The HIA addresses this need and is endorsed by various organizations such as the International Association of Impact Assessment (IAIA), International Center for the Study of the Preservation and Restoration of Cultural Property (ICCROM), International Council on Monuments and Sites (ICOMOS), WHC, UNESCO, and global development agencies like the World Bank. This approach is recognized as a crucial tool and conservation method applicable to diverse cultural scenarios, including cultural landscapes, individual structures, historic towns, and world heritage properties. The potential of the HIA cycle is evident, as seen in concepts like the “historic urban landscape,” which emphasizes the need to integrate heritage protection strategies within broader sustainable development goals. This involves incorporating heritage management into larger development and planning frameworks. To achieve this objective, various tools, particularly planning and information tools for managing and assessing progress, are identified. The HIA plays a crucial role in ensuring coherence in design, planning, and sustainability efforts. The HIA serves as a planning tool, offering decision-makers insights into the potential impacts of human activities on the cultural heritage environment. The methodology of HIA involves a cycle of identification, prediction, assessment, and communication of potential impacts from proposed or ongoing development strategies or actions on cultural life, community institutions, and resources. The findings and conclusions are then integrated into the decision-making process and planning to mitigate adverse effects and enhance positive outcomes<sup>[6]</sup>. Besides, it serves as a crucial tool for managing changes in historical resources by identifying risks to heritage significance and proposing solutions through a thorough evaluation of various essential components (**Figure 2**).

The HIA cycle, adaptable for individual cases, follows five consecutive steps (summarized in **Figure 3**). This approach, developed and refined by ICCROM, WHITRAP-Shanghai, Asian Academy for Heritage Management (AAHM), and the University of Hong Kong, is widely accepted in Asia. Experts in academic research, commercial HIA, and stakeholders, including ICOMOS and UNESCO, collaborated in its development. Over time, Asia has played a crucial role in promoting the HIA cycle, contributing to its theory and practical implementation.



**Figure 2.** HIA cross-evaluates and weighs various factors to understand the potential effects on heritage property values. Source: original



**Figure 3.** Flow chart of the HIA process. Source: Original

### **2.2.1. Screening, scoping, and commissioning**

During the screening, scoping, and commissioning phase of the HIA, the need for HIA is recognized to define its extensive scope and analysis area. The commissioning is arranged for execution by the appropriate practitioners within the heritage authority. This critical phase ensures that no potentially harmful development proposal escapes the impact assessment process.

### **2.2.2. Standard circumstances**

Standard circumstances include involves gathering and comparing data essential for understanding the baseline situation. This includes assessing the type, number, and distribution of heritage assets through desk-based analysis and acquiring additional information, such as community-based mapping, to fill gaps or enhance the database. The goal is to provide a comprehensive description of all impacts within the study area. Screening results are then compared against the pre-project baseline provided.

### **2.2.3. Assessing significance**

In the assessment of significance, it is crucial to acknowledge that heritage is considered the property of world heritage. Without this understanding, the process requires defining the significance and identifying the physical attributes of cultural property that embody the values of the heritage property. HIA lacks a basis or measure for decision-making unless the impacted property of significant heritage is clearly defined, along with its outstanding values associated with specific physical attributes of the site.

### **2.2.4. Menace/Threat analysis**

Menace/Threat analysis involves the identification of impacts, their sources, types, and potential duration. All proposed components are assessed using matrices for precise cross-tabulation with the identified and potential heritage resources, along with their bearing-significance attributes.

### **2.2.5. Impact assessment**

Impact assessment involves determining the level of impact by combining identified threats with an assessment of the severity of anticipated effects, reversibility, type, spatial extent, and duration of impacts. The Impact Matrix is used to scale each impact in relation to the significance of the heritage resource. This evaluation informs the need for mitigation measures, which are then assessed for effectiveness.

### **2.2.6. Monitoring and moderation**

Monitoring and Moderation involve developing a moderation system to identify ways of avoiding, modifying, limiting, correcting, or reducing the effects of an activity. This includes public participation to gather stakeholder input and feedback on the mitigation strategy. The process is followed by enforcement, final approval of the HIA by the authorities, and compliance monitoring as a follow-up program to ensure that mitigation is carried out as planned.

### **2.2.7. Reporting and archiving**

Reporting and archiving involve submitting all data related to a comprehensive investigation of every phase of the HIA to relevant authorities and clients. This information should be accessible for public review and comments, including the complete prepared data analysis.

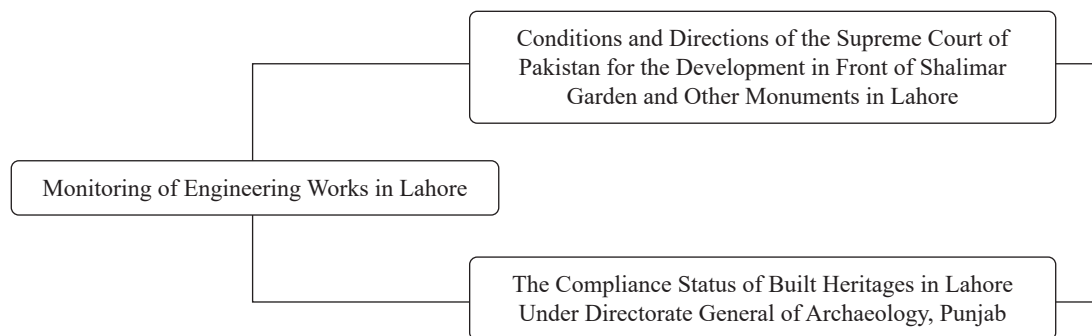
The HIA process benefits significantly from extensive stakeholder discussions. These discussions are crucial for understanding fundamental assumptions about heritage and development, helping to identify what



constitutes heritage in the shared vision of residents and individuals. Built heritage, in particular, involves certain basic assumptions regarding development and heritage within the HIA cycle. The HIA process is rooted in the belief that changes can be accommodated by development proponents, provided they are considerate of the values of built heritage to the communities. It assumes that proposed improvements should be amenable to preserving heritage and be open to negotiation, reflecting the belief that the historic built environment can enhance development, making it sustainable, and that it can and should accommodate some level of compromise to achieve this goal.

### 3. Directions from the Supreme Court of Pakistan for Shalimar Gardens and other historical monuments based on HIA

The civil society in Lahore organized and submitted a petition opposing the development works in proximity to historical monuments to the Lahore High Court, which subsequently ordered the suspension of all work. The Supreme Court of Pakistan took suo moto action, issuing orders in accordance with HIA rules. The Supreme Court directed the Directorate General of Archaeology and formed a team of experts to oversee all the ongoing works (Figure 4).



**Figure 4.** Relation between Supreme Court’s Directions and Compliances under the Directorate General of Archaeology, Punjab. Source: original

An HIA expert may often find themselves balancing conflicting agendas: one focused on preserving heritage and maintaining the status quo, and another advocating for change to achieve public benefits. For instance, an HIA was conducted to assess the potential impacts of a significant transit project, an elevated train track, being constructed in the city of Lahore. This project was generally acknowledged as a requirement for the community. The HIA process addressed various historically significant structures in close proximity to the train line [7].

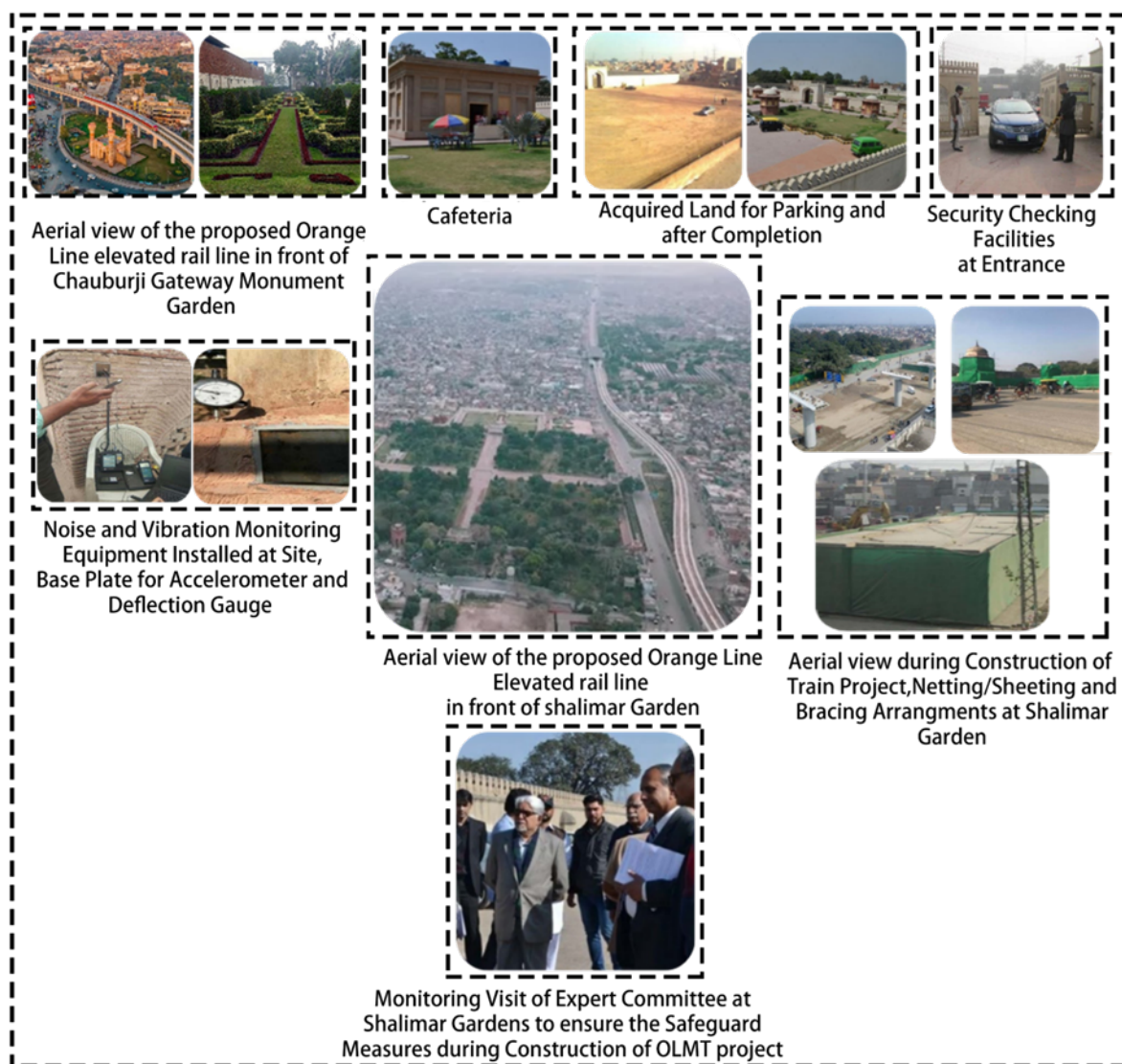
### 4. Facilities and security measures at Shalimar Gardens for visitors

The Directorate General of Archaeology, Punjab acquired land on the southeast corner of the Naqqar Khana complex in the Shalimar Gardens to enhance the experience for visitors. A comprehensive development scheme was initiated, with a total cost of Rs. 30.534 million. The main components of the plan included a cafeteria, parking facilities, gardens, restrooms, souvenir shops, ticket counters, and security posts. The architectural design of the newly created area was carefully integrated with the historic structures of the gardens. The work was completed on schedule, and the area is now fully operational. Security measures for visitors have also been enhanced with the addition of security guards and equipment. These improvements have attracted more tourists, especially foreign travelers, who had decreased due to security concerns.

## **5. Measures taken to preserve the OUV of Shalimar Garden**

To address the escalating traffic problems on the Multan and Grand Trunk Road to Lahore, the Punjab government initiated the OLMT project. According to investigations by the concerned department, approximately 2.54 million people travel on these roads regularly. The OLMT project aimed to provide affordable, rapid transportation to alleviate congestion on these routes, saving considerable time for commuters. The Punjab government is acutely aware of the importance of preserving heritage and took extensive measures to shield it from any potential harm. A comprehensive survey was conducted, and the plan was meticulously devised to mitigate any possible impact of vibrations on the historical heritage. The vibration issues were assessed using DIN 4150-3, the German Standard for evaluating vibration shock. Studies coordinated by engineers from China and NESPAK confirmed that the vibration would be 0.3 mm/sec, well below the permissible limit of 3 mm/sec provided by the German standard. In conclusion, it was asserted that OLMT would traverse south of heritage sites from a protected distance. Both the Lahore Fort and Shalimar Gardens are significantly distant from this project, and any potential visual impact was deemed negligible. To further confirm these findings, the Punjab government commissioned a renowned international firm to conduct a visual impact study (VIA), scheduled for completion by March 2017. Previous analyses had already affirmed the absence of any perceived or potential threat to the outstanding universal values of Shalimar Gardens, and the upcoming VIA was expected to corroborate the results of the earlier study. According to the VIA, there would be a temporary minor visual impact on Shalimar Garden during the construction phase, which would dissipate upon completion of the development work. In case any location within Shalimar Garden experiences a visual impact, it can be mitigated by harmonizing the color and material of the OLMT structure and planting tall trees around the buildings. The visual integrity and OUV of the Shalimar Garden property would not be compromised by the construction of the planned OLMT project. Additionally, the scenic view surrounding the OLMT project in the Shalimar Garden area would be enhanced with similar features and themes, and the visual impact would be further reduced by the presence of creepers and tall plants on the dock. A redesign was undertaken to align with the various mitigation measures recommended in the HIA and VIA reports, aiming to enhance the visual appeal of the area. The government fully understood the significance of the OUV of the Shalimar Garden heritage. While ensuring no compromise to the OUV of the heritage property, the Punjab government chose to address the needs of the growing city of Lahore through the OLMT project. Studies and scientific investigations were conducted to assess the impact of the OLMT project on the world heritage Shalimar Garden, ensuring no adverse effects on the OUV of the heritage property. Furthermore, the studies confirmed that the implementation of the OLMT would alleviate congestion near the Shalimar Garden, resulting in positive outcomes such as reduced noise, air pollution, and vibration. In light of the considerations in the judgment of the Supreme Court of Pakistan dated December 8, 2017, exemplary safeguards were adopted, and the concerns of the WHC were brought to the fore during its 41st session. The towers, Southern wall, and hydraulic tank of Shalimar Garden were fully supported to avoid any incidental impact during the work on the structure. These structures were protected with dust-proof sheets to prevent damage due to pollution and dust. In adherence to the direction of the Supreme Court of Pakistan, the Executive Office made all necessary arrangements to ensure that the historical landmarks remain stable and intact during the completion of the project, as stipulated in the HIA criteria. Measures were taken to address noise hazards, and a vibration control foundation, as referred to in the vibration analysis, was implemented to ensure the use of additional relief and mitigation measures for noise, vibration, and cracking of any part of the structure. Basic instruments were introduced to record deflection and settlement. Under the administration of a retired Judge of the Hon'ble Supreme Court of Pakistan, a special committee of experts was established. The committee included the Principal of the National College of Arts, the Civil Engineering department of UET Lahore, the chairman of the Archaeology department of Punjab University, and the head of the structure division and Directorate General of Archaeology Punjab. Their purpose was to arrange for the implementation

of the judgment of the Supreme Court and to suggest necessary measures for the protection of the landmarks. A specialized team, consisting of a basic structure engineer, a well-experienced archaeologist, and a protectionist, ensured the guaranteed safety of the landmarks during the execution of the construction work of the OLMT project. The team, assigned by the Supreme Court of Pakistan, had the authority to halt the development whenever an unfavorable impact was noted. For screening the project, an experienced and independent conservation engineer was designated. Their duty was to report to the advisory committee and the Directorate General Department of Archaeology to guarantee that the OLMT project met all technical requirements intended to safeguard, protect, and conserve the artifacts or protected premises. The advisory committee and all the technical experts continuously monitored the data of the hardware equipment along with the conditions of the landmarks (Figure 5). It is worth mentioning that data results showed no adverse impact, the level of vibration was far below the permissible limit, and structures were in a stable and sound condition.



**Figure 5.** Execution of HIA in Lahore. Source: original

The view requirement for the foundation exceeded concerns over the remaining visual impacts, which were assessed as satisfactory if a comprehensive mitigation program for each building was followed. However, the HIA process was commissioned late in the development cycle. As construction was already in progress, political



and community complaints led to a brief suspension of the project, pending a case review by the Supreme Court of Pakistan. The political context of this HIA process implied that government clients imposed restrictions on the consultants, preventing any community consultation.

## 6. Conclusion

The HIA studies were initiated under various conditions, taking into account different considerations and perspectives. The World Heritage Centre and the Archaeology Department of Punjab Heritage specialists requested an HIA for the Shalimar Gardens and other significant monuments in Lahore, expressing concerns that the OLMT project was causing irreparable damage to the World Heritage property in terms of its OUV. What the WHC and the authorities in Punjab required was a compelling and legitimate justification based on a comprehensive methodology that would support efforts to completely shut down the OLMT project in the vicinity of monuments in Lahore, including Shalimar Gardens. The results of the HIA process were submitted to the WHC through the governing bodies of Punjab, Pakistan, in 2019, leading to the cessation of the majority of the remaining construction. Subsequently, in April 2020, UNESCO expressed satisfaction with the actions taken by the authorities, announcing that the Shalimar Garden would no longer be included in the list of heritage sites in danger.

## Disclosure statement

The authors declare no conflict of interest.

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