

Contemporary practices and policies for the conservation and presentation of antique ruins in multi-layered cities: Insights from İzmir

Beylem Doğa Tabur* Mine Hamamcıoğlu Turan** 

Abstract

Historic urban landscapes often embody a multi-layered city structure, where successive phases of urbanization, transformation, and cultural accumulation coexist within the same physical and symbolic landscape. However, despite continuing conservation initiatives, persistent problems remain: a lack of accessibility in physical, visual, and intellectual terms limits public engagement with the city's archaeological layers, while a lack of integration, both physical and societal, prevents these invisible periodic layers from being incorporated into contemporary urban planning and public narratives. In response to these challenges, the aim of this study is to analyze current policies and practices for conserving and presenting urban heritage embedded within complex historic fabrics, and its objective is to trace the chronological evolution of İzmir's urban base to reveal how successive transformations have preserved, obscured, transformed or reinterpreted heritage layers. The research adopts a case study approach focusing on the Kadifekale city walls in İzmir. Its methodology integrates a literature review using historical maps, memoirs, and publications for understanding the case, comparative studies, and international documents regarding effective heritage conservation with fieldwork and evaluative analysis to elucidate on-site conditions and policy contexts. Ultimately, the study proposes an integrated, participatory, and sustainable framework for managing and presenting multi-layered urban heritage within historic cities.

Keywords: city wall, heritage management, historic urban landscape, invisible periodic layers, multi-layered urban heritage

1. Introduction

The physical, social, and intellectual accessibility and visibility of archaeological sites (AS), particularly those embedded in multi-layered urban landscapes (MUL), is often constrained by contemporary urban conditions and related management (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Diceglie, 2023; Ebejer et al., 2023; Łakomy, 2021; Moreno et al., 2023; Serrano-Chacón et al., 2025; Şahin Körmeçli, 2024; Wang et al., 2019). Dense urban development and vandalism (UNESCO, 2019), the limited public understanding (Ali & Abouelfadl, 2022), imbalance between well-defined intrinsic values and the insufficiently explored extrinsic values of heritage (Ebejer et al., 2023), poverty (Ripp & Rodwell, 2015), migration (Ababneh et al., 2016; Dines, 2002), and/or gentrification (Ripp & Rodwell, 2015; Ababneh, et al., 2016) hinder the accessibility of mentioned sites, turning them into hidden remains that pose significant challenges for heritage management (Ababneh et al., 2016; Ali & Abouelfadl, 2022; Dines, 2002; Ebejer et al., 2023; Ripp & Rodwell, 2015; UNESCO, 2019). There are also intrinsic qualities of heritage that diminish its accessibility and visibility, such as complicated interactions between natural settings and built heritage (Pardela et al., 2022). Another challenge threatening AS in MUL is their vulnerability to natural risks, e.g., earthquakes (Diceglie, 2023). Furthermore, case studies from diverse geographies demonstrate that archaeological and architectural remains are subject to multiple forms of vulnerability, from seismic risk and moisture-driven physical deterioration (Moreno et al., 2023) to the challenges of ensuring

*(Corresponding author), M.Arch., PhD Candidate, İzmir Institute of Technology, Türkiye beylemtabur@gmail.com

**Department of Conservation and Restoration of Cultural Heritage, İzmir Institute of Technology, Türkiye mineturan@iyte.edu.tr

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the visibility of military heritage landscapes and managing the complicated interactions between natural settings and built heritage (Pardela et al., 2022). Similarly, cases such as the merging into the background of traditional urban culture during China's modernization process (Wang et al., 2019) or the constraints of Poland's monument protection system (Łakomy, 2021) reveal the mechanisms through which ideological and administrative frameworks influence the invisibility of urban heritage layers. In historical settlements such as Amasra, the difficulty in identifying architectural anchors that mediate social interaction networks (Şahin Körmeçli, 2024) represents yet another factor limiting the visibility of complex urban layers. These studies demonstrate that the periodic layers of urban archaeological heritage become invisible not only due to physical, socio-cultural, and intellectual fragilities but also because of planning-related barriers (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Diceglie, 2023; Ebejer et al., 2023; Łakomy, 2021; Moreno et al., 2023; Pardela et al., 2022; Serrano-Chacón et al., 2025; Şahin Körmeçli, 2024; Wang et al., 2019).

Recent conservation studies emphasize that addressing the challenges of conserving and presenting antique ruins requires integrated approaches that extend beyond mere physical preservation (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Diceglie, 2023; Ebejer et al., 2023; Łakomy, 2021; Moreno et al., 2023; Pardela et al., 2022; Serrano-Chacón et al., 2025; Şahin Körmeçli, 2024; Wang et al., 2019). Majority of the practices include only physical conservation (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Diceglie, 2023; Ebejer et al., 2023; Łakomy, 2021; Moreno et al., 2023; Pardela et al., 2022; Wang et al., 2019) while limited studies integrate physical conservation with public engagement (Bonadei et al., 2017), adaptive reuse (Ebejer et al., 2023; Wang et al., 2019) or long-term sustainability (Ali & Abouelfadl, 2022; Diceglie, 2023; Łakomy, 2021; Moreno et al., 2023; Pardela et al., 2022; Serrano-Chacón et al., 2025; Wang et al., 2019). In this context, conservation practices intersect with broader objectives such as education (Bonadei et al., 2017; Ebejer et al., 2023), the reinforcement of cultural identity, and the development of heritage-based tourism (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Ebejer et al., 2023; Łakomy, 2021; Moreno et al., 2023; Wang et al., 2019), underscoring the close relationship between preservation strategies and public engagement. These interconnections highlight the necessity of reconsidering both heritage theory and practice through more holistic, participatory, and value-orientated frameworks capable of responding to the complex demands of contemporary heritage management.

The existing literature on Kadifekale predominantly examines urban regeneration in landslide areas, often framed through discussions of gentrification and its socio-spatial impacts (Demirtas-Milz, 2013; Mutlu Kılıç, 2025; Mutlu Kılıç & Göksu, 2018; Saraçoğlu & Demirtaş-Milz, 2014; Yılmaz & Zafer Kurt, 2022). These studies indicate that formal planning strategies frequently overlook the needs of the disadvantaged and vulnerable groups mentioned. Complementary sociological studies have examined refugee populations and the physical condition of 19th- and 20th-century housing stock (Oner et al., 2020). Despite extensive research on urban management, a significant gap remains in understanding how administrative and planning frameworks, when combined with informal settlements, infrastructure investments, and urban transformation processes, contribute to the loss of archaeological data and the trivialization of local public perspectives in MULs. The insufficient application of the Historic Urban Landscape (HUL) approach in small-scale, participatory conservation practices (Bonadei et al., 2017) exacerbates this gap. In the Kadifekale case, these dynamics have led to the progressive loss of archaeological data and the physical, social, and intellectual invisibility of the city walls.

Early international conservation charters initially limited their scope to the protection of individual monuments and ensembles (International Museums Office, 1931). From the mid-20th century onwards, however, a significant approach shift occurred, prioritising the in-situ conservation and presentation of AS within their historic urban sites (ICOMOS, 1964; ICOMOS, 1994). This shift was accompanied by a growing consensus on the need to integrate archaeological heritage into contemporary urban life through interdisciplinary approaches and participatory interpretation strategies (ICOMOS, 1987; ICOMOS, 1994; UNESCO, 1976). Toward the end of the

20th century, doctrinal texts increasingly addressed the challenges of managing tourism at places of heritage significance and the protection of archaeological heritage in historic cities (Council of Europe, 1992; ICAHM, 1990; ICOMOS, 1999). The UNESCO Recommendation on the Historic Urban Landscape (2011) represents a critical milestone by internationalizing conservation theory and practice beyond its predominantly European focus and framing archaeological heritage as an integral component of broader urban systems. Over the past two decades, international charters have further emphasized sustainable urban development, landscape-based approaches, and the public presentation of archaeological sites as living parts of the city (ICOMOS, 2008; ICOMOS, 2011; ICOMOS, 2017; ICOMOS & IFLA, 2017; UNESCO, 2011). Despite this evolution, a coherent theoretical framework capable of guiding conservation and presentation practices across diverse HULs remains insufficiently articulated.

This study contributes to the literature by conceptualizing AS not only as isolated heritage assets but also as functions that both physically and metaphorically serve as urban bases that continue to structure contemporary socio-spatial relations within MULs. Using Kadifekale as a case study, the research extends current HUL-based discussions by examining how invisible periodic layers become physically, socially, and intellectually inaccessible under conditions of uncontrolled urbanization, migration dynamics, and irregular urban transformations. In doing so, it proposes an integrated framework linking accessibility, public engagement, and heritage interpretation to the conservation and presentation of archaeological urban bases in non-European historic urban contexts.

This study aims to clarify how MULs can be effectively conserved and communicated within rapidly transforming urban contexts. It focuses on the conservation and presentation of historic urban layers that have become periodically invisible due to successive urban interventions, with particular attention to the Kadifekale city walls. The research analyses current policies and practices to assess the conservation, obfuscation, transformation, or representation of heritage layers over time. It aims to formulate policies and strategies that enhance the integration of historic sites with adjacent urban renewal areas within the HUL framework.

Methodologically, the study traces the chronological evolution of İzmir's urban base to contextualize Kadifekale within the city's broader MUL. When considering the architectural, natural, cultural, and socioeconomic characteristics of the case study, its values, potential, and problems are analyzed and evaluated; as a result, proposals are created that will enhance the integrity of the concepts related to both the historical site and the urban renewal area.

This research employed both qualitative methods, which include the literature review and a comparative study of similar cases, and quantitative research methods, such as fieldwork and on-site visual observation¹. The study is primarily grounded in qualitative analysis, supported by a clearly defined quantitative component. The quantitative dimension is operationalized through the numerical evaluation of socio-spatial data derived from fieldwork, which includes measurable indicators related to social patterns and spatial conditions. This approach clarifies both the scope and the analytical role of quantitative methods within the comprehensive research framework. A systematic literature review was conducted in WoS with the identification of related thematic keywords (Table 1). As a result, twenty-two (22) publications were retrieved from the Web of Science Core Collection, from which ten (10) open-access English-language articles were selected for detailed examination.

¹ The data used in this study were generated within the scope of the graduate-level course titled "RESS11 Preservation and Development Methods of Historic Environment", conducted during the 2021–2022 fall semester at the Department of Conservation and Restoration of Cultural Heritage, Faculty of Architecture, İzmir Institute of Technology. The dataset is unpublished and is stored in the university archive. The authors are members of the research team that contributed to the creation of the dataset. The dataset is not available online but may be accessed on site upon reasonable request."

Table 1 Literature Search Keywords Strategy

	PROBLEM DEFINITION			CONTEXT		CASE			RESULT
	Urbanisation Pressure	Migration				Kadifekale	İzmir City walls	City Wall	
KEYWORDS	urban* OR urbanisation* OR press* OR pressure* OR urbanisation pressure*	migrate* OR migration* OR demograph* OR chang* OR demograph* chang*	OR	Multi-Layered Cities Multi-layer* OR cit* OR Multi-Layer* Cit* OR historic*city OR historic urban landscape OR historic urban site OR antique ruin*	AND	Kadifekale*	OR İzmir* OR fortificat* OR city wall*	OR cit* OR cit* OR wall*	AND Heritage Management law* OR legal* OR legis* OR regulat* OR polic* OR heritage* OR manag* OR heritage management * OR heritage conservation * OR heritage preservation
Selected Keywords				historic urban landscape OR "Multi-Layer* Cit*" OR historic urban site			city wall*	city wall*	heritage conservation OR heritage preservation

2. Case Study: Kadifekale and the Urban Base of İzmir

The study area is in the centre of İzmir, a major city in the Aegean Region situated at the interface of Asia and Europe. It is bordered by the historic districts of Kemeraltı and the Agora to the west, the Roman-built Smyrna Theatre to the southeast, and the Basmane district to the north. The case study area lies within the boundaries of the Kemeraltı Historical Urban Site and is near both the Geologically Objectionable Area and the Ballıkuyu Urban Transformation Zone (Figure 1), placing it at the intersection of heritage conservation and ongoing irregular urban transformation processes due to the dense uncontrolled international immigration and rural depopulation (Ertan & Eğercioglu, 2016; Mutlu Kılıç, 2025; Yetiskul & Kul, 2023).

Situated on a hill on the northern slopes of Mount Pagos at an elevation of 186 m, overlooking the İzmir Gulf, the city walls of Kadifekale were first constructed in 334 BC at the request of Alexander the Great following the liberation of Anatolia from Persian rule (Kütükoğlu, 2001). Owing to its strategic topography, Mount Pagos provided control over both the İzmir Gulf and the path extending toward the Yeşildere Valley and the Bornova Plain. Military threats repeatedly plagued Smyrna throughout history, necessitating the construction of an extensive defensive system (Ersoy et al., 2015).

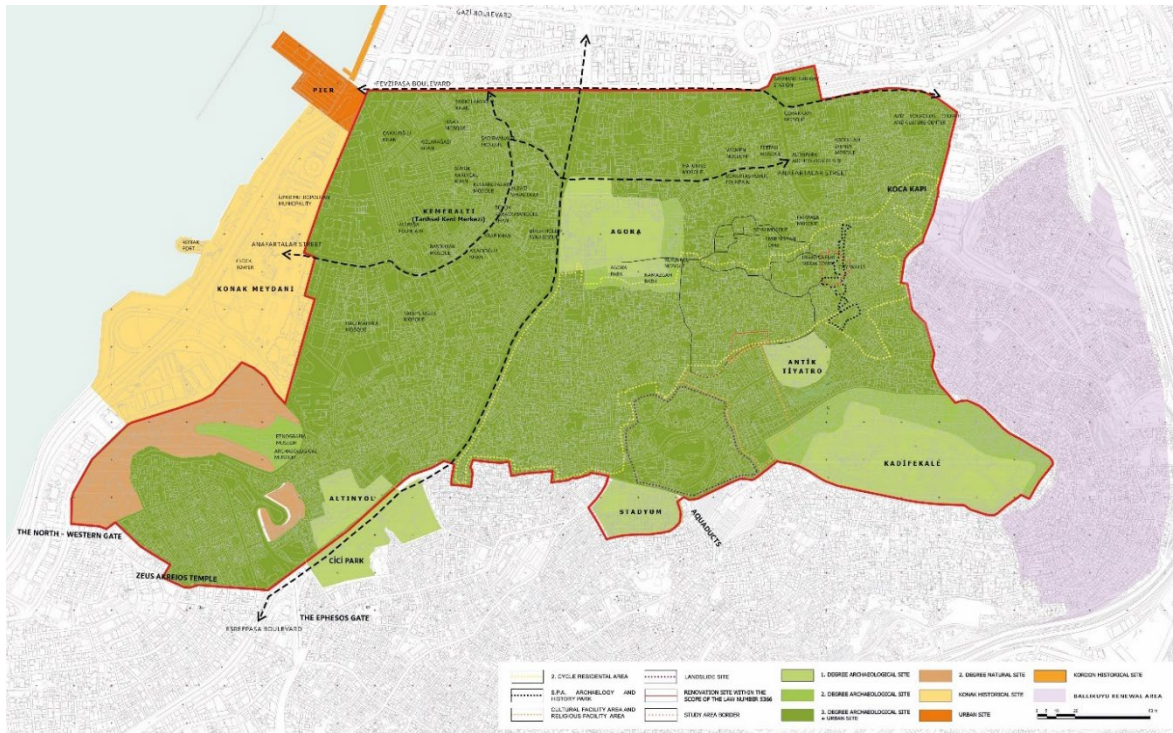


Figure 1 Environmental analysis of the HUL (Revised from the unpublished RES511 course dataset, 2021–2022)

Archaeological evidence indicates the presence of two principal city wall lines extending from the acropolis toward the ancient Sardis Road in present-day Basmane and from the Ephesus Road in Eşrefpaşa down to the coastline (Figure 2).

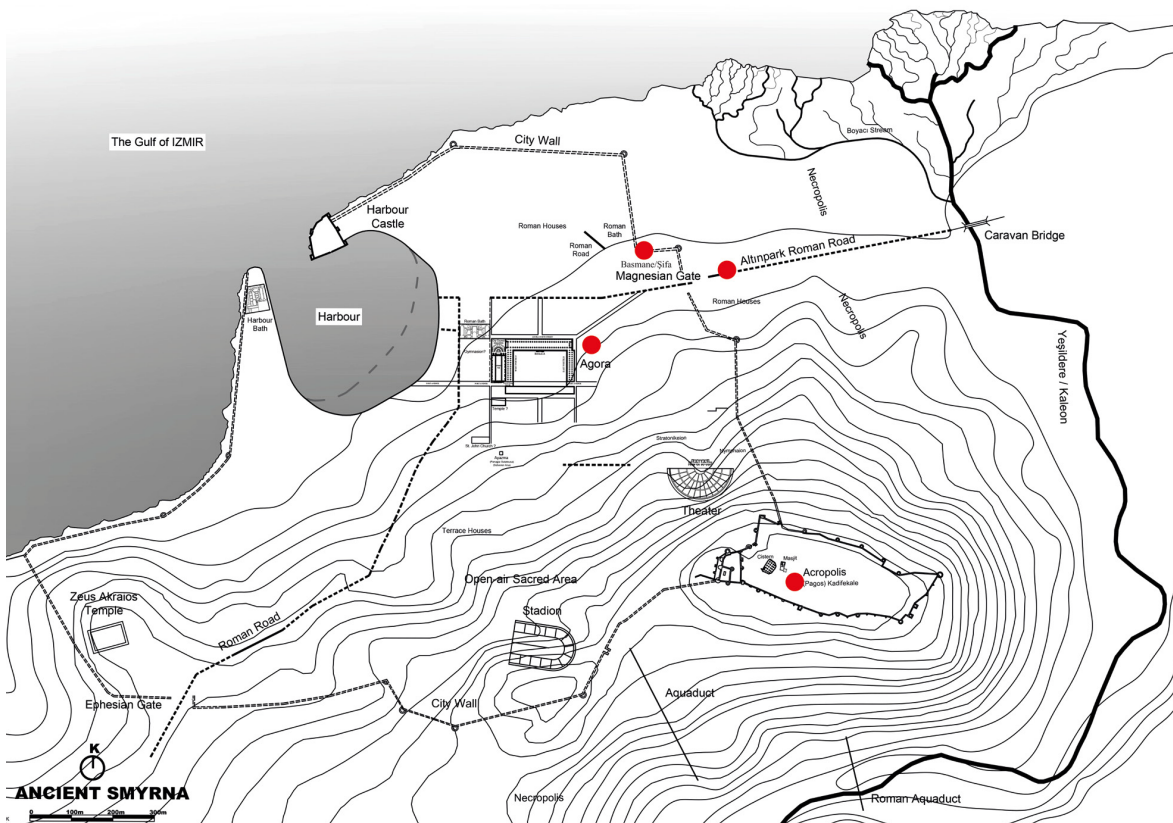


Figure 2 Smyrna city plan (Reproduced from Ersoy & Çakmak, 2025, p. 20)

The city walls suffered major destruction during the mediaeval period, following Timur's campaign in 1402 and the subsequent earthquake of 1668 (Kütükoğlu, 2001). Consequently, the

surviving remains predominantly date to the Middle Ages; however, investigations beneath these structures reveal earlier Hellenistic masonry system (Ersoy et al., 2015). The walls were constructed using rubble stone, ashlar blocks, and brick, reflecting successive building phases. Parts of the city walls were deliberately dismantled during the reign of Çelebi Mehmet (Kütükoğlu, 2001). The most reliable documentation of the urban wall alignments is Storari's 1856 map, which already depicts the eastern and northern walls as fragmented system (Ersoy et al., 2015). Today, apart from the acropolis city walls, the city walls of ancient Smyrna have largely disappeared under modern urban pressure, with only limited traces of the eastern wall surviving between contemporary residential buildings system (Ersoy et al., 2015).

Although the city walls of Kadifekale played a defining role in the defensive structure of ancient Smyrna, they have progressively lost their visibility within the MUL. While the Acropolis wall remains the most legible component, the continuity of the southern, eastern, and northern city walls has been disrupted by successive destruction and irregular urbanization. The city walls have functioned both physically and metaphorically as an urban base for the contemporary city, starting from their Hellenistic foundations and continuing through Roman, Byzantine, mediaeval, and Late Ottoman residential overlays. Today, this urban base is perceived not as an integrated MUL but as fragmented remains, further obscured by limited accessibility and inadequate urbanization.

3. Findings

The Kadifekale city walls, within their MUL, are under intense urbanization pressure as a result of continuous migrations and informal growth (Ertan & Egercioglu, 2016; Mutlu Kılıç, 2025; Yetiskul & Kul, 2023). Solid-void analysis indicates a high degree of building density; particularly the case study area exhibits a lower solid ratio of around 52%, largely due to recent expropriations aimed at exposing the city walls, which have resulted in fragmented voids, including vacant lots, gardens, and residential courtyards.

Storey analyses further demonstrate a clear divergence from the area's original low-rise morphology. While the historic fabric was predominantly composed of one- to two-storey buildings, contemporary pressures have resulted in widespread vertical extensions and new constructions. In the area, three- and four-storey buildings now constitute approximately 36% of the building stock (Figure 3). Chronologically, the area retains older heritage elements, including city wall remains dating to the Hellenistic Period and an Ottoman-era tomb; however, these layers have been substantially obscured by later constructions, some of which are directly superimposed on archaeological remains, transforming the city wall into both a physical infrastructural element and a metaphorical urban base upon which subsequent urban layers have accumulated.

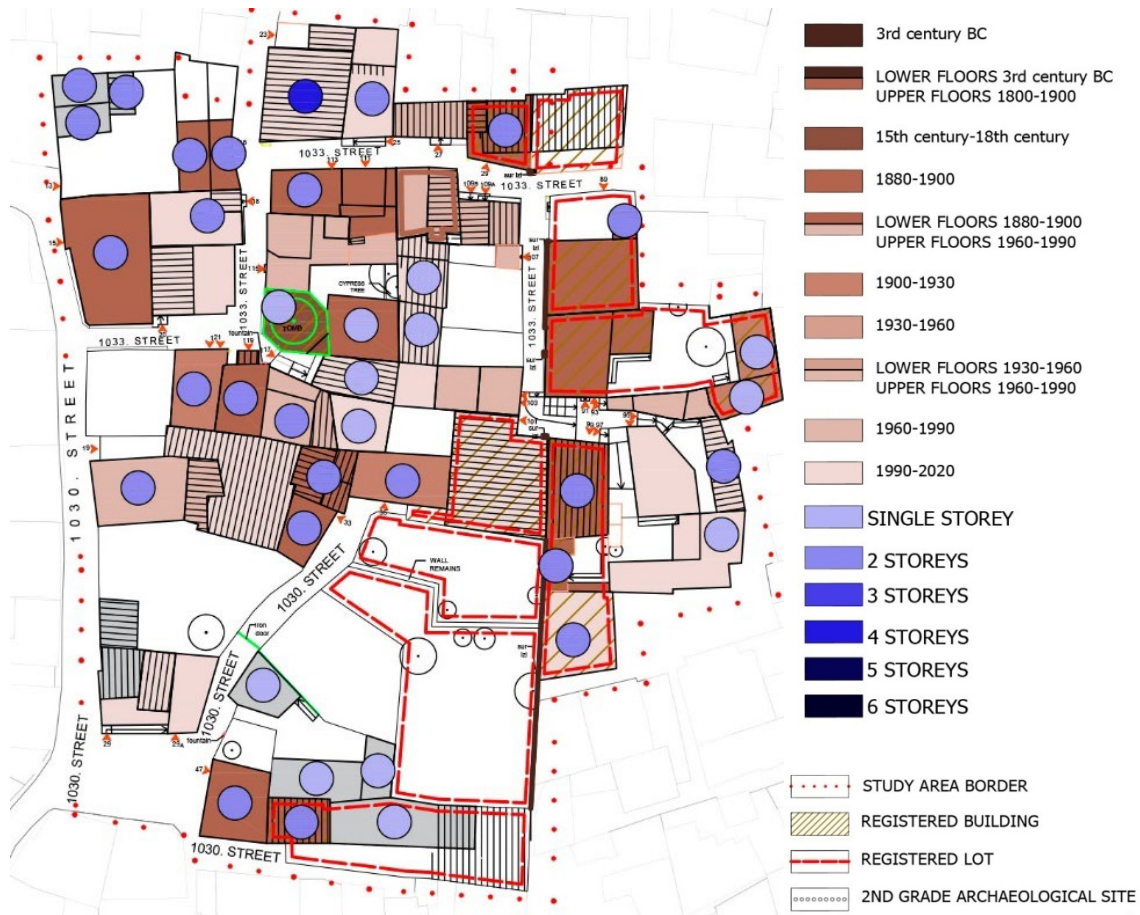


Figure 3 Overlapped analysis period of buildings and number of story (Revised from the unpublished RES511 course dataset, 2021–2022)

Social survey findings further reveal security problems (3/12), infrastructural deficiencies (3/12), and environmental neglect (2/4), which collectively diminish everyday accessibility and reinforce the physical, social, and intellectual invisibility of the city walls. These findings underscore the impact of unregulated densification and socio-spatial pressures on the diminishing visibility of multi-layered urban heritage contexts, where archaeological layers persist yet remain predominantly inaccessible within the MUL.

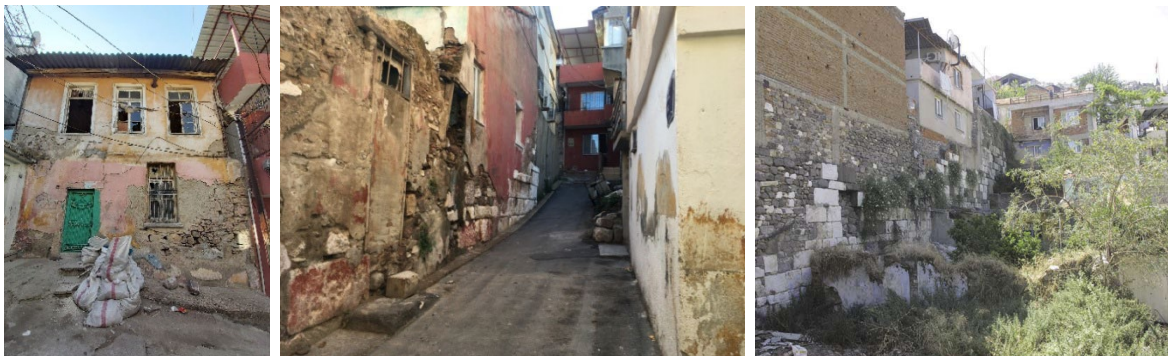


Figure 4 The inaccessible Kadifekale city walls as an urban base of İzmir (Authors, 2021)

The findings indicate that the Kadifekale city walls represent a significant component of İzmir's HUL, embodying intertwined historical, architectural, environmental, urban, and socio-cultural values. As part of the city's long-term development, the continuity of the urban base, the persistence of traditional street patterns, and the presence of archaeological deposits reinforce the area's urban hub role within a MUL. The fortifications, originating in the Hellenistic period and subsequently transformed, maintain both architectural authenticity, collective memory and socio-

cultural relevance with potential of their integration into everyday urban life. Despite this significance, the AS remains largely inaccessible and poorly visible within contemporary urban context (Figure 4). Dense and unregulated construction, combined with limited public space, constrains physical access to the walls. At the same time, the absence of coherent interpretive and public-orientated presentation strategies weakens intellectual accessibility, limiting public awareness and engagement. This condition results in the reduced visibility of archaeological layers, highlighting a critical disjunction between heritage value and its effective integration into contemporary urban life.

The Kadifekale city walls are part of a complex whole characterized by pronounced topographic variation and significant geological risks. The area's elevation differs from approximately 10 to 180 meters above sea level, resulting in steep gradients that vary across neighborhoods. For example, the Smyrna Theatre zone exhibits an average slope of 2.6%, and the Kubilay Neighborhood presents comparatively gentler inclines below 1% (Figure 5).



Figure 5 The view from the Smyrna Acropolis shows elevation differences and the landslide-evacuated area around the Smyrna Theatre (Authors, 2025)

These topographical conditions, combined with the site's location within lower Miocene volcanic formations, increase susceptibility to landslides, particularly as the study area lies adjacent to zones previously evacuated due to active landslide risk (Figure 5). The Kandilli Observatory's historical seismic records indicate that earthquakes have happened many times since the 17th century (Kütükoğlu, 2001). Destructive events, documented since antiquity, have repeatedly threatened the structural integrity of the built environment (Kütükoğlu, 2001). Together, seismic vulnerability, landslide exposure, and steep terrain constitute critical environmental pressures that affect both the preservation of the archaeological layers of Kadifekale and their visibility within the contemporary MUL.

An environmental-scale survey along the route connecting the Smyrna Agora and the Roman Theatre indicates a high concentration of religious, cultural, educational, public, residential, and commercial uses, while health-related facilities remain limited (Figure 6). The site's physical accessibility makes the spatial conflicts between pedestrian and vehicle movement even more clear, especially along Tarık Sarı Street, where the lack of or obstruction of pavement forces narrow roadways to be shared. Informal parking practices, dead-end streets resulting from organic urban morphology, and one-way traffic imposed by limited street widths intensify accessibility and safety problems, especially near schools and public gathering areas. Visual and perceptual assessments identify both positive and negative contributors to urban quality: while landmarks such as the castle, mosque, bazaar square, and sports field function as focal points of social interaction, inappropriate building heights, irregular parking, and poorly positioned urban services disrupt visual coherence. Traditional architectural elements like projections, fountains, chamfers, alms stones, and horse blocks are still important ways to remember the past, but unregulated development makes them less visible. The conflict between officially listed buildings and the

presence of unregistered high-quality structures indicate gaps in heritage recognition, reinforcing the partial social and intellectual invisibility of the city walls. Within the HUL framework, these findings demonstrate that, limited interpretive integration constrain its capacity to function as a visible and inclusive layer of the MUL.

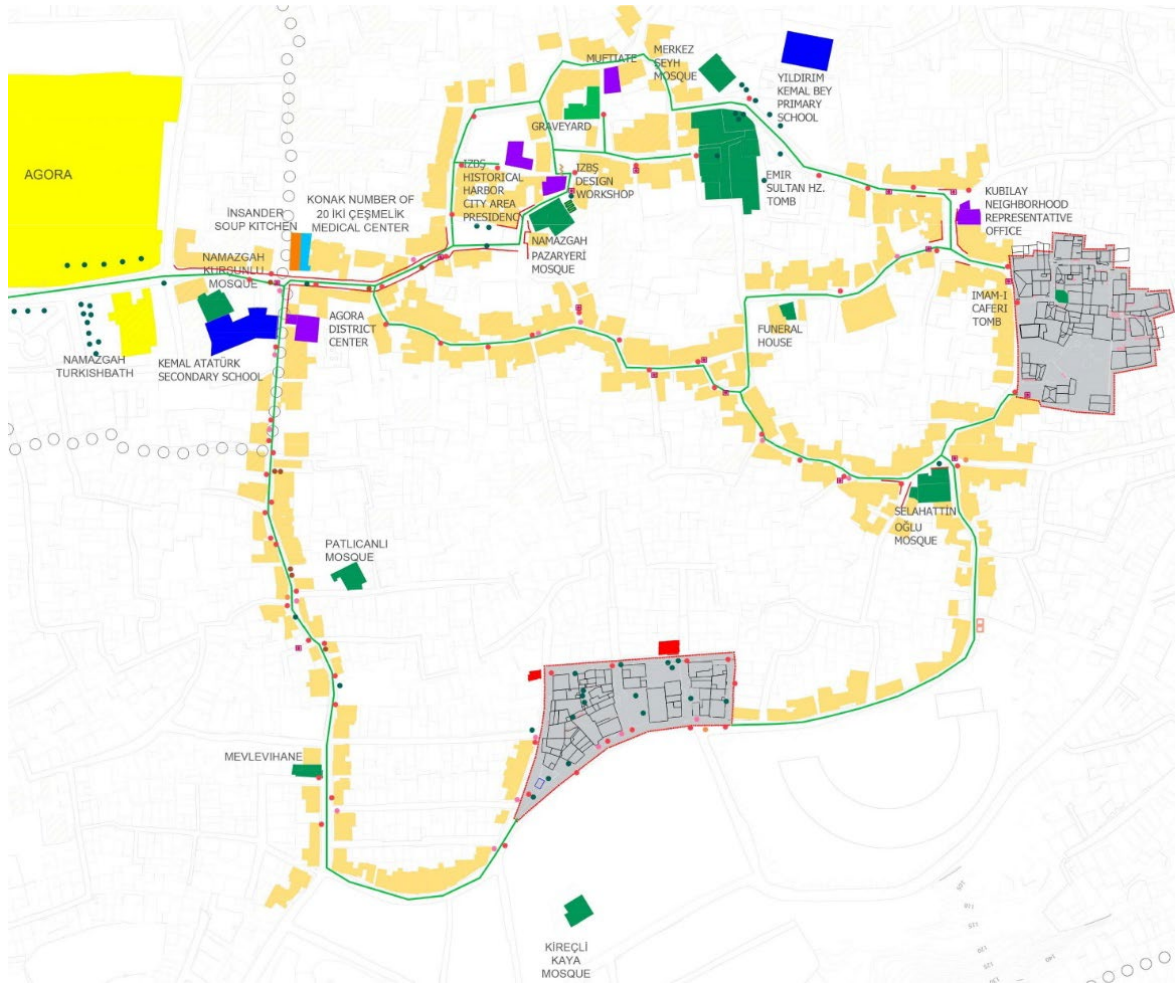


Figure 6 Land use analysis of urban space (Revised from the unpublished RES511 course dataset, 2021–2022)

While residents are generally aware of the significance of nearby excavation areas, this awareness does not extend to city walls; it remains embedded within the foundations and lower floors of their dwellings, where the city wall segments remain physically present but cognitively unrecognized. Types of roads overlapped analyses such as land use and number of storeys, and condition and maintenance state further demonstrate that dense residential development and limited visual visibility constrain the perception of the city walls as a coherent heritage entity (Figure 7). Visitors' access routes primarily follow the main circulation axes that bypass interior neighborhoods, limiting experiential engagement with invisible periodic layers and weakening spatial continuity between archaeological remains. Consequently, the area's significant potential for public use and heritage-based tourism remains largely unused. The lack of interpretive infrastructure, clear signboards, and integrated presentation strategies prevents the transformation of everyday urban spaces into learning environments capable of communicating the MUL. Within the HUL framework, these findings underline that the invisibility of archaeological layers is not solely a matter of physical invisibility but also of limiting both public perception and the broader socio-cultural value of the city walls.

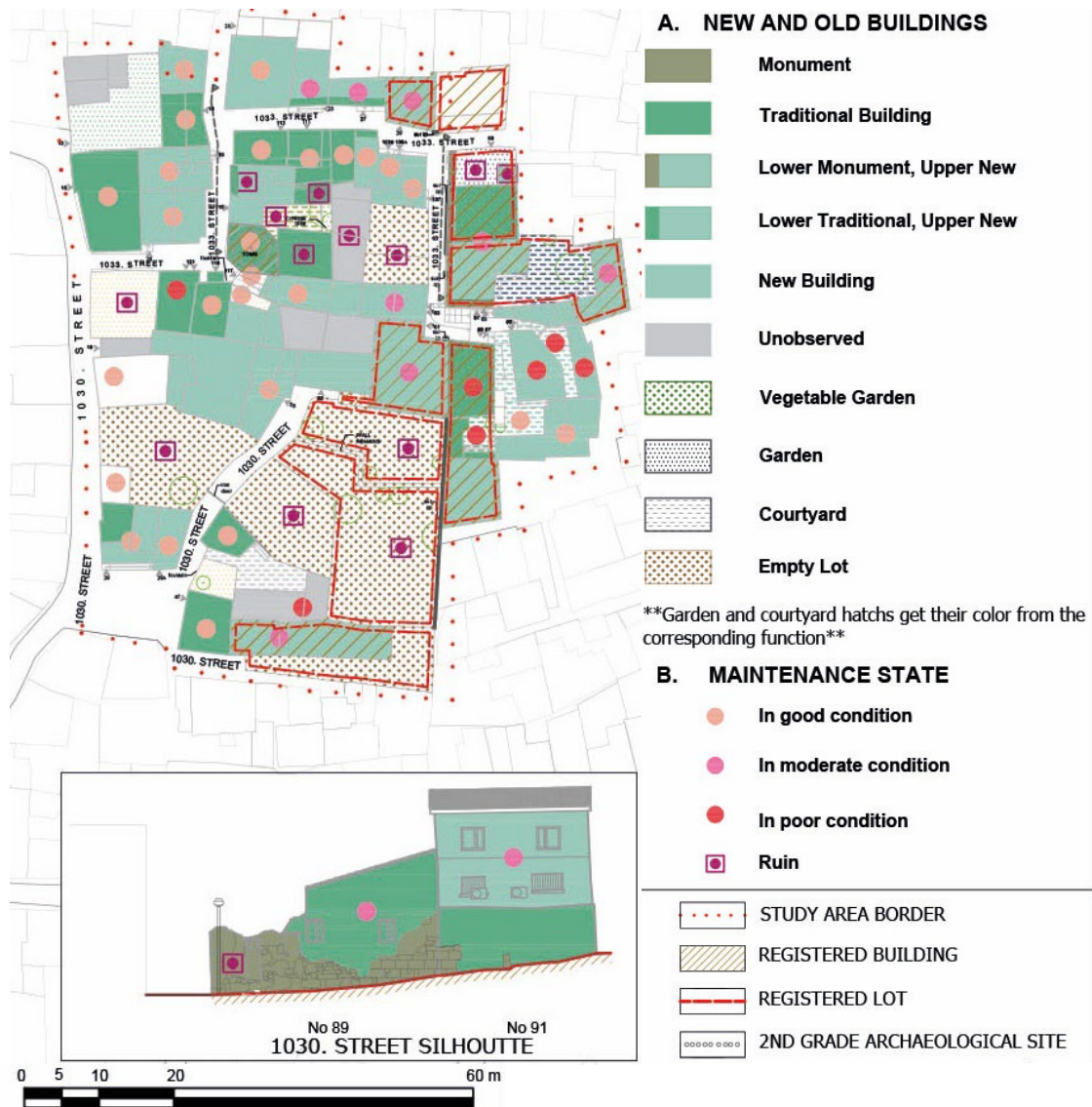


Figure 7 Overlapped analyses new-old buildings and maintenance state (Revised from the unpublished RES511 course dataset, 2021–2022)

Conservation and presentation practices in the Kadifekale area reveal a gradual policy shift from neglect toward integrated heritage planning. In the early Republican period, archaeological remains were largely ignored, and rapid urbanisation after the 1950s led to the occupation and spatial fragmentation of the Roman Theatre and the Kadifekale city wall system, rendering them almost entirely invisible within the urban fabric. Early statutory plans, including the 1955 İzmir City Plan (1/2000) and the 1984 Kemeraltı Protected Area Development Plan (1/1000), defined archaeological boundaries only in limited and schematic terms, failing to establish physical or visual connections with surrounding neighbourhoods. Although the rediscovery of the Roman Theatre in 2008 and the 2013 revision of the 1/1000 Kadifekale Theatre and Its Surroundings Conservation Plan Revision marked a significant conceptual shift, introducing 1st and 2nd degree archaeological site designations and proposing an “Archaeology and History Park” to enhance public participation, implementation has remained constrained (Figure 8).



Figure 8 Archaeology and History Park Project (Revised from Municipality of Konak, Department of Conservation of Cultural Heritage, n.d.)

As a result, despite their formal recognition within conservation policy, the archaeological layers of Kadifekale remain physically inaccessible and perceptually disconnected from daily urban life, reinforcing their continued invisibility within the HUL.

4. Discussions

The preservation of antique city walls that are now situated within the HULs of European cities is evaluated in several studies (Table 2). The European researchers emphasize that the physical and social accessibility to the antique city walls in historic urban centers are achieved to a great extent in European cities, but there are still challenges related to the insufficiency of their intellectual accessibility (Ali & Abouelfadl, 2022; Ebejer et al., 2023). By contrast, researchers working on Asian historic cities tend to focus on mitigating the consequences of limited physical and social accessibility, and place greater emphasis on necessity of improvement of perception, public engagement, and interpretive integration. Positioned at the intersection of these contexts, the Kadifekale city walls offer a critical case for examining the interaction between historic defensive structures and contemporary urban life, particularly in partially renewed and fragmented settings where research remains limited (Şahin Körmeçli, 2024; Wang et al., 2019). Despite their significance as an archaeological layer embedded in İzmir's urban fabric, the walls remain physically, socially, and intellectually inaccessible due to deterioration, security concerns, and insufficient conservation and presentation strategies. This condition highlights the necessity for integrated and participatory approaches that reconnect heritage with everyday urban life. Accordingly, a coordinated framework combining conservation, spatial planning, and heritage-led interventions is proposed to restore the citizens' right to the city and enhance accessibility and visibility. (Figure 9).

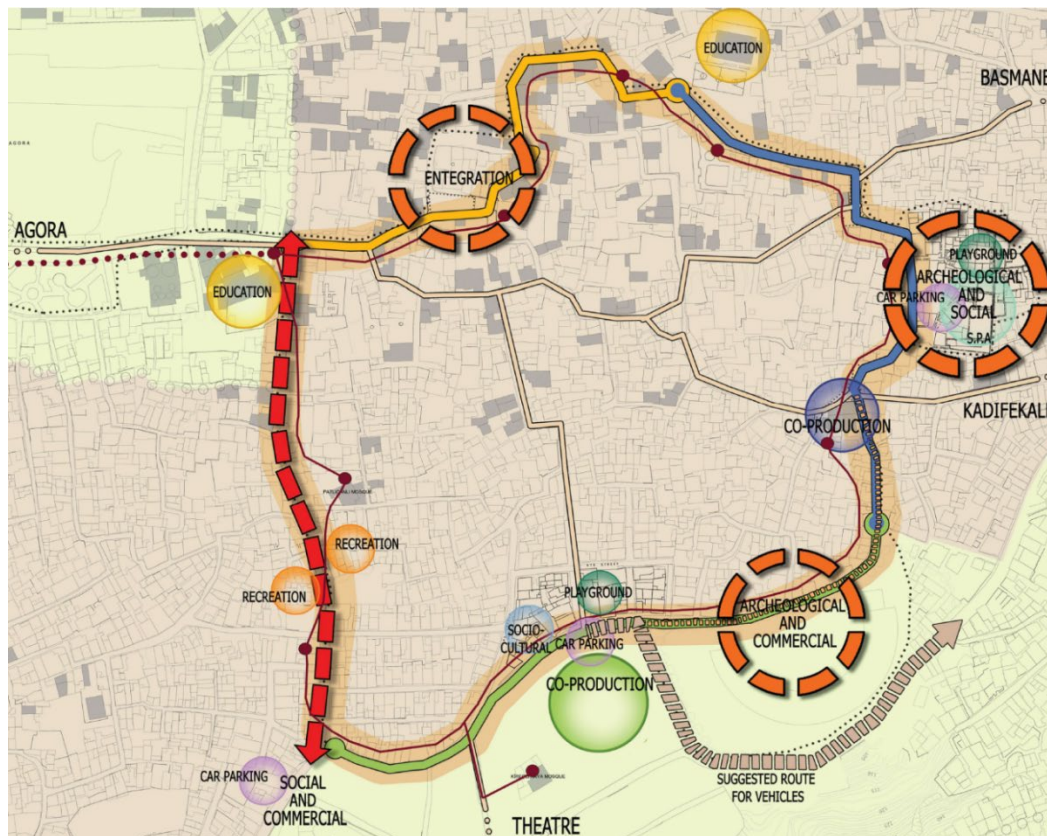


Figure 9 Proposed concept plan (Revised from the unpublished RES511 course dataset, 2021–2022)

Table 2 Comparative Cases of City Walls in Urban Landscapes

ARTICLE	IDENTIFICATION				PROBLEM DEFINITION	AIM	METHOD	INTERPRETATION APPROACH	ACCESSIBILITY	CONSERVATION	PRESENTATION	POLICY AND PRACTICE
	CASE	HERITAGE TYPE	CONTEXT	THREAT								
Ali, & Abouelfadl, 2022	Alexandria	Ancient City Wall and HUL	Heritage Landscape, Cultural	Inaccessible, Unrecognisable	Archaeological remains lack perceived significance within contemporary public contexts.	Integrate MUL and traditional practices to promote sustainable urban conservation.	Literature Review, Case Study Approach, Empirical Study	Mixture of top-down and bottom-up approach	Physical	Regular Monitoring Structural Care and Maintenance	A Culture-Led Touristic Path Archaeological Park	Renovation and Management Plan
Bonadei, et. al., 2017	Bergamo	Ancient City Wall	HUL	Cultural Landmark	The effectiveness of the HUL approach in small-scale participatory conservation remains insufficiently examined.	To reassess the significance of ancient city walls in Bergamo.	Literature Review, Case Study Approach, Empirical Study	The HUL Approach, Mixture of top-down and bottom-up approach	Physical Social Intellectual	Public Dissemination Communication Activities	Museumification on New Gaze and Rejuvenation	Guidebook Short Animated Film
Diceglie, 2023	Monopoli in Puglia	A House within the HUL	Historical and Cultural	Natural Disasters	The seismic vulnerability of heritage artefacts is still inadequately addressed.	To provide a method for conserving and protecting historic buildings in connection with ancient city walls.	Field Research Practice, Documentary-Based Historical Studies, Case Study Approach	Morpho-Typological and Stratigraphic Analysis	Physical Social Intellectual	Reconstruction	Cultural Documents of The City	Management Plan

Ebejer, et. al., 2023	Poland, Malta	Ancient Fortress	HUL	Intrinsic, Extrinsic Nature, Excessive	While intrinsic heritage values are well-defined, extrinsic heritage values are less studied.	To define a conceptual framework of values relevant to fortified heritage.	Literature Review, Case Study Approach	Discussion of The Values	Physical Social	Adaptive Reuse Rehabilitation	Museum	General Framework for Fortified Heritage Referring to Values Set
Łakomy, 2021	Opole Silesia	Post-City wall Area	HUL	Natural, Historical	The Polish monument protection system presents unresolved methodological limitations.	To assess how the historical city's founding decisions influence current functioning and development within a sustainable framework.	Formal Analysis, Field Analyses, Skyline Legibility Analyses, Case Study Approach, Comparative Study	Multidimensional Comparative Analysis	Social	Urban Greenery System Consisting of Investigation, Design, Maintenance	Combining Residential Park and Cemeteries with Natural Greenery (riverbeds, wetlands)	General Guidelines of for Post-City wall Areas Sustainable Tourism Strategy
Moreno, et. al, 2023	Seville and Niebla	Medieval City wall Walls and	HUL	Historical, Architectural	Humidity Changes, Increasing	Green areas are viewed as a threat to heritage structures due to humidity changes that accelerate decay.	Remote Sensing, Test The Statistical Use of Landsat Image, The Analysis of The NDWI Levels, Case Study Approach	Statistical Analysis of Historical Series of Satellite Images	n/a	Regular Monitoring Maintenance	Public Gardens Public Park	Vegetation Monitoring Plan to Implement Sustainable Urban and Heritage Management Policies
Pardela, et. al, 2022	France, Germany, Poland	Historic City walls	HULs	Historical, Cultural, Vegetation, Invasive Plant	The strategies for shaping MHLs to ensure their legibility and optimal naturalness are currently unclear.	To identify the relationship between the legibility and naturalness of MHLs and social preference, considering mediating effects.	Questionnaire Survey, The Units of Analysis, Case Study Approach, An Interdisciplinary and Holistic Approach	Sampling Size and Sampling Method	Social	Maintenance	Green Areas	Nature-Based Solutions and Planning for Different Zones of Greenery Within MHLs
Serrano-Chacón, et. al, 2025	Seville	The Medieval City Wall	HUL	Historical, Cultural, Architectural	Weather-Related Erosion, Capillary Rise,	The mediaeval wall on rammed earth in Seville highlights specific vulnerability, degradation and erosion factors requiring NDT methods.	Literature Review, Case Study Approach, The Enhanced Frequency Domain Decomposition, Ambient Vibration Test, The Stochastic Subspace Identification- Unweighted, Operational Modal Analysis, Principal Components- Merged Test Setups	Non-Destructive Techniques (NDT)	n/a	Monitoring	n/a	Proposed Protocol for The Global Structural Diagnosis of The City Wall
Şahin Körmeçli, 2024	Amasra	Ancient Fortress and City Walls	HUL	Historical, Social, Architectural, Unhealthy and Uncontrolled	The identification of architectural structures affecting social interaction clusters in Amasra remains an unresolved heritage issue.	To present an analysis model that uses visual methods to map the network that shapes the historic centre's urban image.	Literature Review, Empirical Study, Case Study Approach, Integrating Network Analysis and Mental Mapping	The Graph Commons Platform Study	Social Intellectual	n/a	n/a	n/a
Wang, et al, 2019	Xi'an	Ancient City Wall	HUL	Historical, Cultural	China's modernisation led to the neglect of traditional urban culture, resulting in demolition of city walls.	To support the sustainable conservation and development of historic Chinese city walls.	Literature Review, Case Study Approach, Empirical Study, HUL	The Dynamic Integration of Heritage Protection and Social Development	Physical Social Intellectual	Adaptive Reuse	Greenbelt Park Residential Recreation Space Modern Public Transport Station Residential Leisure Square	Sustainable Development Plan

Environmental threats, such as weather-related erosion, capillary rise, and humidity fluctuations (Moreno et al., 2023), as well as natural disasters (Diceglie, 2023), earthquakes, landslides, floods,

and fires (Serrano-Chacón et al., 2025), and excessive vegetation growth, invasive plant species, biotic factors, and allergenic pollen, further obscure archaeological features (Ebejer et al., 2023; Pardela et al., 2022). These are intensified by pollution (Łakomy, 2021), urban pressures, including uncontrolled development, and rapid urbanization (Moreno et al., 2023; Serrano-Chacón et al., 2025; Şahin Körmeçli, 2024). Complex topography and seismic vulnerability in Kadifekale compound these risks, limiting documentation, monitoring, and integration into conservation frameworks. Such an issue highlights the necessity of risk-based heritage management strategies that integrate preventive conservation measures, hazard assessment, and adaptive management strategies within the HUL approach. In this phase of the conservation strategy, the Smyrna Theatre excavation area, adjacent to a disaster-risk zone, is proposed to function as an archaeological node with controlled public access. Pedestrianisation of the surrounding streets and the redirection of vehicular traffic would integrate the site into the pedestrian ring, enhancing accessibility and visibility while supporting risk-sensitive heritage management within the HUL.

Comparative studies highlight that socio-cultural integration within HULs depends on the coordinated provision of physical, social, and intellectual accessibility (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Diceglie, 2023; Ebejer et al., 2023; Łakomy, 2021; Moreno et al., 2023; Pardela et al., 2022; Serrano-Chacón et al., 2025; Şahin Körmeçli, 2024; Wang et al., 2019). The case exemplifies how the absence of such coordination contributes to the progressive inaccessibility of heritage in the MUL (Ali & Abouelfadl, 2022). The area's use as a temporary accommodation for migrants attempting to reach Europe (Oner et al., 2020) generates significant security concerns (Yıldız, & Uzgören, 2016). This neglect and lack of maintenance expose the surrounding examples of high-quality civil architecture to physical deterioration, as well as intellectual invisibility and inaccessibility. As in the conservation process, a pedestrian ring is proposed to connect the three key focus points of the case study area and improve physical accessibility within the multi-layered heritage context. The ring integrates designated co-production and educational spaces, including a craft-orientated production area located within the case study site, to support heritage-based skills development and public engagement. This intervention makes periodical layers more visible and useful in everyday life, while also showing the continuity between cultural heritage, social use, and contemporary urban life within the HUL framework.

The studies emphasize the challenging possibility of linking multi-layered urban heritage sites with traditional practices as a catalyst for sustainable urban conservation (Ali & Abouelfadl, 2022), in accordance with the HUL framework. Research on fortified urban fabrics, including the reassessment of the cultural significance of the Bergamo city wall (Bonadei et al., 2017), the formulation of methodological guidelines for conserving buildings associated with defensive structures (Diceglie, 2023), and value-based frameworks for fortified heritage (Ebejer et al., 2023), demonstrates the continued relevance of city walls in shaping urban identity (Wang et al., 2019). Parallel studies investigate the impact of foundational decisions in early urban formations on contemporary development potential (Łakomy, 2021) and the implementation of green-city strategies within historical contexts, scrutinizing their alignment with cultural heritage preservation (Moreno et al., 2023). Additional contributions examine the interplay between visibility, naturalness, and social preference in military heritage landscapes (Pardela et al., 2022); evaluate ambient vibration techniques for characterizing historic rammed earth structures (Serrano-Chacón et al., 2025); and suggest visual network-based models for analyzing urban image formation in historic centres, such as Amasra (Şahin Körmeçli, 2024). Research on the sustainable development of historic Chinese city walls reinforces these themes (Wang et al., 2019), collectively illustrating an expanding body of knowledge dedicated to enhancing the visibility, interpretation, and conservation of layered urban environments (Ali & Abouelfadl, 2022). Based on the objectives articulated in comparable studies, this research aims to clarify how multi-layered urban heritage can be conserved and communicated within rapidly transforming urban contexts. By analysing the architectural, natural, cultural, and socio-economic attributes of the case area, the study evaluates its heritage values, opportunities, and threats, ultimately formulating strategies that reinforce coherence between the historic site and the surrounding urban renewal zone.

The literature also indicates that methodological approaches to MULs rely on a fundamental methodological cluster that includes case study approaches and empirical studies, which together form the dominant analytical basis in contemporary heritage management science (Ali & Abouelfadl, 2022; Bonadei et al., 2017; Ebejer et al., 2023; Wang et al., 2019). A secondary group of methods combines field analysis, formal architectural assessment, skyline and visibility studies, and documentary historical research to interpret the spatial logic of historic environments, particularly those shaped by defensive structures such as the city wall (Diceglie, 2023; Ebejer et al., 2023; Moreno et al., 2023). Increasingly technical approaches make use of remote sensing, Landsat-based statistical testing, and NDWI analysis to evaluate environmental impacts on heritage sites (Moreno et al., 2023). Interdisciplinary studies further incorporate questionnaire surveys and unit-based spatial analyses, often framed within the HUL approach to examine social perception and public engagement (Pardela et al., 2022; Wang et al., 2019). At the advanced diagnostic level, methods such as ambient vibration testing, operational modal analysis, and related frequency-domain and subspace identification techniques are employed to assess the structural behaviour of vulnerable historic fabrics (Serrano-Chacón et al., 2025). Complementary cognitive spatial tools, including mental mapping and network analysis, offer an explanation of how historic centres are perceived and navigated, despite the partial invisibility of their archaeological layers (Şahin Körmeçli, 2024). Together, these methodological approaches illustrate a consolidated yet diversified set of tools for enhancing the visibility, interpretation, and sustainable management of layered urban environments. In the case study, the methodological framework combines qualitative approaches widely adopted in comparative studies, most notably comprehensive literature reviews and the comparative analysis of relevant cases, with quantitative techniques, particularly the systematic implementation of on-site visual observations. This integration facilitates both the contextual interpretation of the site within the broader discourse of heritage management and the empirical assessment of its present physical, social, and intellectual conditions.

Comparative studies indicate that interpretation approaches in MULs reveal recurring patterns in the provision of physical, social, and intellectual accessibility (Ali & Abouelfadl, 2022; Bonadei et al., 2017). Approaches based on a mix of top-down and bottom-up frameworks, or the HUL methodology, tend to create physical, social, and intellectual access by combining participatory processes with spatial and historical analysis (Bonadei et al., 2017). Similarly, morpho-typological and stratigraphic analyses enhance all three forms of accessibility by revealing structural continuities and deep-time transformations within the urban fabric, which allows for a better understanding of how these elements interact and contribute to the overall accessibility of urban environments (Diceglie, 2023). In contrast, value-based discussions and multidimensional comparative analyses primarily facilitate social accessibility (Ebejer et al., 2023; Łakomy, 2021). They encourage people to become more involved in their communities and help them understand each other better, but they lack intellectual accessibility, which refers to the ability to engage with complex ideas and information that are necessary for informed decision-making (Ebejer et al., 2023; Łakomy, 2021). Methods that use statistical analyses of satellite images, non-destructive testing (NDT) or sampling techniques don't usually support accessibility. They provide data-driven insights but overlook real-life experiences. These approaches rarely provide direct accessibility gains, as their focus lies in diagnostic evaluation rather than public interpretation (Moreno et al., 2023; Pardela et al., 2022; Serrano-Chacón et al., 2025), which limits their effectiveness in enhancing user engagement and understanding of the data presented. The commons-based graphic platform study focuses on social and intellectual access (Şahin Körmeçli, 2024). The dynamic integration of heritage protection and social development facilitates access in all three areas: physical, social, and intellectual (Wang et al., 2019). These groupings demonstrate that each interpretive strategy provides a distinct type of accessibility, which influences how archaeological layers in dense historic settings can be interpreted or remain hidden in modern heritage management. Presentation-orientated approaches, such as the establishment of culture-led tourist routes, archaeological parks, museums, or cultural documentation initiatives, frequently yield guidebooks, interpretive

media, and tourism strategies. The result suggests that increased public visibility of heritage layers typically stimulates communication- and tourism-based policy instruments (Diceglie, 2023; Ebejer et al., 2023; Wang et al., 2019). The Kadifekale case demonstrates how social challenges, such as security issues and migration-related pressures, further intensify inaccessibility due to the absence of such interpretation approaches. These conditions contribute to both physical neglect and the intellectual invisibility of heritage. To address this, a pedestrian ring is proposed to connect key focal points, integrating co-production and educational spaces that support heritage-based skills and public engagement (Figure 9). This intervention aims to enhance the everyday use and perception of periodical layers, reinforcing their continuity within contemporary urban life.

There is a clear link between the type of conservation or presentation methods chosen and the policies and practices that were created to address the heritage problems of MULs. Regular monitoring, structural care, and routine maintenance consistently lead to the formulation of renovation and management plans, as well as vegetation monitoring schemes aligned with sustainable urban and heritage management policies, demonstrating that basic preventive conservation often produces regulatory frameworks aimed at long-term management (Ali & Abouelfadl, 2022; Łakomy, 2021; Moreno et al., 2023; Pardela et al., 2022; Serrano-Chacón et al., 2025). Conservation strategies involving reconstruction, adaptive reuse, and rehabilitation tend to generate more comprehensive management plans and general frameworks for fortified heritage, reflecting their broader spatial and functional impacts on historic environments. Where studies combine cultural and natural presentation practices, such as integrating residential parks, cemeteries, and natural green systems, the resulting outputs align with nature-based planning policies and sustainable development strategies within MULs (Łakomy, 2021). In contrast, highly technical conservation practices, including systematic monitoring or diagnostic assessments, often culminate in specialised protocols for the structural diagnosis of city walls, highlighting their focus on engineering-driven risk mitigation rather than broad, interpretive, or public-facing policies (Serrano-Chacón et al., 2025). While case studies and empirical research dominate, complementary methods ranging from spatial analysis and historical documentation to advanced diagnostic and digital techniques help reveal both physical conditions and perceptual dimensions. Similarly, interpretation approaches vary in their capacity to generate accessibility: participatory and HUL-based strategies tend to enable integrated access, whereas technical methods remain limited to diagnostic functions (Table 3).

Table 3 Proposed Solutions

CHALLENGES OF THE SITE	PROPOSED SOLUTIONS IN SIMILAR CASES			PROPOSED SOLUTIONS		
	<i>conservation</i>	<i>presentation</i>	<i>policy and practice</i>	<i>conservation</i>	<i>presentation</i>	<i>policy and practice</i>
A lack of accessibility in physical, visual, and intellectual terms, limiting public engagement with the city's archaeological layers	Regular Monitoring, Structural Care and Maintenance, Adaptive Reuse, Rehabilitation	A Culture-Led Touristic Path, Archaeological Park, Museum, Green Areas	Renovation and Management Plan, General Framework for Fortified Heritage Referring to Values Set, Nature-Based Solutions and Planning for Different Zones of Greenery Within MHLs	Structural Care and Maintenance, Rehabilitation, Adaptive Reuse	A Culture-Led Touristic Path, Archaeological Park	Renovation and Management Plan
A lack of integration, both physical and societal	Public Dissemination, Communication Activities, Urban Greenery System Consisting of Investigation, Design, Maintenance, Adaptive Reuse	Museumification, New Gaze and Rejuvenation, Combining Residential Park and Cemeteries with Natural Greenery, Greenbelt Park, Residential Recreation Space, Modern Public Transport Station, Residential, Leisure Square	Guidebook, Short Animated Film, General Guidelines of for Post-City wall Areas, Sustainable Development Plan	Public Dissemination, Communication Activities, Urban Greenery System Consisting of Investigation, Design, Maintenance, Adaptive Reuse	Greenbelt Park, Recreation Space	Sustainable Tourism Strategy, Sustainable Development Plan
Invisible periodic layers are not incorporated into contemporary urban planning and public narratives	Reconstruction, Regular Monitoring, Maintenance	Cultural Documents of The City, Public Gardens, Public Park,	Management Plan, Vegetation Monitoring Plan to Implement Sustainable Urban and Heritage Management Policies, Protocol for The Global Structural Diagnosis of The City Wall	Regular Monitoring, Maintenance	Public Gardens, Public Park	Management Plan

This study contributes to debates on MULs by conceptualizing AS as an urban base that shapes both the physical structure and the cultural continuity of the city. In Kadifekale, this perspective extends conventional HUL-based approaches by connecting the invisibility of archaeological heritage to disruptions in physical, social, and intellectual accessibility. Accordingly, the study develops an integrated analytical framework that links accessibility, interpretation, and heritage integration, offering a context-sensitive approach for managing invisible periodic layers within rapidly transforming HULs.

Although the empirical findings identify different periodic layers, framing them within the HUL approach demonstrates how these invisible periodic layers continue to shape contemporary socio-spatial dynamics. By directly connecting these findings to the urban base conceptual framework, it becomes evident that managing multi-layered urban heritage requires transcending the static preservation of isolated monuments. Consequently, the Kadifekale case reveals the active role of similar heritage elements within the broader urban base, illustrating that the dynamic integration of historical stratifications is essential for robust heritage management in MULs.

The results of these studies highlighted that the type of conservation or presentation practice directly shapes the policy strategies developed, revealing how specific interventions contribute to making otherwise invisible periodic layers more governable, interpretable, and sustainably managed within dense historic urban fabrics. Preventive conservation measures often lead to long-term management strategies, while adaptive reuse and presentation-orientated approaches generate broader planning and tourism policies. In contrast, highly technical interventions primarily result in specialised diagnostic protocols. These results show that the visibility and integration of periodical layers within MULs depend not only on physical conservation. It also depends on the alignment of interpretation, accessibility, and policy-making processes within a holistic heritage management framework. In this context, the proposed strategies address the discontinuity of the city walls through the establishment of a pedestrian network reconnecting key focal points, the integration of the Smyrna Theatre excavation area as a controlled-access archaeological node within a risk-sensitive framework, and the activation of underused spaces through co-production and educational functions. These interventions aim to enhance physical, social, and intellectual accessibility while responding to site-specific constraints such as topography, disaster risk, and security concerns. In doing so, the proposed programs not only support the visibility of the city walls but also foster intellectual accessibility for residents and irregular migrant populations while addressing their basic socio-spatial needs in the area. Furthermore, the completion and implementation of the previously initiated but currently inactive Archaeology and History Park project (Figure 8) is essential to ensure the long-term visibility, accessibility, and integration of the archaeological layers within the HUL.

5. Conclusion

This study demonstrates that invisible periodical layers within HULs should be understood not merely as urban base physical remains but as integral components of cultural continuity, urban identity and collective memory. In this context, the concept of the urban base provides both a tangible and conceptual framework for interpreting the relationship between historical layers and contemporary spatial practices. Accordingly, the findings emphasize the importance of integrated, participatory, and place-based approaches that combine conservation, presentation, and accessibility to ensure the effective inclusion of these layers in everyday urban life.

The case shows the persistent challenges of integrating deeply embedded archaeological heritage into modern planning processes. Despite long-standing recognition of İzmir's archaeological potential, planning practices have largely treated such areas as isolated entities, limiting their visibility, accessibility, and socio-cultural integration. In Kadifekale, environmental risks, uncontrolled urbanization, and inadequate interpretive strategies have further reinforced the

physical and metaphorical invisibility of the city walls, despite their role as the foundation of the contemporary urban fabric.

Through the presentation of the concept of the urban base within the HUL framework, this study contributes to ongoing debates in heritage management, proposing a transferable approach for MULs. This approach highlights the visibility of the city walls, physically, socially, and intellectually, by defining the characteristics of key focal points and linking them through a pedestrian network, integrating the archaeological excavation area as a controlled-access archaeological node within a risk-sensitive framework, and revitalizing underused spaces through co-production and educational functions. It highlights the need for context-sensitive strategies that integrate heritage into urban governance and daily life practice, offering a framework for addressing visibility and accessibility challenges in comparable historic environments.

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The dataset is unpublished and archived at İzmir Institute of Technology. The authors are members of the research team that contributed to the creation of the dataset. The dataset has been re-evaluated and interpreted in accordance with the aims of the present study. Ethics committee permission is not required.

CRedit Authorship Contribution Statement

Beylem Doğa Tabur: Writing – review & editing, Writing – original draft, Methodology, Investigation, Analysis, Data curation, Conceptualization, Data visualization. Mine Turan: Writing – review & editing, Writing – original draft, Methodology, Investigation, Analysis, Data curation, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Data will be made available on request.

Ethics Committee Approval

Ethics committee permission is not required.

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Resume

Beylem Doğa Tabur is currently an architect at a public institution and a PhD candidate in the Department of Conservation and Restoration of Cultural Heritage at İzmir Institute of Technology (İZTECH), Türkiye. She received her B.Arch. degree in Architecture from İZTECH in 2019 and her M.Sc. degree in Conservation and Restoration of Cultural Heritage from İZTECH in 2024. She also completed the graduate-level Online Certificate Programme for Safeguarding and Rescuing Archaeological Assets, organised collaboratively by Koç University, KU ANAMED, ICOM UK, and the British Institute in Ankara (BIAA). She has worked as a researcher and architect in several national and international multidisciplinary projects, including the ERC-funded HOMEACROSS Project, the Ephesus Seven Sleepers Restoration and Visitor Route Project, and the Restoration Project of the Pakistan Pavilion in Kültürpark, İzmir. She has also received awards in architectural competitions. Her research interests focus on digital humanities, particularly the use of digital technologies in the documentation, visualisation, and interpretation of cultural heritage.

Mine Hamamcıoğlu Turan, Prof. Dr., held a Doctor of Philosophy in Architecture from İzmir Institute of Technology (İZTECH). Her research interests are architectural conservation, and preservation of historic environment. She has been part of the academic staff of the Department of Conservation and Restoration of Cultural Heritage in İzmir Institute of Technology, Türkiye since 2000.