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The Silhouettes of Sofia — Architectural Adaptation and Spatial Reuse of a Historic Structure on "Maria Luisa" Boulevard

Abstract:

The study is relevant because adaptive reuse in dense historic city centres increasingly determines whether protected buildings survive as meaningful parts of the urban fabric or are reduced to fragmented façadism. The research problem arises from the tension between contemporary functional transformation and the preservation of architectural authenticity, especially where cumulative alterations weaken not only material integrity but also the street silhouette and the legibility of a historic ensemble. The novelty of the article lies in treating the urban silhouette as a concrete heritage parameter and as an analytical instrument for evaluating adaptive reuse rather than as a purely visual or picturesque effect. The subject of analysis is the architectural adaptation of a protected early twentieth-century building on "Maria Luisa" Boulevard in Sofia as part of a historically linked street composition. The object of analysis is the historic structure itself together with its spatial envelope, material substance, façade articulation, volumetric development, and its relation to the collective silhouette of the boulevard. The purpose of the study is to determine how such a building can be adaptively reused in a way that preserves authenticity, restores its contribution to the street profile, and accommodates contemporary functions through structurally legible, materially compatible, and volumetrically controlled interventions. The methodological framework combines archival-documentary research, historical-photographic comparison, urban silhouette assessment, volumetric compatibility analysis, on-site architectural and engineering survey, and scenario-based design evaluation. The study is conceptually and practically oriented toward architects, conservation specialists, urban morphologists, municipal planners, heritage administrators, and design educators concerned with protected buildings in Sofia and comparable European historic centres. The results show that the weakening of authenticity was caused not by one major reconstruction alone but by a gradual sequence of façade flattening, replacement of joinery, masking of monzonite and masonry surfaces, billboard loading, roofline disruption, and function-driven exterior distortion. The study demonstrates that silhouette loss may occur even without substantial height increase, through cumulative changes in proportion, façade depth, tectonic legibility, and the base–body–top hierarchy of the street wall. It further establishes that the greatest adaptive potential of the building lies in its original structural logic, material authenticity, and spatial envelope, while any future volumetric growth is acceptable only if introduced as a recessed, lightweight, reversible, and clearly contemporary layer subordinate to the historic cornice line and existing massing. The study also shows that interior transformation and street-scale heritage continuity are inseparable, since inappropriate changes in programme and spatial order ultimately deform the public architectural image of the building. The author concludes that adaptive reuse in Sofia's historic core should be judged not by superficial façade restoration or by the mere insertion of new function, but by the extent to which intervention preserves structural intelligibility, reveals authentic materials, respects the inherited space envelope, and sustains the formal legibility of the boulevard. The article further concludes that the building must be understood as part of a wider historical composition rather than as an isolated object, and that urban silhouette should be operationalised as a measurable criterion for assessing both heritage loss and future intervention. On this basis, adaptive reuse is defined as a

disciplined conservation strategy through which old and new elements enter into a legible, historically grounded architectural dialogue.

Keywords: urban memory, architectural authenticity, building identity, spatial envelope, urban scale, Sofia urban centre.

Abbreviations:

UACEG is University of Architecture, Civil Engineering and Geodesy.

Introduction

The adaptive reuse of historic buildings in dense urban centres has become one of the most urgent questions in contemporary architectural conservation, particularly in cities where rapid functional change, commercial pressure, and fragmented interventions have weakened the continuity of inherited urban form. In such contexts, the preservation of a building cannot be reduced to the retention of isolated decorative features or façade fragments. It must also include the safeguarding of its volumetric presence, material logic, and contribution to the broader street composition. Along "Maria Luisa" Boulevard in Sofia, where early twentieth-century structures continue to define the historic identity of the central urban core, the question of reuse is inseparable from the question of how the street itself remains legible as a cultural and spatial whole.

This relevance is especially evident in cases where historic structures survive physically but lose architectural intelligibility through cumulative alterations. The challenge is no longer merely to "save" an old building in a technical sense, but to ensure that its transformation does not erase the urban relationships that give it meaning. Height, cornice hierarchy, roof line, façade depth, masonry articulation, and the cadence of openings all participate in the collective silhouette of the boulevard. For this reason, the adaptation of a single protected building must be understood as an intervention in a larger heritage system. The present study addresses this issue through the case of a historic structure on "Maria Luisa" Boulevard, arguing that reuse can become a survival strategy for historic architecture only when it preserves both the internal structural logic of the building and its public role within the street profile.

The research problem emerges from the tension between contemporary functional requirements and the preservation of architectural authenticity within a historically layered urban fabric. In practice, many adaptive interventions are driven by short-term utilitarian needs: commercial conversion, maximisation of floor area, replacement of original elements with standardised systems, or façade redesign intended to modernise appearance. However, such interventions often produce a distortion of the building's authentic identity rather than a meaningful renewal. In the case under examination, archival evidence and visual comparison indicate that the loss of authenticity has not resulted only from large-scale reconstruction, but also from the gradual replacement of joinery, concealment of original materials, application of incompatible surface treatments, and visually dominant additions that disrupt the perception of massing and proportion.

A second dimension of the problem concerns the insufficient integration of building-scale adaptation with urban-scale analysis. Historic buildings in ensemble conditions cannot be adequately assessed as isolated objects, because their heritage significance is partly embedded in their relation to neighbouring structures and to the pedestrian experience of the street. Yet in many redevelopment practices, the urban silhouette is treated as secondary, or is considered only

in abstract planning terms without detailed architectural reading. This produces a methodological gap: while conservation discourse often emphasises authenticity of fabric and material, it less consistently addresses the authenticity of silhouette, volumetric rhythm, and street continuity. The present article therefore examines how a building's adaptation may be evaluated not only through interior functionality or façade treatment, but through its role in preserving the measurable cultural coherence of the boulevard.

The novelty of the study lies in its interpretation of urban silhouette as a concrete heritage parameter and as an analytical instrument for adaptive reuse. Rather than approaching authenticity only through the preservation of material substance or stylistic details, the study extends the discussion toward the building's external spatial agency within a linked historical composition. In this perspective, silhouette is not a purely visual category, nor a picturesque effect, but a structured expression of urban memory, scale, hierarchy, and continuity. The study proposes that the preservation of authenticity in a central Sofia street must include the readability of the base–body–top composition, the dominance of the historic cornice line, and the controlled relationship between the original volume and any future additions.

The innovative contribution of the article also consists in combining archival plans, historical photographs, volumetric analysis, structural reading, and scenario-based design thinking in order to reconstruct both the lost and the potentially recoverable logic of the building. This allows the research to move beyond descriptive documentation and toward a projective model of heritage adaptation. The proposed interpretive framework connects material authenticity, tectonic legibility, and public-scale urban perception, while also testing the possibility of recessed and reversible additions that remain secondary to the historic envelope. In this sense, the article does not merely analyse past transformations; it formulates a method for evaluating future interventions in terms of their compatibility with the historic silhouette and the cultural continuity of Sofia's urban centre.

The subject of the research is the architectural adaptation of a protected early twentieth-century building on "Maria Luisa" Boulevard in Sofia, considered as part of a historically linked group of buildings whose collective silhouette contributes to the identity of the boulevard. The study focuses on the relationship between the building's changing functions, its structural and material authenticity, and the transformation of its urban presence over time.

The object of the research is the historic architectural structure itself together with its spatial envelope, façade articulation, material substance, volumetric development, and street-scale silhouette as these have evolved through successive alterations from the early twentieth century to the present. The object also includes the building's relationship to the neighbouring volumes that shape the compositional continuity of the boulevard.

The aim of the research is to determine how a historic structure within Sofia's central urban fabric can be adaptively reused in a way that preserves its architectural authenticity, restores its contribution to the street silhouette, and allows the introduction of contemporary functions through structurally legible, materially compatible, and volumetrically controlled interventions.

To achieve this aim, the study addresses the following research tasks:

- reconstruct the historical development of the building's silhouette, architectural features, and material expression through archival documents, photographic evidence, and on-site analysis.
- identify the principal forms of authenticity loss caused by façade alteration, material substitution, structural modification, and function-driven transformation.

- evaluate the building's current volumetric and structural capacity for adaptive reuse in relation to the established silhouette of "Maria Luisa" Boulevard.
- formulate criteria and project-oriented scenarios for future interventions, including recessed additions and reversible structural systems, that preserve the dominance of the historic envelope while enabling contemporary public and educational uses.

The results of this research are addressed, first, to scholars and professionals working in architecture, heritage conservation, urban morphology, adaptive reuse, and interior architecture. For this audience, the article offers a case-based methodological model for understanding historic authenticity not as a static category, but as a dynamic relationship between structure, material, volume, and urban context. It contributes to the ongoing disciplinary discussion on how to reconcile conservation principles with functional transformation in historically dense city centres.

The study is also directed toward municipal authorities, planning institutions, cultural heritage administrations, and design practitioners involved in decision-making for protected buildings in Sofia and comparable European urban environments. For these readers, the article provides a practical framework for evaluating interventions that affect not only individual structures, but the integrity of whole streetscapes. In addition, the research has pedagogical relevance for students of architecture and interior design, since it demonstrates how archival inquiry, material reading, urban analysis, and design projection can be integrated into a single research-based approach to historic adaptation.

Although adaptive reuse has been widely discussed in architectural conservation literature, the specific relationship between urban silhouette, pedestrian-scale perception, and building-level adaptation remains insufficiently articulated in studies of historic centres such as Sofia. Existing scholarship usually addresses reuse through sustainability, material conservation, typological transformation, or heritage management, yet less attention is paid to the way a single building participates in the continuity of a larger street composition. In the present case, the draft clearly demonstrates that the historic value of the structure cannot be explained solely through its internal organisation or façade ornament, because its significance is also embedded in the cornice line, roof profile, façade depth, and proportional dialogue with adjacent buildings along "Maria Luisa" Boulevard.

A further gap concerns the absence of an operational framework for assessing when a new intervention remains compatible with a historic streetscape. The draft repeatedly shows that silhouette loss may occur not only through vertical enlargement, but also through the substitution of window joinery, masking of authentic stone and brick surfaces, billboard loading, visually heavy cladding, and other additions that alter the base–body–top hierarchy of the building. At the same time, it proposes that new capacity may still be introduced if it is recessed, lightweight, reversible, and subordinate to the historic cornice and primary massing. What has been missing, therefore, is a coherent methodological bridge between documentation of authenticity loss and criteria for future design action.

The study proceeds from the hypothesis that the adaptive reuse of a protected early twentieth-century building in Sofia's historic centre can preserve and even strengthen urban heritage continuity when intervention strategies are based on three interdependent principles: retention of structural legibility, recovery of authentic material expression, and protection of the historic street silhouette as a measurable heritage parameter. Under this hypothesis, the heritage value of the building is not confined to surviving fabric alone, but is also expressed through its contribution to the collective profile of the boulevard and to the human-scale reading of the street.

A second, more specific hypothesis is that limited new volumetric capacity may be introduced without compromising authenticity, provided that any addition is clearly contemporary, visually recessive from pedestrian viewpoints, structurally reversible, and compositionally subordinate to the original façade plane and cornice hierarchy. In this sense, the study tests whether a historically grounded design strategy can move beyond passive preservation toward an active model of reuse in which the building remains recognisable as inherited architecture while accommodating new public, educational, and cultural programmes. This hypothesis follows directly from the draft's proposed scenario of a recessed upper layer, lightweight construction, and flexible interior reuse based on the building's existing structural logic.

Against this background, the present study positions the historic structure on "Maria Luisa" Boulevard not as an isolated object of façade preservation, but as a dynamic component of a wider urban composition whose legibility depends on continuity of scale, massing, material expression, and spatial rhythm. The article argues that adaptive reuse in such a context must be evaluated simultaneously at the level of the building and at the level of the street, since the loss or recovery of authenticity unfolds across both registers.

To address this problem, the research combines archival plans, historical photographs, on-site survey, volumetric analysis, and interpretive comparison of historical and current conditions. This multi-layered approach makes it possible to reconstruct the building's former silhouette, identify the principal mechanisms of authenticity loss, and assess the capacity of the existing structure to absorb new functions without erasing its historical identity. In doing so, the study develops an analytical model in which urban silhouette becomes not a secondary visual effect, but a critical criterion for conservation-based design.

The following sections therefore move from conceptual framing to method and evidence. First, the article explains the methodological basis of silhouette analysis and volumetric compatibility. It then examines the historical transformations of the building and the distortions introduced by later interventions. Finally, it formulates a scenario for adaptive reuse in which authentic architectural features are revealed, new layers remain distinguishable and reversible, and the building's role within the historic profile of "Maria Luisa" Boulevard is preserved and reactivated.

Methods

This study is structured as a case-study investigation of a protected early twentieth-century building on "Maria Luisa" Boulevard in Sofia, examined as part of a historically linked street ensemble rather than as an isolated architectural object. The methodological framework combines archival-documentary research, historical-visual analysis, urban silhouette assessment, volumetric compatibility analysis, and on-site architectural and engineering survey. This mixed qualitative approach was selected in order to reconstruct the building's historical transformation, identify the mechanisms through which its architectural authenticity was weakened, and evaluate its capacity for adaptive reuse within the established street profile of the boulevard.

The first methodological component was urban silhouette research. In this study, urban silhouette is treated as an analytical category for understanding how the building historically contributed to the visual profile of the street through its estimated height, roof line, cornice hierarchy, façade depth, and the material articulation of openings. The investigation therefore relied on time- and place-specific evidence, including the collection and analysis of original graphic plans for the structure at No. 31, research into archival urban plans, photographic analysis, reconstruction of archival images, and examination of the historical dynamics of

silhouette formation along the street (*State Archives…, n.d.*). This stage made it possible to compare the building's earlier and later visual presence within the larger boulevard composition and to identify the principal changes affecting its public architectural legibility.

The second methodological component was archival and comparative analysis of the building's documented and existing condition. A detailed archival study was undertaken at the National Institute for Immovable Cultural Heritage, where the building was examined as a monument of local significance. Particular attention was given to discrepancies between officially approved plans and the existing built fabric. Rather than treating such discrepancies as secondary irregularities, the research used them as evidence for tracing later alterations, including exterior coverings, signage, altered window frames, added floor structures, and paint layers applied over original surfaces. In methodological terms, these discrepancies were not interpreted simply as documentary inconsistencies; they were used to establish a comparative basis for identifying changes in architectural appearance, façade depth, and material authenticity over time.

The third methodological component was volumetric compatibility analysis. Here, "volume" was understood as the three-dimensional architectural form of the building in relation to the historic street silhouette. Compatibility was assessed by examining whether any prospective new intervention—such as an additional floor, roof transformation, or visible adaptive insertion—could remain subordinate to the dominant historic massing. The principal criteria of evaluation were the continued readability of the historic cornice and roof line, respect for the skyline rhythm established by neighbouring buildings, limitation of excessive visual bulk from pedestrian viewpoints, and the recognisability of any new intervention as a clearly contemporary, reversible layer rather than an imitation of the original fabric. In this sense, volumetric analysis served not only as a design-oriented tool, but also as a conservation criterion linking adaptive reuse to urban continuity.

During the continuing research of specific building, more facts appeared which enlightened the principles relevant to the whole street. The building's analysis, as a monument of local significance since 1976, began with a detailed archival study at the National Institute for Immovable Cultural Heritage.

The initial research phase included a review of the 2017 architectural and interior design project, which involved partial conversion of the ground floor into an "Entertainment Centre". This review was used to assess the building's previously proposed adaptive capacity and to compare recent design intentions with the historic structural and spatial logic of the building.

A comprehensive engineering survey of the entire structure was conducted. A special geological analysis of the soil beneath the foundations was performed, accompanied by a thorough structural investigation of all existing load-bearing elements by the research team from the engineering team based in the research centre at UACG.

The study also incorporated a review of the 2017 architectural and interior design project, which proposed the partial conversion of the ground floor into an "Entertainment Centre." This review was used methodologically to assess the building's previously recognised adaptive capacity and to compare recent design intentions with the historic structural and spatial logic of the building. In parallel, a comprehensive engineering survey of the entire structure was carried out. This included a geological analysis of the soil beneath the foundations and a structural investigation of all existing load-bearing elements conducted with the participation of the engineering research team at UACEG. These investigations provided the empirical basis for evaluating the physical limits and possibilities of future intervention and for determining whether new functions could be introduced without compromising the historic load-bearing system.

The analytical procedure was organised in three interrelated stages. First, archival drawings, approved plans, historical urban documents, and photographic records from different periods were compared in order to reconstruct the former silhouette of the building and its relation to neighbouring volumes along "Maria Luisa" Boulevard. Second, on-site survey, proportion studies, and engineering assessment were used to document the current structural condition, material legibility, and spatial configuration of the existing building. Third, the collected evidence was synthesised through volumetric comparison and scenario testing in order to evaluate whether future adaptation could preserve the dominance of the historic cornice line, maintain pedestrian-scale proportional continuity, and introduce new layers as clearly contemporary, lightweight, and reversible additions. Within this framework, authenticity was assessed not only through surviving material fabric, but also through façade depth, opening rhythm, cornice hierarchy, roof profile, and the building's contribution to the collective street silhouette.

As a result, the Methods section establishes a research pathway that connects documentation of the past, diagnosis of the present condition, and evaluation of future adaptive possibilities. By combining archival evidence, visual comparison, volumetric assessment, and structural investigation, the study develops a methodological basis for understanding adaptive reuse as both an architectural and an urban operation within Sofia's historic centre.

Literature Review

Adaptive reuse is now widely recognised as one of the principal strategies through which historic buildings can remain socially relevant, materially preserved, and economically viable under contemporary conditions. Early professional arguments in favour of this approach stressed the need to justify reuse not as a secondary compromise, but as a legitimate architectural and conservation response to functional obsolescence (*Arjani, 1996*). This position was later reinforced by broader theoretical reflections on architectural duration and transformation. Stern (*1991*) argued that architecture acquires meaning over time, while Brand (*1995*) demonstrated that buildings evolve through layered processes of change rather than through single, finalised states. Read together, these works establish the conceptual basis for understanding adaptive reuse as a form of continuity rather than rupture.

Within conservation scholarship proper, adaptive reuse has increasingly been treated as a structured field of professional and academic inquiry. Bullen and Love (*2011*) framed the reuse of heritage buildings as both a technical and strategic issue, while Plevoets and Van Cleempoel (*2019*) systematised the field by reviewing adaptive reuse as a heritage conservation strategy in its right. More recent contributions, such as Maha Shree et al. (*2024*), confirm the continuing vitality of this discourse in relation to cultural heritage, especially where buildings must accommodate new functions without surrendering their recognisable identity. This body of work makes clear that the central question is no longer whether reuse is acceptable, but under what conditions it preserves significance while enabling contemporary occupation.

A major strand of the literature links adaptive reuse to sustainability and long-term resource responsibility. Elefante's (*2007*) influential argument that the "greenest building" is the one that already exists redirected attention toward embodied energy, retained material value, and the environmental costs of demolition. Brand (*1995*) supports this logic by showing that buildings possess an inherent capacity to absorb change over time if their structure and spatial order are understood properly. Gregorio et al. (*2020*) further connect adaptive reuse to the enhancement of local context, while Cinquepalmi and Tiburcio (*2023*) extend the discussion into the digital era, where sustainable restoration increasingly depends on improved documentation,

assessment, and management tools. Together, these authors position reuse as both an ecological and a cultural project.

At the same time, the literature repeatedly demonstrates that adaptive reuse cannot be reduced to a sustainability slogan. Successful intervention depends on the relationship between existing material systems, regulatory frameworks, and design judgement. Cantell (*2005*), writing on historic industrial buildings, showed that reuse is shaped by regulatory barriers, best practices, and the practical limits imposed by the inherited structure. Mark and Smith (*2012*) provide an equally important reminder that masonry buildings must be understood in terms of structural behaviour and design logic, not merely as stylistic surfaces. This is highly relevant for conservation contexts in which façade alterations, inserted floors, or incompatible repairs may damage both appearance and load-bearing clarity. Such scholarship supports an approach in which adaptive reuse begins with structural literacy and material diagnosis rather than with programme alone.

Another significant body of literature shifts the discussion from the single building to the surrounding urban fabric. Amer et al. (*2025*), in their study of Cairo's Al-Gamaleya District, explicitly connect urban morphology and adaptive reuse, showing that heritage intervention must balance continuity and change not only within individual structures but across historically complex urban environments. Gatti et al. (*2022*) contribute a more measurable urban-design dimension by examining façade length in relation to streetscapes of human scale. Their work is particularly relevant to studies concerned with frontage rhythm, visual proportion, and pedestrian perception. Taken together, these studies suggest that the appropriateness of reuse cannot be assessed only by interior functionality or façade styling; it must also be evaluated through the building's contribution to the continuity of the street wall and the legibility of the public realm.

This broader concern with context is consistent with international heritage doctrine. The UNESCO World Heritage Centre (*2011*) emphasises integrity, setting, and the management of change within culturally significant environments, thereby legitimising an understanding of heritage that extends beyond the isolated monument. In this perspective, skyline relations, visual coherence, and the wider urban setting are not secondary matters of taste, but part of the significance of historic environments. When this normative frame is considered together with the conservation literature on adaptive reuse (*Bullen & Love, 2011*; *Plevoets & Van Cleempoel, 2019*), it becomes clear that contemporary interventions should remain distinguishable from historic fabric while still respecting the spatial and cultural coherence of the inherited urban ensemble.

The literature also underscores the social and civic dimension of inherited buildings. Vitkuviene (*2006*) draws attention to the social significance of former urban buildings, indicating that their value persists even when their original functions diminish or disappear. This insight is important because it moves discussion beyond physical conservation toward the cultural life of urban structures. A comparable lesson can be drawn from the example of Sofia's Central Baths, whose continuing symbolic presence in the city has been widely recognised despite functional transformation and contested urban development (*Sofia's Central Baths, 2009*). Such cases demonstrate that adaptive reuse must also be evaluated in terms of whether it preserves the public intelligibility and civic resonance of historic architecture.

For a study focused on Sofia, local historical and documentary sources are indispensable. The municipal publication *Sofia in the first half of the 20th century* (*Sofia Municipality, 2024*) provides the historical background necessary for understanding the formation of the city's central architectural identity during the period when mixed-use masonry buildings, representative façades, and coherent boulevard compositions played a defining role. By contrast, the historical

overview *Sofia Under Communist Rule (1944–1989)* (*About Sofia, 2025*) helps explain subsequent transformations that disrupted earlier urban logics through ideological, planning, and morphological shifts. Together, these sources show that the present condition of Sofia's historic centre is the product of layered change rather than a stable continuity of one period.

This contextual reading is further strengthened by locally specific visual, geological, and administrative sources. The photographic archive *Stara Sofia* (*n.d.*), especially its material on Maria Luisa Boulevard, offers crucial visual evidence for reconstructing historical façade relationships, cornice continuity, roof profiles, and street silhouette. Pristavova and Marinova (*2024*) contribute a more material and territorial dimension by linking rocks and buildings in central Sofia, thereby reminding researchers that the city's architecture must also be understood through its geological and construction context. In addition, the planning framework defined by Sofia Municipal Council (*2018*) provides the administrative basis within which issues of height, intervention, ensemble protection, and volumetric compatibility are negotiated. These sources are especially important because they connect abstract conservation theory with the practical and urban realities of Sofia.

What emerges from the reviewed scholarship is a well-developed foundation for discussing adaptive reuse in terms of conservation, sustainability, structural care, social significance, and urban context. Yet an important analytical gap remains. Much of the literature addresses the building as an object, the district as a broad setting, or reuse as a policy and sustainability instrument. Fewer studies examine in a sustained way how adaptive intervention affects the urban silhouette of a historically legible street, especially through changes in roofline, cornice hierarchy, façade depth, volumetric addition, and the visual rhythm of adjoining buildings. In other words, while context is frequently invoked, it is less often operationalised through the specific formal category of silhouette.

This gap is particularly evident in relation to Sofia. There is no shortage of historical narratives, documentary archives, municipal materials, or individual heritage examples. However, these sources remain scattered across different disciplinary registers and have not been sufficiently synthesised into a coherent framework for analysing adaptive reuse through the lens of silhouette continuity, volumetric subordination, and architectural authenticity. The case of Maria Luisa Boulevard therefore offers an opportunity to connect international reuse theory with local historical evidence and to show that the preservation of historic value depends not only on saving fabric, but also on maintaining the legibility of the street as a collective architectural composition.

The present study positions itself at precisely this intersection. It adopts from Arjani (*1996*), Bullen and Love (*2011*), Plevoets and Van Cleempoel (*2019*), and Maha Shree et al. (*2024*) the premise that adaptive reuse is a legitimate and necessary conservation strategy. From Stern (*1991*), Brand (*1995*), and Elefante (*2007*), it takes the understanding that buildings embody accumulated temporal, material, and environmental value. From Cantell (*2005*) and Mark and Smith (*2012*), it adopts the need for structural, material, and regulatory literacy. From Amer et al. (*2025*), Gatti et al. (*2022*), UNESCO World Heritage Centre (*2011*), and the Sofia-specific documentary sources, it develops a contextual approach in which the street silhouette, human-scale continuity, and the wider urban setting become decisive criteria of intervention. On this basis, the article advances the argument that adaptive reuse in Sofia's historic centre should be assessed not only through function and fabric, but through the extent to which it preserves the formal intelligibility and public continuity of the historic boulevard.

Results

Analyse

1. Derived from photographic materials (1943–2025), and the archive-architecture layouts.

Based on the photographed sequence (1935, 1943, 1970, 2012, 2015) and archive layouts, the image evidence leads to several conclusions. The 1935-1943 "original silhouette" showed tectonic clarity with a readable base–middle–top hierarchy.

Photographs from 1943 indicate a façade with large wooden window frames (*joinery*), visible façade stone blocks made of monzonite (*granite stone*) (*Pristavova & Marinova, 2024, pp. 13–21*), and an orderly arrangement of façade elements (a façade grid). This combination produced a clear three-part mass: a solid stone-shaped base, a masonry body, and an upper ending defined by a cornice and the roofing. The building's effect on the street's silhouette was clear in these proportions, reflecting how people experienced the street walking throwght the ground-level windows (*Gatti et al., 2022*).

There was a metal console balcony added in the second floor of the building. The same was removed in later reconstructions, so the facade lost its decorative layer in a silhouette of the 1970s. The preserved archival original layout highlights complete differences from the current structure, indicating that the earliest project was different or confused (*State Archives…, n.d.*).

Thus, the early alterations weakened authenticity by removing key and most visible markers.

During the 1970s, the removal of original wooden joinery blocked material logic and rhythm of the whole composition of the architectural ensemble. Although the building's height and volume remained similar, the silhouette became less sharp because of altered window patterns and openings.

This demonstrates that silhouette loss can occur without major changes, simply by removing or replacing facade components that define proportion and depth. joinery shifted to the façade's edge, and a roof billboard framework appeared. This created the sense of volumetric growth but no architectural continuity. The major break added cladding and billboard loads the roof and demolished the attic windows. Photos from this time confirm the street silhouette was not just altered but overwritten at different times.

The conclusion here is important: silhouette loss appears without a change of height, simply through the substitution of façade elements. They do not create the same proportion and depth. During the 2012 alterations, the loss of authenticity continued through surface strategies and decorative imposition. The replacement of joinery with PVC, dense yellow paint over monzonite (massive granite blocks), and the installation of decorative laser-cut metal grilles introduce a second type of distortion: aesthetic masking.

The conclusion is as follows: All of the facade changes could be read as a distortion rather than to restauration. The heritage value is essential scale and rhythm. The real reason for interrupting the façade's tectonic, reducing the originality and construction logic, is the constant changing of interior space functions and the simple adaptation process of the building exterior. Photographs from this stage support the conclusion that imitation does not recover silhouette authenticity; it produces a new layer, temporally inconsistent at close range and visually disruptive at street scale (*Figure 1*).

2. Early Alterations Weakened Authenticity by Removing Elements

Inside the silhouette of the group of buildings, the structure is read as heavier, flatter, and more commercialised, with the billboard acting as an "illegal extension" that overgrows the historic roof line.

Photographic evidence from this stage shows that the street silhouette was not only altered but overwritten by non-architectural additions. The photographic image from (1943–2015) is

evidence that the building's loss of urban silhouette was driven less by changes in overall height and more by interventions starting from interior function, emerging over exterior /facade image/, which reduced depth, covered authentic materials, and introduced visually dominant additions (facade cladding, billboard structure, metal sheds, and surface overlayered painting).

The evidence confirms that the image of the silhouette's authenticity depends on the base–body–top hierarchy, on authentic materials such as massive granite blocks and bricks, and on proportional continuity at the pedestrian level. Consequently, any proposed new volume can be considered compatible only if it remains as a visible layer to the historic massing through setback placement, lightweight reversible construction, and clear differentiation from the original (*Figure 2*).

3. Street Silhouette and Volumetric Logic

The street silhouette has been formed by the linked buildings on both sides and has changed over the past 80 years. The possible survey of the volumes of both side buildings shows that they formed a graduated street profile characteristic of the historic centre, where facade rhythm, opening proportions, and cornice lines maintain a measurable human scale.

Later interventions interfered with this reading by introducing additional architectural layers, facade and building scales. The 3D volume mapping clarifies that the existing structure does not support the new programme, as it is characterised by low stability and a limited number of floors.

The conclusion is that the additional volume in the main arteries over the past decades must be carefully surveyed, protected, and controlled to avoid disrupting the continuity of silhouettes and the perceived scale from pedestrian viewpoints.

A relevant example is a recent public project with similar aims on the opposite side of the boulevard. That this municipal initiative started with a silhouette survey, showing how the facades of linked buildings provide vital cues for prospective interventions—especially at the pedestrian level with shops and larger commercial openings (*Figure 3*).

4. Future adaptation -between the "gaps" of time and space. The concept of Contemporary Interventions with Deliberate Contrast

Within the thesis that there is a way to survive and the part of the adaptive future of the structure on N.31, the possibility of bringing in new volume must be approached as a controlled urban and architectural operation.

The proposed strategy treats any additional levels not as an extension of the historic facade plane, but as a secondary, visible recessed layer, giving a new opportunity for the spot. The historic cornice and upper facade proportions remain dominant from the pedestrian viewpoint, guaranteeing that the existing building continues to define the primary silhouette, but closer to the new adapted volume.

This method preserves the boulevard's skyline while providing space for new contemporary uses and gives balanced "filling" of the historic void.

5. Possible volume adaptation of the structure

The new volume is intended to be lightweight and reversible, using differentiated construction methods such as steel substructures and dry construction. This approach shows that the structure is of great importance, as is the authenticity of the historical tissue.

Instead of imitating historic aesthetics, the intervention creates a deliberate yet restrained contrast, in line with preservation principles that require a clear distinction between old and new structural elements (*Plevoets & Van Cleempoel, 2019*; *Bullen & Love, 2011*).

6. Volumetric analysis:

- existing massing within the "Maria Luisa" Boulevard Street silhouette;

- proposed new volume as a recessed layer preserving the dominance of the historic cornice line and lowering visual impact from pedestrian viewpoints (*Figure 5*).

7. Volumetric Analysis: Old–New Parallel Section

The old–new parallel volumetric section combines archival information and on-site measurements to compare the building's space. The existing volume is assessed in relation to the street silhouette and its proportional hierarchy, while the adaptation scenario tests how new programs can be accommodated without the historic envelope dominating.

In conclusion, the comparison shows that volumetric compatibility can be achieved through recessed additions and lightweight structural solutions. New levels can add volume by being positioned as a step back from the volumes behind the front facade (*Brand, 1995*).

8. New Functional Approach for Future Scenarios

The architectural survey and archival comparison indicate that the building's greatest reuse potential resides in its original structural logic, particularly the pattern of its load-bearing masonry, the proportions of its vault system, and its authentic materials.

The intervention strategy ought to follow methodical steps: identify and document original key structural elements; removal of additions such as light gypsum walls and cladding, that covers authentic features; add reversible, clear structural components that support new functions, without damaging historic logic; and maintain a clear dialogue between old and new through contemporary design thinking solutions that underline the building's history.

Exterior, through the use of imitative finishes, has diminished both operational and heritage legibility.

As a result, based on visual analysis, measured proportions, structural specifics, and a detailed construction project, the research introduces new interior elements—circulation, lighting, and partitions—using minimal, distinct materials that are both historical and genuine. This approach supports visual transparency from the interior and follows the same logic as the exterior's appearance, which is essential for revealing the building's architectural history.

The subtle contrast between old and new ensures historical layers stay visible, in line with preservation principles (*Plevoets & Van Cleempoel, 2019*; *Bullen & Love, 2011*).

The survey confirms that new functions can only be accommodated through lightweight, reversible systems, respecting the load paths and avoiding overloading the historic masonry and vaults. New floors are envisioned as contemporary layers that expand usable space while remaining secondary to the historic envelope. Their arrangement responds to the building's spatial qualities—double-height spaces, strong structural bays, and circulation routes—facilitating flexible configurations for multipurpose use.

The conclusion is that saving the street silhouette should begin with the structure's inner layers.

Findings and Possibilities: The Solid Structure—Old and New Layers.

Stewart Brand's framework focuses on a building's cycles of change over time after it has been built, which he refers to as the shearing layers of change. The building is separated into six layers, or the six S's: Site, Skin, Structure, Services, Space plan and Stuff). The site is the plot of land that is allowed to be occupied, including its topography and building lines (*Figure 6*).

The "Shearing Layers of Change" framework developed by Stewart Brand, which outlines how different components of a building evolve at different rates.

Site: The geographical location, which is considered eternal.

Structure: The foundation and load-bearing elements, lasting 30–300 years.

Skin: The exterior surfaces, lasting roughly 20 years.

Services: Functional systems like plumbing and wiring, lasting 7–15 years.
Space Plan: Internal layouts and partitions, lasting 3–30 years.
Stuff: Interior furnishings and appliances, which change daily.

Interior Connectivity and the Neighbourhood Buildings-Vertical Voids and Visual Exchange along the Street

The former central living area of the city originally supported residential spaces and apartment buildings, which flourished in the early twentieth century and were later complemented by commercial ground floors. Today, these central zones in Sofia lack residential comfort due to pollution, and many civic buildings have been abandoned. As a result, "Maria Luisa" Bulevard, the former main street, has lost much of its appeal and quality (*Sofia's Central Baths, 2009*).

The key question regarding vertical expansion is how to utilise newly added floors and spaces, so the whole image of the silhouette remains preserved and. These areas should provide public access, support new forms of community living and working, and include thoughtfully planned commercial openings, all without causing damage.

Interior functional changes can be most damaging to the building structure if not guided by sound judgment and respect for architectural values. However, by carefully modifying interior volumes, it is possible to create a readable spatial envelope that exposes both old and recent elements, with vertical voids connecting different time layers and floor levels.

This approach can revitalise non-functioning buildings, offering them new potential and purpose.

Surveyed sectional relationships justify introducing selective voids, balconies, and double-height zones to enhance daylight and visual communication between levels. These spaces support public forums, exhibition atria, debate formats, and shared academic commons (*Figure 7*).

Basic conclusion comes with all facts- the street and the interior are connected as a part of the public intentions. Changing the way of life means changing the whole rhythm of the architecture and design thinking from interior to exterior.

The evolution of the spaces, depending on their functions, have capacity to generate:

- Public forums
- Exhibition atrium
- Debate and presentation spaces
- Academic Commons

Programmatic Indeterminacy (Hybrid Zones). Mapping of adaptable areas supports intentionally undefined zones that can accommodate future needs without further structural disturbance. These zones enable pop-up exhibitions, research showcases, community workshops, and temporary art–science installations.

This survey suggests that functional adaptation is most successful when it emerges from the building's spatial order logic. This way, the proposed scenarios transform the measured structure and volume into a flexible program.

The new uses reinforce more than obscure the building's architectural authenticity.

To Guide Effective Design Interventions

This research came to future proposed scenarios for reuse:

- Preserving original architectural features, ensuring new additions are clearly distinguishable yet smoothly integrated.
- The line and shape of the authentic historic cornice have to be preserved, and the roofline with recessed additions on the plaster has to be restored. The recently added elements do not compete visually with the current building structure, so they should be replaced.
- The finish materials that are implemented should be relevant to the historic context, both architecturally, aesthetically and functionally.
- Incorporate flexible new design strategies should accommodate structural and design integrity.
- Ensure that all interventions are applied with respect to the overall urban fabric, adding to the heritage continuity and cultural legibility of Sofia's streetscape.

Discussion

The case study confirms the central hypothesis of the research: the adaptive reuse of a protected early twentieth-century building in Sofia's historic centre can preserve and even strengthen urban heritage continuity when intervention strategies are guided by structural legibility, recovery of authentic material expression, and protection of the street silhouette as a measurable heritage parameter. The findings show that the heritage value of the building is carried not only by surviving fabric, but also by its contribution to the collective profile of "Maria Luisa" Boulevard and to the pedestrian-scale reading of the street. In this sense, the building cannot be interpreted as an isolated façade object; it must be understood as a component of a wider urban composition whose legibility depends on continuity of scale, depth, rhythm, and cornice hierarchy. This interpretation directly supports the study's original proposition that adaptive reuse in dense historic centres should be assessed simultaneously at the level of the building and at the level of the streetscape (*Stern, 1991*; *UNESCO World Heritage Centre, 2011*).

The results also clarify the mechanisms through which authenticity was weakened over time. The photographic sequence and archival comparison show that the loss of silhouette did not result only from major volumetric enlargement. It also emerged through cumulative and often function-driven alterations: the removal of original joinery, the concealment of monzonite and masonry surfaces, the flattening of façade depth, billboard loading, roofline disruption, and the use of visually heavy or imitative façade treatments. This is an important interpretive finding because it demonstrates that silhouette loss is not merely a problem of heightто It is equally a problem of proportion, material masking, and diminished tectonic legibility. The case therefore advances the literature by showing that the continuity of a historic street profile may be damaged through incremental façade and surface interventions long before a formal increase in height becomes visible. In this respect, the findings extend adaptive reuse discourse beyond fabric retention alone and support the argument that authenticity must include volumetric rhythm, façade depth, and the base–body–top hierarchy of the historic street wall (*Plevoets & Van Cleempoel, 2019*; *Bullen & Love, 2011*).

A second major outcome concerns the question of volumetric compatibility. The evidence supports the study's more specific hypothesis that limited new capacity may be introduced without compromising authenticity, but only under strict formal and structural conditions. Any new intervention should remain clearly contemporary, visually recessive from pedestrian viewpoints, structurally reversible, and compositionally subordinate to the original façade plane and cornice hierarchy. The value of this conclusion lies in its precision: the research does not reject all future additions, nor does it legitimise unrestricted enlargement. Instead, it proposes a

calibrated criterion for intervention. Volume becomes acceptable only when it remains secondary to the historic massing, preserves the dominance of the inherited silhouette, and avoids the visual bulk that would distort the boulevard's human-scaled street rhythm. This interpretation corresponds with the study's volumetric analysis and aligns with broader conservation principles requiring distinguishability between old and new (*Plevoets & Van Cleempoel, 2019*; *Bullen & Love, 2011*). It also resonates with urban-scale observations that pedestrian perception depends on frontage rhythm, façade proportion, and skyline control rather than on isolated formal gestures alone (*Gatti et al., 2022*).

The discussion also confirms that adaptive reuse in this case cannot be separated from the building's interior spatial logic. One of the strongest implications of the results is that the degradation of the exterior image was closely linked to repeated changes in interior use. In other words, the façade distortions were not simply surface events; they were symptoms of a deeper rupture between programme and structure. The concept of the "space envelope" therefore becomes especially important. A coherent relationship between load-bearing masonry, vault geometry, enclosure, and interior proportion is not only a matter of structural performance, but also of heritage intelligibility. Where new uses ignore this envelope, the building loses both spatial coherence and public meaning. Conversely, where new programmes are inserted through lightweight, reversible systems that respect structural bays, vertical connections, and authentic materials, adaptive reuse can recover the building's legibility from the inside outward. For this reason, the study's conclusion that saving the street silhouette should begin with the structure's inner layers is not merely a design slogan. It is an interpretive principle that links interior adaptation with street-scale heritage continuity.

Within this logic, Stewart Brand's theory of the shearing layers of change provides a useful explanatory framework. The case demonstrates that not all parts of the building should change at the same speed or with the same degree of freedom. The site, primary structure, and main spatial proportions should remain the most stable layers, because they carry the building's tectonic identity and its relationship to the boulevard. By contrast, services, partitions, and certain programme-specific insertions may evolve more flexibly over time, provided that they do not damage the historic load-bearing system or obscure the reading of the original envelope. Read in this way, Brand's framework helps clarify why adaptive reuse should not aim at total formal stasis, but at a differentiated regime of change in which the most heritage-bearing layers remain primary while faster-changing layers are designed as reversible and clearly contemporary additions (*Brand, 1995*). This is especially relevant for the proposed scenario of inserted new levels, vertical voids, and multipurpose interiors, where the future life of the building depends on flexibility without structural or volumetric erasure.

The case also has implications beyond the scale of a single building. One of the most important discussion points concerns the need for a consistent public and regulatory framework for protecting historic street silhouettes. The evidence shows that urban heritage continuity cannot be secured through isolated design decisions alone. If façade replacements, roofline interventions, billboard structures, and material substitutions are assessed separately from the collective profile of the street, then cumulative distortion becomes almost inevitable. The case therefore supports the argument that silhouette protection requires institutional intention and enforceable guidelines, particularly in dense historic centres where ensemble value is as important as individual monument value. In practical terms, this means that planning review should evaluate interventions in relation to façade depth, cornice continuity, visible bulk from pedestrian viewpoints, and the compatibility of new materials with the established urban texture. In this respect, the study's findings are consistent with the administrative logic already present

in Sofia's planning framework and reinforce the need for ensemble-based, rather than object-isolated, heritage control (*Sofia Municipal Council, 2018*; *UNESCO World Heritage Centre, 2011*).

The future-use scenario proposed by the study should also be interpreted in this wider civic and urban context. The recommendation that the building be transformed into a mixed-use public facility with flexible office spaces, community areas, exhibition spaces, and public forums is not an arbitrary design preference. It follows from the building's position within the historic centre, its spatial capacity for layered circulation and gathering, and its potential to recover civic resonance rather than merely commercial occupancy. This point matters because adaptive reuse is not only about technical survival; it is also about cultural reactivation. The literature has repeatedly shown that historic urban buildings continue to carry social significance even when their original functions disappear, and that successful reuse should preserve public intelligibility and civic meaning rather than reduce heritage to a visual shell (*Sofia's Central Baths, 2009*; *Vitkuviene, 2006*). In this sense, the proposed programme of educational, cultural, and semi-public uses is consistent with the building's urban role and with the broader ambition of treating it as living heritage within Sofia's central fabric.

At the same time, the pedagogical dimension of the project deserves to be retained and more clearly interpreted. The fact that the case entered the UACEG pre-diploma programme is not a peripheral detail; it shows that the building functions not only as an object of conservation, but also as a research-based teaching model. Its value for education lies precisely in the way it integrates archival inquiry, structural reading, visual analysis, urban interpretation, and design projection within a single heritage problem. This pedagogical relevance corresponds to the stated audience of the article and reinforces the idea that adaptive reuse in historic centres should be taught as an interdisciplinary process involving architecture, interior design, heritage studies, and urban planning.

The discussion should also acknowledge the limits of the case study. The argument developed here is grounded in one protected masonry structure within a historically linked segment of "Maria Luisa" Boulevard. For that reason, the findings should not be generalised mechanically to all heritage settings. Their strongest applicability lies in comparable urban conditions: dense streetscapes, ensemble-based historic value, cumulative façade alteration, and the possibility of reversible new layers within an inherited structural shell. Nevertheless, the case has wider relevance because it offers an operational framework for thinking about authenticity not only as material survival, but as the combined continuity of structure, spatial logic, and street silhouette.

Taken together, the discussion demonstrates that adaptive reuse in Sofia's historic centre should be judged not by the mere insertion of new function, nor by the superficial restoration of a façade image, but by the extent to which the intervention preserves structural intelligibility, material truthfulness, interior spatial coherence, and the formal legibility of the boulevard. The case of "Maria Luisa" Boulevard therefore helps close the research gap identified in the literature review: it shows how urban silhouette can be operationalised as a concrete heritage parameter and as a criterion for evaluating both loss and future adaptation. On this basis, the transition to the concluding section becomes clear: the building's future depends on treating reuse not as a compromise with heritage, but as a disciplined strategy for extending the life of authentic architecture within a living urban composition.

Conclusions

The aim of this study was to determine how a historic structure within Sofia's central urban fabric can be adaptively reused in a way that preserves its architectural authenticity, restores its

contribution to the street silhouette, and allows the introduction of contemporary functions through structurally legible, materially compatible, and volumetrically controlled interventions. On the basis of the archival, visual, structural, and volumetric evidence examined in this study, this aim has been achieved. The research demonstrates that the adaptive reuse of a protected early twentieth-century building on "Maria Luisa" Boulevard can be developed as a conservation-based architectural strategy when the intervention is grounded in the building's tectonic logic, authentic material system, and role within the collective urban composition of the boulevard. In this sense, the article not only answers the specific case under examination, but also opens broader pathways for future exploration of reuse, continual discovery, and growth in Sofia's historic centre.

The study confirms that early 20th-century masonry buildings in Sofia's historic core can achieve contemporary functionality without diminishing heritage value when interventions are guided by structural legibility, material integrity, and proportional continuity. The case study shows that the building's significance is carried not only by its physical survival, but by its tectonic logic, its constructional truth, and its contribution to the collective silhouette of the street. The load-bearing masonry, Prussian brick vaults, floor construction, masonry supports, monzonite elements, and early steel beams form a coherent structural and material system that also generates the building's human-scaled proportions and its public architectural presence (*Cantell, 2005*; *Mark & Smith, 2012*). The preservation of this system is therefore not merely a technical requirement, but a cultural and urban one.

Archival documentation, photographic comparison, and on-site survey reveal that the weakening of authenticity did not result from one single intervention, but from a gradual sequence of substitutions and distortions. Later alterations, material masking, façade flattening, replaced joinery, billboard structures, roofline disruption, and partial structural modifications introduced discontinuities in volumetric reading, material perception, and architectural legibility. One of the key conclusions of the study is that silhouette loss may occur even when the overall height remains unchanged. In this case, the loss of authenticity emerged through the erosion of façade depth, the disruption of the base–body–top hierarchy, and the replacement of original components that once sustained proportion, rhythm, and tectonic clarity. For this reason, the study supports the removal of non-original structural and surface additions wherever possible and argues that future projects should expose the constructive elements and authentic materials as both artefacts and as the logical grid of the building's historical composition.

A further conclusion concerns the concept of the space envelope, which emerges as one of the most useful criteria for responsive reuse. A coherent relationship between load-bearing structure, enclosing surfaces, interior proportions, and routes of movement is fundamental for both conservation and new programmes. The study shows that new functions should not be imposed in a way that ignores the building's inherited spatial logic. On the contrary, future adaptation must be developed within a space where structure, surfaces, and human scale remain integrated. In this respect, the space envelope is not simply an interior-design concern; it is a mediating principle that links structural authenticity, functional transformation, and the external legibility of the street silhouette. This is why the research ultimately concludes that saving the street silhouette should begin with the structure's inner layers.

The study also confirms that volumetric compatibility can be achieved, but only under strict conditions. Any additional volume should be approached as a controlled urban and architectural operation rather than as an unrestricted extension of the existing building. The proposed new levels should remain lightweight, reversible, and clearly distinguishable from the historic massing. Their position must be recessed behind the front façade so that the historic cornice line and

upper façade proportions continue to dominate from pedestrian viewpoints. Such an approach preserves the boulevard's skyline, reduces visual impact, and allows new space to be added as a secondary contemporary layer rather than as a competing imitation of the original. In this sense, the article concludes that recessed additions and lightweight structural systems represent the most compatible scenario for possible future growth, in line with the principles of distinguishability between old and new and with the long-term logic of adaptive transformation (*Brand, 1995*; *Bullen & Love, 2011*; *Plevoets & Van Cleempoel, 2019*).

The architectural survey and archival comparison further indicate that the building's greatest reuse potential resides in its original structural logic. The pattern of load-bearing masonry, the proportions of the vault system, and the material authenticity of the existing fabric together form the basis for future intervention. The study therefore proposes a methodical sequence for adaptation: first, to identify and document the original structural and architectural elements; second, to remove later additions such as gypsum partitions, cladding, and coverings that conceal authentic features; third, to introduce reversible contemporary components capable of supporting new functions without damaging historic logic; and finally, to maintain a clear dialogue between old and new through restrained contemporary design. Such a strategy allows historical layers to remain visible while also supporting present-day use. It confirms that adaptive reuse should not restore a false historical image, but should reveal authentic structure through careful differentiation and spatial clarity.

The findings also support a broader urban conclusion. The building should be defined and projected as part of the whole historical composition rather than as an autonomous object. Its future must therefore be assessed in relation to the linked buildings of "Maria Luisa" Boulevard, the street's graduated profile, and the public experience of scale, rhythm, and continuity at walking pace. From this perspective, protecting authenticity means protecting not only materials and details, but also the measurable coherence of the boulevard as a collective urban form. The article thus advances the proposition that urban silhouette should be treated as a concrete heritage parameter and as a criterion for evaluating both loss and future intervention in Sofia's historic centre.

The first research task was to reconstruct the historical development of the building's silhouette, architectural features, and material expression through archival documents, photographic evidence, and on-site analysis. This task has been fulfilled through the comparative reading of original graphic plans, archival urban materials, historical photographs, and field investigation. As a result, the study reconstructed the former legibility of the building's base–body–top hierarchy, the earlier depth of the façade, the role of joinery and stone articulation, and the way in which the structure once participated in the graduated profile of "Maria Luisa" Boulevard. This reconstruction was essential for understanding not only what has been lost, but also what remains recoverable within the current building fabric.

The second research task was to identify the principal forms of authenticity loss caused by façade alteration, material substitution, structural modification, and function-driven transformation. This task has likewise been resolved. The study shows that the weakening of authenticity did not result from one single intervention, but from a gradual sequence of substitutions and distortions: removal of original joinery, concealment of monzonite and masonry surfaces, flattening of façade depth, billboard structures, roofline disruption, imitative surface strategies, and interiorly driven exterior modifications. One of the key conclusions is that silhouette loss may occur even when the overall height remains unchanged. In this case, the erosion of authenticity emerged through the disruption of proportion, rhythm, material truthfulness, and tectonic legibility. Thus, the research confirms that the silhouette is damaged

not only by visible vertical enlargement, but also by cumulative façade and surface interventions that overwrite the inherited architectural logic of the street.

The third research task was to evaluate the building's current volumetric and structural capacity for adaptive reuse in relation to the established silhouette of "Maria Luisa" Boulevard. This task has been achieved through engineering survey, geological assessment, on-site proportion studies, and old–new volumetric comparison. The findings indicate that the building has adaptive potential, but that this potential is conditional rather than unlimited. The existing structure cannot support arbitrary expansion; however, it can accommodate carefully controlled new functions and limited new volume when these are introduced through lightweight, reversible systems that respect the existing load paths and remain subordinate to the historic envelope. The study therefore concludes that volumetric compatibility is possible, but only where the historic cornice line remains dominant, the skyline rhythm of neighbouring buildings is respected, and any added mass is visually secondary from pedestrian viewpoints.

The fourth research task was to formulate criteria and project-oriented scenarios for future interventions, including recessed additions and reversible structural systems, that preserve the dominance of the historic envelope while enabling contemporary public and educational uses. This task has also been completed. The research proposes a clear set of criteria: preserve the authentic historic cornice line and roof silhouette; remove later visually competitive additions; reveal original structural and material elements wherever possible; distinguish new work from historic fabric rather than imitate it; use lightweight and demountable construction for new layers; and ensure that all interventions contribute to the continuity of the wider streetscape. On this basis, the article formulates a scenario in which new levels are treated as recessed, contemporary layers behind the front façade, while the inherited street profile continues to define the primary silhouette of the building. Such an approach allows future public, semi-public, and educational programmes to be integrated without undermining heritage legibility.

A further conclusion concerns the concept of the space envelope, which emerges as one of the most useful criteria for responsive reuse. The study demonstrates that a coherent relationship between load-bearing structure, enclosing surfaces, interior proportions, and routes of movement is fundamental for both conservation and new programmes. New functions should not be imposed in ways that ignore the building's inherited spatial order. On the contrary, the intervention must be developed within a space where structure, surfaces, and human scale remain integrated. In this respect, the space envelope is not simply an interior-design concern; it is a mediating principle that links structural authenticity, functional transformation, and the external legibility of the street silhouette. This is why one of the central conclusions of the research remains that saving the street silhouette should begin with the structure's inner layers.

The research also confirms that adaptive reuse should not be understood as the restoration of a false historical image. The appropriate future scenario is not to conceal time, but to make time legible. By exposing constructive elements and authentic materials as both artefacts and as the logical grid of the historic composition, the building can be read again as a layered architectural organism rather than as a commercialised shell. The subtle but deliberate contrast between old and new ensures that historical layers remain visible while allowing new spatial and programmatic needs to be met. In this way, the project does not reduce heritage to appearance alone; it restores operational, structural, and cultural intelligibility to the building as part of the city.

At the urban scale, the study advances a broader conclusion: the building should be defined and projected as part of the whole historical composition rather than as an autonomous object. Its future must therefore be assessed in relation to the linked buildings of "Maria Luisa"

Boulevard, the street's graduated profile, and the public experience of scale, rhythm, and continuity at walking pace. From this perspective, protecting authenticity means protecting not only materials and details, but also the measurable coherence of the boulevard as a collective urban form. The article therefore confirms its central contribution: urban silhouette should be treated as a concrete heritage parameter and as a criterion for evaluating both loss and future intervention in Sofia's historic centre.

At the level of future use, the research suggests that the most meaningful path of transformation lies in programmes that can work with the building's structural order and public urban position rather than against them. The proposed scenarios of mixed, flexible, and community-oriented use are justified not by abstract preference, but by the building's capacity for layered circulation, multipurpose spatial configurations, selective voids, and renewed public activation within the historic core. In this sense, the project positions the building as living heritage, capable of accommodating new civic, educational, cultural, and semi-public functions while continuing its identity within Sofia's central urban texture. The case also has pedagogical value, since it has already functioned as a design and research task within the educational framework of UACEG, demonstrating how archival inquiry, material reading, urban analysis, and design projection can be integrated into a single heritage-based methodology.

Finally, the broader scientific contribution of the study lies in showing that adaptive reuse in dense historic urban contexts should be judged neither by superficial façade restoration nor by the mere insertion of new function. Its real measure lies in the extent to which the intervention preserves structural intelligibility, reveals authentic materials, respects the inherited space envelope, and sustains the formal legibility of the boulevard. By preserving and revealing essential features, a carefully integrated vertical addition may indeed fill the gaps caused by time and space; however, it can do so only when it remains subordinate to the historic volume and when the continuity of the street silhouette is treated as a public cultural responsibility. On this basis, the article concludes that the reuse of old structures is not simply a pragmatic response to obsolescence, but a survival strategy for historic buildings in dense urban contexts—a strategy through which old and new do not compete, but enter into a legible, disciplined, and historically grounded architectural dialogue.

Conflict of Interest

The author declares that there is no conflict of interest.

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Figures:

Figure 1. Part of the public approved plans

Figure 2. Stages of construction and silhouhette interventions

Figure 2–1. 1920. As a silhouette, the building is the second-highest on the left. The trees on the street are small and have carefully cut crowns with a circular shape

Figure 2–2. 1930. Restored image of the left silhouette including the house at N33. There is an approved archived project for reconstruction and an additional floor of the neighbour house linked to the structure of N33

Figure 2–3. 1940. The building is still one of the tallest on the street. The street numbering is 33–35. The facade joinery is with massive wooden frames. Granite/Monzonite/ blocks are clearly

distinguishable on the facade. The trees in front of the property have been cut. A beautifully detailed wooden door is visible at the entrance of the living area

Figure 2–4. 1940. Restored silhouette image fragment /around. Despite the differences in height and the different elements, the silhouette looks identical as a scale, yet the building character is similar. The linked building at the left shows a sign of the "Studebaker" Car company-representation office

Figure 2–5. 1970–1980 restoration of the silhouette. A huge, non-proportional, "pseudo-classical"–"totalitarian" block of flats from the 1950s has replaced the buildings to the right of the structure under study. It creates a dominating volume. The old wooden joinery was dismantled. he metal balcony on the second floor has been dismanteled. The facade masonry of monzonite was covered with a dark cladding, and the joinery was visibly replaced with metal, moved forward to the outer edge of the facade plane. The roof structure of the building was heavily loaded by a mounted metal framework for a billboard

Figure 2–6. 2012. The metal facade joinery and dark metal cladding were removed

Figure 2–7. 2015. New PVC window frames joinery was installed, reducing the facade windows, along with decorative fixed metal grilles made of laser-cut sheet steel with a styled monogram of the owner. On the first floor above the ground level, an entire internal load-bearing brick wall (50 cm thick) was removed. The same wall remains intact on the upper level of the building. Additional inside changes appeared. The Vitosha Monzonite on the facade columns from the ground floor to the second floor was covered with a dense layer of facade paint in signal yellow colour

Figure 3. Building authenticity in bigger scale- the Spatial Void. The buildings, protected as a monument-Group of Buildings. View from "Maria Luisa" Boulevard with the whole block of buildings

Figure 4. Possible future adaptation- between the "voids" of time (space)

Figure 4–1. The existing silhouette affected from 50 years " Time Void"—resulting by 20th century architecture.

Figure 4–2. The possible result from approved urban plan

Figure 5. Volumetric analysis:

(1) existing massing within the Maria Luisa Boulevard street silhouette;

(2) proposed new volume as a recessed layer preserving the dominance of the historic cornice line and minimising visual impact through stepping back from pedestrian viewpoints.

Figure 6. Stratified Learning Infrastructure by Stewart Brand

Figure 7. Vertical void -connecting the levels—Interior project 2025

Figure 7–1. Interior project 2025. Vertical voids and double-height zones visually and spatially connect floors

Figure 7–2. Interior project 2025. As a result the daylight penetrates and promote awareness of shared activity across levels

Appendix

Figure 1. Part of the public approved plans. Official Silhouette plan approved by urban planning authorities. Maria Luisa building is the Structure in red (*State Archives Agency of Bulgaria…, n.d.*)

Figure 2–1. Stages of construction and silhouhette interventions. 1920.

Figure 2–2. Stages of construction and silhouhette interventions. 1930.

Figure 2–3. Stages of construction and silhouhette interventions. 1940.

Figure 2–4. Stages of construction and silhouhette interventions. 1940. Restored.

Figure 2–5. Stages of construction and silhouhette interventions. 1970–80.

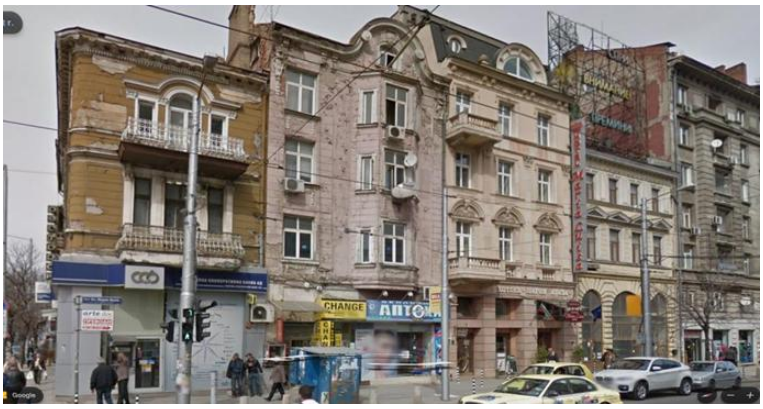

Figure 2–6. Stages of construction and silhouhette interventions. 2012.

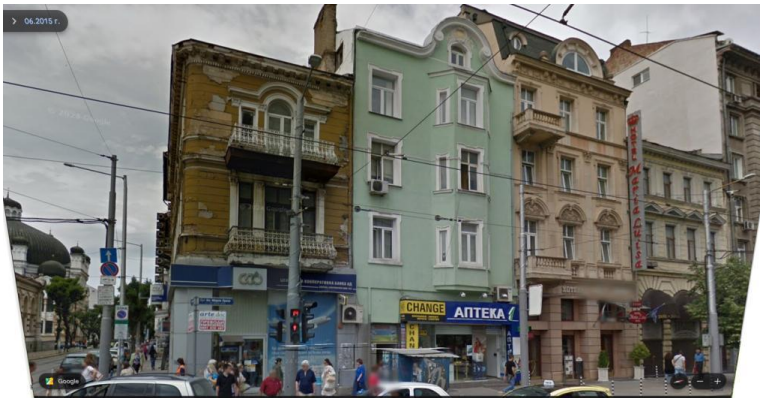

Figure 2–7. Stages of construction and silhouhette interventions. 2015.

Figure 3. Building authenticity in bigger scale- the Spatial Void

Figure 4–1. Possible future adaptation between the "voids" of time (space)

Figure 4–2. Possible future adaptation between the "voids" of time (space)

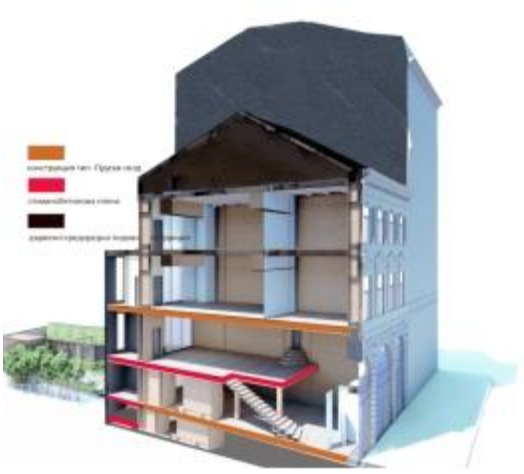

Figure 5–1. Volume of the existing building

Figure 5–2. recessed upper volume with new possible spaces and specific installed new layers /slabs/

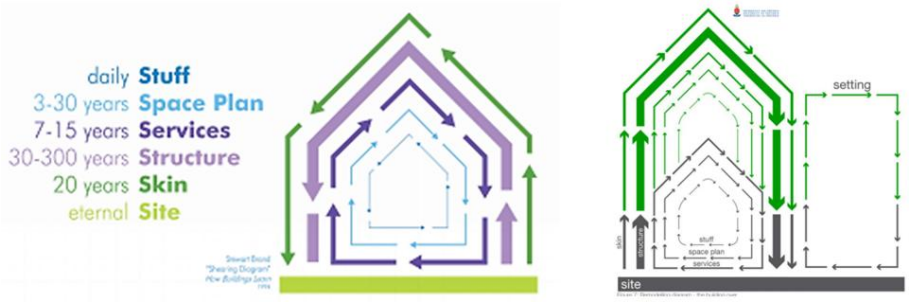

Figure 6. Stratified Learning Infrastructure by Stewart Brand (*1995*)

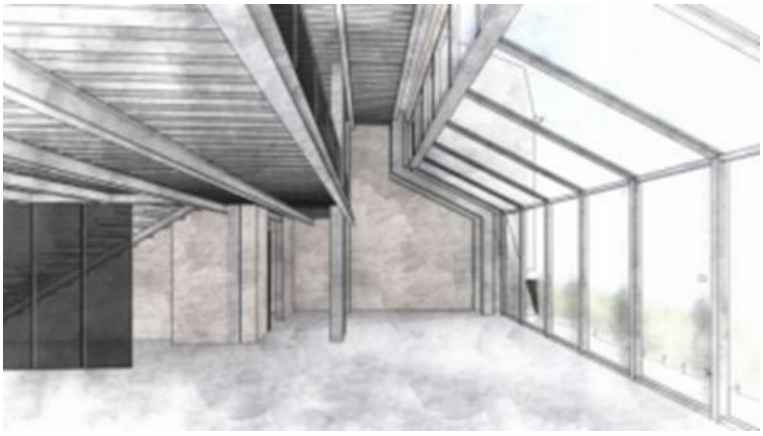

Figure 7–1. Interior project 2025. Vertical voids and double-height zones visually and spatially connect floors.

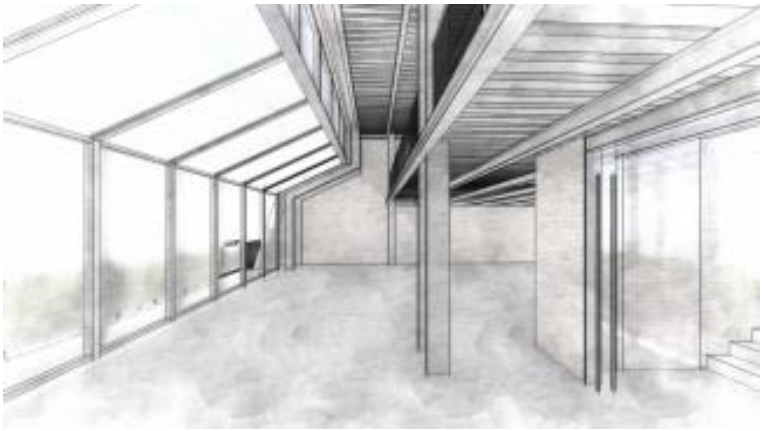

Figure 7–2. Interior project 2025. As a result the daylight penetrates and promote awareness of shared activity across levels.