IMPACT ASSESSMENT OF URBAN HERITAGE SITES: THE CASE OF KHOR DUBAI, UAE

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ABSTRACT

This research questions the efficiency of impact assessment as a tool for the holistic management of urban living heritage sites, considering the evolving understanding of urban heritage presented in the 2011 UNESCO Recommendation on the Historic Urban Landscape and the Sustainable Development Goals. The research focuses on Khor Dubai in the United Arab Emirates, a site nominated for World Heritage since 2014, as a case study to identify the potential of such a tool to maintain the outstanding universal values embedded in the site. Drawing on UNESCO, ICCROM, ICOMOS, and IUCN resource manuals on impact assessment, the study identifies critical elements and proposes mitigation strategies for urban development adjacent to Khor Dubai. Ultimately, the research underscores that impact assessment is a complex process essential for safeguarding and enhancing these culturally and historically significant assets.

Keywords: impact assessment, world heritage, historic urban landscape, sustainable tourism development, Dubai.

1 INTRODUCTION

Khor Dubai is situated along a natural seawater inlet on the Arabian side of the Gulf, at the heart of Dubai in the United Arab Emirates. The creek (khor in Arabic) divides the city into two parts, Bur Dubai and Deira, and has played a crucial role in the Emirate's economic development throughout history. The natural shape of the creek significantly influenced Dubai's urban layout. The settlement grew organically on both banks of the creek from an early stage, distinct from the desert hinterland. Rather than limiting urban expansion, the creek served as the focal point of a maritime-dependent urban ensemble connected to a broader network of Gulf ports and settlements. In the early 19th century, the creek was essential to Dubai's establishment and early growth as a trading and fishing port. For over a century, it remained the city's primary port, crucial in establishing Dubai's commercial significance. The creek's morphology, including its port facilities and associated traditional markets, has been preserved through ongoing modifications to the site's geomorphology and commercial infrastructure, ensuring its continuity as a historical and economic landmark.

Khor Dubai, a traditional merchant's harbour, was nominated to the World Heritage List in 2014 under criteria ii, iii and iv. Its outstanding universal value (OUV) lies in its preservation of the original port and urban structure connected by the creek, and its status as the last remaining example of a neighbourhood with traditional wind-tower houses on the Arabian Gulf coast. Today, Khor Dubai remains an active port and living community, maintaining continuity with its historical origins [1]. The nominated property spans approximately 2.5 km of the waterway from its historic mouth to the Al Fahidi historic neighbourhood. However, the nomination process faced setbacks, as it was changed in 2014, referred to in 2016, and eventually withdrawn in 2018 [2].

The property includes the waterway itself, specialised traditional markets, and surrounding quarters that form the urban context of the port, all encompassed by a large buffer zone containing additional sections of the creek harbour. Concerns were raised in ICOMOS' 2018 evaluation about proposed developments around Khor Dubai, such as the Marsa Al Seef project in the southern buffer zone and the Deira Enrichment waterfront across

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the creek, including the infinity bridge at the mouth of the Khor. These developments were seen as potentially altering the urban characteristics and setting of Khor Dubai, posing threats to its OUV, integrity, and authenticity.

This paper aims to evaluate the measures implemented by Dubai Municipality (DM) to mitigate the impacts of these new developments before their implementation. The goal is to determine whether these measures effectively prevent adverse effects on the OUV and other values of the site. The analysis is based on the impact assessment guidance toolkit provided within the World Heritage Convention context by UNESCO, ICOMOS, ICCROM, and IUCN.

2 LITERATURE REVIEW

The present-day concept of cultural heritage is shaped by the ongoing evolution of contemporary society, its values, and its needs [3], [4]. Ricca notes that in the 1990s, a new cultural approach emphasising the appreciation of heritage emerged alongside the growing importance of local values and traditions [4]. In her work on the uses of heritage, Smith explores heritage as a cultural practice rather than a static entity. She argues that heritage is a social process involving acts of remembering that help us understand and engage with the present. Culture at the national level is a fundamental aspect of everyday life, serving as a dynamic space for knowledge production, innovation, and reconstruction [5]. The significance of urban heritage gained prominence during the mid-20th century with documents like the Athens Charter of 1933 and subsequent works by Le Corbusier in the 1950s, 1970s and 1986 [6]–[8]. These documents, arising from the Fourth International Congress of Modern Architecture, stressed the importance of safeguarding architectural treasures amidst rapid urban development and threats to socio-cultural values.

The Stockholm Declaration of 1972 responded to environmental concerns during a period of global urbanisation and development [9], [10]. Concurrently, the establishment of the US Environmental Protection Agency in 1970 and the National Environmental Policy Act of 1969 underscored the integration of environmental impact assessments in development processes, influenced by early ecological advocates such as Ian McHarg's principles of 'designing with nature' [11], [12]. The approach to impact assessment evolved significantly after 2011 with the introduction of the UNESCO Recommendation on the Historic Urban Landscape and the UN-Habitat New Urban Agenda in 2016 [13], [14]. These initiatives expanded the scope of cultural heritage to encompass living historic cities, reflecting a broader understanding of sustainability that integrates environmental considerations.

Several key initiatives have contributed to this evolution, including the European Union's Sustainable Development of Urban Historical Areas through Active Integration within Towns (SUIT) in 2004 [15], the URBACT Heritage as Opportunity network in 2008 [16], and the United Nations Office for Disaster Risk Reduction's Sendai Framework and Resilient Cities Campaign in 2017 [17]. These efforts introduced frameworks like the 'Ten Essentials for Resilient Cities' and aligned with the United Nations' 2030 Sustainable Development Goals [18].

The attention to threats to urban heritage developed later, with a predominant focus on architectural and monumental cultural heritage. Reporting on World Heritage sites in danger drew significant attention to the necessity of conducting impact assessments for any upcoming interventions that could adversely affect the site's OUVs. ICOMOS urged state parties to undertake impact assessments for future projects proposed near World Heritage site boundaries. ICOMOS's toolkit, a joint publication by UNESCO, ICCROM, ICOMOS and IUCN, provides guidance on impact assessment for World Heritage properties [19]. This toolkit explains how impact assessments can safeguard the OUV of World Heritage

properties, facilitating informed decision-making to manage continuity and change effectively.

The cases of Dresden Elbe Valley and Liverpool Maritime Mercantile City are extreme examples of World Heritage properties, with the former being delisted in 2009 and the latter confirmed on the List of World Heritage in Danger continuously since 2012 [20]. In Dresden's case, a limited-focus visual impact study was applied to the proposed Waldschlößchen Bridge crossing the River Elbe, which ignored broader considerations such as environmental, economic, and transportation management within the city, as well as alternative, less obtrusive design options for the bridge itself [21].

In Liverpool, three inconsistent impact assessments were conducted for the major Liverpool Waters development project along the waterfront north of the city centre. These assessments predominantly focused on visual impacts on the World Heritage Site, while neglecting potentially significant socio-economic impacts and relationships across the wider city [22].

The concept of 'sustainable development' gained prominence with the Brundtland Report in 1987, solidifying environmental impact assessment as a well-established tool [23], [24]. However, its focus has evolved to incorporate the social and economic dimensions of sustainability, primarily as a reactive instrument when applied at the project level [25]. The emerging concept of strategic environmental assessment aims to be more proactive and comprehensive, addressing broader strategic impacts and involving a spectrum of stakeholders [26], [27]. This approach encourages the participation of various disciplines and emphasises that the impact assessment process is not solely about immediate outcomes or resulting statements, but also about the broader value it brings through fostering stakeholder dialogue.

3 RESEARCH METHODOLOGY

The study is structured into two main sections. The first section examines the evolution of approaches to urban heritage impact assessment within the international framework and explores how this issue has been addressed at World Heritage Sites globally.

The second section focuses on analysing the impacts of new urban developments implemented since 2014, specifically assessing their effects on Khor Dubai as a historic urban site. It also seeks to propose alternative mitigation strategies to minimise negative impacts on the site's significance. The assessment will adhere to the guidance toolkit and follow the steps outlined below:

1. Identify the significance of the site based on the OUV and other values.
2. Identify attributes that reflect the values of the site.
3. Identify potential negative and positive impacts on OUV and other values.
4. Identify a range of reasonable alternatives and assess their potential impact.

4 DISCUSSION

Since 2014, during the preparation of the nomination file for Khor Dubai, three major new developments have been undergoing approval by DM. These developments are situated within the buffer zone of the nominated property and are owned by different sectors.

4.1 The Marsa Al Seef project

The Marsa Al Seef project is owned by a semi-private entity, while the Deira Enrichment waterfront and Infinity Bridge are owned by the Dubai government but implemented by a

private developer. Marsa Al Seef, a waterfront development initiated by Meraas, a semi-private developer, was proposed in 2014 to replace a public open space utilised by the nearby community. Completed in 2017, it is strategically located at the border of the Al Fahidi historic district within the buffer zone of the nominated property of Khor Dubai, which was submitted to the World Heritage Centre in 2014. This site was historically known for hosting cultural festivals.

The development is characterised by distinct architectural styles. One section faithfully emulates traditional architecture, while another features a more modern aesthetic with shops, cafes, and underground parking facilities. The primary aim of Marsa Al Seef is to establish a recreational destination for visitors, offering an array of attractions such as an open-air market for handcrafted artifacts, cafes, restaurants, hotels, and boutiques. Despite its low-rise profile, this development introduces elements of traditional Dubai architecture, including multiple new wind towers, in proximity to the historic Al Fahidi neighbourhood [25].

4.2 Deira Waterfront Development project

The Deira area stands as one of Dubai's oldest and most densely populated communities, renowned for its role as a trading hub for spices, textiles and jewellery with destinations across Asia and Africa. The recently launched Deira Waterfront Development aims to preserve Deira's rich tradition and culture while revitalising its waterfront area. Encompassing the entire northern section of the current Deira district, the project is situated opposite the Gold Souq and overlooks the Dubai creek, adjacent to the proposed World Heritage Site of Khor Dubai. The development includes the construction of new residential blocks ranging from 7 to 12 storeys high, accommodating more than 31,000 residents. It also introduces new community amenities such as plazas, parks, bicycle routes, and transportation hubs, along with refurbishing existing shops, hotels, commercial zones, parking facilities, and storage areas. Construction commenced in 2017 and concluded in 2023.

In terms of its impact on the urban skyline, Deira Waterfront Development LLC focuses on structures up to six stories tall, aiming to provide housing, offices, and commercial spaces along the northern banks of the creek, from the mouth of Khor Dubai to its bend. Emphasising traditional architectural elements, the development falls entirely within the Deira Bank buffer zone and is situated close to historic merchant houses in Al-Ras. The new urban fabric of the project seamlessly extends the existing one, preserving key visual corridors to the water and enhancing community access with ample parking and open public areas for communal enjoyment.

4.3 Infinity Bridge

A new Infinity Bridge has been recently completed along the historic Shindagha shoreline, featuring a futuristic steel design. On the opposite shore, the Deira Enrichment project nears completion, adding another contrast to the historic context with its modern grandeur. Spanning the Dubai creek, the 295 m long bridge connects the Al Shindagha and Al Ras districts, standing 15.5 m above the water. It boasts 12 lanes of traffic, six in each direction, along with pedestrian crossings, and is distinguished by a 42 m high steel arch symbolising infinity.

Announced in 2018 and completed in 2022, the Infinity Bridge is a pivotal component of the AED 5.3 billion Al Shindagha Corridor Project. This extensive corridor, spanning nearly 13 km, aims to enhance connectivity to developments such as the Dubai Seafront, Port Rashid, Deira Islands and Dubai Maritime City. According to the RTA, the bridge's opening

has significantly reduced travel times during the morning rush hour, cutting the journey between Sheikh Khalifa Bin Zayed Street and Al Mamzar Intersection to just 13 minutes, marking a substantial 73% improvement.

5 RESULTS

Approval for these projects requires issuance from the Architectural Heritage Department (AHD) of DM to ensure they do not compromise the OUV of the nominated property. The review process involved extensive discussions with developers and led to specific alternative actions being mandated for each project to mitigate potential negative impacts on the site's values. See Table 1 for an assessment of values, their attributes, potential impacts and identified alternative measures.

In the case of Marsa Al Seef, the AHD approved the project's general concept but expressed concerns about specific issues that could adversely affect the site's OUV. The department recommended the following alternatives:

1. Relocate some project masses southward to allow direct contact between the nominated site and the water.
2. Maintain the original boundaries along Khor Dubai without any land extension or reclamation.
3. If developers wish to extend beyond the site boundaries, utilise reversible floating structures.
4. Change the building colours on the site from beige to a distinct colour to differentiate them from the traditional architectural character of the Al Fahidi area.
5. Reconstruct the Al Seef watchtower in its original location.
6. Relocate the proposed mosque to the south to position it centrally within the site.

These measures were prescribed to ensure that Marsa Al Seef and similar projects align with the preservation and enhancement objectives of the nominated property's OUV (Table 2).

Regarding the Deira Enrichment Waterfront Development, the AHD has raised significant concerns about its potential negative impact on the urban landscape of the creek, particularly at its mouth (Table 3). The project involves reclaimed land currently used for parking, which blocks direct access of the original urban fabric to the water and reduces the presence of traditional cargo activities along the Khor. Additionally, the proposed tall building at the creek's mouth poses a threat to the visual experience. In response, the AHD has requested that the developer undertake the following actions to mitigate the project's potential impact on the OUV of the nominated property:

1. Relocate the tall building to a position outside of the visual corridor.
2. Maintain public access to the water.
3. Reduce the height of the structures facing the creek.

In the case of the Infinity Bridge, the AHD considers it a significant intervention that could dramatically alter the urban fabric and character of the creek, potentially diminishing the importance of the simple, low-traditional buildings in historic Shindagha. The department has requested specific actions from the developer to prevent any negative impact on the OUV of the nominated property, notably emphasising the need to relocate the bridge's ascending portion away from historic Shindagha (Table 4).

Table 1: Values and attributes of Khor Dubai.

Category	Values	Attributes
Urban landscape	Unique morphology of traditional trade settlements composed of creek traffic, port activities, souk features Khor Dubai a living urban heritage	• The geomorphology of the creek and its continuous adaptation. • The port quays facilities for cargo activities and passenger traffic. • The structure and evolution of the traditional souks. • Urban fabric around the creek and the souks including merchants' housing, Indian quarter, ruler. • At the large scale: the preserved traditional landscapes from the creek with the specific landmark signs of the wind-towers.
Historical	Historic port since 19th century developed as a trade and fishing port and become the core of global trade in the 20th century	• The structure and evolution of the traditional souks. • The geomorphology of the creek and its continuous adaptation to permit boat traffic. • The continuing evidence of the traditional urban fabric around the creek and the souks. • Appealing to a large multi-cultural and multi-religious population.
Architectural	Outstanding technical and architectural solutions adapted to harsh environment Unique architectural synthesis of Arab, Persian and Indian traditions	• The presence of religious buildings belonging to different communities. • The reconstructed neighbourhood of Shindagha, traditional seat of the rulers. • Ruler's family, materialising the physical 'protective' role of the Ruler over trade in the city. • The architectural details showing intercultural exchanges reflected in wind tower, gypsum decoration panels and imported decorated wood doors.
Socio economic	Place where encourage interchanged of human values and unique multi culture multi-ethnic environment	• Diversity of exchanges of Dubai cosmopolitan mercantile society. • Wind tower houses. • The political and religious openness of Dubai that while cherishing and preserving its Arab and Islamic traditions, has been able to provide an urban and social environment. • The presence of an active multi-ethnic population continuing to actively trade in Khor Dubai.
Economic	Unique active economic entity based upon free trade principles	• Traditional boats. • Traditional souq on both side of the khor. • Custom building at the mouth of Shindagha. • Merchants' houses. • Rulers' houses. • Cargo activities.

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Table 2: Impact assessment for Project 1: Marsal Al Seef project.

Category	Attributes	Nature of impact	Potential impact on values
Urban landscape	• The geomorphology of the creek and its continuous adaptation. • The port quays facilities for the cargo activities and the passenger traffic. • The structure and evolution of the traditional souks. • Urban fabric around the creek and the souks including merchants' housing, Indian quarter, ruler. • At the large scale: the preserved traditional landscapes from the creek with the specific landmark signs of the wind-towers.	The project is cutting the visual and physical access to the creek.	Negative minor impact No positive impact
Historical	• The structure and evolution of the traditional souks. • The geomorphology of the creek and its continuous adaptation to permit boat traffic. • The continuing evidence of the traditional urban fabric around the creek and the souks. • Appealing to a large multi-cultural and multi-religious foreign population.	Historical function of the area will change to be touristic oriented rather than community and traditional trade function.	Negative moderate impact No positive impact
Architectural	• The presence of religious buildings belonging to different communities. • The reconstructed neighbourhood of Shindagha, traditional seat of the Ruler's family, materialising the physical 'protective' role of the Ruler over trade in the city. • The architectural details showing intercultural exchanges reflected in wind tower, gypsum decoration panels and imported decorated wood doors.	Misconception of traditional architectural affect its authenticity. Fake copied and insertion of wrong interpretation of traditional architecture.	Moderate negative impact No positive impact
Social	• Wide diversity of exchanges of Dubai cosmopolitan mercantile society. • Wind tower houses. • The political and religious openness of Dubai that, while cherishing and preserving its Arab and Islamic traditions, has been able to provide an urban and social environment. • The presence of active multi-ethnic population continuing to actively trade in Khor Dubai.	Erase memory of the place as being a public open space for the community.	Major negative impact No positive impact
Economic	• Traditional boats. • Traditional souq on both side of the Khor. • Custom building at the mouth of Shindagha. • Merchants' houses. • Rulers' houses. • Cargo activities.	Might bring some economic improvement to Al Fahidi historic district.	No negative impact Minor positive impact

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Table 3: Impact assessment for Project 2: Deira Enrichment Waterfront.

Category	Attributes	Nature of impact	Potential impact on values
Urban landscape	• The geomorphology of the creek and its continuous adaptation. • The port quays facilities for the cargo activities and the passenger traffic. • The structure and evolution of the traditional souks. • Urban fabric around the creek and the souks including merchants' housing, Indian quarter, ruler. • At the large scale: the preserved traditional landscapes from the creek with the specific landmark signs of the wind-towers.	The project is cutting the visual and physical access to the creek.	Negative moderate impact No positive impact
Historical	• The structure and evolution of the traditional souks. • The geomorphology of the creek and its continuous adaptation to permit boat traffic. • The continuing evidence of the traditional urban fabric around the creek and the souks. • Appealing to a large multi-cultural and multi-religious foreign population.	Historical function of the area will change to be touristic oriented rather than community and traditional trade function.	Negative minor impact No positive impact
Architectural	• The presence of religious buildings belonging to different communities. • The reconstructed neighbourhood of Shindagha, traditional seat of the Ruler's family, materialising the physical 'protective' role of the Ruler over trade in the city. • The architectural details showing intercultural exchanges reflected in wind tower, gypsum decoration panels and imported decorated wood doors.	Misconception of traditional architectural affect its authenticity. Fake copied and insertion of wrong interpretation of traditional architecture.	Minor negative impact No positive impact
Social	• Wide diversity of exchanges of Dubai cosmopolitan mercantile society. • Wind tower houses. • The political and religious openness of Dubai that, while cherishing and preserving its Arab and Islamic traditions, has been able to provide an urban and social environment. • The presence of active multi-ethnic population continuing to actively trade in Khor Dubai.	Erase memory of the place as being a public open space for the community.	Minor negative impact No positive impact
Economic	• Traditional boats. • Traditional souq on both side of the Khor. • Custom building at the mouth of Shindagha. • Merchants' houses. • Rulers' houses. • Cargo activities.	Might bring some economic improvement to Al Fahidi historic district.	No negative impact Moderate positive impact

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Table 4: Impact assessment for Project 3: Infinity Bridge.

Category	Attributes	Nature of impact	Potential impact on values
Urban landscape	• The geomorphology of the creek and its continuous adaptation. • The port quays facilities for the cargo activities and the passenger traffic. • The structure and evolution of the traditional souks. • Urban fabric around the creek and the souks including merchants' housing, Indian quarter, ruler. • At the large scale: the preserved traditional landscapes from the creek with the specific landmark signs of the wind-towers.	The project is cutting the visual and physical access to the creek.	Major negative impact No positive impact
Historical	• The structure and evolution of the traditional souks. • The geomorphology of the creek and its continuous adaptation to permit boat traffic. • The continuing evidence of the traditional urban fabric around the creek and the souks. • appealing to a large multi-cultural and multi-religious foreign population.	Historical function of the area will change to be touristic oriented rather than community and traditional trade function.	Major negative impact No positive impact
Architectural	• The presence of religious buildings belonging to different communities. • The reconstructed neighbourhood of Shindagha, traditional seat of the Ruler's family, materialising the physical 'protective' role of the Ruler over trade in the city. • The architectural details showing intercultural exchanges reflected in wind tower, gypsum decoration panels and imported decorated doors.	Misconception of traditional architectural affect its authenticity. Fake copied and insertion of wrong interpretation of traditional architecture.	Minor positive impact No positive impact
Social	• Wide diversity of exchanges of Dubai cosmopolitan mercantile society. • Wind tower houses. • The political and religious openness of Dubai that, while cherishing and preserving its Arab and Islamic traditions, has been able to provide an urban and social environment. • The presence of active multi-ethnic population continuing to actively trade in Khor Dubai.	Erase memory of the place as being a public open space for the community.	No negative impact Minor positive impact
Economic	• Traditional boats. • Traditional souq on both side of the Khor. • Custom building at the mouth of Shindagha. • Merchants' houses. • Rulers' houses. • Cargo activities.	Might bring some economic improvement to Al Fahidi historic district.	No negative impact Minor positive impact

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6 CONCLUSIONS

Heritage conservation is viewed as a socio-cultural endeavour rather than solely a technical discipline, encompassing a range of activities that precede and follow any material intervention. It is a complex process shaped by the evolving values and contemporary needs of society. Historically, the focus was often on individual artworks or monumental structures. However, the widespread destruction of world wars and the rapid industrialisation from the 1950s onwards underscored the profound connection between people's lives and their environments. This realisation emphasised the role of cultural heritage in shaping identities and providing a spiritual and mental foundation for a balanced quality of life.

UNESCO's recommendations emphasise that protecting cultural heritage requires a clear understanding of the resource and its social and cultural dimensions. This understanding is crucial in fostering an appreciation of heritage as an integral part of modern society. It involves developing frameworks to assess the value of resources, defining management objectives, and crafting policies for preservation and interpretation. This holistic approach aims to ensure that heritage conservation not only preserves physical artifacts but also sustains their socio-cultural significance for future generations.

Impact assessment is a process of thinking before acting. Effective impact assessment involves a comprehensive approach that considers various dimensions and engages stakeholders to ensure the protection and enhancement of these valuable cultural and historical assets. It informs the decision-making process by exploring the consequences that proposed actions may have on the environment, or in the case of World Heritage properties, on their OUV. It should always be carried out before any irreversible decisions or actions are taken, so that any findings can genuinely inform a final decision.

The threats encompass not only environmental, social, and economic aspects but also cultural dimensions in their broadest sense, including tangible heritage and the legacies of our cities. The methodology for impact assessment of urban heritage is more complex and addresses different interconnected relationships compared to the impact assessment of monuments. Identifying alternatives to proposed actions at an early stage means considering several options while it is still possible to influence planning decisions and even avoid negative impacts. There are multiple stages in the development and implementation of a proposed action. Although the existing management regulations set by DM permit monitoring and controlling not only the physical elements of the property but also the commercial and economic processes essential for its sustainability and long-term preservation, there is still a need to enforce a more comprehensive management and monitoring system that will address the complexity of the site.

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