

## HISTORIC BUILDING CONDITION ASSESSMENT: OBSERVATION OF THE PHYSICAL STATE OF THE BUILDING FACADE IN CHUKAI TOWN, KEMAMAN

Muhammad Afiq Wasie Mohd Asri<sup>1\*</sup> and Nor Zalina Harun<sup>1</sup>

<sup>1</sup>Institute of The Malay World and Civilization, Universiti Kebangsaan Malaysia, Malaysia

### ARTICLE INFO

#### Keywords:

Conservation,  
historic buildings,  
historical towns,  
heritage,  
observation

### ABSTRACT

*The significance of conserving historic towns is deeply ingrained to local historiography. Prioritizing its conservation is paramount to maintaining its significance. Thorough mapping serves as a crucial initial step in assessing a town's visual elements, offering guidance for informed decisions on its maintenance and enhancement. However, there is a notable scarcity of studies focusing on mapping historic buildings, a vital component of comprehensive conservation efforts. Thus, this study aimed to evaluate the current condition of historic buildings in the town of Chukai, Terengganu. Utilizing structured observation based on JKR building inspection guidelines, the study reviewed the facade condition of buildings, categorizing them into six condition levels: excellent, good, moderate, critical, very critical, and disposed. Results revealed that 23 buildings fell into the moderate category, indicating disruptions to their external structure. Additionally, one building was classified as good, with its original structure maintained without serious disruptions, while another was deemed critical due to defects and dilapidation. The remaining three buildings were categorized as disposed. Nonetheless, the absence of building monitoring reports highlights a potential negligence in conservation efforts. This study underscores the area's low-level conservation efforts for historic buildings, emphasizing the need for heightened preservation initiatives to address lingering challenges.*

## 1. INTRODUCTION

Regular physical condition assessment of historic buildings is important to ensure the continuity of the function and duration of a building (S. M. Noor, et al. 2019). Although the assessment of the condition of the historic building is important, the focus of its implementation at the local level is still at a low level. In the context of the conservation of local historical buildings, there is a problem where there is a trend of neglect of the conservation of historic buildings resulting in damage and defects to the structure of the building (S. Y. Tan, et al. 2016). One of the major contributors to this situation is documenting problems such as reporting in historic building conservation efforts (W. N. W. Ali & A. G. Ahmad, 2021).

Such problems still plague local historic urban area which effectively cause the conservation management of historic buildings to become problematic, leading to the deterioration of their physical condition. Chukai Town is an example of a historical town that is facing this problem.

This heritage town has its own potential to be developed as a focal point for the conservation of heritage assets due to a number of prominent historical buildings that have been built since the British colonial era, especially since the 1920s. It shows that the

area has an outstanding heritage asset in terms of its uniqueness, age, history, and importance to local socio-economic development. Preliminary studies have found that the area at its early stages of urban conservation and already has a complete historical building inventory data, but it has not been monitored for the condition of the building until now.

The long-running data pool opens up opportunities for possible damage or defect to the town's significant heritage. Therefore, there is an urgent need for the implementation of the assessment of historic buildings in the area, in addition to also reporting on the current condition of the building. Looking at this problem, this study was carried out to assess the physical condition of the latest façade of the historic buildings listed in the inventory of the historic buildings of Chukai Town.

## 2. LITERATURE REVIEW

The development of the historic town is of great value to local historiography. The evolution of development in terms of landscape and social events that have taken place has resulted in a unique and high town with historical value. This forms its own

\*Corresponding Author: p119285@siswa.ukm.edu.my

attribute to a historic town (S. Brusaporci, 2014). Then it needs to be preserved and taken care of its value. A method capable of guaranteeing sustainable conservation of heritage urban area is by documentation. Documentation aspects such as reporting are a very important method of knowing the situation and the level of comprehensive conservation of the components of urban appearance (Deni Suwardhi, 2022; C. Udejaja, et al. 2020). This is important not only to conservation efforts, but also to the development and a more comprehensive regeneration of the historic town. A complete report also helps a lot in assessing the condition of the town's appearance component.

One of a significant attribute to the components of the historical urban look is the historic building. Historic buildings have a universal value that stands out in terms of history and art (Act 645) which is influenced by the development of an area and the local community (*Institute of Historic Building Conservation*, 2021). For example, the construction of colonial buildings in an area clearly demonstrates the times of colonialism that once occurred (N. S. A. N. Hanapi & N. Tugang, 2021). Such a situation justifies the importance of the building to the historiography of a locality. Therefore, such constructions have a clear importance to be well maintained and preserved. Therefore, such buildings should be evaluated, documented and mapped on the development of their construction structures to ensure their function and condition.

Assessment of the condition of historical buildings is important to identify whether a building structure is in a good or bad state. According to S. M. Noor, et al. (2019), the purpose of implementing this assessment is to determine the physical condition of the building and measure the defects and deterioration of the value that occurs. In addition, as a result of this assessment, an estimate can be made involving certain costs to solve the problem at hand. Thus, this evaluation has evolved as an important element in the conservation efforts of historic buildings (S. Yacob, et al. 2016).

With information gleaned from an assessment of the condition of historic buildings, a more comprehensive design of conservation work can be developed. In carrying out the conservation work of a historic town and its urban visual components such as historical buildings, complete data on subject details need to be given heavy emphasis. This is as confirmed by Erkan (2018). According to him, without complete data, the next step towards a conservation effort cannot be achieved.

In fact, a guide to the assessment of building conditions has been issued by the Public Works Department of Malaysia (2013) for the use of professionals and implementers. This guide is implemented with the aim of producing a simple, complete, systematic and transparent guide. In addition, this guide is dynamic and will be reviewed from time to time taking into account any changes. This guide should be applied to identify the current condition of historic buildings in the local context.

According to S. N. F. Zuraidi, et al. (2018), Malaysia is indeed rich in tangible heritage resources such as historic buildings that have been developed in local localities. However, there are issues where most of these buildings do not receive proper conservation measures. There are even buildings that are threatened with demolition. One of

the reasons for this is the lack of focus on constructive assessments of such buildings. It is similar to the opinion of M. Q. Mootar (2019) who explained that such documenting problem inherently hampers conservation work. Therefore, he said, there is a need to carry out an assessment of the condition of the historic building in order to see the developments taking place on the building structure.

Chukai Town is one of the cities that suffer from such problems. The area's tangible heritage assets, through its historic buildings, have gained early conservation with the implementation of the historic building inventory (S. Z. A. Idid, 1995). However, it has been found that there has been a rift in terms of the assessment of the physical condition of the façade of the building involved. This situation has raised questions about the current condition of the historic building, leading to potential damage to the building.

### 3. METHODOLOGY AND STUDY AREA

This study used a qualitative approach involving structured observation of 28 historical buildings in Chukai Town in achieving the study goal. This observation is carried out in accordance with the guidelines issued by the Public Works Department of Malaysia (JKR) through the Guidelines on Building Inspection and Evaluation (2013). Based on this guide, the physical level of buildings is divided into 6 categories which are (i) excellent, (ii) good, (iii) medium (iv) critical (v) very critical, and (vi) disposed. In addition, there are also 38 revisions of the type of defects/general damage of the building to clarify the category division (has been placed in the 'Supplementary Data' section).

Based on the guidelines, a visual observation of the building's façade was made to see the condition and possible damage that had occurred to the façade of the buildings involved in the inventory of historical buildings in the town. Although according to the guidelines there are 5 stages of physical condition of the building, but in accordance with this study, 'disposed' category has been added. This addition was made because considering the possibility that some historical buildings in Chukai Town could no longer exist or could be traced to their existence.

The study was conducted in Chukai Town, Terengganu, a small-sized old town located next to the Kemaman River. Its location which is located close to the Kemaman River gives the area great importance in terms of the local economy. This area has also once emerged as an economic hotspot that has gained rapid development since the British colonial era in the year of 1920s. During the era, this town underwent an impressive expansion, in line with its importance in economic terms since the 1920s. Its location next to the Kemaman River gives the town the opportunity to emerge as an anchorage. This situation gave opportunity for the development of colonial-style buildings in Chukai Town that can still be seen to this day.

Due to its importance in terms of local heritage assets scattered through its urban form, the area has received an early level conservation effort through the mapping of historic buildings inventory in 1995. However, the effort was not carried out continuously and effectively. As a result of preliminary studies, it has been found that the development of heritage conservation of historic buildings in Chukai Town is stunted and has problems in the absence of monitoring reports on the condition of historic buildings

especially since the inventory of historic buildings was published in 1995 (S. Z. A. Idid, 1995).

This inventory can be considered quite complete as it includes details such as address, building volume, building type and architectural style in quite detail. A total of 28 old buildings of various types such as residential houses, shop houses, houses of worship and offices, were listed through the inventory. The locations of these old buildings are all located at Jalan Pasar, Jalan Sulaiman and Jalan Masjid (now Jalan Sulaiman and Jalan Pasar have been merged into Jalan Sulaimani).

**Table 1:** Distribution and Architectural Style of Historic Building in Chukai Town (S. Z. A. Idid, 1995)

Building Type	Building Name	Building Location	Architectural Style	Total
Shophouses Before War	Not stated	Jalan Pasar	Eclectic	13
		Jalan Sulaiman	Eclectic	9
Public Buildings	Malayan Banking	Jalan Sulaiman	Art Deco	1
House of Worship	Jamek Mosque	Jalan Masjid	Malay Classical Mosque	1
Commercial	Siew Distillery	47 Jalan Bakar	Early Colonial	1
Public Buildings	Former Customs Office	Jalan Sulaiman	Early Colonial	1
Residential House	Not Stated	191 Kampung Cina	Early Modern	1
Residential House	Not Stated	K52 Jalan Kampung Cina	Early Colonial	1



**Figure 1:** Historic Buildings Position in Chukai Town Based on 1995 Inventory

#### 4. RESULT AND DISCUSSION

Generally, most buildings are in moderate condition, where there are obvious defects and require repair work. Besides that, there is also a building that has been dilapidated although it is important for the historiography of the town. The results of the observation through Table 2 can be seen that in general, the majority of historic buildings in Chukai Town belong to the medium and lower categories. Most of these buildings clearly have their own damage and physical defects, which cause the original appearance to be disturbed. In fact, there are a total of 3 buildings that fall under the disposed category due to the absence of any more constructions in the study area.

**Table 2:** Condition Physical Levels of Historic Building

Physical Categories of Buildings	Details / Indicators of the State of the Building	Type of defect/damage	Building Lot Name & Code (if any)	Total
Category 1 (Excellent)	No Defects. Very good conditions. Works well.			
Category 2 (Good)	There is a defect or minor damage.	Moss	Jamek Mosque (443)	1
	Good condition. Can work well.	Fibrous Dirty		
Category 3 (Average)	There is a major defect or damage.	Cracked Interplant tree	Kemaman Museum (132)	1
	Average condition. Still working but needs to be monitored.	Dirty Fibrous Pale/dull	Shophouse in Jalan Sulaimani (33-54)	22
Category 4 (Critical)	Have / Doesn't have major and minor damage. Critical condition Unable to function according to agreed service level.	Dirty Interplant tree Rusty Pale/dull Inclined Perforated Fibrous	Residential House (K52 Jalan Kampung Cina)	1
Category 5 (Very critical)	Conditions are very critical. Unable to function. Risks that may cause accidents and/or injury.			
Category 6 (Disposed)	The building has collapsed/disposed. Don't know existence.	Disappear	Former Customs Office (PT160)	1
			Residential House (191 Kampung Cina)	1
			Siew Distillery (47, Jalan Bakar)	

##### a. Category 2 (good)

The historic building in Chukai Town which has been rated as good level of physical condition is the Jamek Mosque. The house of worship located at Jalan Masjid has visually seems to be managed with good care. This is because, externally, the façade of this building does not have any damage or serious defects. However, through observation to the mosque compound, there are also minor

defects. This defect is seen as a matter that can be solved without incurring significant financial and energy costs.

The original elements of the building have been successfully maintained since time immemorial until now. This is an added value to the historical value available to the building. This is due to the fact that it manages to preserve the original character of the building. Looking at the structure of the building, there are 2 components of the physical structure that remain in terms of decoration at the top of the roof which is the *buah buton* and the mosque tower.

The decoration at the top of the roof of a traditional Malay heritage building found as in Jamek Mosque is known as *buah buton* (S. D. M. Sojak, N. Utaberta, 2013; F. Ahmad@Taufik, et al. (2020)). This structure is a vertical decoration located at the top of the roof of the traditional Malay building. The *buah buton* found on the roof of Jamek Mosque is a type of trunk. It can be noted that there is a *buton* structure at the top of the roof of the right side of the mosque. With the existence of the traditional Malay-built heritage structure, this can prove that this mosque is a long-built mosque in the area of Chukai Town, in addition to being successful in conserving and maintaining its identity.

Apart from its roof decoration, the Jamek Mosque tower has also been successfully maintained. The tower is an architectural element that is somewhat synonymous with mosques. It mostly serves as a place to call out the adhan due to its high position. It is worth highlighting that in the early stages of the construction of the traditional Malay Mosque, the tower development was built separately with the mosque (A. A. Ahmad, et al. 2012). This is because in the old days the tower was not an obligatory and important structure in a mosque. Therefore, there is also an old mosque that does not have a built-in tower. However, in colonial times the construction of towers and mosques was not separated (F. Ahmad@Taufik, et al. 2020; A. A. Ahmad, et al. 2012). A similar situation can be observed at this building, where it was built together with its tower. Indirectly, the mosque was built around the colonial era in Malaya.

A visual comparison of the façade of Jamek Mosque can be said that it has been well taken care of. In addition, it can be clearly seen that the structure and shape through the decoration of the roof and the tower are still the same. Therefore, the proof of identity of this historic building is still maintained to date. However, there are also minor defects in the appearance of the mosque, especially in the outer fence.

The defect in question is the impurities that are on the left side wall as well as the back of the mosque. There are moss-type impurities on the surface of the walls, as well as the placement of tree plants that should not be in the area around the mosque. This situation can be considered a minor flaw because it does not require any significant labour and financial resources to be resolved and can be completed in a short period of time. However, in general, the Jamek Mosque has a good level of physical condition among the historical buildings in Chukai Town.

### **b. Category 3 (average)**

The historic building in Chukai Town rated as medium physical level is the Kemaman Museum and the entire shophouse along

Jalan Sulaimani. The total number of shophouses involved was 22. Outwardly, these buildings have a considerable degree of damage, especially involving problems such as cracks and a rather gloomy and fibrous look. This includes tree plant problems in building structures that have the potential to cause greater damage.

Kemaman Museum is one of the colonial-era buildings in Chukai Town. This historic building was developed in the 1920s (S. Z. A. Idid, 1995; Terengganu State Museum) with Art Deco architectural style which is quite synonymous in architectural art in Europe around the beginning of the 20th century. According to A. Wagner (2017), such a style of construction 'decorates the road' in Malaya in 1930. This situation shows that the museum building has a prominent historical development value in terms of the architecture of the building in the local context.

From the view of the current design of this historic building, it is outwardly found that it still retains the same build shape as the original. This situation has been exhibited in the museum as one of the exhibits to show the historical development of the town and the building. It has been found that no significant changes have occurred as shown. This indicates the retention of the shape of the building despite the changing times.

It can be found that almost the entire appearance of the building has been maintained from the past until now. This includes columns, windows, stairs, balconies and the front foyer of the building. Thus, it can be concluded that the building has managed to retain its original characteristics. However, from the study of the current level of physical condition of the building, there are some defects that are considered quite serious.

Externally, the current situation of the Kemaman Museum is quite fibrous. Although it is recognized as one of the district museums, it is not as if it is not well maintained. The left side of the building has been tainted with things that should not be in the area. There is a rusty tent frame still placed on the grounds of the museum. In addition to a vehicle, which is likely owned by museum officials. Thus, the building is a prominent historical building with local heritage value that is upgraded as a district museum.

In addition, there is also the problem of moss and tree plants within the building area. In addition to the increase in fungus along the outer walls of the building, there are cracks to the wall. This problem can pose a greater threat of cracking or cause the stone to break. This will result in a malfunction failure of the wall which is capable of collapse.

This problem is coupled with the presence of a living tree on the cement site of the building compound and there is also a tree creeping over the building. Based on the general visual assessment guide from JKR (2013), this situation creates a messy atmosphere for the building area. Indirectly, this problem reflects the rather dirty and dull image of the building structure of the Kemaman Museum.

Apart from the Kemaman Museum building, the entire shophouse located at Jalan Sulaimani also has more or less the same problem. In general, all these shop houses have retained the original eclectic architectural form. Looking at the architectural style of the shophouses that were highlighted through the 1995 inventory, it has been found that almost all of these buildings are in the Early Straits Eclectic style.

Such a vernacular style developed in 1890-1920 (A. Wagner, 2017), as well as being very synonymous with the Chinese community at that time (A. Zwain, 2019). The architecture of the 2-storey building is manifested through its windows which have only 2 or 3 panels and its minimalist and underemphasized style will be carved on the building structure. The architectural style of such a store is in fact very popular and has a very wide spread of construction that adorns the morphology of the local historical town.

According to the observation, all the shophouses in Jalan Sulaimani are still maintained and are used as commercial buildings in Chukai Town. In terms of building floors, the average majority of buildings still retain their image as a 2-storey building. However, there are also some buildings that have been renovated by upgrading the building. The buildings involved are lots numbered 33, 37 and 39. This renovation resulted in the height of some of these buildings no longer uniform.

Apart from that, in terms of window panels that are a prominent identity to the Early Straits Eclectic style, it has been found that there are several buildings that have already changed the window panels. Of the 22 eclectic shophouse buildings, only 9 still retain the original shape of the panels (lot buildings numbered 34, 35, 37, 40, 41, 42, 43, 44, and 45). The rest have modified their respective window panels. In other words, only 9 panel pieces really retain the original architectural style of this heritage.

However, these 9 buildings have their own problems that undermine the value of the historic buildings. It has been found that the level of custodians and maintenance of this historic building still needs to be improved. This is said to be because there are components that have been damaged but not repaired, especially against the window panels. The observation also found that the window panels on lot buildings numbered 40, 41 and 42 were decayed resulting in a sloping of the windows. This needs to be addressed to prevent other components from experiencing the same problem.

#### c. Category 4 (critical)

The historic building in Chukai Town which falls into the critical category is the residential house of K52 Jalan Kampung Cina. This building is a rather large building as it is a 2-storey residential house and has a relatively large area. The external visuals of the building have exhibited a relatively low level of care and conservation of the building, where there are building structures that have decayed, rusted and looked fibrous.

Based on the inventory details in 1995, this building is a residential house. However, after the latest monitoring, the building has changed function to an eatery now known as Tim Kam Leng Coffee Shop with Lot 299, Kampung Cina.

Externally, this historic building is arguably poorly maintained, although it has now turned into a coffee shop. This is said to be due to defects and damage to the external structure of the building and its surroundings. The first problem was about the roof of the building. Observations have found that the zinc roofs used in this building are already tilted bent, perforated and rusty. It can also be seen that some pieces of zinc roof have been used as a barrier to the exterior walls of the building.

In the meantime, the environment of the K52 building area is seen as dirty and fibrous. Observations of this building found that although it has a relatively large area, it is mostly filled with bushes and rubbish. There are also cluttered wooden twigs, fallen trees and rubbish-burning waste on the back of the building. Plus, there is a pile of rubbish from empty and used up oil bottles that are not well managed can be seen. The situation caused the building to be seen as quite dirty, faded, dull and lack lustre as an eatery.

#### d. Category 6 (disposed)

The historical buildings in Chukai Town that fall into the category of disposed are the former customs office buildings, residential houses in Kampung Cina and Siew Distillery. There are 2 reasons why these three buildings are included in this category. The first is that the building has been demolished, and both are due to the current location of the building no longer being detected. The findings of this study found that only the location of the former customs office building can be identified. On the other hand, the existence of a residential house addressed by 191 Kampung Cina and the Siew Distillery company cannot be known.

The Customs Office was an important government building in the old days, especially during the rapid development of Chukai Town in the 1920s. Kemaman River is an important trade route for the economy of the area. The river was once known as the hub of iron ore transportation routes taken at *Bukit Machang Setahun* and *Bukit Kambing* (M. S. Muda, 2020). This mineral resource will be carried anchored at this port before being exported out. Thus, the customs office located next to the river serves to manage and implement the maritime taxation system. The building has been demolished and is now used as promenade called *Taman Persiaran Chukai*.

## 5. CONCLUSION

The inventory in 1995 was seen as a sticking point in intensifying the conservation efforts of historic buildings in Chukai Town. Nevertheless, it has been found that there is no act of continuity from the work of this inventory. Observations have found that this situation has led to neglect of almost the entire historic building based on the inventory list. There are defects in the façade structure of most of the historic buildings, thus proving that there is a disregard for the restoration and care of the buildings.

The town is one of the locations with local heritage potential but is not given the proper conservation opportunities. The town should be given the focus of urban conservation players and implementers who belong to academics and law enforcement to plan an effective plan to address this problem. This protracted problem will lead to the destruction of its own historical development and heritage values. In turn, it will lead to elimination of the evidence of inheritance which can be avoided by appropriate action.

## ACKNOWLEDGEMENT

Appreciation is given to the research grant of the Museum Heritage Asset Information Generation through Design Code Development (GUP-2021-065) and Universiti Kebangsaan Malaysia for the financing facilities provided throughout the study.

## REFERENCES

- Ahmad @ Taufik, F., Yi Mei, E., Ghafar, A. N. A., Shafee, M. S., Razak, M. S. A., Megat, M. H. A. N. W., Jusan, M. J., Kadir, M. Z., Rohizi, P. N. I. M., Rashidi, S. H. M., & Siti Long, Z. (2020). Masjid Warisan di Malaysia. *Universiti Teknologi Malaysia*.
- Ahmad, A. A., Ali@Mat Zin A., & Arbi, E. (2012). Wacana Dan Teori Rekabentuk Menara Masjid Di Nusantara. *Jurnal Al-Tamaddun*. Bil. 7(2),77-88. <https://ejournal.um.edu.my/index.php/JAT/article/view/8640>.
- Malaysia. (2006). *Akta Warisan Kebangsaan 2005*. (Akta 645). Cetakan Semula.
- Ali, W. N. W., & Ahmad, A. G. 2021. Systematic Inventory For Heritage Shophouse Facades In Ipoh, Perak, Malaysia. *Planning Malaysia*. Vol. 19 (5), 108-120. [doi.org/10.21837/pm.v19i19.1064](https://doi.org/10.21837/pm.v19i19.1064).
- Brusaporci, S. 2014. Issues of Historic Town Surveying: Visualizing Urban Values. *SCientific RESearch and Information Technology* (2): 63-80.
- Erkan, Y. 2018. The Way Forward with Historic Urban Landscape Approach Towards Sustainable Urban Development. *Built Heritage*. 4. [doi.org/10.1186/BF03545686\\_-Download%20citation](https://doi.org/10.1186/BF03545686_-Download%20citation).
- Hanapi, N. S. A. N. & Tugang, N. 2021. Transformasi Bangunan Warisan Bersejarah: Suatu Tinjauan Menyeluruh. *Malaysian Journal of Social Sciences and Humanities* (MJSSH) 6(7): 228-235. [doi.org/10.47405/mjssh.v6i7.881](https://doi.org/10.47405/mjssh.v6i7.881).
- Institute of Historic Building Conservation. 2021. Historic buildings definition. *Institute of Historic Building Conservation*. United Kingdom. [https://www.designingbuildings.co.uk/wiki/Historic\\_buildings\\_definition#:~:text=An%20historic%20building%20is%20generally,to%20be%20made%20concerning%20it](https://www.designingbuildings.co.uk/wiki/Historic_buildings_definition#:~:text=An%20historic%20building%20is%20generally,to%20be%20made%20concerning%20it)
- Mootar, M.Q. 2019. Pemuliharaan Bangunan Warisan Dari Aspek Sejarah di George Town, Pulau Pinang. *Universiti Sains Malaysia*.
- Muda, M. S. 2020. Pelabuhan dan Pangkalan Terengganu. *Lembaga Muzium Negeri Terengganu*.
- Noor, S. M., Mei, C. S., Ibrahim, I. Z., Sarbini, N. N., Osman, M. H., Khayon, & N. A. 2019. Heritage building condition assessment: a case study from Johor Bahru, Malaysia. *IOP Conf. Series: Earth and Environmental Science* 220, 1-12. [doi:10.1088/1755-1315/220/1/012024](https://doi.org/10.1088/1755-1315/220/1/012024).
- Yacob, S., Ali, A. S. & Peng, A. C. 2016. Building Condition Assessment: Lesson Learnt from Pilot Projects, *MATEC Web Conf*. Vol. 66 (77). [doi.org/10.1051/mateconf/20166600072](https://doi.org/10.1051/mateconf/20166600072).
- Sojak, S. D. M., & Utaberta, N. 2013. Typological Study Of Traditional Mosque Ornamentation In Malaysia-Comparison Between Traditional And Modern Mosque. *Proceedings International Conference On Architecture And Shared Built Heritageconference (ASBC 2013)*, 101-118.
- Suwardhi, D., Trisyanti, S. W., Virtriana R., Syamsu, A. A., Jannati, S. & Halim, R. S. Heritage Smart City Mapping, Planning and Land Administration (Hestyta). *International Journal of Geo-Information*. 11 (107), 1-16. [doi.org/10.3390/ijgi11020107](https://doi.org/10.3390/ijgi11020107).
- Tan, S. W., Olanrewaju, A., & Lee, A. T. 2016. Maintenance of Heritage Building: A Case Study from Ipoh, Malaysia. *MATEC Web of Conferences* 47. [doi.org/10.1051/mateconf/20164704003](https://doi.org/10.1051/mateconf/20164704003).
- Udeaja, C., Trillo, C., Awuah, K. G. B., Makore, B. C. N., Patel, D. A., Mansuri, L. E., & Jha, K. N. 2020. Urban Heritage Conservation and Rapid Urbanization: Insights From Surat, India. *Sustainability*. 12 (2172), 2-26. [doi.org/10.3390/su12062172](https://doi.org/10.3390/su12062172).
- Wagner, A. 2017. Malaysian Shophouses: Creating Cities of Character. PhD thesis, *University of Arkansas*. Fayetteville.
- Zuraiddi, S. N. F., Rahman, M. A. A., & Akasah, Z. A. 2018. The Development of Condition Assessment for Heritage Building. *E3S Web of Conferences* 65, 1-12.
- Zwain, A., & Bahauddin, A. 2019. Place Identity in the eclectic style interiors of vernacular courtyard shop-houses in Heritage City, George Town, Malaysia. *ISVS e-journal*. Vol. 6(1), 32-41.

## SUPPLEMENTARY DATA

1. Cracked	20. Leaking
2. Damp	21. Absorb water
3. Broken	22. Faded/dull
4. Peeling	23. Torn
5. Evaporation	24. Misty
6. Removed	25. Broken
7. Pull out	26. Blocked
8. Cut off	27. Rusty
9. Not following specifications	28. Crusty
10. Lost	29. Tilted
11. Mold	30. Hollow/perforated
12. Moss	31. Collapsed
13. Parasitic plant	32. Decayed
14. Insect infestation/termites	33. Rotten
15. Bent	34. Crumbling
16. Swollen	35. Dirty
17. Bent	36. Swollen
18. Loose	37. Cracked
19. Shake	38. Fibrous

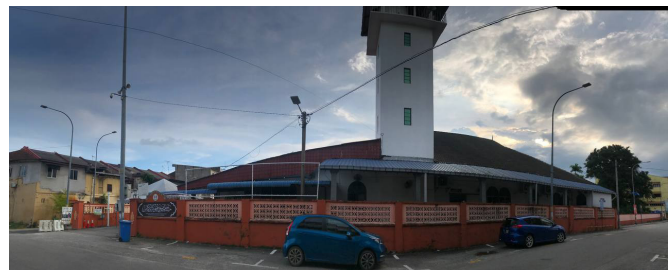


Photo 1: Jamek Mosque compound from front view



Photo 2: Jamek Mosque compound from hindsight



Photo 3: Kemaman Museum From Front View



Photo 4: Kemaman Museum From Left Side View



Photo 5: The window panels that have been slammed on the Jalan Sulaimani shophouse



Photo 6: Obvious damage to row of window panels on Jalan Sulaimani shophouses



Photo 7: Rear View of Building K52



Photo 8: A playground developed on the site of a former Customs Office