

# Boutique Hotels Within Heritage Shophouses in George Town: Understanding Adaptive Reuse Through Existing Interior Layouts



Muhammad Firzan, Rani Prihatmanti, Shafiq Falil Johari, Tan Sin Ning, and A. Ghafar Ahmad

**Abstract** Adaptive reuse has been an emerging means of conservation and commodification of built heritage worldwide. Its implementation is associable with the thrive in tourism industry for UNESCO World Heritage Site (WHS) localities. As seen in George Town WHS of Malaysia, conversion of heritage shophouses to function as boutique hotels is one of the common trends. However, observation and documentation on the physical impact of such cases are in sparse mode, thus compels the execution of this exploratory study. A preliminary inventory to identify heritage shophouses that legitimately met the meaning and criteria of a boutique hotel was performed, prior to conducting field observation to record the physical changes and modifications. Consequently, five buildings were identified and further scrutinised through field observation that gave special emphasis on their new interior layout. It is found that spatial provisions such as reception and lobby area, guest rooms, and *en suite* bathroom are inevitable for repurposing heritage shophouses into boutique hotels. Besides, integration of swimming pool was uncommon while setting up a rooftop garden was unlikely, implying from the collective cases.

**Keywords** Adaptive reuse and retrofit · Boutique hotels · Building interiors · City cultural heritage · Heritage shophouses

## 1 Introduction

Adaptive reuse intervention has been an emerging means of conservation and commodification of built heritage worldwide. It became favourable for reviving physical, functional, and financial aspects of underutilised or physically worn buildings. It is fair to claim that the thrive in tourism industry for localities revered as UNESCO World Heritage Site (WHS) can be associated with adaptive reuse implementation.

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In the WHS of Malaysia, heritage shophouses in George Town and Melaka carry profound significance in relation to the Outstanding Universal Values (OUVs). One of the common trends of adaptive reuse seen, particularly in George Town WHS, is the conversion of heritage shophouses to function as boutique hotels. However, the arduous meaning and legitimate criteria of a boutique hotel have been much debated previously. Besides, it is of very little evidence available currently on the observation and documentation of physical impact committed to heritage shophouses that have undergone adaptive reuse to boutique hotels. Acknowledging so, this exploratory study is purposed to identify the heritage shophouses that legitimately met the meaning and criteria of a boutique hotel. Subsequently, it records on the physical changes and modifications occurred to heritage shophouses in functioning as a boutique hotel, with special emphasis on their new interior layouts. Anticipatedly, the study will update on the legitimate boutique hotels that are still operational in George Town WHS despite the recent struck of unprecedented COVID-19 pandemic to the tourism sector. Moreover, it will shed lights on the physical impact on heritage shophouses resulting from their adaptive reuse to boutique hotels. The subsequent section dissects and synthesises past literature concerning the baseline design of heritage shophouse mainly within the context of the research locale namely George Town WHS, followed with comprehending boutique hotel legitimately, as well as matters on repurposing heritage shophouses to serve the functions associated with boutique hotel.

## 2 Literature Review

Traditionally, shophouses in George Town were urban building built with mixed use functions—commercial and residential. The ground floor serves as the business premise (usually a family business) and dwellings on the upper floor. This spatial arrangement not only provides shelter, but also convenience and security [1, 2]. Shophouses were built in rows with shared party walls and interconnecting five-foot walkway in the front with narrow façade (6–7 m width). It has a deep rear that reach 30 m and it could extend up to 60 m [3]. Due to the length, air well is presence to control the ventilation as well as to illuminate the interior space (Fig. 1). Heritage shophouse possessed a historical urban building typology which formed and developed over 200 years ago. These heritage shophouses were connected along the veranda namely five-foot way facing the main road. Generally, it claimed to have business premise at the ground floor area while the accommodation chambers are located at the upper level [4].

A shophouse commonly built as a single, double or triple storey building which depends on the architectural style of the construction period. In George Town, there are main six architectural styles as illustrated in Fig. 2. The first four styles (Early Penang style, Southern Chinese Eclectic style, Early Straits Eclectic style, and Late Straits Eclectic style) were constructed before the Second World War, hence it is

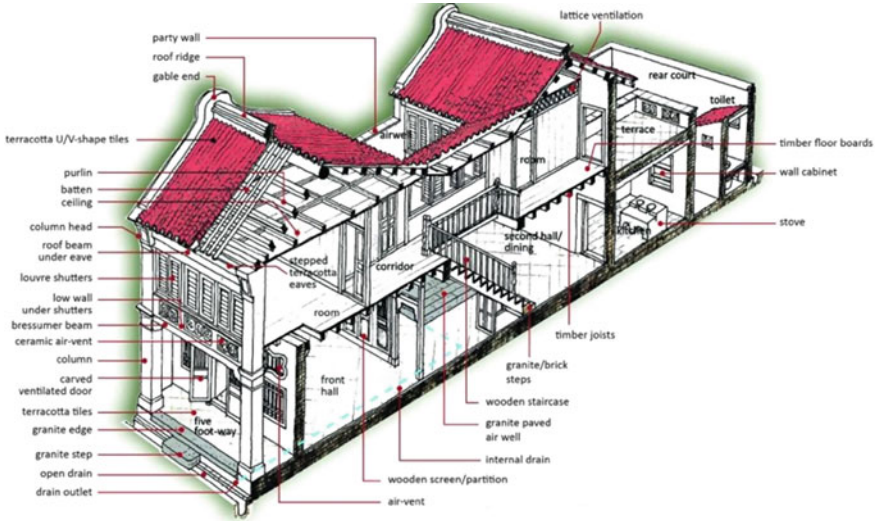


Fig. 1 Typical features of a Southern Chinese eclectic style shophouse [5]

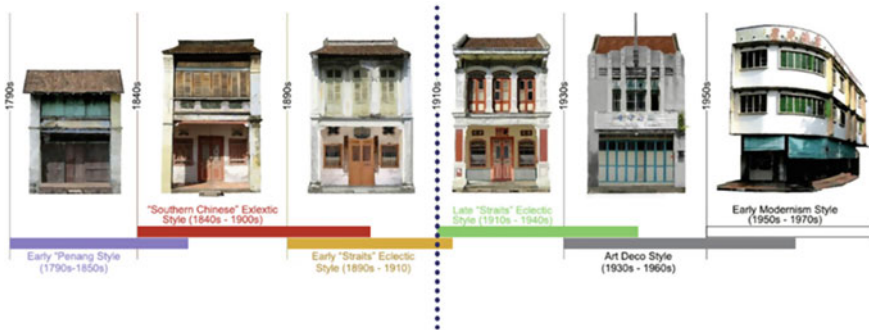


Fig. 2 Architectural styles of shophouses in George Town [2]

commonly known as the pre-war shophouse. After the Second World War, shophouses with Art Deco style and Early Modern style were built based on the socio-economic changes and technology development that grew in Penang [1]. The dominating styles that are applied on the shophouse boutique hotels in this research are the ‘Southern Chinese’ Eclectic Style (1840s–1900s) and the ‘Early Straits’ Eclectic Style (1890s–1910s). During the pre-war era, the shophouses were constructed based on the local knowledge and the building construction method was brought by the immigrants from the southern coastal province of China which then adapted to the shophouses in Penang. Therefore, it is a combination of vernacular, European as well as Chinese cultural influences. These cultural influences create a unique yet exceptional building styles which reflects in the OUV criteria (iv) [2].

Since the inscription of the UNESCO World Heritage Site in 2008, Penang is struggling to maintain the authenticity of these shophouses. The Penang State Government (Majlis Bandaraya Pulau Pinang/MBPP) together with the George Town World Heritage Incorporated (GTWHI) and local NGO such as Penang Heritage Trust (PHT) are closely monitoring any alteration on the building fabrics as well as the interior layout of the shophouses. Any protection, preservation and conservation works, including adaptive reuse, must comply to the standard, i.e. Special Area Plan (SAP) of George Town. This guideline provides a full statement of the government's policy for protection of heritage buildings, conservation areas and other historic elements within the George Town WHS. It is a requirement for any adaptive reuse practice in commodifying the heritage shophouses into boutique hotels to issue HIA report. It is used to describe the compatible development and new use projects as well as for assessing the impact of OUVs of the site. According to the SAP of George Town, the shophouses within the WHS are categorised as Category II—"buildings, objects and sites of special interest that warrant every effort being made to preserve them" [2].

After being listed as the WHS, many pre-war buildings, such as traditional shophouses and heritage mansions, were adaptively reused into boutique hotels to accommodate the tourists. This commodification has emerged to increase the economic and tourism sector in WHS in the form of transforming goods, services or ideas into an extended economic value. Consequently, the number of boutique hotels was increasing due to the market demand since the year 2008 [6, 7]. An important aspect of concern when rehabilitating the shophouses into boutique hotels is to maintain its significant historical architecture characteristics and values held within the building fabrics. However, new facilities and space functions are necessary for the retrofit of heritage shophouse to boutique hotel as they served a different building purpose. Therefore, the proposal of new space requirements for the boutique hotel has to be based on their selection of services provided to meet the guest's activities. For facilities and public spaces wise, few accommodation quarters, bar counter, restaurant and dining area are the basic needs of interior space to serve as a hotel. Besides, there are some supportive facilities such as administration office, housekeeping room, security room and reception counter are required for management purpose [4].

Several previous studies have been conducted to determine the most suitable criteria of boutique hotels in George Town WHS. According to Khosravi, Malek and Ekiz [8], the most attractive attributes are special services, room features, convenience, and the hotel design. The guests prefer to receive individualised and personalised services from the friendly staff in a homely and comfortable environment. The uniqueness on the interior and architecture of boutique hotels creates a dramatic impression to the guests. As stated in earlier studies, layout and decorations of the hotel room, particularly the hotel lobby, are essential factor in creating customers' experience during their stay [8–10]. Although commonly situated in old buildings, high tech facilities in the room are required by the guests. Moreover, they also expect to engage in local activities offered by the hotel. In-house entertainment such as lounge and bar are considered as necessities. Price and location are also important attributes for the guests in selecting boutique hotels in George Town. Hence, easy

access to the downtown and airport has always been a preference. To summarise, the characteristics of the boutique hotel in George Town are classified into the tangible and intangible values. The tangible values consist of the location, distinctiveness architecture design, premise size and number of rooms, uniqueness and dissimilarity of rooms, the features available in each room, and the hotel facilities offered. Meanwhile, image of the hotel as WHS branding, the historical origin and background, rare experience and facilities, specialised services provided, and the price are included as the intangible value of boutique hotel criteria.

It is imperative to cater guests' needs and fulfil hotel functional requirements while repurposing heritage shophouses to function as a boutique hotel. This is especially true when guest's satisfaction and their acceptance towards the boutique hotels are central for such business. Interestingly, boutique hotels are expected to provide a more personalised and distinguished experience as opposed to other type of hotels in the market [9, 11]. Thus, factors that contribute largely to guests' satisfaction and attraction towards boutique hotels as outlined by Khosravi, Malek and Ekiz [8] are deemed imperative which include convenience, room features, special services, and design element. To summarise, the criteria of boutique hotels in George Town is tabulated in Table 1 as follows:

### 3 Methodology

Initially, an inventory was performed to identify the actual number of boutique hotels located in the Core Zone of George Town WHS. The site inventory was conducted to list and identify converted heritage shophouses that qualify the legitimate meaning and function of a boutique hotel. Two days were taken to conduct the site inventory, covering the 109.38 ha of Core Zone of George Town WHS. Prior to the site inventory survey, the hotel names were searched earlier from their official websites as well as from the online travel agency for lodging reservations. As illustrated in Fig. 3, the hotels located in zone A and B were surveyed to validate the existence on the first day, followed by zone B and C on the second day. Unfortunately, some hotels were permanently closed due to the financial crisis caused by the COVID-19 global pandemic. First set of checklist which consists of name, address, building typology, and type of hotels was used when conducting the site survey. In total, there were 53 hotels surveyed within the Core Zone of the WHS.

Hotels which are categorised as a 'boutique hotel' and located in a pre-war shophouse were selected for this study, particularly the Southern Chinese Eclectic style. Table 1 presented earlier was used as the guidance to select the buildings for field observation. Based on that, there were six boutique hotels and only five were operating for business (Fig. 4). Field observation was then performed on each of the five buildings, involving three enumerators of built-environment background. Since archival documents and reports such as Heritage Impact Assessment (HIA) and copies of architectural drawings were not accessible due to confidentiality, informal interview with the hotel's proprietor and/or the staff in charge was also carried out to

**Table 1** Key consideration aspects on the tangible values of a legitimate boutique hotel

| Aspects          |   | Author(s)  |      |
|------------------|---|--|------|
| Tangible value   | Location  | Convenient to the airport                                | [8]  |
|                  |   | Setting in the city centre                               | [6]  |
|                  |   | Strategic location and nearby all attractions            |      |
|                  | Distinctiveness architecture design (heritage building)                                     | Heritage building value (listed building)                |      |
|                  |   | Originally shophouse with an average of 3 storey premise |      |
|                  |   | Uniqueness layout of heritage/pre-war premises           |      |
|                  |   | Restoration and re-adaptive reuse for contemporary uses  |      |
|                  |   | Architectural style                                      | [7]  |
|                  | Premise size and number of rooms  | Unique and distinctive concept and design                | [12] |
|                  |   | Small size of the premise                                | [6]  |
|                  | Uniqueness and dissimilarity of rooms   | Less than 50 rooms                                       |      |
|                  |   | Individualised   |      |
|                  |   | Every room offers different design                       |      |
|                  |   | Different sets of furniture and decoration               |      |
|                  |   | Different theme in every boutique hotel                  |      |
| Room features    | Antique collections and artwork inherited from the ancestors (furniture and interior décor) | [7]  |      |
| Hotel facilities | Availability of high-tech facilities in the room  | [8]  |      |
|                  | Library   | [8]  |      |
|                  | Gallery   |  |      |
|                  | Rooftop garden  |  |      |
| Star rating      | Souvenir shop   |  |      |
|                  | Three to five stars   | [12]   |      |

probe historical background and physical interventions committed at those buildings. Basic measurements of the five buildings were also performed and the reproduction of the drawings of their new interior layouts followed suit. The field observation data is analysed based on intra-case (reporting changes and modifications observed at each of the building) and inter-case (cross-comparing spatial hierarchy, spatial zoning, and facilities provision of the five buildings) reviews.



1. You Le Yuen (Love Lane)
2. Seven Terraces (Argus Lane)
3. Mclane Boutique Hotel (Market Lane)
4. The Boutique Residence Hotel (Pitt Street)
5. Sweet Cili Boutique Hotel (Malay Street Ghaut)

**Fig. 3** Location of boutique hotels involved in field observation. *Source* Modified from Penang Global Tourism [13]



**Fig. 4** From left to right namely You Le Yuen (visited on May 1–2, 2021), Seven Terraces (visited on May 2–3, 2021), Mclane Boutique Hotel (visited on May 3–4, 2021), The Boutique Residence Hotel (visited on May 4–5, 2021), and Sweet Cili Boutique Hotel (visited on May 6–7, 2021)

## 4 Results and Discussion

Figure 4 shows the five boutique hotels in George Town shortlisted for field observation, found to be operational despite the unprecedented COVID-19 pandemic that has negatively affected the global tourism industry.

These buildings are similar in terms of their architectural style (Southern Chinese eclectic) as well as their number of floors (2 storeys height). Table 2 tabulates the changes and modifications observed at each boutique hotel. The floor plan of each site is attached in the Appendix 1 and the supporting figures are attached in

**Table 2** Intra-case review on the changes and modifications observed

| Case           | Adaptive reuse remarks   |
|----------------|--|
| You Le Yuen    | <ul style="list-style-type: none"> <li>• Made of one unit of shophouse building</li> <li>• Addition of reception area, souvenir shop, fitting room, and bar area at the front hall and the second hall of the first floor</li> <li>• Modification of the steepness and original position of the staircase (Fig. 5 in Appendix 2)</li> <li>• Addition of four guest rooms on the first floor and the mezzanine floor</li> <li>• Addition of <i>en suite</i> toilet on guest room 1, 2 and 3 on the first floor and guest room 4 on the mezzanine floor</li> <li>• Addition of new walls to segregate mini-kitchen and security room (Fig. 6 in Appendix 2)</li> <li>• Addition of security room and guest room 4 has occupied and enclosed the opening of the rear courtyard which is typically available in Straits Chinese eclectic style shophouse (Fig. 7 in Appendix 2)</li> </ul>   |
| Seven Terraces | <ul style="list-style-type: none"> <li>• Made of nine units of shophouse building</li> <li>• The shophouses were 90% demolished when purchased, hence the central courtyard merged into one from 7 unit of shophouses (Figs. 8 and 9 in Appendix 2)</li> <li>• Addition of reception area, lobby, souvenir shop-cum-gallery, swimming pool, library at the poolside lounge, multi-purpose dining hall, Kebaya Restaurant, kitchen, staff area, office, exhibition area, furniture storage and workshop, garden, and swimming pool on the ground floor</li> <li>• Addition of 16 guest rooms (14 standard rooms and 2 apartments) and linen storage on the first floor</li> <li>• Each of the standard guest rooms are provided with semi outdoor balcony (Fig. 10 in Appendix 2)</li> <li>• Addition of mezzanine in each standard room, connected with wooden staircase (Fig. 11 in Appendix 2) and <i>en suite</i> toilet is provided in the mezzanine floor of the standard room (Fig. 12 in Appendix 2)</li> <li>• Addition of lift and spiral staircase for the hotel guests on the public area (Fig. 13 in Appendix 2)</li> <li>• Addition of 2 fire escape stairs on the left and right side of the building to comply the fire safety regulation</li> <li>• Addition of disabled restroom on the ground floor. However, the toilet failed to comply the standard</li> <li>• The rear part of the original building facing Argus Lane now become the main entrance of the hotel (Fig. 14 in Appendix 2). The original façades facing Lorong Stewart become the entrance of Kebaya restaurant and gallery-cum-souvenir shop</li> </ul> |

(continued)



**Table 2** (continued)

| Case                         | Adaptive reuse remarks  |
|------------------------------|---|
| Mclane Boutique Hotel        | <ul style="list-style-type: none"> <li>• Made of four units of shophouse building</li> <li>• Addition of reception area at ground floor, guest room and storage rooms at the rear court (Figs. 15 and 16 in Appendix 2)</li> <li>• Addition of 8 guest rooms on the ground floor area and 14 guest rooms on the first floor area</li> <li>• Rear court have been newly constructed to accommodate storage rooms (Fig. 16 in Appendix 2)</li> <li>• The open courtyard of 4 row of shophouse is merged to create one open courtyard with a newly constructed guest room (Fig. 16 in Appendix 2)</li> <li>• Addition of <i>en suite</i> toilet in all guest rooms</li> <li>• Newly constructed concrete floor with finishes (terracotta/laminated wood floor) to accommodate new lounge, guest rooms on ground floor and first floor (Figs. 17 and 18 in Appendix 2)</li> <li>• Lounge is introduced as a public space on first floor on the fourth unit</li> <li>• Newly constructed partition wall to create guest rooms, storage rooms (Fig. 19 in Appendix 2)</li> <li>• Newly constructed staircases located at first and third unit of the shophouse as opposed to its original location (Fig. 20 in Appendix 2)</li> <li>• New staircase is constructed to access Room 22 (Fig. 21 in Appendix 2)</li> <li>• Walls are hacked to create continuous accessible corridor on both floors</li> </ul> |
| The Boutique Residence Hotel | <ul style="list-style-type: none"> <li>• Made of six units of shophouse building</li> <li>• Addition of lobby and reception area at ground floor (Figs. 22 and 23 in Appendix 2)</li> <li>• Now abandoned café with kitchen and bar at the ground floor (Fig. 24 in Appendix 2)</li> <li>• Swimming pool at the air well area (Fig. 25 in Appendix 2)</li> <li>• Air well on 4 unit of the shophouse (2 unit on the left and right side of the building row) has been closed to accommodate guest rooms (Room 2 and Room 9) and staircases</li> <li>• Newly constructed partition walls to accommodate the new spaces</li> <li>• Staircases are built anew and relocated at both left and right side at 2 unit of the shophouse (Fig. 26 in Appendix 2)</li> <li>• Concrete with terracotta tiles and laminated wood finishes corridor on the first floor (Fig. 27 in Appendix 2)</li> <li>• Polycarbonate roofing enclosure at the air well (Fig. 28 in Appendix 2)</li> <li>• Addition of toilet in each guest room (Fig. 29 in Appendix 2)</li> <li>• The addition of guest rooms (Room 1, 2, 9 and 10) on the first floor at the rear court space as well as the storage compartments</li> </ul>  |

(continued)

**Table 2** (continued)

| Case                      | Adaptive reuse remarks  |
|---------------------------|---|
| Sweet Cili Boutique Hotel | <ul style="list-style-type: none"> <li>• Made of three units of shophouse building</li> <li>• Addition of reception area, lobby, pantry at ground floor and ample storage spaces for cleaning equipment and linen at first floor</li> <li>• Modification of staircase in terms of steepness, material, and type of staircase (Fig. 30 in Appendix 2)</li> <li>• Withdrawal of staircase for the second shophouse unit</li> <li>• Enclosure of air wells for the first and third shophouse unit to accommodate more guest room spaces</li> <li>• Addition of three guest rooms (1, 2, 3) at ground floor and five guest rooms (4, 5, 6, 7, 8) at first floor. All guest rooms are equipped with <i>en suite</i> toilet</li> <li>• Replacement of timber flooring into red-coloured seamless concrete floor for guest rooms at first floor (Fig. app 31)</li> <li>• Addition of polycarbonate overhang as roofing at the courtyard (Fig. 32 in Appendix 2)</li> <li>• Addition of glass panels at air vents and windows on the façade to insulate the interior space with exterior of hotel (Figs. 33 and 34 in Appendix 2)</li> <li>• Addition of single leaf glass door with electronic lock at the entrance for security purpose (Fig. 35 in Appendix 2)</li> <li>• Addition of new walls to segregate storage area (Fig. 36 in Appendix 2)</li> </ul> |

Appendix 2. Table 3 meanwhile presents the cross-comparison among the five buildings based on the spatial hierarchy, spatial zoning, and facilities provision.

## 5 Conclusions

Implying from the collective results, a certain degree of physical changes and modifications to the existing layout of heritage shophouses is necessitated in accommodating the new boutique hotel function. For such repurposing intervention, it is apparent that spatial alterations to cater guests' needs and fulfil a hotel functional requirement are inevitable. These, as seen in the new interior layouts, include:

- Revamping the front hall to accommodate reception and lobby area (for welcoming and facilitating guests in checking in and out of their stays),
- Erecting new walls mainly at the first floor to segregate the typical long and narrow shophouse interior (for creating guest rooms, which quantity is contributory to the revenue generation), and,
- Retrofitting additional sanitary and plumbing system (for equipping *en suite* toilet within each guest room, a paramount feature of a boutique hotel).

**Table 3** Inter-case review on the cross-comparison of the five buildings

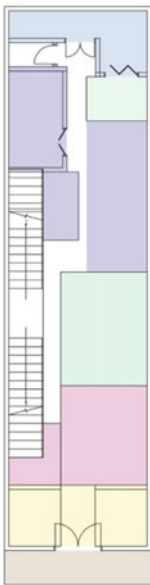
| Aspect               |                | You Le Yuen  | Seven Terraces  | McLane Boutique Hotel      | The Boutique Residence Hotel    | Sweet Cili Boutique Hotel |
|----------------------|----------------|--|---|----------------------------|---------------------------------|---------------------------|
| Spatial hierarchy    | Largest        | Lounge and reading corner                          | Courtyard, Kebaya Restaurant  | Open courtyard             | Lobby, bar, swimming pool       | Lobby                     |
|                      | Smallest       | Kitchen  | Linen storage   | Guest Rooms (Room 6 and 7) | Toilet (ground floor)           | Storage room              |
| Spatial zoning       | Public         | Courtyard lounge, dining area, bar, rear courtyard | Lobby lounge, library/poolside lounge, Kebaya Restaurant, exhibition area, souvenir shop, courtyard | Lobby, open courtyard      | Lobby, café, bar                | Lobby                     |
|                      | Semi-public    | Reception  | Reception, swimming pool  | Reception                  | Reception, swimming pool        | Reception, courtyard      |
|                      | Private        | Guest rooms, security room                         | Guest rooms, staff area, furniture workshop, office   | Guest rooms                | Guest rooms, office, staff area | Guest rooms               |
|                      | Service        | Kitchen  | Kitchen, store room (linen & furniture)   | Storage rooms              | Kitchen                         | Pantry, storage           |
| Facilities provision | Library        | Yes (Reading corner)                               | Yes (Reading corner)  | None                       | None                            | None                      |
|                      | Gallery        | None   | Yes (Peranakan jewellerys, porcelain-ware, interior decors, and furniture)                          | None                       | None                            | None                      |
|                      | Rooftop garden | None   | None  | None                       | None                            | None                      |
|                      | Souvenir shop  | Yes (Fashion boutique)                             | Yes (Peranakan jewellerys, porcelain-ware, interior decors, and furniture)                          | None                       | None                            | None                      |
|                      | Miscellaneous  | Security room                                      | Swimming pool, garden   | None                       | Swimming pool                   | None                      |

- Two out of the five buildings equipped their respective building with a swimming pool (one is within the internal space which is considerably an intrusive intervention to the existing cultural fabric).
- None of the buildings provided the facility of a rooftop garden, presumably unfeasible to be constructed and due to the importance to retain the original roof identity of heritage shophouse (identity of Southern Chinese eclectic style).

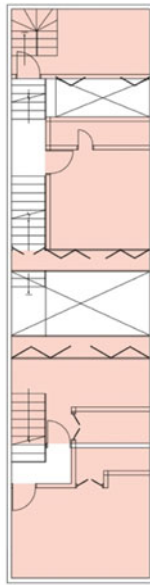
Inferably, both building owners and heritage consultants faced challenges in accomplishing the varying business and conservation needs while planning for such adaptive reuse implementation. It is suggested that this study is extended to other building typology other than heritage shophouses, besides expanded to cover beyond the Core Zone of George Town WHS to foster a better understanding on the physical impact of adaptive reuse on built heritage in a holistic manner.

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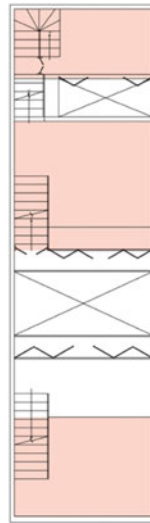
## Appendix 1



Ground Floor

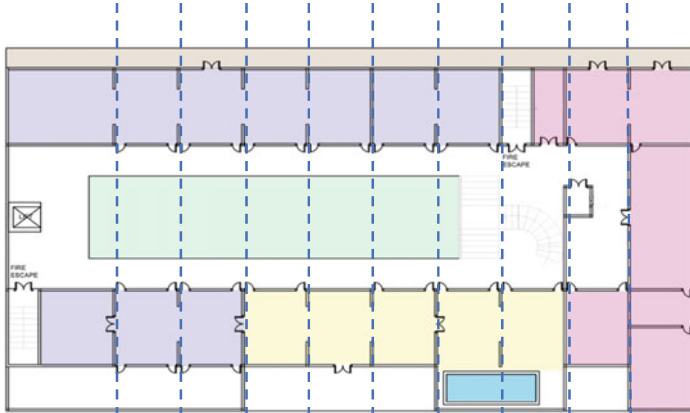


First Floor

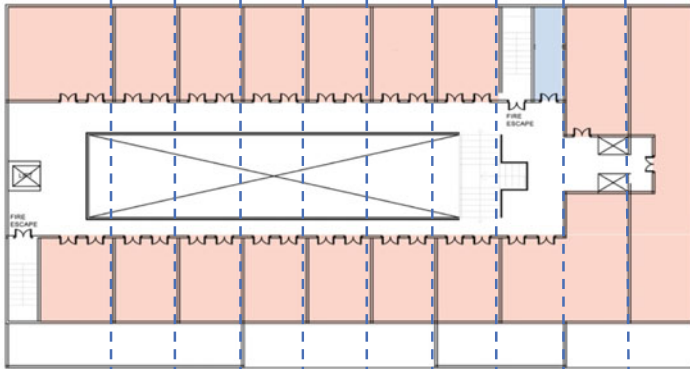


Mezzanine Floor

**You Le Yuen**

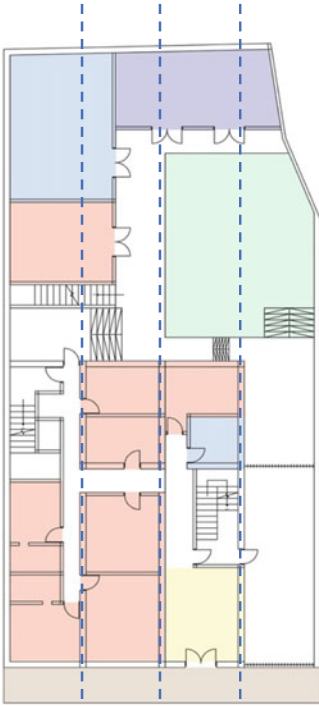


First Floor

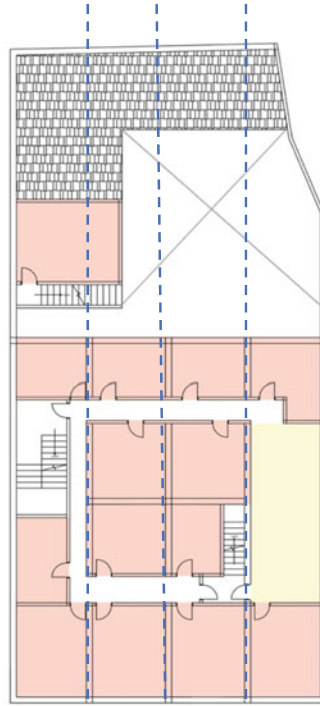


Ground Floor

Seven Terraces

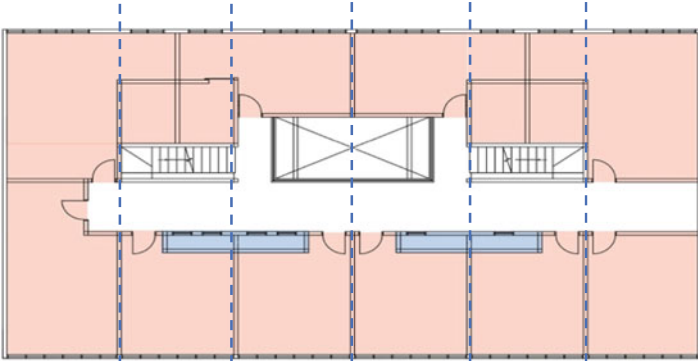


Ground Floor

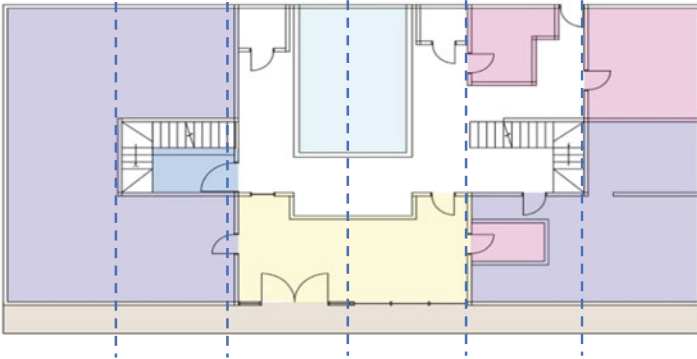


First Floor

**Mclane Boutique Hotel**

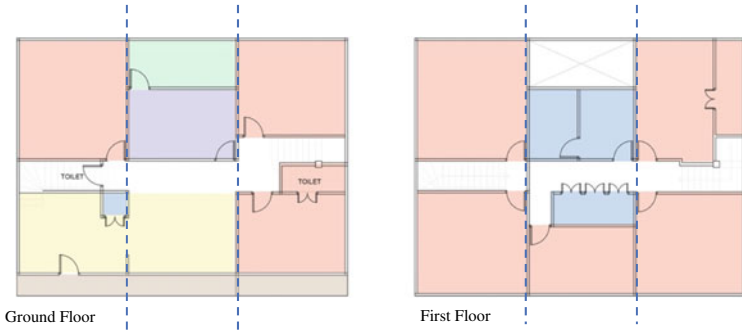


First Floor



Ground Floor

**The Boutique Residence Hotel**



Ground Floor

First Floor

**Sweet Cili Boutique Hotel**

**Legend:**

- |   |   |
|---|---|
|  Lobby/Reception/Lounge                  |  Storage                               |
|  Guest room                              |  Office/Souvenir shop/Gallery/Workshop |
|  Dining area/Restaurant/Café/Bar/Kitchen |  Five foot walkway                     |
|  Courtyard/Air well                      |  Swimming pool                         |
|  Border of the original shophouse        |   |



## Appendix 2

|   |   |   |  |
|---|---|---|--|
|    |    |    |    |
| Figure 6  | Figure 7  | Figure 8  | Figure 9   |
|    |    |    |     |
| Figure 10   | Figure 11   | Figure 12   | Figure 13  |
|    |    |    |    |
| Figure 14   | Figure 15   | Figure 16   | Figure 17  |
|  |  |  |  |
| Figure 18   | Figure 19   | Figure 20   | Figure 21  |
|  |  |  |  |
| Figure 22   | Figure 23   | Figure 24   | Figure 25  |



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