

SUNGAI BATU ARCHAEOLOGICAL COMPLEX AS AN ICONIC HERITAGE TOURISM SITE: EVIDENCE OF ANCIENT TRADE IN THE NORTHERN PART OF PENINSULAR MALAYSIA

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Abstract: The research at the Sungai Batu Archaeological Complex (SBAC) aimed to document the original river jetty structure and port management of ancient Kedah, which dates back to the 6th and 5th centuries BC. It was built on the riverbank, while port management was built at the back of the river jetty structure. The existence of the river jetty and port management structure in SBAC is clear evidence of the international trade process that has occurred in this area between the ancient Kedah Kingdom and foreign traders. For primary data recording in the field, several methodologies have been used, which include excavation, and analysis. The results revealed evidence of in situ river jetty and port management structures built using bricks. The architecture was also found to be complete with floor, wall, corridor and staircase structures for the river jetty, while the port management structure revealed the architecture of the floor, wall, corridor and administration space. The evidence of in situ architecture allows for the first time the outstanding universal value (OUV) of the river jetty and port management site to be clearly determined based on academic studies. It is the most complete river jetty architectural form of early world civilisation since the 6th century B.C., ii) the most complete iron ingot export river jetty of early world civilisation and iii) the most complete ancient Kedah port complex. The OUV for port management sites was determined to be i) the earliest civilisations reveal the clearest and most complete evidence of port management architecture since the 5th century BC and ii) the first discovery of the architecture for managing iron export facilities in early world civilisations. This makes the archaeological evidence at SBAC the only one in Southeast Asia that is unique and can be nominated as a UNESCO World Heritage site for the World Heritage Site (WHS) category. To achieve this goal, the process of empowering the heritage tourism sector is actively carried out in collaboration between stakeholders and the local community so that it can produce a total of 17 identity tourism packages in the Kuala Muda district, Kedah, Malaysia. The involvement of stakeholders and local communities in tourism activities is a positive step to ensure that the heritage tourism sector in SBAC can be preserved and sustained.

Keywords: SBAC, heritage site, iconic tourism product, tourism

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INTRODUCTION

The development of the Sungai Batu Archaeological Complex (SBAC) as a sustainable tourism site has been discussed scientifically by Abd Halim et al. (2024a) and Abd Halim et al. (2025a), which cover the offering of tour packages, the availability of tour guides and the application of digital technologies. The development of this area as a heritage tourism location is closely related to the very special outstanding universal value (OUV) revealed through academic studies.

In fact, based on these factors, SBAC was recognised as a national heritage site in 2012 (Ali et al., 2021 a,b) and developed as a heritage tourism site in Malaysia. Its recognition as a national heritage site has led to the establishment of a more structured tourism development and marketing plan to empower the heritage tourism sector. This allows for the first time in Kedah, Malaysia; there has been a systematic tourism development movement complete with living culture gallery facilities that include poster information, iron smelting demonstrations, hands-on excavations, and hands-on ancient brick, roof tiles and bead making (Abd Halim et al., 2024b). In addition, with the application of digital technologies such as AR, VR, hologram fans, and QR codes (Abd Halim et al., 2024a) also demonstrates the positive commitment played by stakeholders in ensuring that tourism sites in SBAC are conserved just like heritage tourism sites in other parts of the world (Hasan Khan, 2020; Labadi et al., 2021; Abdul Huq & Puthuvayi, 2024; Van der Zed et al., 2024; Abd Halim & Saidin, 2026). All these tourism marketing moves can be carried out based on systematic studies conducted at iron smelting workshop sites that represent evidence of the industry (Mohd Mokhtar, 2012: 2019; Abd Halim et al., 2025b), river jetty (Abd Halim et al., 2025c), and port management (Aminuddin, 2015; Ahmad, 2016; Yusof, 2016; Abd Halim, 2019) as evidence of trade, as well as ritual and Buddhist monuments (Abd Halim & Saidin, 2025a) as evidence of belief and religion in SBAC. This shows that archaeological studies in SBAC are special because it is the only area in the world that reveals clear and complete evidence of

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industry, trade and religious beliefs in an area of only about 4 km² (Abd Halim & Saidin, 2025a). To balance the marketing of tourism, the availability of tourism infrastructure is also given priority. The availability of transportation infrastructure (Figure 1) and accommodation (Figure 2) to the heritage tourism area is seen to be on a good track and able to attract tourists to travel to this area (Yu et al., 2023; Zunic et al., 2023; Arsh et al., 2024). This is expected to be a trigger for the development of tourism activities that take place at SBAC, which is also able to maximise the tourist experience at a tourist location.

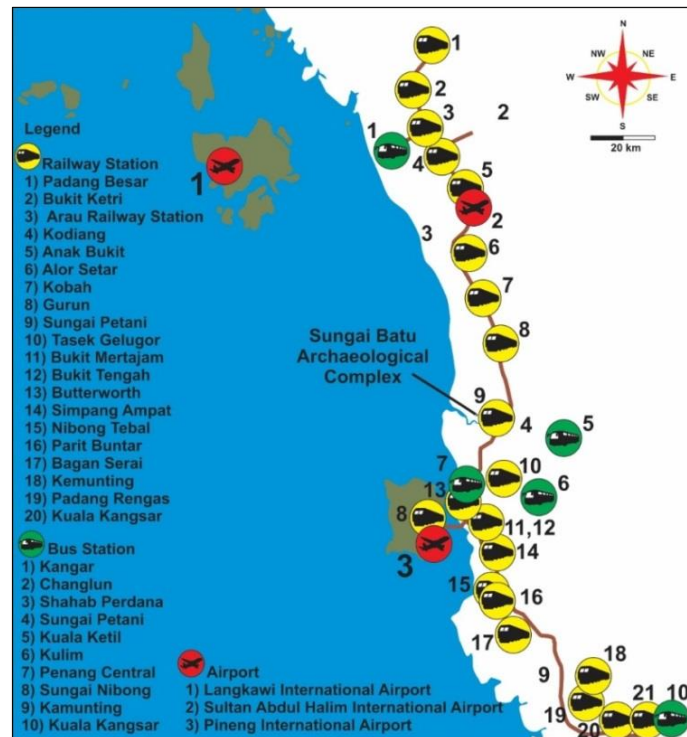


Figure 1. Availability of transportation systems to SBAC areas capable of developing tourism activities (Source: The authors)

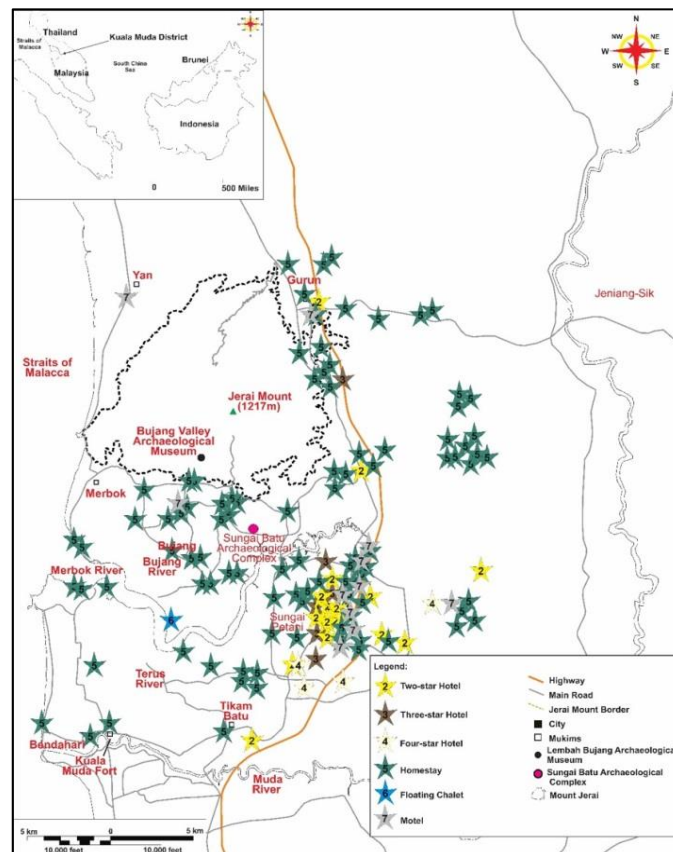


Figure 2. The availability of various types of accommodation in the nearby SBAC area is also able to offer more accommodation options to tourists (Source: The authors)

Additionally, there are eight border crossings near SBAC that have the potential to attract more tourists to the area (Figure 3). Some of the border gates include i) Wang Kelian-Wang Prachan border, ii) Padang Besar border, Perlis, iii) Bukit Kayu Hitam-Sadao border, Kedah, iv) Pengkalan Kubor-Tak Bai border, v) Rantau Panjang-Sungai Golok border, vi) Bukit Bunga-Buketa border, vii) Durian Burung-Ban Prakob border, Kelantan, and viii) Pengkalan Hulu-Betong border, Perak, Malaysia. Even with the role of stakeholders who formulate various programmes throughout the year to visit Kedah, 2025 is also expected to be able to attract domestic tourist visits (Nizam, 2024) in addition to being able to boost the influx of international tourists to tourist sites in Kedah (Hamid, 2024). This shows that the existence of special world-class heritage tourism sites with outstanding universal value and high value coupled with the availability of the best tourism infrastructure can be a catalyst for the development of heritage tourism, especially in ancient Kedah tourism sites. This is clearly recorded in other tourist sites that record the increase in the number of tourist arrivals to tourist areas due to tourism facilities that have been available (Gossling et al., 2018; Lei et al., 2023; Apriyanti et al., 2024; Hidalgo, 2024).



Figure 3. The border gate located in the northern part of Peninsular Malaysia has the potential to attract more tourists from Thailand (Source: The authors)

Tourism Marketing

According to Thomas & Langlitz (2018), John & Supramaniam (2024), and Basumatary & Sarma (2025), tourism marketing is a unique and methodological way to empower the tourist sector. This is because tourist sites are very close to local communities, so every element related to the development, empowerment, and marketing of a tourist location must include community involvement to ensure sustainability and success (Gubam & Nomishan, 2020). This approach is seen as a proactive step to maximise the empowerment of the tourism sector in an area (Ryan, 2002).

To achieve this goal, Poon (1993), Mendoncia et al., (2015) and Wang (2024) have outlined several issues related to integration, collaboration and networking activities at the local level as policy issues that need to be arranged and coordinated at the grassroots level to achieve the end goal of marketing a heritage tourism locality. After the issue is given special attention at the grassroots level, there is a need for a location that provides a tourism information centre which is used as an area that manages and monitors all activities related to packages and tourism, such as the recommendations of Ludmila & Kristina (2018) and Rachmawati et al. (2023). The purpose of its establishment is to centralise the tourism marketing process carried out while acting as an initial step to provide information related to tourist destinations directly to tourists so that the selection of tour packages becomes more effective. For these needs, tourism marketing in SBAC also involves the provision of a one-stop tourism centre in Sungai Merbok (Figure 4) which is available for various tourism facilities. To ensure that tourism marketing is able to attract tourists, especially for tour packages to heritage tourism sites, the provision of certified tour guides is a very necessary step (Rabotic, 2010; Setiawan & Wiweka, 2018). This is because a tour package to a heritage site is not a tour program to a tourist site other than because it is in the category of knowledgeable tourism, so the provision of a certified special tour guide is the most important asset in preserving the tourist location (Rabotic, 2018).



Figure 4. The One Stop Tourism Centre serves as a tourist information centre in Sungai Merbok (Source: The authors using a drone, 2021)

Therefore, UNESCO (2018); Bayram (2020); Malelak et al. (2022); and Dung (2024) stated that the local heritage has a direct connection with the community, so the provision of certified tour guides from among the local community is important to emphasise. This can also emphasise the principle of leaving no one behind in tourism marketing (Trupp & Dolezal, 2020; Butcher et al., 2021; de Jong & Vijgeberg, 2024; Abd Halim et al., 2025a; Priatmoko et al., 2025).

SBAC Authentic Data Research

Archaeological studies conducted at SBAC since 2009 have been able to record evidence of trade in this area based on the findings of the river jetty and port management structure. Although the archaeological study at SBAC has recorded the discovery of 11 river jetties structures and 18 port management sites, to complete this study, only archaeological evidence at the river jetty SB2J and port management SB2G sites (Figure 5) will be discussed more carefully to clarify the architecture, analysis of artefacts carried out and interpretations submitted.

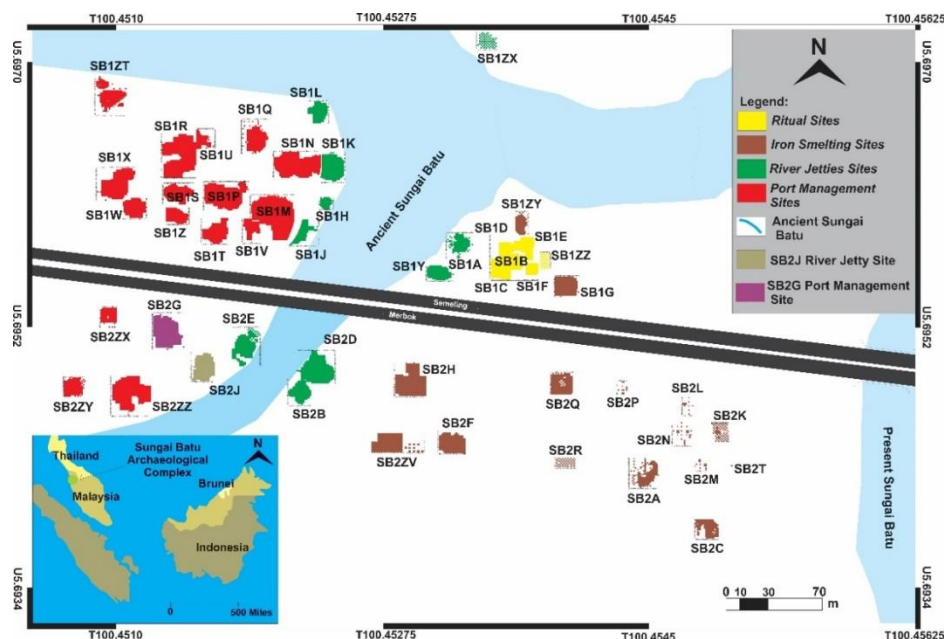


Figure 5. Location of SB2J river jetty and SB2G port management site in SBAC (Source: The authors)

SB2J River Jetty Structure

The SB2J site [05°41'42.0" N and 100°27'05.2" E] is located approximately 15 metres northeast of SB2E, 30 metres northwest of SB2G and 26 metres southwest of SB2ZZ (Figure 5). Excavations at the SB2J site have found bricks that

suggest bricks have been used as the raw material for the construction of monument structures at the SB2J site. The excavation process at the SB2J site involved a total of 173 squares, measuring 1x1 square meter (m²). After the excavation process was completed, digital photo recording at the SB2J (Figure 6) site was taken.

Digital photo recording was taken to be the main reference during the sketching process and the production of architecture plans for the appearance of the monument at the SB2J site. For the purpose of simplifying the process, Figure 7 is the floor map plan for the SB2J site. Excavations carried out at the SB2J site have involved an area of 247 m². Trench K19 and N10 are stratigraphic reference trenches for SB2J and have not been excavated. The stratigraphic layers in both trenches suggest that the monument structures at the SB2J site remain intact.



Figure 6. The side view of the SB2J site includes 173 squares, covering a total area of approximately 247 m² (Source: The authors)

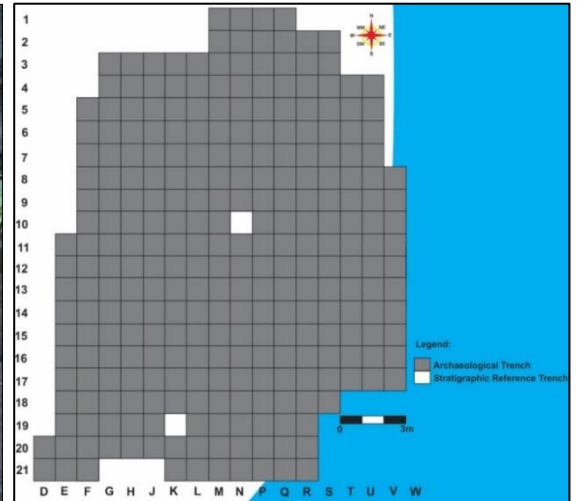


Figure 7. Floor map plan of SB2J (Source: The authors)

Researchers also conducted a study of the stratigraphic layers of the SB2J site (Figure 8). The researchers selected the walls of the site, located in the eastern part of the nearby ancient Sungai Batu, for the study of the stratigraphic layers. The results of the study also found that the SB2J site is still in situ and is not disturbed by human activities. Stratigraphic layers in the area with evidence of brick finds reveal a layer of clay. The SB2J site's clay layer serves as the base layer, indicating the absence of architectural structures beneath it.

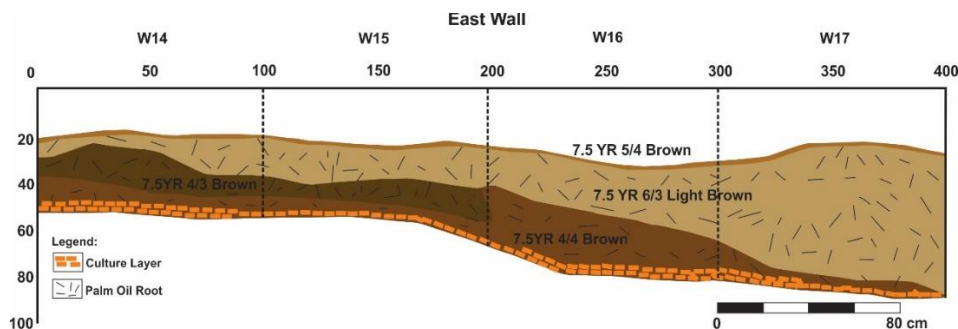


Figure 8. Stratigraphic layers at SB2J sites that are still in situ (Source: The authors)

The excavation results at the SB2J site have revealed the structure of floors, walls, corridors, staircase and roof tiles (Figure 9) as proof that the site is roofed. Based on the location and structure of the building, which was built sloping towards the ancient river, the site also plays the role of a river jetty in SBAC. The monument structure of the SB2J site was also built on land reclaimed in advance with brick fragments. The floor structure is in the central part of the site (Figure 9a). The horizontal construction of this part of the floor utilises bricks with an average size of 27x17x5 cm.

The area of this section is estimated at about 11 x 7 square metres. The arrangement of the floors on the site is clearly visible in the eastern part. The floor structure at this site also has similarities with other jetty sites, which are built orientated north-south and have a small strip of about 15 cm between each floor brick arrangement. The wall structure (Figure 9b) is found at the north and south ends of the main floor structure of the SB2J building.

The structure is intended to serve as a space separator between the floor structure and the corridor on the site. The length of the ruins of this wall structure measures 11 metres. The average brick size used to build the wall structure is around 17x16x5 cm, which consists of two layers of bricks. The SB2J site's main floor structure features corridor structures on its north, south, and west sides (Figure 9c). The corridor structure in the North and South is proposed to be the same length as the main structure of the SB2J monument, which is 11 metres long and about three metres wide, while the corridor structure in the western part measures 16x2.5 metres. The corridor structure at this site is built with an

average brick size of 18x17x5 cm and arranged in a stretchable manner between each brick arrangement. The proposal is to locate the floor staircase (Figure 9d) in the southern part of the SB2J site.

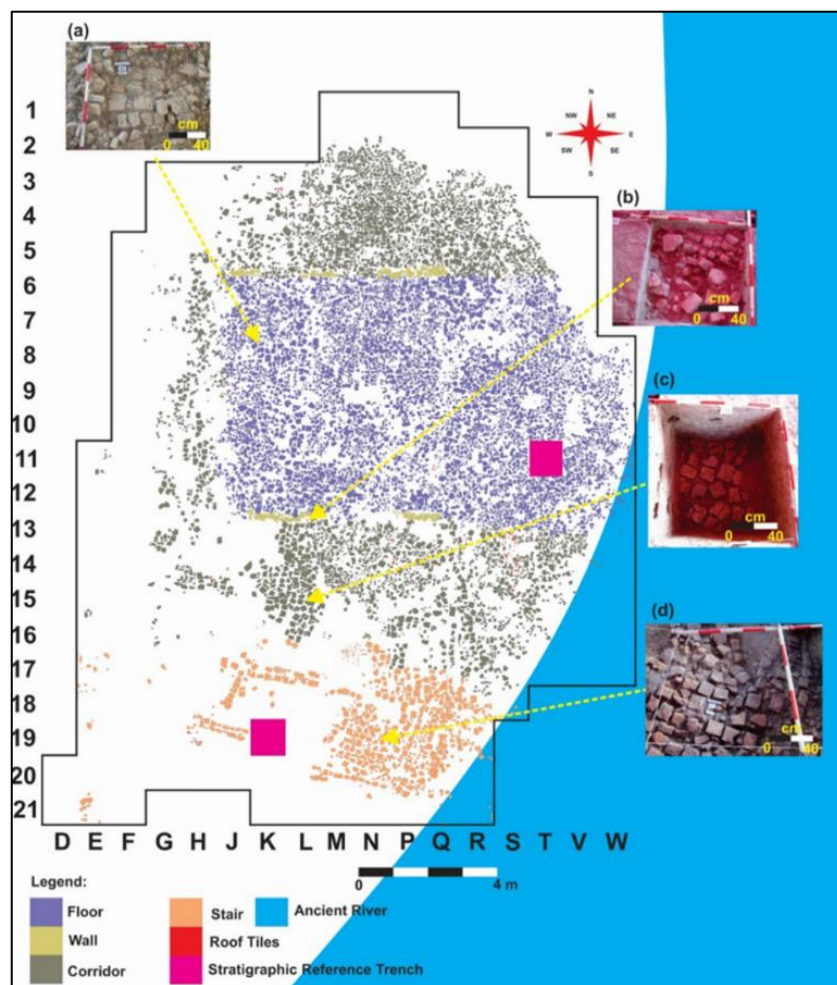


Figure 9. The architectural sketch plan of the SB2J river jetty at SBAC showcases the in situ structure, including the floor (a), wall (b), corridor (c), and staircase (d), making it the most complete ancient river jetty made of brick in Southeast Asia (Source: The Authors; small picture: The Authors, January 10, 2025)

The structure of the staircase was built with a 25° gradient towards the ancient river. The structure of the staircase at the SB2J jetty site was found to be connected to the corridor structure in the main building. The proposed structure will measure approximately 4 meters in length and 2.5 meters in width. The structure of the alternative pathways, which slopes towards the ancient river, consists of at least eight stacks of brick strips. The alternative route's floor features a brick arrangement that spans approximately 15 cm per row.

Based on the study of the architectural form of the SB2J site, Figure 10 is a reconstruction plan of the monument at the SB2J site. Based on the sketch, the SB2J site has similarities with the SB2E river jetty site, which has an alternative pathways structure to fluctuate from the river to the mainland. Excavations at the SB2J site also revealed the discovery of a pillar base in trench J5, spit 2, which suggested the existence of a roof structure at the site (Figure 11). This is reinforced by the discovery of the distribution of roof tiles on the north and south of the SB2J monument. Based on the pillar base found at the end of the floor structure, there are at least four pillars that support the roof structure at this site. Because there is no record of the discovery of the roof tiles on the alternative pathways, that suggests the structure is not roofed.

In addition, contour mapping carried out at the SB2J site also showed that the main monument structure of the site was built horizontally. However, in the southern part of the site, there is evidence of structures sloping towards the ancient river (Figure 12). It is likely that the structures built on the southern side of the SB2J site had a more obvious function with the ancient river. Pottery fragments were also found at the SB2J site, which is evidence of material culture in SBAC. A total of four brick samples were taken to obtain chronometric dating for the SB2J site. The four brick samples were taken from several different architectural structures, such as floors and staircase. The trench involved in the brick sampling process are L14 (Spit 5), P18 (Spit 8), N20 (Spit 9) and Q18 (Spit 4).

Charcoal samples from trench L14 (Spit 5) and P18 (Spit 8) were selected to obtain data on activities taking place at the site. However, until now only chronometric dating data from the trench L14 (floor structure) and P18 (staircase) have been obtained, which describe the site was built since the 4th to 6th century AD. This means that the river jetty floor structure was built since 518 AD (1.5±0.1), while the staircase structure was built since 318 AD (1.7±0.1).

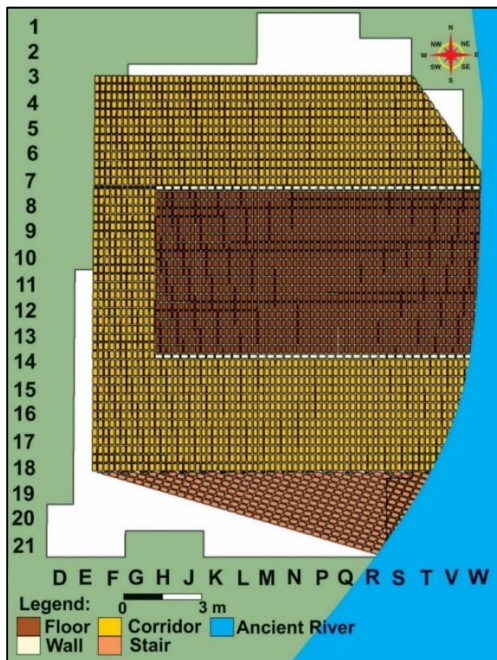


Figure 10. The SB2J site's proposed reconstruction architecture plan reveals that an ancient river served as the foundation for the main building structure

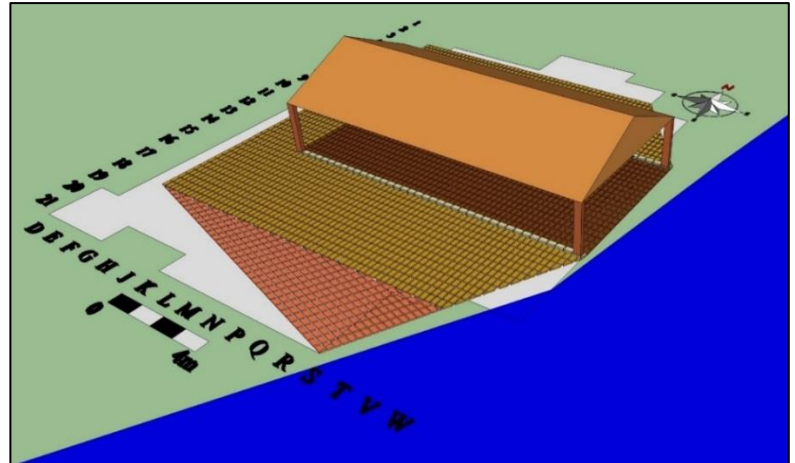


Figure 11. The proposed reconstruction architecture plan for the monument at the SB2J site is based on the findings of the floor structure, corridors, walls, staircase, roof tiles, and pillar base (Source: The authors)

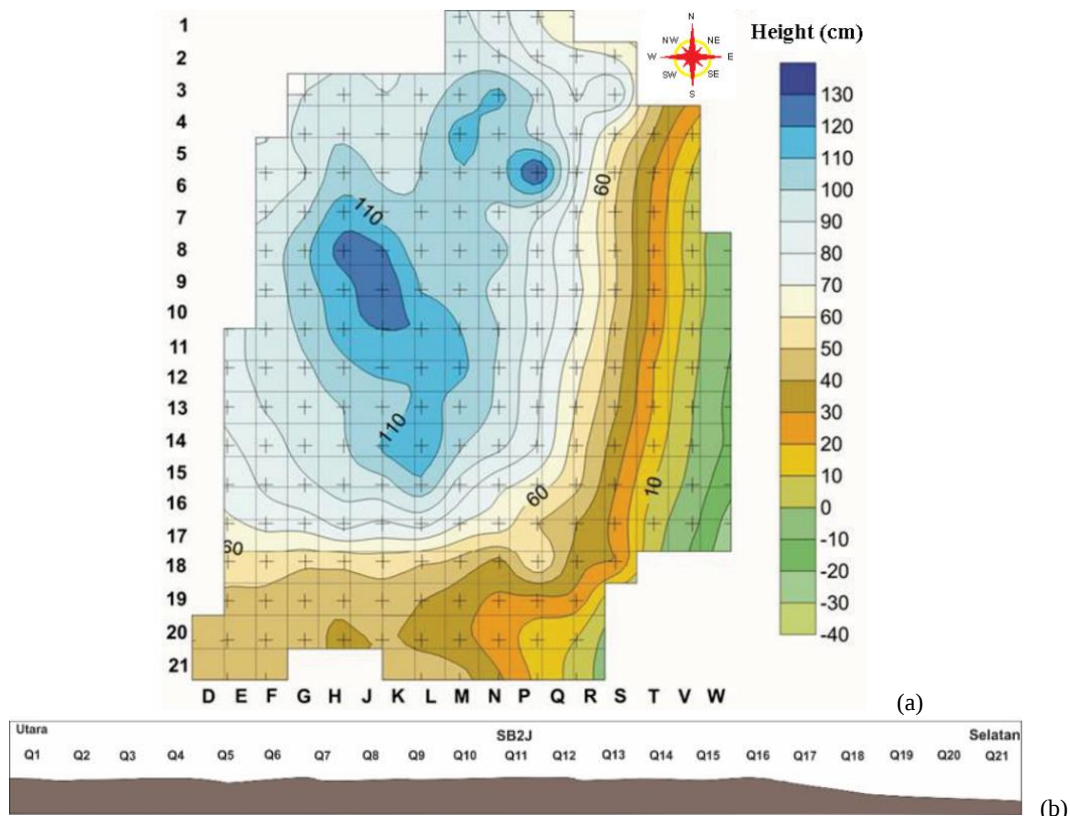


Figure 12. Contour mapping results (a) showing the structure at the SB2J site sloping towards the ancient Sungai Batu in the eastern. The cross-sectional results also indicate that the built structures at the SB2J site began to slope towards the ancient river in the southern part of the site (b) (Source: The authors)

SB2G Port Management Structure

In 2010, excavation took place at SB2G site, located at $05^{\circ}41'42.2''$ N & $100^{\circ}27.04.4$ E (Figure 5). The mapping results revealed that the SB2G site was located 35 metres east of the SB2E site, 15 metres southeast of the SB2J site and 25 metres southwest of the SB2ZZ site. The SB2G site is behind the SB2E site, which is on the west bank of the ancient Sungai Batu.

After the excavation process was completed, a side view of the SB2G site was also taken (Figure 13). Digital photography for the SB2G site is intended to be used as a reference during the sketching process carried out there. In order to facilitate the work during the field study, the SB2G floor map plan has been produced (Figure 14). Based on the SB2G site plan, trench P45, R35-36, S35-36, S26-27, T26-27, B31-32, A41, B41, C31-32 and Y39 were not excavated, as the trench were used as stratigraphic reference trench for the SB2G site apart from the presence of oil palm tree stumps in the area.



Figure 13. View site of SB2G. A total of 407 trenches have been excavated at this site, involving an area of 513 m² (Source: The authors)

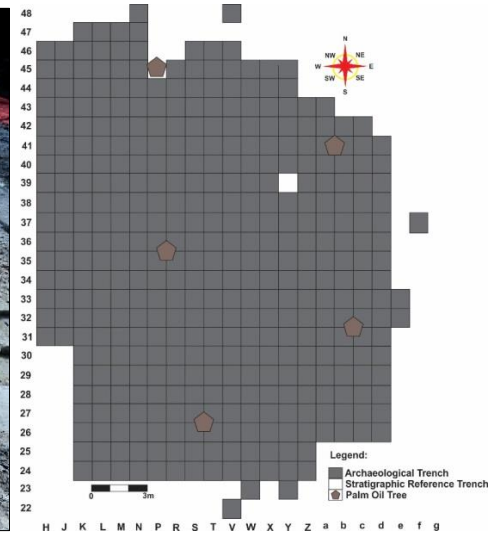


Figure 14. SB2G floor map plan involving 407 trenches with a total area of 513 m² (Source: The authors)

The stratigraphic data recording process was also conducted at the SB2G site. Stratigraphic data is important to examine to confirm that the SB2G site is still *in situ* and undisturbed during the last time it was abandoned by the community at SBAC. The results of a study of the soil stratigraphy of the SB2G site clearly show that it is not disturbed by human activities (Figure 15).

The building is therefore an undisturbed and still *in situ* structure. In addition, the results of contour mapping found that the main monument structure of the SB2G site was not built in a sloping condition (Figure 16). It is built horizontally.

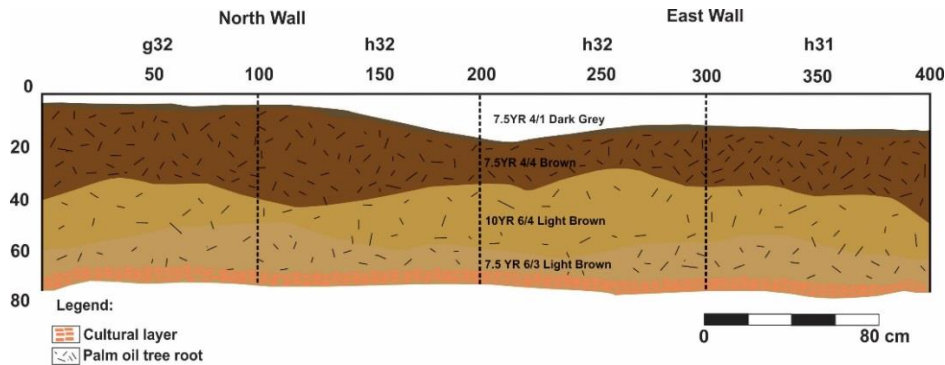


Figure 15. The SB2G sites exhibit stratigraphic layers. The cultural layer is found in the fourth layer, characterised by the discovery of bricks that represent the built structures of the site (Source: The authors)

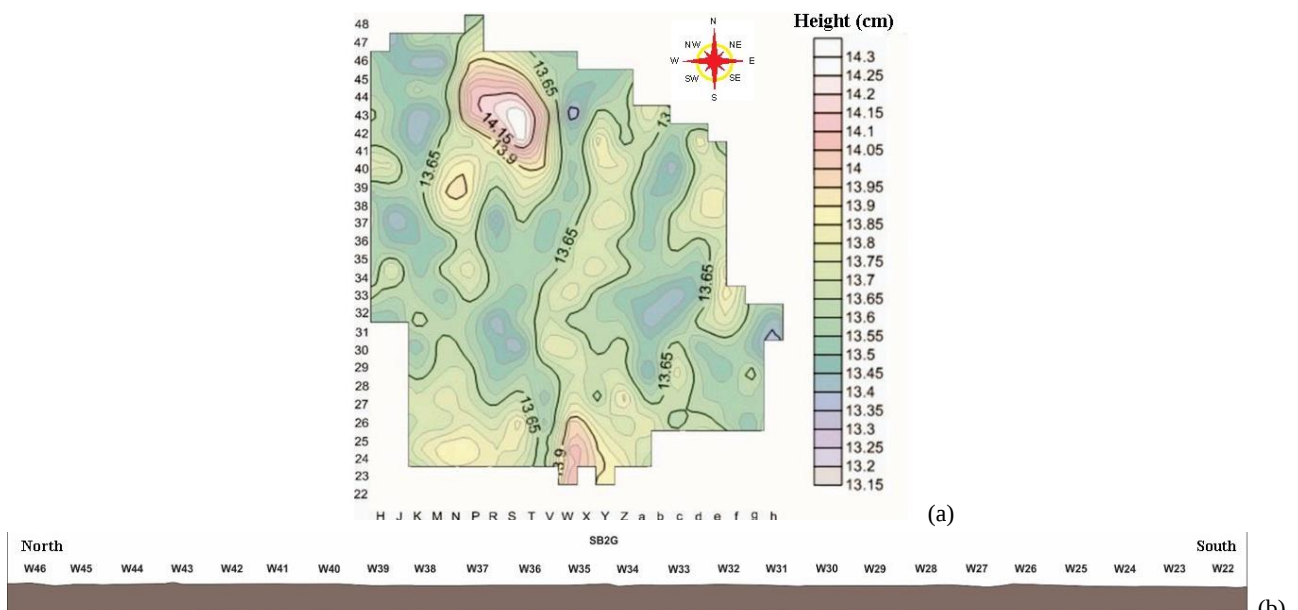


Figure 16. The result of contour mapping (a) and cross-section (b) at the SB2G site clearly shows that the main monument is built horizontally, which is different from the river jetty site in SBAC (Source: The authors)

So the excavation process carried out at the SB2G site has revealed the structure of the floor, room space (administration), walls, roof tiles and pillar bases as evidence that it was roofed (Figure 17) and built on reclaimed land with broken bricks. The SB2G building's main floor structure faces north-south and features small, 15 cm-wide strips between each floor arrangement. The average brick size used to represent the floor structure is 27x16x5 cm. There are at least 45 strips of floor brick arrangement at the SB2G site that form the floor structure (Figure 17c).

The brick arrangement of the floor structure was found to have similarities with the river jetty floor and slightly sloping towards the ancient river in the eastern part. The arrangement suggests its function as a river jetty structure at the beginning and when the river level is shallow until the land is formed, causing it to change its function as an administrative space. Additionally, the left and right sides of the main floor structure do not serve as visible wall structures for space separation. The brick arrangement's orientation indicates the difference in space and function. The main building structure spans at least 13 metres in length and five metres in width. The corridor structures at the SB2G site are located on the north, south and west sides of the site (Figure 17a).

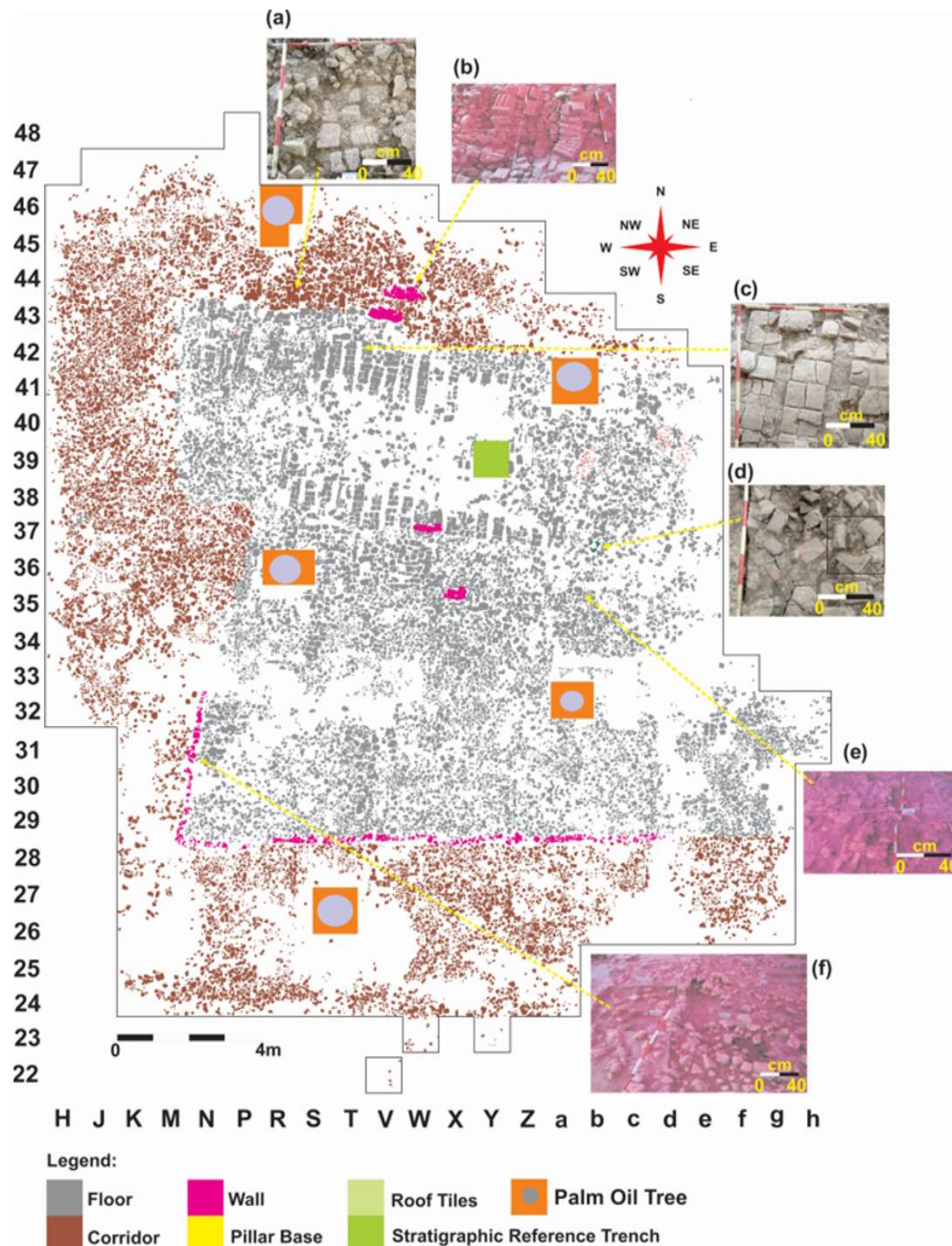


Figure 17. The architectural sketch plan of the SB2G port management site at SBAC showcases the in situ structure, including the corridor (a), wall (b), floor (c), pillar base (d), administrative space (e) and wall (f) making it the most complete ancient port management made of brick in Southeast Asia (Source: The Authors; small picture: The Authors, January 10, 2025)

The SB2G site arranges its corridor structure in an unsystematic manner, setting it apart from the main floor structure. This structure is expected to be an alternative route to the support monument, which is on the south side of the main structure of the site. This is because there is a wall structure that separates the corridor from the administrative building. The corridor

structures in the northern and southern sections measure 13 metres long and 1.2 metres wide, while those in the western section measure 2 metres wide. The size of the bricks used to represent the corridor structure at the SB2G site is 18x15x5 cm.

The discovery of stacked brick rubble believed to be a brick entrance gate structure (Figure 17b) was also found at the SB2G site. The brick entrance gate structure is in the corridor area at the north and south of the SB2G site. This brick entrance gate measures 130 cm long by using an average brick size of 17x16x5 cm. As there are two brick entrance gate, each pair on the north and south sides of the SB2G site suggests it is part of the brick entrance gate evidence of the SB2G monument structure. The southern end of the corridor structure at the SB2G site is proposed to be a rectangular structure that is proposed as an administrative space to the SB2G (Figure 17e). The port management structure measures 22x11 metres. A wall structure consisting of two layers of brick separates the administrative space from the corridor in this section (Figure 17f). So Figure 18a,b is a reconstruction plan and the appearance of the monument for the SB2G site, which has an earliest river jetty area of 6x17 m² in the north, while the second room has an area of about 22x11 m² in the south for the administrative area, as well as corridors in the north, south and west. The evidence of room space indicates that the SB2G monument initially functioned as a river jetty and later transitioned to port management in SBAC when the river became shallow. Excavations at the site also revealed 115 pieces of earthenware, which support the interpretation of the area as a river jetty and port management structure. The excavation also found a pillar base (Figure 17e) and roof tiles distribution (Figure 19), which allows interpretations to be submitted related to the architectural form of the pillar at the SB2G site. Pillar base at the SB2G site were recorded in trenches B37 and M38 at the end of the room structure at the SB2G site. Wooden poles are proposed to be used as roof supports at this site due to their flexible ability to accommodate heavy loads (Wiyana, 2016).

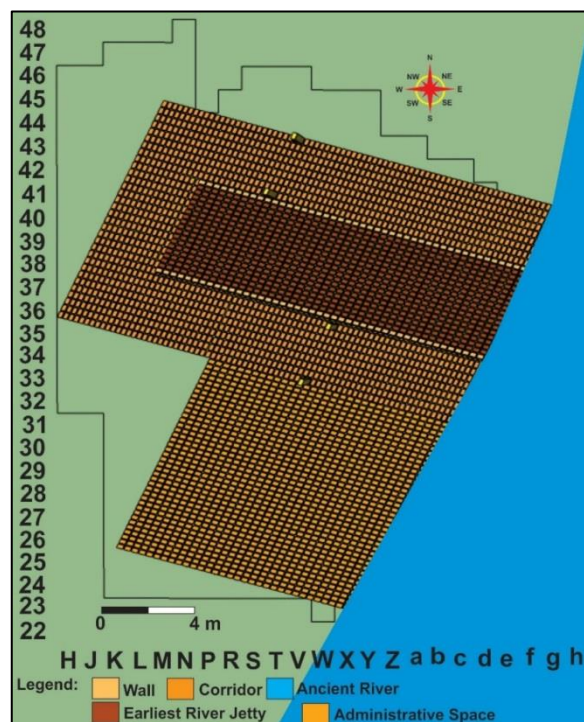


Figure 18a. The SB2G proposal plan was produced based on the remains of in-situ architecture at the site. The results of the study have confirmed its appearance as a river jetty and port management in SBAC (Source: The authors)

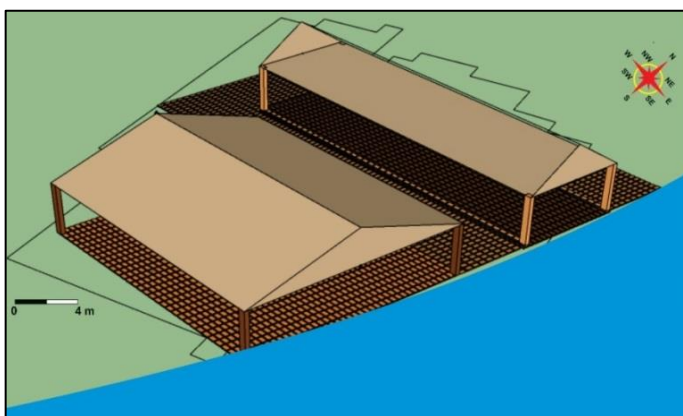


Figure 18b. The reconstruction plan for the SB2G monument is based on the findings of the river jetty floor, corridors, walls, administrative space, roof tiles, and pillar base structures (Source: The authors)



Figure 19. The distribution of roof tiles at the SB2G site in the northern part reinforces the related interpretation of the existence of roof structures at the SB2G site (Source: The authors)

However, the excavation results at the SB2G site did not record the discovery of the pillar structure because it was likely that it had been weathered. Based on the in-situ findings of the pillar base structure, it is proposed that the river jetty and port management monument at the SB2G site have four pillar base structures as roof supports. Therefore, Figure 16 shows the architectural form of SB2G, which has pillars and roofs based on the location of the pillar bases and the distribution of roof tiles at the site. To obtain data on the chronometric dating of the monument, a total of 11 brick samples were taken to obtain dating data. The sample brick will use the OSL method. The brick samples involved were d37 (Spit 3), d38 (Spit 3), d39 (Spit 3), e38 (Spit 6), X25 (Spit 3), M34 (Spit 3), M43 (Spit 3), N41 (Spit 4), P40 (Spit 4), X23 (Spit 3) and Z38 (Spit 3). The brick samples represent the floor, corridors, and administrative room structures at the SB2G site. However, until now, only two samples have provided dating data: sample d37 (Spit 3), which represents the corridor structure and indicates an age of about the 1st century BC, and sample d38 (Spit 3), which represents the floor structure and reveals that it was built in the 5th century BC. This construction occurred around the 5th century BC (Abd Halim & Saidin, 2025b). This site has functioned as a river jetty and port management on the riverbanks of the river, and when the sea level dropped, it caused land to form, causing the site to move away from the river. Consequently, the riverbank area underwent the construction of a new river jetty structure to facilitate effective trade activities. This coincides with the dating of the SB2E site on the banks of Sungai Batu (Figure 5), which was built in the 3rd century BC after the flow of the river decreased and was in the area concerned. This is reinforced based on geophysical mapping in the port management area in the northern part of SBAC, which was also built in the 5th century BC, which has revealed evidence of ancient river flow based on a low resistivity value of $< 50\Omega\text{m}$ (Ahmad, 2016).

Outstanding Universal Value (OUV)

Archaeological excavations carried out at the river jetty and port management site at SBAC have so far been able to reveal an exceptional outstanding universal value (OUV) that qualifies it to be nominated as a UNESCO World Heritage site. Table 1 summarises data relating to the OUV of the river jetty and port management sites, which to date have not been recorded in any other archaeological study in other parts of the world.

Based on the data, it is clear that SBAC has met the criteria for nomination as a UNESCO World Heritage site, although currently it is only recognised as a national heritage site in 2012 (Abd Halim et al., 2025a), in addition to being recognised as the oldest civilisation in Southeast Asia in 2016 during the Kedah Tua Festival held by five early world civilisation experts from Mesopotamia, Indus, Mesoamerica, China, and Greek-Rome (Anonymous, 2016).

Table 1. Outstanding universal value of river jetty and port management sites at SBAC (Source: The authors)

Site Classification	OUV	Description
River Jetty	Evidence of the most complete river jetty architectural form of early world civilisation since the 6th century B.C. The most complete iron ingot export river jetty of early world civilisation The most complete ancient Kedah port complex	Based on the architectural appearance of the river jetty at SBAC, it has been suggested that it is the most complete structure that has ever been the subject of archaeological studies in the early civilisations of the world. Until now, archaeological studies at the world level have not recorded the existence of river jetty architectural structures that are still in situ structures of floors, walls, corridors, stairs, walkways, pillar bases and roof tiles in their architectural form. The dating of the river jetty structure corroborates the radiocarbon dating of the SB2H iron smelting site, which provides dating data to around the 6th century BC (Abd Halim et al., 2025b). Based on the dating data, it is clear that the Sungai Batu river jetty structure were erected for the purpose of exporting ancient Kedah iron ingots, especially since the 6th century BC (Abd Halim et al., 2025d). A comparative study of the iron smelting sites of the world civilisations to date also revealed no evidence of the river jetty, port management, ritual and Buddhist monument sites in the same area that shows the uniqueness and importance of the discovery in SBAC on the development of early world civilisations. Archaeological studies conducted at the site on the edge of the ancient riverbank revealed 11 structures that served as river jetties (see Map 1). The results of excavations carried out at the site found that all the main monument structures were built in a directional manner and sloping towards the river, which suggested their function as a river jetty. The close spacing of the sites, which range from three to 15 metres apart, suggests that this area served as a port complex in SBAC. To date, archaeological studies of early river jetties, wharves, and harbours worldwide have not identified an area with as many river jetty structures suited for both river and sea environments. The Sungai Batu archaeological site is the only one in the world to date that has been able to reveal 11 sites of river jetty evidence that reveal the civilisation that took place in SBAC, which represents the ancient Kedah Kingdom and is representative of a highly civilised nation.
Port Management	The earliest civilisations reveal the clearest and most complete evidence of port management architecture First discovery of the architecture for managing iron export facilities in early world civilisations	Most of the port sites identified are based on the discovery of trade artefacts such as beads, pottery, ceramics, glass and others. Evidence of port structures is incomplete as found in Mesopotamia, Indus, Egypt and China. Even if seen in studies in Southeast Asia, the port criteria are only identified based on the discovery of trade artefacts (Abd Halim, 2019). There is no data about the port itself and the role of the port management site. This makes the study at SBAC the only one in the world to date that reveals a clear and complete port management architecture Archaeological studies conducted in Mesopotamia, Egypt, Indus, China, Greek-Roman and Mesoamerican civilisations until now have not recorded the discovery of port management architecture used as the management of the iron ingot trade. To date, SBAC's port management is the only one in the world to reveal clear evidence of a port management architecture (Abd Halim & Saidin, 2025b). This makes SBAC the most complete centre of iron smelting and export management for the early civilisations of the world.

DISCUSSION

As the river jetty and port management site at SBAC have revealed a very special OUV, then the process of its development as a heritage tourism site was carried out vigorously after 2012. Even Abd Halim et al. (2022a; 2024a; 2025a) and Ali et al. (2021a, b; 2023) have discussed more detail about the marketing and development process of SBAC heritage tourism sites in the national tourism sector, emphasising the principles of sustainability and leaving no one behind. This can make the development of the tourism sector, especially in Malaysia, more efficient.

In addition, the heritage tourism sector in Malaysia, especially sites such as prehistoric sites in the Lenggong Valley (Rapidah et al., 2018; Talib et al., 2022; Abd Halim et al., 2025c), Gua Pelangi (Abd Halim et al., 2022b), and Neolithic sites in Guar Kepah (Abd Halim et al., 2024d), has also been developed as a sustainable heritage tourism product. Sustainability means that every tourism activity carried out emphasises the principle of preserving the heritage tourism site. At the same time, also involve the local community, either as a tour guide or as an association involved in providing tourism services. This shows that the marketing of heritage tourism is concerned with empowerment from the bottom up, which is specifically able to make heritage sites preserved based on the direct involvement of stakeholders, NGOs and the local community (Foncesa et al., 2025; Lawasi et al., 2025).

However, to ensure that a tourist location can attract domestic and international tourists, the implementation of several drastic measures is necessary to market the place or tourist destination to the general public. The five main components that need to be implemented in the travel offering movement are 1) destination attractions, 2) destination facilities and services, 3) destination accessibility (including transportation), 4) image, brand and perception and 5) price to visitors (Middleton & Clarke, 2001; Ali, 2022).

Therefore, the diversity of actors, roles and environmental factors is a main key that supports the development of a tourism area (Capone, 2006), so the heritage tourism development program in a planned manner should be designed and implemented. This is very closely related to the existing tourism service and product offerings and its relationship with business networks, interactions, resources and academic knowledge flow that should be given emphasis in advance so that delivery to end users can be done smoothly. For this reason, issues such as integration, collaboration and networking activities (Poon, 1993) need to be organised and coordinated at the grassroots level to achieve the end goal.

In fact, the involvement of local communities in tourism marketing initiatives (Ryan, 2002) is necessary to maximise the work of empowering the tourism sector in an area. At the Kedah state heritage tourism level, Malaysia has organised several activities to strengthen the heritage tourism sector, which include travel marts, town halls, carnivals, festivals and national and international conferences. The programme also involves the local community to strengthen community involvement in tourism development. To facilitate the work, cooperation with stakeholders (Machlouzarides, 2010) should be carried out, such as with the Kedah state, federal, the Kedah State Economic Planning Division (BPEN), Jerai Geopark, Sungai Petani Municipal Council (MPSPK), and the Tourism; this is also the best step in marketing tourism destinations.

Additionally, utilising the latest technology (Abd Halim et al., 2024a; Yu et al., 2025) can positively impact the marketing process of tourist destinations, alongside the living culture gallery space that enables tourists to engage directly in demonstrations and hands-on activities. Digital marketing for tourist destinations, which includes analysing primary data studies, conducting marketing and promotion, developing strategic plans, and establishing branding, is the best approach for enhancing a tourist site. The use of virtual tourism methods is one of the effective methods that must be applied, as in many world tourism sites, such as the virtual centre of Alexandria and Kansas, United States (Aggour, 2017), in addition to several existing channels for promoting tourism destinations. In addition, a successful tourist destination also needs a tourist information centre that is able to manage all travel packages (Ludmila & Kristina, 2018) that are offered systematically. This is because the existence of the Tourism Information Centre is an initial step to provide information related to tourist destinations directly to tourists so that the selection of tour packages becomes more effective.

Providing tourism products and packages that prioritise the sustainability of tourist destinations should also be emphasised in developing the tourism sector. This is because if the sustainability of tourism products is not managed sustainably, then all tourism marketing programmes carried out will not be able to maintain the integrity of the tourism area, which ultimately has a negative impact on tourist visits. Therefore, the declaration of a tourist site as a UNESCO World Heritage site for the categories of World Heritage site for archaeology (WHS), global geopark (UGGp) and Man and Biosphere (MAB) is one of the best steps to preserve the tourist destination.

Tourism infrastructure at the global level also proves that all tourist destinations have maximised the construction of infrastructure such as hotel services, culinary, security and basic facilities at tourist locations (Cuka et al., 2015; Vinegar et al., 2015) to facilitate and provide maximum comfort to tourists. These elements must be given special attention to ensure that the tourist destination is able to attract tourists and become a successful tourist area.

Based on tourism marketing data for destinations, the world tourism site allows some good benefits to be taken for the development of heritage tourism marketing in SBAC. The management of the tourism information centre, product and package offerings, the availability of infrastructure, and the latest promotional activities are all necessary and can be of practical benefit to the development of the heritage tourism sector in this area.

CONCLUSION

Studies on primary evidence sites (trade and industry) in SBAC and the progress of destination marketing in its heritage tourism sector clearly demonstrate its importance to economic development in Malaysia in particular. To ensure that SBAC is able to attract tourists, the development of infrastructure in tourist areas, including accommodation and transportation, has become a priority and began to be developed in a planned manner. In fact, the SBAC has also been recognised as a

national heritage site in 2012, as Southeast Asia's oldest civilisation site in 2016, and is currently in the process of nomination as a UNESCO World Heritage Site through the Jerai Geopark concept. This is the backbone of the empowerment of the heritage tourism sector in SBAC, which is expected to develop this location on par with similar heritage tourism sites in other parts of the world.

Limitations of the study for future study

The Sungai Batu Archaeological Complex area's heritage tourism study does not prioritize the involvement of stakeholders, NGOs, and the local community in the implementation of heritage tourism. This needs to be carried out as a comprehensive study along with accurate data related to the success of its implementation to measure the success of heritage tourism promotion offered.

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