For discussion on
25 November 2014

Legislative Council Panel on Development

Archaeological features discovered at To Kwa Wan Station of the Shatin to Central Link and their proposed preliminary conservation and interpretation plans

Introduction

This paper reports to members the archaeological features discovered at the To Kwa Wan Station of the Shatin to Central Link (SCL), their proposed preliminary conservation and interpretation plans, modification of the associated station design and construction method, as well as the impact on the programme and cost of the SCL project.

Background

2. The SCL, with a total length of 17 kilometres (km), consists of the following two sections –

(a) Tai Wai to Hung Hom section: this is an extension of the Ma On Shan Line from Tai Wai via Southeast Kowloon to Hung Hom where it will join the West Rail Line; and

(b) Hung Hom to Admiralty section: this is an extension of the East Rail Line from Hung Hom across the Victoria Harbour to Wan Chai North and Admiralty.

3. The SCL will have ten stations. Apart from improvements to the existing Tai Wai Station, the SCL project will involve the construction of new stations or extension of existing stations at Hin Keng, Diamond Hill, Kai Tak, To Kwa Wan, Ma Tau Wai, Ho Man Tin, Hung Hom, the Hong Kong Convention and Exhibition Centre (Exhibition) and Admiralty. It is a territory-wide strategic railway project (alignment

layout at **Enclosure 1**).

4. The estimated construction cost for the entire SCL project is about $79,800 million [1] (in the money-of-the-day prices). Being implemented under the "concession approach", the Government is responsible for funding the construction of the SCL. On 11 May 2012, the Finance Committee of the Legislative Council approved the funding applications for **61TR** – Shatin to Central Link – construction of railway works – remaining works and **62TR** – Shatin to Central Link – construction of non-railway works – remaining works. Thereafter, the Government and MTR Corporation Limited (MTRCL) entered into an agreement for entrusting construction, testing and commissioning of the SCL to the latter. The MTRCL has been entrusted to provide management and monitoring service to the SCL project. The main construction works commenced in July 2012. According to the agreement, the target commissioning dates are December 2018 for the Tai Wai to Hung Hom section of the SCL and December 2020 for the Hung Hom to Admiralty section.

Archaeological Work and Discovery

5. In conducting the environmental impact assessment (EIA) under the Environmental Impact Assessment Ordinance, the consultant appointed by the MTRCL has assessed the impact on cultural heritage arising from the SCL railway scheme, including the possible existence of archaeological finds at the previous location of the Sacred Hill and its vicinity within the area of the To Kwa Wan Station. Therefore, the EIA report for the SCL recommended that an archaeological survey-cum-excavation[2] be carried out at a specified area prior to the

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[1] The total estimated construction cost includes the construction cost estimate of protection works under **58TR** and **59TR**, advance works under **63TR** and **64TR**, construction of railway works-main works under **61TR** and construction of non-railway works – main works under **62TR**.

[2] Archaeological survey-cum-excavation is commonly conducted before construction within a specified area with archaeological potential. The archaeological survey is to define the precise horizontal extent and the nature of the archaeological deposits while the excavation is applied to this confined area to retrieve the archaeological data completely. The archaeologist needs to submit a proposal of the archaeological work to the Antiquities and Monuments Office (AMO), including the method and the procedure

commencement of construction works for the To Kwa Wan Station. After consultation with the Advisory Council on the Environment and making available the EIA Report for public inspection and comment, the EIA Report for the SCL was approved by the Director of Environmental Protection in February 2012.

6. An archaeological survey-cum-excavation was carried out at the specified area before commencing construction of the To Kwa Wan Station. The archaeological work was carried out by an independent archaeological team engaged by the SCL contractor. Under the close supervision of the Antiquities and Monuments Office (AMO), fieldworks commenced in November 2012 at the Part 1 archaeological area in accordance with the Antiquities and Monument Ordinance (see Part 1 archaeological area **in Enclosure 2** which is provided by the MTRCL). A square-shaped stone well dated to the Song-Yuan period with high heritage value was discovered in this archaeological area. The Government has revised the alignment of the proposed carriageway of Road L9 of the Stage 5 Infrastructure Works in the Kai Tak Development Area, so as to divert the carriageway away from the location of the well to facilitate its preservation and future public display. Since the square-shaped stone well remains intact and can reflect the lifestyle of the ancient settlement, it was decided after consulting the Antiquities Advisory Board (AAB) that the stone well should be preserved in-situ. As the well is located outside the To Kwa Wan Station area, its preservation will not affect the construction works of the station. Other key findings include ceramic sherds, coins and remnants of archaeological features of the Song-Yuan period as well as from recent epochs. These archaeological finds have been retrieved after taking records to facilitate further excavation to deeper levels reaching the sterile layer in search of other cultural relics. The excavation in this area has reached the sterile layer, which is 2.3 to 4.8 metres below ground level. The archaeological fieldwork was completed in December 2013.

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of the archaeological excavation. With the approval of the AMO and support of the Antiquities Advisory Board (AAB), the Antiquities Authority (i.e. the Secretary for Development) will issue a licence to the applicant in carrying out the archaeological work in accordance with the proposal of the archaeological work and under the close monitoring of the AMO.

7. In relation to the above archaeological survey-cum-excavation, the independent archaeological team has submitted an interim report to the AMO. During the archaeological work, the AAB had been kept informed of the progress by the reports from the AMO. All the related documents were uploaded to the website of the AMO for public viewing. The SCL contractor has resumed construction works by phases within the Part 1 archaeological area since December 2013 upon the completion of the archaeological survey-cum-excavation.

8. On the other hand, over 500 coins mainly dated to the Song dynasty were found while piling works was carried out at the launching shaft location for tunnel boring machines (see Part 2 archaeological area in **Enclosure 2**). The discovery was immediately reported to the AMO by the MTRCL. Upon request and under the close supervision of the AMO, and after obtaining a licence issued by the Antiquities Authority (i.e. Secretary for Development) under the Antiquities and Monuments Ordinance, the independent archaeological team conducted an Archaeological Watching Brief (AWB)[3] at the launching shaft area (designated as the Part 2 archaeological area) in December 2013. Archaeological fieldwork in the Part 2 archaeological area has been completed, except for the T1 Area which is of about 400 square metres at the south-western corner of the archaeological area. Excavation in the rest of the Part 2 archaeological area has reached the sterile layer, which is 2.6 to 4.5 metres below ground level. With the agreement of the AMO, construction works in this area (except T1 Area) have been progressively resumed since January 2014.

9. Another square-shaped stone well of the Song-Yuan period and stone building remnants were discovered at the T1 Area. At this stage, the MTRCL has implemented appropriate measures for the protection of the stone well in the T1 area and other stone building remnants.

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[3] Archaeological watch brief (AWB) refers to any archaeological work conducted during the construction phase of a development project. The AWB allows archaeological methods to be applied by archaeologists once any archaeological remains are identified in the course of the construction works of the development project. A proposal is required to specify the aim, method, and potential mitigation measures for the AWB. The AWB could turn into an archaeological excavation if significant archaeological remains are discovered. Once the AWB commences, the archaeologist needs to report any archaeological remains discovered to the AMO. The AMO will then report the related discoveries to the AAB. The AMO will also regularly oversee the related archaeological work.

10. Except for the T1 Area of the Part 2 archaeological area, the archaeological work has been extended to the Part 3 archaeological area upon the request of the AMO (see **Enclosure 2**). Under the close supervision of the AMO, and after obtaining a licence issued by the Antiquities Authority under the Antiquities and Monuments Ordinance, the independent archaeological team commenced archaeological work in April 2014 in areas within the Part 3 archaeological area. The MTRCL suspended construction in this archaeological area in order not to affect the archaeological work.

11. Archaeological fieldwork in the Part 3 archaeological area was completed in end September 2014. In this archaeological area, the extent of the former Sacred Hill was revealed and remnants and ceramic sherds dated from Song-Yuan, late Qing to Republican periods and the 1920s to 1960s were discovered in the vicinity. Archaeological discoveries dated to Song-Yuan period include remnants of building foundations, low walls, column plinths, stone wells, drains, a pit with a wooden structure found inside, and a stone footpath, etc. Features dated to late Qing to Republican period such as a stone well and a stone structure which form the riverbank of the former Ma Tau Chung were also found. Other findings include a water channel and a red brick well dated to the 20th Century, and a nullah built during the Japanese occupation.

12. The remains of a stone well and a water channel were discovered in mid-June 2014 in Zone A of the Part 3 archaeological area (see **Enclosure 2** for its location). The independent archaeological team conducted further excavation to investigate their dating, function and structure. Findings indicated that the stone well (Well J2) was built in the Song-Yuan period while the water channel was built in the early 20th century. The top portion of the stone well to which the water channel is connected was truncated by the water channel connection works in the early 20th century.

Preliminary Conservation Proposal for Archaeological Discovery

13. Having considered the expert advices from the independent archaeological team and the AMO, the Government concurred that the archaeological discoveries in the Part 2 and Part 3 archaeological areas have significant historical and heritage values. Due to the rarity of some of the archaeological features dating back to the Song-Yuan period, the archaeological discovery is an important one in Hong Kong in recent years. As these unearthed features have important research and educational values in helping us to understand the social development of Hong Kong in the Song-Yuan period, in-situ preservation where appropriate could be considered. Other organic relics which require specialist conservation treatment have been retrieved and moved off site. Details are at Table 1 and Enclosure 3.

Table 1

	Archaeological Feature	**Location**	**Period**	**Conservation Proposal**
1)	Well J5	Part 1 archaeological area	Song-Yuan	Preserve in-situ
2)	Stone building features	Part 3 archaeological area, Zone A	Song-Yuan	Preserve in-situ
3)	Wooden structure in a pit	Part 3 archaeological area, Zone A	Song-Yuan	Organic relic. Retrieved off site for conservation treatment
4)	Well J2 and water channel	Part 3 archaeological area, Zone A	Song-Yuan (Well) and Early 20th century (water channel)	Four conservation options (pending decision)
5)	Well J1	Part 2 archaeological area, T1 Area	Song-Yuan	Preserve in-situ
6)	Building remains	Part 2 archaeological area, T1 Area	Song-Yuan	Preserve in-situ
7)	Stone footpath and stone	Part 3 archaeological area,	Song-Yuan (stone footpath)	Preserve in-situ

	Archaeological Feature	Location	Period	Conservation Proposal
	structure which form the riverbank of the former Ma Tau Chung	northern portion of Zone C	and late Qing to Republican period (stone structure)	
8)	Stone structure	Part 3 archaeological area, southern portion of Zone C	Song-Yuan	Two conservation options (pending decision)
9)	Stone building features and Well J3	Part 3 archaeological area, Zone D	Song-Yuan (stone building features) and late Qing (Well J3)	Preserve in-situ
10)	Stone building features	Part 3 archaeological area, Zone B and northern end of Zone C	Song-Yuan	Preserve in-situ
11)	Red brick well	Part 3 archaeological area, Zone A	Modern	Preserved by record

Four conservation options for the Well J2 and the associated water channel at Zone A of Part 3 Archaeological Area

14. As Well J2 and the remains of the early 20th century water channel discovered within Zone A of the Part 3 archaeological area are located at the centre of the footprint of the To Kwa Wan Station; and in particular the wall of Well J2 is located at the roof slab of the future station concourse, the station design and the construction works of the station would need to be adapted to tie in with the conservation plan for Well J2 and the water channel. In this regard, 3-dimensional laser scanning would be conducted by the engineering team for precise recording of the conditions of Well J2 and the water channel. As regards the conservation of Well J2 and the water channel, the MTRCL proposed the following four conservation options **(Table 2)**. A detailed

comparison of the options is at **Enclosure 4.**

Table 2

Conservation Proposal	**Content**
Option 1	First conduct detailed recording, then dismantle Well J2 and the water channel by hand and move it off-site for proper storage. After completion of construction works, reinstate them at the original position (but at a higher elevation near ground level) or at other suitable locations nearby to facilitate future public appreciation.
Option 2	First conduct detailed recording, then construct a giant "steel structure" to protect and accommodate Well J2 to facilitate removal and proper off-site storage. After completion of the construction works, the well will be reinstated at its original position (but at a higher elevation) or other suitable locations nearby to facilitate future public appreciation. Since the water channel dated to early 20th century is of lower heritage value, it will be removed off site for proper storage after detailed recording, and to be reinstated next to Well J2 in future.
Option 3	Preserve both Well J2 and the water channel in-situ. Construct a giant "steel structure" bigger than that of Option 2 to protect the whole of Well J2 and water channel. The giant structure together with its concrete cover will become a giant column, and will stay in the station concourse permanently.
Option 4	Preserve Well J2. Construct a giant "steel structure" to protect Well J2, the giant structure together with its concrete cover will become a giant column, and will stay in the station concourse permanently. For the water channel, it will be properly recorded. It will then be removed by hand and stored properly. After completion of works, it will be reinstated at its original location.

15. In fact, two other similar square-shapted wells (i.e. Well J1 and Well J5), which are dated to the Song-Yuan period and of higher heritage value, have been preserved in-situ. Taking into account that Well J2 has been distributed in the early 20th century, its integrity and heritage value are relatively lower. In this connection, in-situ preservation or other conservation options can be considered with reference to overseas experience. When implementing the conservation plan, the archaeological team and experts from the AMO will closely monitor the implementation of the conservation work.

16. Regarding the impact on the construction progress of the SCL, the conservation method of Option 1 is relatively simple, and should have less impact on the construction programme and cost. For Options 2 to 4, a "steel structure" will need to be constructed to protect the feature. The construction of the "steel structure" involves piling works. If complex geological environment is involved, it will bring about additional construction time and cost. In respect of the station design, Options 1 and 2 would not require further changes to the station design. For Options 3 and 4, a "steel structure" together with a concrete cover would need to be constructed, and this would result in a large column sitting in the main passageway of the station concourse. The station design would need to be modified and the station concourse would need to be enlarged so as to allow passenger flow.

Two conservation options for the stone building features at the South of Zone C of Part 3 Archaeological Area

17. The independent archaeological team has identified some stone structures of the Song-Yuan Period (i.e. items 7, 8 and 10 in Table 1) at the northern and southern ends in Adit C in the Part 3 archaeological area (adit to Pak Tai Street) which will affect the alignment of the adit leading to Pak Tai Street (See **Enclosure 5**). It is proposed that the archaeological features in the northern end of Adit C should be preserved in-situ (see Table 1). With regard to the archaeological features in the southern end, the MTRCL proposed two conservation options: (1) preservation in-situ; and (2) preservation by record. A

comparison of the two options is at **Enclosure 6**.

18. If Option 1 is adopted, the entire alignment of the adit connecting the T1 Area and Pak Tai Street will be seriously affected. Since the area around the adit is designated as a temporary works site to tie in with the construction of the station and the train tunnel, suitable alternative routing cannot be explored until the respective works are completed in the second half of 2017 when the area can be made available for further investigation. In other words, a temporary access at grade would be required to connect the station entrance upon completion of station construction works. In case no suitable alternative routing could be identified eventually as a result of further archaeological discoveries or other site constraints, residents in the vicinity of Pak Tai Street might need to use the existing pedestrian crossing facilities (see **Enclosure 5**) at Ma Tau Chung Road to gain access to To Kwa Wan Station. The MTRCL will also explore the feasibility of adding a crossing at grade to Song Wong Toi Road at suitable locations in order to reduce the walking distance between Pak Tai Street and the station entrance.

19. If Option 2 is adopted to preserve the archaeological features at the southern portion of Zone C by recording, it would still be necessary for the MTRCL to identify an alternative routing for the section connecting the southern portion of Zone C and the station because the archaeological features found in the northern part would be preserved in-situ. As mentioned in Paragraph 18 above, suitable alternative routing cannot be explored until the respective works are completed in the second half of 2017. If no routing could be identified, this section of the adit would need to be replaced by passageway at grade, i.e., to connect the station entrance with access at grade. The crossing to Song Wong Toi Road connecting Pak Tai Street and the southern portion of Zone C would not be affected. Access to the station from Pak Tai Street is possible via the Kai Tak Development Area.

Conceptual Interpretation Plan of Archaeological Discovery

20. The Administration and MTRCL have proposed the preliminary

conservation proposals and interpretation concept plan, and revised the station design of To Kwa Wan Station to facilitate the preservation of the features unearthed for future public display. The area to the west of To Kwa Wan Station has been earmarked as the future Sung Wong Toi Park. The Administration will explore feasibility of providing appropriate facilities inside the park for displaying the archaeological features. Also, MTRCL will consider displaying part of the relics, such as pottery pots, bowls, incense burners, coins and roof tiles, etc in the concourse of the future To Kwa Wan Station.

Impact on the SCL arising from Archaeological Work and Discovery

21. The Transport and Housing Bureau has all along been concerned about the archaeological discovery and is fully co-operative on the construction arrangements. The MTRCL has made the following adjustments to facilitate the archaeological work:

a) Expanding the archaeological work from Part 1 archaeological area to the entire works site of To Kwa Wan Station and engaging an independent archaeological expert team appointed by the contractor to conduct additional archaeological work to unearth more archaeological features;
b) Suspending part of the excavation of the launching shaft of tunnel boring machine (TBM) and the station construction in the course of additional archaeological work. As a result, some labour, machinery and equipment of the contractor have to be left idle. Besides, the extended construction period will lead to an increase in the construction cost;
c) Building temporary protection walls and carrying out protective backfilling works for the unearthed features inT1 Area of Part 2 archaeological area; and
d) Modifying the design of the temporary supporting struts and the construction sequence for the TBM launching shaft.

22. The archaeological work, unearthed finds and conservation options have inevitably caused works delay and additional cost. The

Highways Department has been working with MTRCL to examine adjustments of the construction sequence, modify the original construction method and devise a suitable revised scheme for station design with a view to preserving the relics and minimising the impact on the works. According to the conservation options in Table 1 and the proposed conceptual interpretation plans mentioned in paragraph 20 above, the design and construction of To Kwa Wan Station will be affected as follows:

(a) Revising the design of the ventilation facilities and plant rooms in T1 Area of Part 2 archaeological area and Zone B of Part 3 archaeological area, including their relocation, in order to preserve Well J1 and the nearby stone building features in-situ (**Enclosure 7**);
(b) Erecting additional steel pipe pile protection walls to separate the stone building features of the Sung-Yuan Period in Zone A of Part 3 archaeological area outside the northern side of the station for protecting them from the effect of construction works (**Enclosure 7**);
(c) Placing display cabinets at station concourse to showcase part of the relics unearthed (**Enclosure 7**);
(d) Modifying the construction sequence, installing additional temporary supports and monitoring device at some locations inside the station footprint and repeating some works procedures as necessary;
(e) Addressing the impacts arising from the preservation of Well J2 and the water channel (see paragraphs 14 to 16); and
(f) Modifying the adit connecting Pak Tai Street and the station (see paragraphs 17 to 19).

23. Up to end-November 2014, the delay and additional cost caused by the archaeological work are tabulated as follows:

Table 3

Item	**Adjustments made to the SCL because of the expansion of the extent of archaeological work**	**Delay to works of Tai Wai to Hung Hom section of SCL**	**Additional cost to SCL works@**
1	Unavoidable adjustments to the	At least 11 months	About $3.1

Item	Adjustments made to the SCL because of the expansion of the extent of archaeological work	Delay to works of Tai Wai to Hung Hom section of SCL	Additional cost to SCL works@
	SCL works for facilitating the expanded archaeological work between December 2013 and end-September 2014 (see items (a) to (d) of paragraph 21 for details)		billion
2	Adjustments to the SCL works for adopting the proposed conservation options under Items 2 to 3, 5 to 7 and 9 to 11 of Table 1 (not including Well J2 and the water channel, and the stone structure at the southern end of Adit C) (see items (a) to (d) of paragraph 22 for details)	Will delay the construction period of To Kwa Wan Station but no further additional delay to the SCL project	About $1 billion
3	Adjustments to the SCL works for adopting 4 conservation options for Well J2 and the water channel (see **Table 2** and **Enclosure 4**)		
	Option 1:	• No further additional delay	• About $10 million
	Option 2:	• At least 4 months' additional delay	• About $0.8 billion
	Option 3:		• About $1.3 billion
	Option 4:		• About $1.2 billion
	Cumulative impact on the works from Items 1 to 3 above:	• At least 11 months	• About $4.1

Item	Adjustments made to the SCL because of the expansion of the extent of archaeological work	Delay to works of Tai Wai to Hung Hom section of SCL	Additional cost to SCL works@
		(Option 1) • At least 15 months (Options 2 to 4)	billion (Option 1) • About $4.9 to $5.4 billion (Options 2 to 4)
4	Conservation options for stone structure at the southern end of Adit C • Given that the alternative tunnel alignment is yet to be confirmed as stated in paragraphs 17-19 above, assessments on the corresponding adjustment on works cannot be made at this stage	Will only affect the construction of Adit C and no impact on the completion date of the To Kwa Wan Station	Assessments cannot be made at this stage

@ It does not include the cost required for future display of relics.

24. If the conservation option for Well J2 and water channel cannot not be finalised by early December 2014, it is estimated that the construction cost will be increased by about $250 million for each month of delay in making the decision. The works will be affected by the corresponding delay.

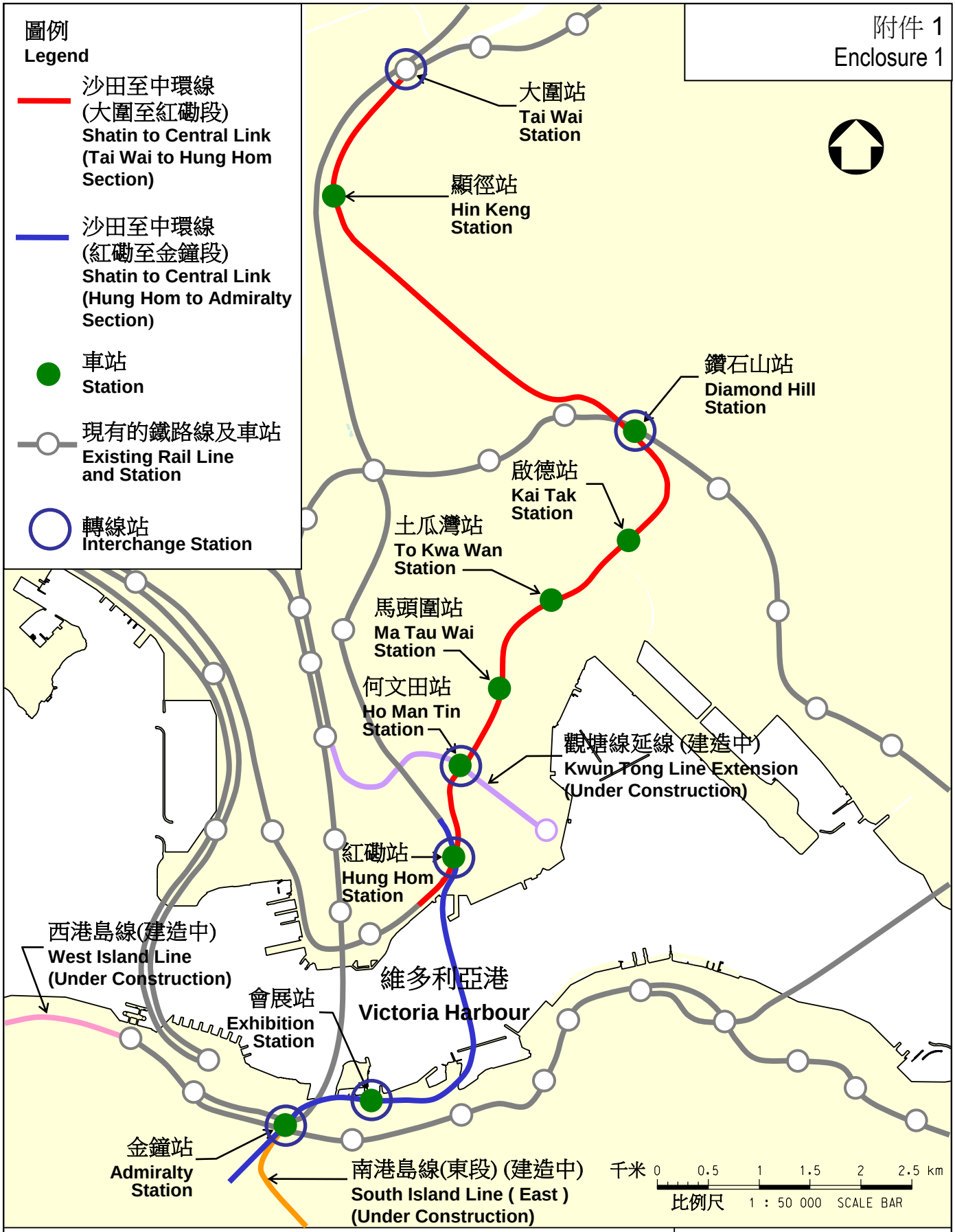
25. As the additional cost (**Table 3**) induced by the expanded archaeological work and discovery has not been included in the project contingency and the existing project contingency will not be sufficient to meet the additional cost, a funding application shall be submitted to the Legislative Council in a timely manner to ensure continual

implementation of the project.

Conclusion

26. The Administration is extremely concerned about the archaeological discovery at the works site of To Kwa Wan Station, and places great importance on the discovery. As such, the archaeological survey area has been extended and the archaeological expert team has carried out additional archaeological work under the close supervision of the AMO. The AMO has also been reporting to the AAB about the archaeological finds in a timely manner. Our full cooperation with the archaeological work has inevitably caused delays of different extents to every aspect of the SCL works and induced additional cost. The archaeological work was completed in end-September this year. The Administration is consulting the AAB on the proposed conservation options for the archaeological discoveries. We hope that the conservation plan can be confirmed as soon as possible to facilitate conservation of the archaeological discoveries and the continual implementation of the SCL works without giving rise to further delays and additional costs.

Development Bureau
Transport and Housing Bureau
November 2014



圖則名稱 drawing title

沙田至中環線的走線

Alignment of the Shatin to Central Link

圖號 drawing no.
HRWSCL003-SK0427

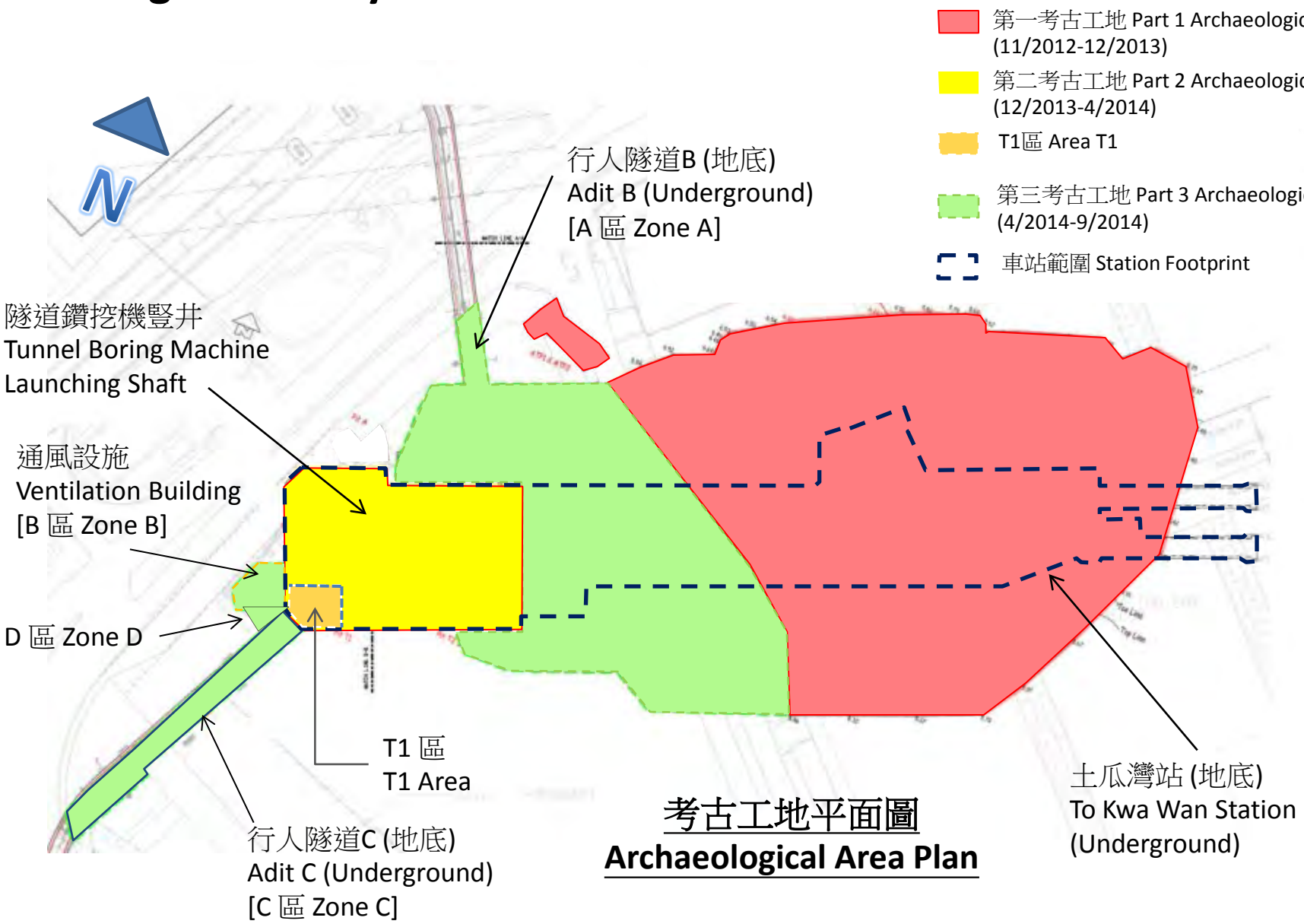
鐵路拓展處 RAILWAY DEVELOPMENT OFFICE

路政署
HIGHWAYS DEPARTMENT

A4 210X297

土瓜灣站考古調查
Archaeological Survey at To Kwa Wan Station

附件二 Enclosure 2



考古工地平面圖
Archaeological Area Plan

考古文物保育方案

附件三 Enclosure 3

Conservation Options for Archaeological Features Discovered

10) 石砌建築遺蹟
Stone building features
(原址保留 Preserve in-situ)

11) 紅磚井
Red Brick Well
(記錄方式保存
Preserve by record)

1) J5井 Well J5
(原址保留
Preserve in-situ)

2) 石砌建築遺蹟 Stone building features
(原址保留 Preserve in-situ)

3) 坑中木質結構
Wooden structure in a pit
(已移走作保育處理
Retrieved off site for conservation treatment)

9) 石砌建築遺蹟及J3井
Stone building features and Well J3
(原址保留 Preserve in-situ)

4) J2井和引水槽
Well J2 and water channel
(四個保育方案
4 Conservation options)

7) 石砌路徑及前馬頭涌河岸的石結構 Stone footpath and stone structure which forms the riverbanks of the former Ma Tau Chung
(原址保留 Preserve in-situ)

8) 石砌結構
Stone structure
(兩個保育方案
2 Conservation options)

6) 殘存房屋構件 Building remains
(原址保留 Preserve in-situ)

5) J1井 Well J1
(原址保留 Preserve in-situ)

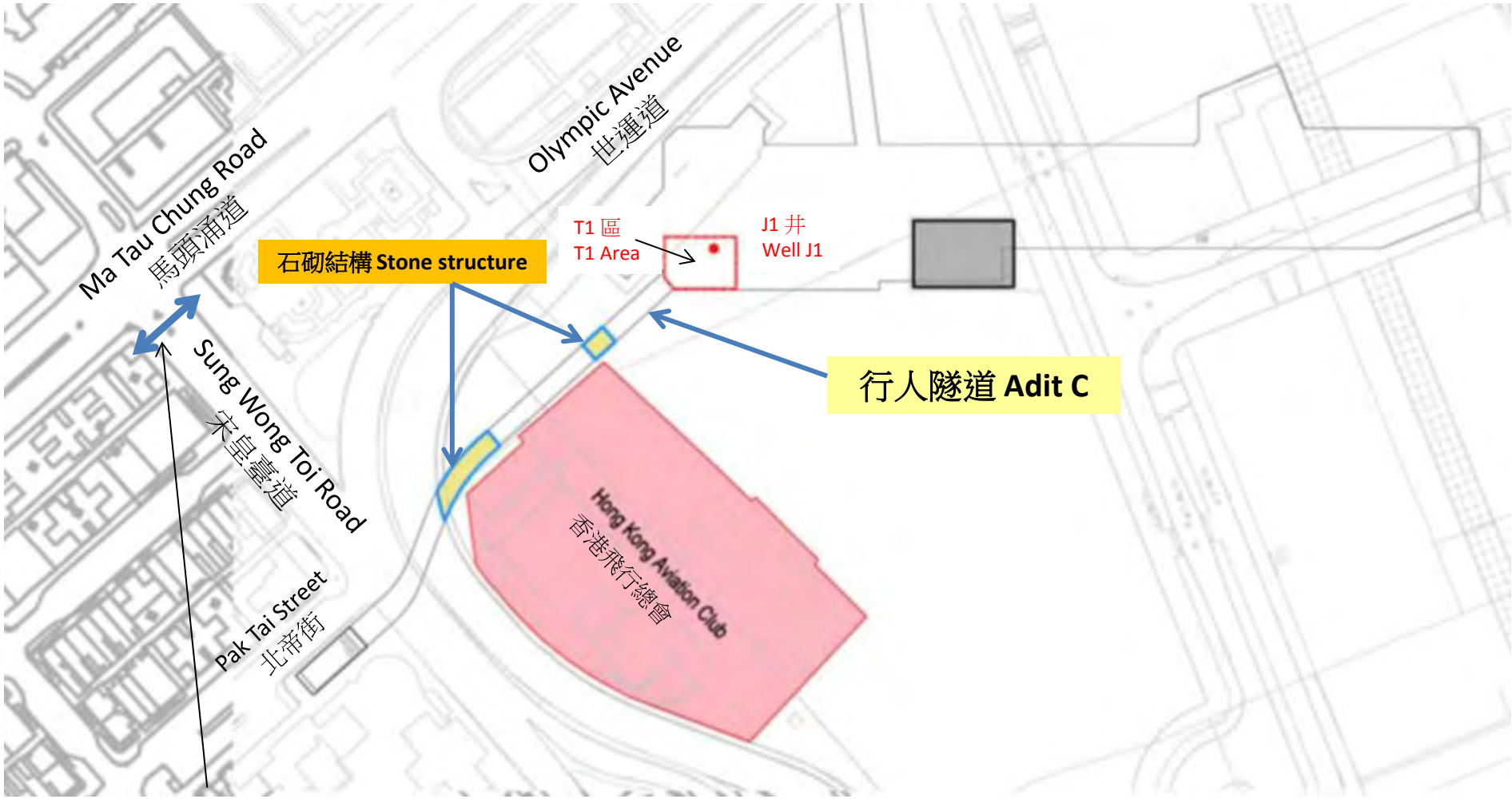
J2 井和引水槽的保育方案
Conservation Options for Well J2 and Water Channel

附件四 **Enclosure 4**

方案 Option	工程風險 Construction risk	對車站設計的影響 Impact to station design	文物保育角度 Heritage Viewpoint
1	• 重置後可能與原本狀況整體上有輕微分別 • Possible slight difference to the original condition generally after re-assembly	• 除因應T1區保育方案及大堂展示櫃的改動外並無額外修改 • No additional change to the modification due to T1 Area conservation scheme and display cabinets in concourse	• J2井及引水槽完整性受影響 • 展示和詮釋安排較靈活，增加教育果效 • Integrity of Well J2 and water channel would be impaired • Interpretation and display would be flexible to enhance educational value
2	• 打樁工程有可能遇上孤石層，產生的震動可能影響井的結構 • 為避開孤石亦可能需要另覓打樁位置，因而涉及額外施工時間及開支 • 搬運巨型結構的過程可能影響井的結構 • Piling works through corestone layers may cause vibration that affects the well structure • Find another piling location to avoid conflict with corestone layers may incur additional time and cost • Well may deform during relocation of the massive structure	• 除因應T1區保育方案及大堂展示櫃的改動外並無額外修改 • No additional change to the modification due to T1 Area conservation scheme and display cabinets in concourse	• J2井較完整地保存 • 引水槽文物價值較低，故採用不同保育方法 • Well J2 would be kept intact • Water channel is of lower heritage value thus a different conservation approach is applied
3	• 打樁工程有可能遇上孤石層，產生的震動可能影響井的結構 • 為避開孤石亦可能需要另覓打樁位置，因而涉及額外施工時間及開支 • Piling works through corestone layers may cause vibration that affects the well structure • Find another piling location to avoid conflict with corestone layers may incur additional time and cost	• 車站範圍須進一步擴大，而且須修改設計以承托巨型結構 • Station area needs to be further enlarged, and the design has to be revised for supporting the massive structure.	• 完整保存J2井及引水槽 • 因其位處將來路面以下，展示和詮釋較為困難 • Integrity of Well J2 and water channel retained • As they are located at a level lower than the future ground level, display and interpretation would be difficult
4	• 打樁工程有可能遇上孤石層，產生的震動可能影響井的結構 • 為避開孤石亦可能需要另覓打樁位置，因而涉及額外施工時間及開支 • Piling works through corestone layers may cause vibration that affects the well structure • Find another piling location to avoid conflict with corestone layers may incur additional time and cost	• 車站範圍須進一步擴大，但比方案三的範圍較少，而且須修改設計承托巨型結構 • Station area needs to be further enlarged, but the enlargement required is smaller than Option 3. Also, the design has to be revised for supporting the massive structure.	• 完整保存J2井 • 引水槽文物價值較低，故採用不同保育方法 • 因其位處將來地面以下，展示和詮釋較為困難 • Integrity of Well J2 retained • Water channel is of lower heritage value thus a different conservation approach is applied • As they are located at a level lower than the future ground level, display and interpretation would be difficult

行人隧道 C 的走線
Alignment of Adit C

附件五 **Enclosure 5**



附件六

就第三考古工地 C 區南端遺蹟的兩個保育方案建議的比較

項目	方案一	方案二
保育方案內容	原址保留	記錄方式保存
方案對工程/車站設計的影響	• 整條由 T1 區至北帝街行人隧道會受到影響。港鐵公司曾考慮研究替代路線，但因附近土地須配合車站及列車隧道建造工程作為臨時工地，故此現階段不能確定附近土地的考古潛在價值。預計在 2017 年下半年，當部分相關工程完成後，才可騰出空地作進一步考察，以探討合適替代路線。 • 受到附近現有建築物及道路的限制，其他連接北帝街及車站替代隧道的建造可行性或較低，但仍會研究替代線。	• 對C區南端遺蹟以記錄方式保存，因C區北端遺蹟會原址保留，港鐵公司仍然需要為C區南端至車站的一段行人隧道研究替代隧道走線。 • 如方案一，預計在 2017 年下半年，才可作進一步考察，以探討合適的替代隧道走線。
方案對乘客/行人的影響	• 即使能夠有合適的替代隧道走線，整段行人隧道預計亦未能與車站同步完工，而需要以臨時地面通道往來車站出入口。若最終因為後來的考古發現或現場環境限制而未能有合適的替代隧道走線時，北帝街一帶的居民可能需要使用現有馬頭涌道行人過路設施往來土瓜灣	• 若未能成功找到合適的替代隧道走線，則此段行人隧道便需要以地面行人路代替；即使能夠有合適的隧道走線，此段行人隧道預計亦未能與車站同步完工，而需要以臨時地面通道接駁至車站出入口。至於橫過宋皇臺道連接北帝街和C區南端的一段行人隧道則不受影

項目	方案一	方案二
	站。 • 港鐵公司亦會探討在其他合適位置，加設地面通道橫過宋皇臺道的可行性，以縮短北帝街與車站出入口之間的步行距離。 • 對北帝街附近的居民往來車站帶來不便。	響，乘客可使用此行人隧道由北帝街通往啟德發展區再往車站。 • 能減低對北帝街附近的居民往來車站的不便。
文物保育角度	• 由於遺蹟將原址保留，其完整性不受影響。	• 由於部分遺蹟將被移除，其完整性受到一定程度的影響。

Enclosure 6

Comparison of two conservation options for the relics found at the southern end of Adit C at Part 3 Archaeological Area

Item	Option 1	Option 2
Details of Conservation Option	Preserve in-situ	Preserve by record
Impacts on the construction works / station design	• The whole adit from T1 Area to Pak Tai Street will be affected. MTRCL has considered studying alternative alignment. However, the site nearby is temporarily required to facilitate the construction works of the station and train tunnel, so the archaeological potential of the site cannot be ascertained at this stage. It is anticipated that part of site area could be released after mid-2017 to facilitate the investigation of alternative route. • Limited by the existing buildings and roads, the feasibility of constructing alternative adit to connect Pak Tai Street and the Station may be relatively low. However, the feasibility of constructing an alternative adit will still be explored.	• The relics at the southern end of Zone C will be preserved by recording. As the relics at the northern end of Zone C will be preserved in-situ, MTRCL is still required to study an alternative tunnel alignment between the southern end of Zone C and the station. • Similar to Option 1, the study to explore suitable tunnel alignment can only commence in the second half of 2017.
Impacts on passengers/ pedestrians	• Even if a suitable alternative tunnel alignment can be identified, it is anticipated that the whole adit cannot be completed with the station at the same time, and a temporary at-grade crossing is hence required for connecting to the station. If	• If alternative tunnel alignment cannot be identified, at-grade walkway would become the alternative to this section of the adit. Even if a suitable alternative tunnel alignment can be identified, it is anticipated that the whole

Item	Option 1	Option 2
	a suitable alternative tunnel alignment cannot be identified eventually due to subsequent archaeological finds and site constraints, residents living in the vicinity of Pak Tai Street may need to use the existing crossing at Ma Tau Chung Road to access to the station. • MTRCL would also explore the feasibility of providing at-grade pedestrian facilities for crossing Song Wong Toi Road at a suitable location with a view to shorten the walking distance between Pak Tai Street and the station entrance. • Will cause inconvenience to residents living in the vicinity of Pak Tai Street in accessing to the station.	adit would not be completed with the station at the same time, and a temporary at-grade crossing is hence required for connecting to the station. The section of the adit crossing Sung Wong Toi Road linking Pak Tai Street and the southern end of Zone C would not be affected. Passengers can make use of this adit to go from Pak Tai Street to the Kai Tak Development Area, and then to the station. • Can minimise the inconvenience caused to residents living in the vicinity of Pak Tai Street in accessing to the station.
Heritage Impact	• The relics will be preserved in-situ and their integrity would not be affected.	• As some relics will have to be relocated, and their integrity will be affected to a certain extent.

附件七

就有關土瓜灣站的設計及建造工程的影響

項目	有關土瓜灣站的設計及建造工程的影響
修改通風設施設計及機房位置	• 獨立考古專家團隊在第二考古工地的T1區(原設計作為車站機房位置)，和第三考古工地的B區(原設計作為通風設施位置)，發現了J1井及一些宋、元時期的石砌房屋建築遺蹟。為了讓這些遺蹟能夠被原址保留，港鐵公司會取消T1區和B區為車站建造範圍，車站大堂須在另一端擴大範圍，機房位置須移至近車站D出入口的位置，機房及通風設施的設計須作出修改，而施工工序亦須作出調整。
建造額外的鋼管樁保護牆分隔車站和其北面的考古遺蹟	• 獨立考古專家團隊在第三考古工地A區的車站外北面發現了宋、元時期的石砌建築遺蹟。車站外北面雖然不在車站範圍內，但在原本的建造過程中車站外北面須進行挖掘工程；因此港鐵公司須額外建造鋼管樁保護牆，保護車站北面內出土的遺蹟，並分隔車站北面及車站施工位置，才可以讓車站挖掘及建造工程得以繼續進行。
於車站大堂內增設文物展示設施	• 港鐵公司可按政府的要求於車站大堂內預留部分位置, 以建造文物展櫃，展示部分相關出土文物。

Enclosure 7

Impacts on the design and construction of To Kwa Wan Station

Item	Impacts on the design and construction of the To Kwa Wan Station
Amending the design of the ventilation facility and relocating the plant room	• The independent archaeological team discovered Well J1 and some stone building features of Song-Yuen Period in Zone T1 of the Part 2 archaeological area (i.e. the original position of the plant room) and in Zone B of the Part 3 archaeological area (i.e. the original position of ventilation facility). To enable in-situ preservation of the relics, MTRCL will need to exclude Zone T1 and Zone B from the original station design, while the footprint of the station concourse will have to be enlarged for relocating the plant room near entrance D of the station. The design of the plant room and the ventilation facility will have to be amended, while the associated construction works method has to be adjusted.
Construction of additional pipe pile wall to separate the station and the relics located at the north of the station	• The independent archaeological team discovered some stone building features of Song-Yuan Period at Zone A of the Part 3 archaeological area located to the north of the station. Although the features are located outside the station footprint, the original station construction method involves excavation at its vicinity. As such, MTRCL will have to install an additional pipe pile wall to protect the relics and separate them from the construction area before the station construction can continue.
Providing display cabinet in the station concourse	• MTRCL can, as per the government's request, reserve some areas in the station concourse to place display cabinets for the display of some archaeological discoveries.