水務署
Water Supplies Department

MEINHARDT

# Agreement No. CE 38/2016 (WS)

# Implementation of Water Intelligent Network (WIN), Remaining District Metering Areas and Pressure Management Areas in Yuen Long and Sheung Shui & Fanling Major Supply Zones - Investigation, Design and Construction

## Heritage Impact Assessment Report (Issue 4)

**November 2018**

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# 1. INTRODUCTION

## 1.1 Project Background

1.1.1 In the 1990s, maintenance of a considerable length of water mains approaching the end of their service life became increasingly difficult and costly. Given the poor condition of the water distribution network, replacement and rehabilitation (R&R) of the aged water mains was the most effective solution to rejuvenate the water distribution network to arrest the rapid rising trend of main bursting and leakage. A programme of R&R of water mains (R&R Programme) was launched in 2000 to replace and rehabilitate around 3 000 kilometres (km) of the aged water mains in Hong Kong. The R&R Programme was substantially completed in 2015. At present, the total length of water mains in Hong Kong is about 8 000 km.

1.1.2 Following the substantial completion of the R&R Programme, the condition of the water distribution network has been largely improved. The annual number of water main bursts has been reduced from the peak of about 2 500 in 2000 to 88 in 2017. The leakage rate has also been reduced from exceeding 25% in 2000 to about 15.2% in 2017.

1.1.3 Notwithstanding the completion of the R&R Programme, the water mains previously not covered in the R&R Programme will continue to age and deteriorate. Riding on the technological advancement of sensors, telemetry, network management software and data analysis in recent years, we consider it an opportune time to implement the Water Intelligent Network (WIN) to maintain the healthiness of the water distribution network. With WIN, we would be able to analyse the condition of the water distribution network and determine the most cost-effective means to maintain the healthiness of the network.

1.1.4 The essence of WIN is continuous monitoring of network performance in a holistic manner by utilising advanced technologies. Under WIN, the water distribution network will be divided into discrete district metering areas (DMA) and pressure management areas (PMA) of manageable size with high-technology monitoring and sensing equipment installed in each DMA and PMA network. Implementation of WIN enables the effective execution of measures under the four pillars of network management in an integrated and coordinated manner. These four pillars include (a) active leakage detection and control through the usage of the monitoring and sensing equipment installed in the network; (b) pressure management to reduce the pressure in the network of the PMAs; (c) quality and speedy repairs to water main leaks and bursts; and (d) asset management by reprovisioning of aged water mains which are beyond economic repair. WIN also enables detection of probable unauthorised consumption from the network.

1.1.5 Tremendous amount of flow and pressure data as well as other associated network data will be collected from the monitoring and sensing equipment of the DMAs and PMAs. An intelligent network management system (INMS) is being established for analysing the data collected for continuous monitoring of the condition of the network so as to assess the level of leakage and unauthorised consumption, and to enable timely determination of the priorities and the most effective network management measures for the DMAs and PMAs. For full implementation of WIN to cover the entire water distribution network in the territory, we will link up all DMAs and PMAs, which are either established or to be established to the INMS. By incorporating all the DMAs and PMAs into the INMS, WIN will eventually be established and will enable efficient network management to cover the water distribution network in the whole territory.

## 1.2 Background of Consultancy

1.2.1 Meinhardt (Hong Kong) Limited has been appointed by WSD to carry out the investigation, detailed design and construction supervision for the establishment of the remaining (DMAs) and (PMAs), together with the installation of the necessary network monitoring and sensing equipment and the establishment of an intelligent network management system and development of associated analytical tools for the fresh water distribution systems (including distribution systems for temporary water mains for flushing), in Yuen Long and Sheung Shui and Fanling Major Supply Zones(MSZs) as shown in **Figure A**.

1.2.2 The Project covers the supply zones (SZs) of the fresh water primary service reservoirs (FWPSRs), fresh water service reservoirs (FWSRs), fresh water tank (FWT), fresh water break pressure tank (FWBPT) and direct supply (DS) from the water treatment works (WTWs) in Yuen Long and Sheung Shui and Fanling Major Supply Zones (MSZ) and the scope of works comprises the review, design, construction, commissioning and monitoring of the underground DMA and PMA chambers and critical pressure point (CPP).

## 1.3 Objectives of Heritage Impact Assessment

1.3.1 The objectives of the Heritage Impact Assessment (HIA) include identification and evaluation of potential heritage impact on heritage sites, including Sites of Archaeological Interest (SAI) and built heritages arising from the proposed works in accordance with Development Bureau Technical Circular (Works) No. 6/2009 Heritage Impact Assessment Mechanism for Capital Works; if impacts are identified and assessments will be carried out, mitigation measures will be recommended as appropriate.

## 1.4 Authorship

1.4.1 Archaeological Assessments Limited was commissioned by Meinhardt Infrastructure and Environment Limited to draft a HIA study brief and to undertake the HIA. Key personnel in undertaking the HIA are:

- Julie Van Den Bergh (Project director and main consultant)
- Kennis Yip and Kathy Chan (Researchers)

# 2. PROPOSED WORKS

## 2.1 General Description

2.1.1 The project consists of investigation, detailed design and construction supervision for the establishment of the remaining DMAs and the associated PMAs, together with the installation of the necessary network monitoring and sensing equipment and the establishment of an intelligent network management system and development of associated analytical tools for the fresh water distribution systems (including distribution systems for temporary water mains for flushing), in Yuen Long and Sheung Shui and Fanling Major Supply Zones (MSZ).

## 2.2 Type of Works

2.2.1 For the evaluation of heritage impacts, some chambers for the establishment of DMA and PMA are identified in view of the sub-surface construction and potential impact identification.

2.2.2 A chamber typically includes a below ground concrete chamber in which (1) a flow meter used for continuously measuring/monitoring the flow into and out of the district meter area is set, (2) a pressure reducing valve may also be included in the chamber at some locations which are checked in the hydraulic design having a possibility of pressure reduction and (3) some other associated and enabling works such as valve operation which are necessary for the completeness of the water networks and/or establishment of the DMA/PMA. Some associated and enabling works involve excavation. All the works involved excavation were assessed as of having excavation. The size of a chamber is ranging about 1.5 to 3 m wide x 1.5 to 5 m long x 2 to 4 m deep, which depends on the size and the depth of the existing water mains and the site conditions. The foreseeable maximum size of the chamber is adopted in the assessments.

## 2.3 Description of Construction Works On-site

2.3.1 The majority of the proposed works consist of construction of chambers located at existing roads, under the carriageways, pavements or footpaths and in location of existing water supply network.

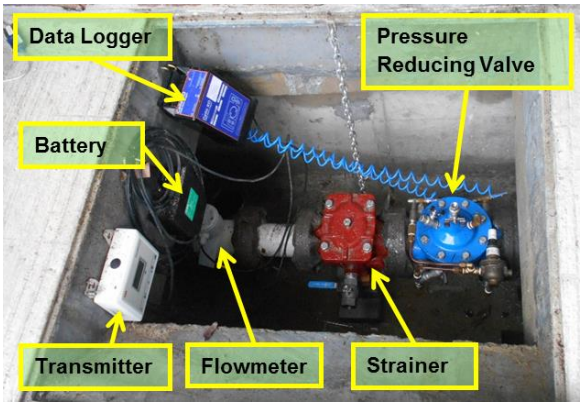
2.3.2 The chambers would be constructed for the installation of flow meters and/or other pressure management equipment on the existing water supply network. It is necessary to set out the exact location of the proposed chambers with reference to the design.

2.3.3 Before excavation, a detailed underground utility detection would be carried out by a competent person for locating the existing water mains and other underground utilities nearby for verifying the location of the construction. The exact location and dimensions of the existing water supply network are not known.

2.3.4 After identifying the locations, the concrete or the asphalt ground surface will be saw-cut and then broken down into pieces by breaker. Then, open trench excavation would be carried out by an excavator.

2.3.5 Having exposed the concerned section of the water mains, the chambers will be constructed by concreting and steel fixing for the subsequent installation of instrument (e.g. flowmeter and/or pressure reducing valve). After that, the connection with existing fresh water supply network will be carried out.

2.3.6 Finally, the excavated site area shall be backfilled with appropriate material and reinstated the ground surface.




**Photos 1 and 2 – Showing the Equipment Arrangement Installed in the Chamber and the Ground Surface Reinstatement after the Construction (approximate size: 1.5 – 3m wide x 1.5 – 5 m long x 2 – 4m deep)**

# 3. METHODOLOGY

## 3.1 Identification – Near the Declared Monuments and Historic Buildings

*Identification of Possible Impacts*

3.1.1 A HIA checklist and a HIA Study Brief have been prepared and submitted previously to identify the potential affected heritage sites.

3.1.2 This Assignment covers the Yuen Long, Sheung Shui and Fanling MSZs. The historic buildings, which are located within the 50 m from the proposed works, have been identified with reference to the following lists obtained from AMO:

- Declared Monuments (as at 13 October 2017)
- List of 1,444 Historic Buildings in Building Assessment (as of 6 September 2018)
- List of new items and new categories with assessment results (as at 6 September 2018)

3.1.3 28 nos. of built heritages have been identified to fall within 50 m of 26 nos. of proposed chambers, as summarized in **Table 3.1** below.

3.1.4 Two proposed works have been identified to fall within 50 m of Declared Monuments.

3.1.5 The detailed lists of identified historical buildings in the List of 1,444 Historic Buildings in Building Assessment and list of identified historical buildings in the List of New Items and New Categories with Assessment Results are presented in **Appendix B** and **Appendix C** respectively. Figures showing the identified built heritages with respect to the locations of the proposed works are presented in **Section 10**.

**Table 3.1 Summary of Built Heritage Identified within 50 m of Proposed Chambers**

| Source of List | No. of Proposed Chambers Identified within 50 m of Built Heritage | No. of Built Heritage Identified | Distance between works boundary and Built Heritage (m) |
|---|---|---|---|
| Declared Monuments | 3 | 2 | 33.1 – 33.6 |
| List of 1,444 Historic Buildings in Building Assessment (Details refer Appendix B) | 20 | 23 | 4 – 48.7 |
| List of new items and new categories with assessment results *(Details refer* | 3 | 3 | 10.9 – 43.8 |

| | | | |
|---|---|---|---|
| ***Appendix C)*** | | | |
| **Total** | **26** | **28** | |

*Considerations*

3.1.6 In view that all the proposed works are constructed below ground, no permanent impact to the landscape and visual aspects of the historic buildings is expected.

3.1.7 Moreover, as the proposed works are generally situated away from the identified historical buildings, the impacts on the structures or foundations of the historic buildings (e.g. cracks on walls, settlement of the structures, etc.) are considered negligible since the size of the works area for construction of the proposed works is relatively small and confined (i.e. about 1.5 to 3 m wide x 1.5 to 5 m long x 2 to 4 m deep). The construction method does not involve significant vibration since only small and localized excavations are involved.

*Proposed Mitigation Measures*

3.1.8 The only one DM (Tang Ancestral Hall, Ha Tsuen) identified to be the closest from the works boundary, the separation distance from the proposed chambers are approximate 34m away, given the minor excavation works for the proposed chambers, the generated vibration would only small and localized.

In addition to the DM, the nearest identified historic building boundary (Ta Kwu Ling Police Station (Grade 3)) is located approximate from 4-9m from the proposed chambers, however, the police station building itself is located at more than 15m from the works boundary, given the minor excavation works for the proposed chambers, the generated vibration would only small and localized. Further investigation / survey shall be carried out with appropriate mitigation / precautionary measures proposed where necessary such as monitoring plan and checkpoints subject to the approval by AMO.

*Conclusion*

3.1.9 In view of the above, it is considered that the proposed works will **not have any adverse impacts** to the identified historic buildings in general and hence no in-depth assessed in this HIA Report would be required.

3.1.10 Notwithstanding this, a buffer zone of 5m should be set up around the historic buildings. In addition, signage identifying the graded historic buildings should be provided and care should be taken to avoid encroachment. Also, should impacts to the identified historic buildings be identified during construction monitoring/mitigation plan would be proposed before the construction by the Contractor. If there is any observed impact or potential concern to the buildings, the works will be suspended and the advice from AMO will be sought. The works will be resumed subject to advice from AMO, if necessary.

## 3.2 Identification – Sites of Archaeological Interest (SAIs)

3.2.1 With reference to the List of Sites of Archaeological Interest (SAIs) in Hong Kong (as at Nov 2012), the proposed works located 50m of the SAIs and within SAIs have been identified.

Within 50m Circumferential Area from the Boundary of SAIs

3.2.2 The SAIs identified to be within 50 m of the proposed works have been identified and summarized in **Appendix D**.

3.2.3 6 nos. of Sites of Archaeological Interest have been identified to fall within 50 m of 10 nos. of proposed chambers, as summarized in **Table 3.2** below. The detailed list of the identified Sites of Archaeological Interest is presented in **Appendix D**.

**Table 3.2 Summary of Sites of Archaeological Interest (SAIs) Identified within 50 m of Proposed Chambers**

| No. of Chambers Identified within 50m Circumferential Area from the Boundary of SAI<br><br>(Details in Appendix D) | No. of SAIs Identified Having Proposed Chambers within 50m Circumferential Area from the Boundary<br><br>(Details in Appendix D) |
|---|---|
| **10** | **6** |

3.2.4 In view of the proposed works of the construction of chambers is a relative small scale. The works located outside the SAI but within 50m of the SAI is assessed to have insignificant impact to the SAI. Therefore, these works **are not assessed in depth** in this HIA Report.

3.2.5 Notwithstanding this, should antiquities or supposed antiquities be identified during the construction works, the works should be suspended and the relevant contractor should notify AMO immediately.

*Within the SAIs*

3.2.6 3 nos. of proposed chambers have been identified within the boundaries of 3 nos. of Sites of Archaeological Interest, as summarized in **Table 3.3** below. The detailed list of the identified Sites of Archaeological Interest is presented in **Appendix E**, with the figures as shown in **Appendix A**.

**Table 3.3 Summary of Proposed Chambers Identified within the Boundaries of Sites of Archaeological Interest (SAIs)**

| No. of Proposed Chambers Identified within SAIs<br>(Details in Appendix E) | No. of SAIs Identified<br><br>(Details in Appendix E) |
|---|---|
| **3** | **3** |

*Discussion and Recommendations*

3.2.7 As the proposed works generally involves the installation of district meters, pressure reducing valves, CPPs and other enabling works along the existing fresh water mains, where the underground conditions have already been disturbed to unknown extent during the previous water main laying works, excavations for construction of the proposed works are acknowledged to be carried out within partially disturbed areas. However, 3 nos. of proposed works have been identified within the boundaries of SAIs and are included in the heritage impact assessment (HIA)

3.2.8 Regarding the **HIA on the identified works areas located within SAIs**, an archaeological review including topographical, geological and archaeological background for each identified site of archaeological interest which may be affected are conducted by a qualified archaeologist. The assessment of the heritage impacts arising from works is based on the desk-based review and study of the proposed works and mitigation will be recommended as necessary. The HIA report includes all the findings of the assessment and mitigation recommendations.

## 3.3 Works Identified to be Further Assessed and Investigated

3.3.1 The HIA is based on evaluation of proposed construction works within SAI boundaries and mitigation may be recommended. Nevertheless, during the construction if there is antiquity or supposed antiquity identified outside the recommended mitigation measures, the relevant contractor should notify AMO and the project proponent immediately for follow up action. In case there is any change in the scope and boundary of the proposed works which have not been covered in the HIA, the project proponent should consult AMO on the need of conducting further assessment and investigation.

# 4 CONSERVATION POLICIES

## 4.1 Hong Kong legislation, standards and guidelines concerning heritage

4.1.1 Legislation, standards, guidelines and criteria relevant to the consideration of cultural heritage in Hong Kong include the following:

- Antiquities and Monuments Ordinance (Cap. 53);
- Environmental Impact Assessment Ordinance (EIAO), including Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) Annexes 10 and 19, and Guidelines for Cultural Heritage Impact Assessment;
- Hong Kong Planning Standards and Guidelines (HKPSG);
- Proposed Graded and Graded Historic Buildings Classification; and.
- Development Bureau Technical Circular (Works) No. 6/2009: Heritage Impact Assessment Mechanism for Capital Works Projects.

***Antiquities and Monuments Ordinance***

4.1.2 The Antiquities and Monuments Ordinance (Cap. 53) (the Ordinance) provides statutory framework for preservation of objects of historical, archaeological and paleontological interest. This Ordinance contains statutory procedures for the Declaration of Monuments. The proposed monument can be any place, building, site or structure, which is considered to be of public interest by reason of its historical, archaeological or paleontological significance.

4.1.3 Under Section 6 sub-section (1) and subject to sub-section (4) of the Ordinance, the following acts are prohibited in relation to certain monuments, except under permit granted by the Secretary for Development (the Authority):

- To excavate, carry on building works, plant or fell trees or deposit earth or refuse on or in a proposed monument or monument; and
- To demolish, remove, obstruct, deface or interfere with a proposed monument or monument.

4.1.4 The discovery of an antiquity or supposed antiquity, as defined in the ordinance must be reported to the Authority, or a designated person. The Ordinance also provides that, the ownership of every relic discovered in Hong Kong after the commencement of this ordinance shall vest in the HKSAR Government from the moment of discovery. The Authority on behalf of the HKSAR Government may disclaim ownership of the relic.

4.1.5 No archaeological excavation may be carried out by any person, other than the Authority and the designated person, without a licence issued by the Authority. A licence will only be issued if the Authority is satisfied that the applicant has sufficient scientific training or experience to enable him to carry out the excavation and search satisfactorily, is able to conduct, or arrange for, a proper scientific study of any antiquities discovered as a result of the excavation and search and has sufficient staff and financial support.

4.1.6 It should also be noted that the discovery of an antiquity under any circumstances must be reported to the Authority or designated person. The Authority may require that the antiquity or supposed antiquity is identified to the Authority and that any person who has discovered an antiquity or supposed antiquity should take all reasonable measures to protect it.

***Environmental Impact Assessment Ordinance***

4.1.7 The EIAO was implemented on 1 April 1998. Its purpose is to avoid, minimise and control any adverse impact on the environment arising from designated projects, through the application of the EIA process and the Environmental Permit (EP) system. The relevant

document pertaining to cultural heritage under the legislation is the "Technical Memorandum on Environmental Impact Assessment Process".

4.1.8 The general criteria and guidelines for evaluating and assessing impacts to Sites of Cultural Heritage are listed in Annexes 10 and 19 of the Technical Memorandum on Environmental Impact Assessment Process TM-EIAO. It is stated in Annex 10 that all adverse impacts to Sites of Cultural Heritage should be kept to an absolute minimum and that the general presumption of impact assessment should be in favour of the protection and conservation of all Sites of Cultural Heritage. Annex 19 provides the details of scope and methodology for undertaking Cultural Heritage Impact Assessment, including baseline study, impact assessment and mitigation measures.

***Guidelines for Cultural Heritage Impact Assessment***

4.1.9 The document, as issued by the AMO, outlines the specific technical requirement for conducting terrestrial archaeological and built heritage impact assessments and is based upon the requirements of the TM-EIAO. It includes the parameters and scope for the Baseline Study, specifically desk-based research and field evaluation. Besides, it also includes guidelines encompassing reporting requirements and archive preparation and submission in the form of Guidelines for Archaeological Reports and Guidelines for the Handling of Archaeological Finds and Archives.

4.1.10 The prerequisite conditions for conducting impact assessment and mitigation measures are presented in detail, including the prediction and evaluation of impacts based upon five levels of significance (Beneficial, Acceptable, Acceptable with Mitigation Measures, Unacceptable and Undetermined). The guidelines also state that preservation in totality must be taken as the first priority and if this is not feasible due to site constraints or other factors, full justification must be provided.

4.1.11 Mitigation measures will be proposed in cases with identified impacts and shall have the aim of minimising the degree of adverse impact and also where applicable providing enhancement to a heritage site through means such as enhancement of the existing environment or improvement to accessibility of heritage sites. The responsibility for the implementation of any proposed mitigation measures must be clearly stated with details of when and where the measures will be implemented and by whom.

***Hong Kong Planning Standards and Guidelines***

4.1.12 Chapter 10 of the HKPSG details the planning principles for the conservation of natural landscape and habitats, historical buildings and SAIs. The document states that the retention of significant heritage features should be adopted through the creation of conservation zones within which uses should be restricted to ensure the sustainability of the heritage features. The guidelines state that the concept of conservation of heritage features, should not be restricted to individual structures, but should endeavour to embrace the setting of the feature or features in both urban and rural settings.

4.1.13 The guidelines also address the issue of the preparation of plans for the conservation of historical buildings, SAIs and other antiquities. It is noted that the existing Declared Monuments and proposed Monuments be listed in the explanatory notes of Statutory Town Plans and that it be stated that prior consultation with AMO is necessary for any redevelopment or rezoning proposals affecting these buildings and Sites of Archaeological Interest and their surrounding environments.

4.1.14 It is also noted that planning intention for non-statutory town plans at the sub-regional level should be include the protection of monuments, historical buildings, SAIs and other antiquities through the identification of such features on sub-regional layout plans. The appendices list the legislation and administrative controls for conservation, other

conservation related measures in Hong Kong, and government departments involved in conservation.

***Development Bureau Technical Circular (Works) No. 6/2009: Heritage Impact Assessment Mechanism for Capital Works Projects***

4.1.15 This technical circular contains the procedures and requirements for assessing heritage impact arising from the implementation of new capital works projects. It is stated in the document that the works agent will provide a checklist to the AMO of any heritage sites (as defined in the technical circular) situated within or within the vicinity of the project boundary (usually to be defined as not more than 50m measured from the nearest point of the project boundary, including works areas).

4.1.16 The identification of the heritage sites should be undertaken at the earliest possible stage, preferably as part of the Technical Feasibility Statement. If the works boundary cannot be defined at this stage, the checklist should be provided as soon as the project boundary has been defined. Upon receipt of the above information from the works agent, AMO will determine if the proposed project will affect the heritage value of any heritage site and decide the necessity of conducting a Heritage Impact Assessment (HIA) based upon the submitted information.

4.1.17 If an HIA is required, the works agent shall submit a proposal for the scope of the HIA for AMO approval. Once the scope has been approved it will be the responsibility of the works agent to conduct the HIA.

# 5 REVIEW OF HERITAGE SITES UNDER HIA

## 5.1 Identified Heritage Sites

5.1.1 In accordance with the HIA Mechanism stipulated in Development Bureau Technical Circular (Works) No. 6/2009, the works agent needs to confirm with the AMO with there are any declared monuments, proposed monuments, sites and buildings graded by the Antiquities Advisory Board (AAB), SAIs or Government historic sites identified by AMO (hereafter together referred to as "heritage sites") within or in the vicinity of the project boundary.

5.1.2 Further to the study in the Section 3.1 and 3.2 above, a summary of listing the number of heritage sites that fall within 50m boundary of the proposed works is listed in the table below.

| Type of Heritage Sites | Number of Identified Heritage Sites within 50m of the Proposed Works | Number of Proposed Works Involved |
|---|---|---|
| Declared Monuments | 2 | 3* |
| Proposed Monuments | 0 | 0 |
| Graded Historic Buildings<br><br>(see Appendices B and C) | 26 | 22* |
| Sites of Archaeological Interest (SAI)<br><br>(See Appendices D and E) | 3 (with works within the SAIs)<br><br>6 (with works within 50m of the SAIs) | 3<br><br>10 |
| Government Historic Sites | 0 | 0 |

Note: *The proposed works are only in vicinity of the Graded Historic Buildings.

5.1.3 The lists of the concerned proposed works and the identified heritage sites are provided in **Appendices B, C, D and E**.

## 5.2 Identified Heritage Sites For HIA

5.2.1 Adverse impacts on archaeology are usually limited to direct impacts; in this case from excavation of potential archaeological deposits within chamber locations. As such, the proposed chambers within SAIs have the potential to adversely impact on suspected archaeological deposits. Proposed direct impacts on chambers within 50m outside the areas of archaeological potential (close but not within SAIs) are deemed to have less impact on known archaeological potential.

5.2.2 The proposed works near the built heritage sites will be positioned away from the structures to avoid disturbance and physical damages during the course of the works. Moreover, the

works are discrete and no major equipment is involved beyond the hand breaker, small excavator and lorry. Hence no impact on built heritage is expected from the works.

5.2.3 Therefore, only those proposed works fall within the heritage sites listed below would be carried out further assessment. The following three (3) Sites of Archaeological Interest were identified as having proposed works within their boundary:

1. Long Jok Tsuen Site of Archaeological Interest (AM98-0916)
2. Fu Tei Au Site of Archaeological Interest (AM98-0910)
3. Ngau Hom Sha Site of Archaeological Interest (AM04-1983)

5.2.4 A description of their relevant background information follows.

## 5.3 Long Jok Tsuen Site of Archaeological Interest (AM98-0916)

### *Geological and topographical background*

5.3.1 The Long Jok Tsuen Site of Archaeological Interest (SAI) is part of a series of SAIs located along the coast of Deep Bay in western New Territories. The SAI is truncated by Nim Wan Road, which runs north-south across the site. The hilly north-eastern part includes the proposed works area W1 (**FKT-DMA02AA-1)** and comprises mainly of fine-grained granite. (**Figures 1 - 2**) The lower-lying western and southern areas consist of strips of beach deposits and backbeach deposits backed by Holocene alluvium and a small pocket of Pleistocene terraced alluvium in the valley area, and small pockets of a small pocket of Pleistocene debris flow deposits along the foothill area (**Figure 1**) (HKGS 1988a).

### *Archaeological background*

5.3.2 During the Second Territory-wide Survey, prehistoric pottery sherds, stone objects and a well-preserved associated thick cultural layer dated to Late Neolithic period were identified in three of the test pits located in the crescent shaped backbeach area (AMO 1997). The site was further investigated in 1999 but no new findings were recorded (AMO 1999).

### *Existing impacts and discussion of archaeological potential of proposed work areas*

5.3.3 The former backbeach area where Late Neolithic remains were discovered is currently covered in fill. In addition, site formation impacts to accommodate houses along the steep slopes can be noticed in the north-eastern hilly terrain. Works area W1 is located along Nim Wan Road at the edge of the rocky area within the boundary of the Long Jok Tsuen SAI (**Figure 2**).

## 5.4 Fu Tei Au Site of Archaeological Interest (AM98-0910)

### *Geological and topographical background*

5.4.1 Fu Tei Au SAI is located on strips of beach deposits filled in with Holocene alluvium and Pleistocene terraced alluvium. The coastal deposits are backed by fine to medium grained low-lying hills surrounded by debris flow deposits (HKGS 1988a) (**Figures 3 - 4**). Besides the prehistoric materials recovered from the hillock located in the eastern end of the SAI (i.e. Ngau Hom Shek 'A' hillock site), the other major deposits dated to Late Neolithic and Bronze Age were recorded along the lower hill slopes in the southern part of the SAI on debris flow deposits.

### *Archaeological background*

5.4.2 Although some prehistoric finds and a shallow Bronze Age deposit were recorded between 1959 and 1994 at the Ngau Hom Shek 'A' hillock site located in the north-eastern end of the SAI (Peacock and Nixon 1986, AMO 1994, AMO 1997), it was not until 1999 that significant prehistoric findings were excavated within Fu Tei Au SAI. Cultural deposits dated to both Late Neolithic and Bronze Age, as well as features such as hearth and postholes were recovered from the lower hill slopes located in the southern part of the SAI (AMO 1999). A subsequent two-phase excavation which yielded significant findings including the discovery of 90 postholes, hearth, ash pit and burial remains, was carried out by the Hong Kong Archaeological Society in 2003. (Mo and Li 2003).

***Existing impacts and discussion of archaeological potential of proposed work areas***

5.4.3 The proposed works area W13 (**FKT-DMA02-1)** is located on the southern lower slopes of the hillock in the eastern part of the SAI, which is currently used as a burial ground (**Figure 4**). The hillock, named Ngau Hom Shek 'A' Site in early investigations, was the site of prehistoric materials and a shallow Bronze Age deposit recorded in 1994 (AMO 1994). One of the test pits excavated in 1994 in the general vicinity of **W13** however, revealed severe disturbance in the area. In addition, based on the 1994 investigation, it is suggested that overall very little in situ deposit remained on the hillock site due to destructive land-use (i.e. burials and formation work for the access road) and erosion.

## 5.5 Ngau Hom Sha Site of Archaeological Interest (AM04-1983)

***Geological and topographical background***

5.5.1 The Ngau Hom Sha Site of Archaeological Interest covers an area which includes fine to medium grained granite, Pleistocene terraced alluvium and debris flow deposits, raised beach areas separated by Holocene alluvium (**Figure 5**). The topography of the SAI ranges between low-lying 5mPD and ascend to 34mPD on hill slopes to the east.

***Archaeological background***

5.5.2 Song/ Ming dynasty remains were identified during an investigation carried out in 1999 (AMO 1999). Another investigation comprising field scan and auger testing conducted as part of the Deep Bay Link project did not however, record any further archaeological remains (HKIA 2001).

***Existing impacts and discussion of archaeological potential of proposed work areas***

5.5.3 A single works area WP14 (**FKT-DMA02A-1)** is proposed at the edge, but within the Site of Archaeological Interest on an existing road (**Figure 6**). Some subsurface impact should be expected from the road construction and maintenance, but the proposed works should exceed the level of disturbance and may impact the buried archaeology. The works area occupies raised beach area deposit at the edge of solid granite geology at elevation of 5.1mPD.

# 6 EVALUATION OF POTENTIAL ARCHAEOLOGICAL IMPACT

## 6.1 General

6.1.1 The proposed works consist of construction of chambers and other associated works below ground in relatively small and defined areas. The works coincides with locations of existing water mains and as such each works area has a level of existing impact which may have affected archaeological potential.

6.1.2 The archaeological review in section identified archaeological potential based on previous investigation and topographical and geological background within each site of archaeological interest. The existing information is used to determine whether the discrete area may contain archaeology.

6.1.3 For the site works requires mitigation measures which will be discussed in **Section 7**.

## 6.2 Long Jok Tsuen Site of Archaeological Interest

| **Proposed Works Area** | **Proposed Works and Dimensions** | **Elevation (mPD) and Topography** | **Potential Archaeological Impact** |
|---|---|---|---|
| W1<br><br>(**Figures 1-2**) | Construction of District Meter Chamber c.W170 x L210 x H250cm | The proposed works lie along Nim Wan Road at the edge of the granite hilly terrain at c.11mPD. | The proposed works will occur within the SAI; based on previous investigation however, findings are restricted to backbeach deposits situated at elevation of approximately 6-7mPD. In addition, the proposed works are in close proximity to the existing road, associated impacts from construction and maintenance can be expected.<br><br>***Acceptable Impact.*** |

## 6.3 Fu Tei Au Site of Archaeological Interest

| Proposed Works Area | Proposed Works and Dimensions | Elevation (mPD) and Topography | Potential Archaeological Impact |
|---|---|---|---|
| W13<br><br>(**Figures 3-4**) | Construction of District Meter Chamber<br><br>c.W170 x L210 x H250cm | Proposed works lie within on granite slopes at elevation of c. 12mPD. | The proposed works are located within the SAI in an area of burials and known impacts of access road construction and ongoing erosion. One of the test pits excavated in 1994 in the general vicinity of **W13** revealed severe disturbance in the area. In addition, based on the 1994 investigation, it is suggested that overall very little *in situ* deposit remained on the hillock site due to destructive land-use (i.e. burials and formation work for the access road) and erosion.<br>***Acceptable impact.*** |

## 6.4 Ngau Hom Sha Site of Archaeological Interest

| Proposed Works Area | Proposed Works and Dimensions | Elevation (mPD) and Topography | Potential Archaeological Impact |
|---|---|---|---|
| W14<br><br>**(Figures 5-6)** | Construction of District Meter Chamber c.W170 x L170 x H200cm | The proposed works lie along Nim Wan Road on raised beach deposit at c.5.1mPD. | The proposed works will occur within the SAI on underlying deposit of raised beach area which has some archaeological potential as cultural remains dated to Song and Ming were identified in previous investigation (AMO 1999). Besides, the proposed works area is on Qrb which yielded archaeological remains along the Deep bay. Some disturbance from the road construction may be expected.<br><br>***Acceptable with mitigation.*** |

# 7 MITIGATION RECOMMENDATIONS

## 7.1 General

7.1.1 Based on the archaeological review and proposed works, mitigation is recommended at each works location in the following sections for each concerned works and identified heritage sites. The details of the mitigation measure are elaborated in **Section 8**.

7.1.2 Although disturbance from previous utility and /or water main works has been identified, archaeological watching brief is recommended to be conducted at proposed works at Ngau Hom Sha SAI. The proposed works are expected to exceed the previous disturbance in size and depth, although the exact extent of the previous works are largely unknown. The location assessment is influenced by identification of other existing adverse impacts, proximity of previous findings, and topographical and geological situation of interest.

## 7.2 Long Jok Tsuen Site of Archaeological Interest (AM98-0916)

| Proposed Works Area | Proposed Works and Dimensions | Potential Archaeological Impact | Proposed Mitigation Recommendations |
|---|---|---|---|
| W1<br>(FKT-DMA02AA-1)<br><br>(**Figures 1-2**) | Construction of District Meter Chamber<br>c.W170 x L210 x H250cm | Based on the review, the proposed works are not expected to affect archaeological resources.<br><br>***Acceptable impact.*** | After review, the construction environment and the procedures are considered acceptable. Insignificant impact is anticipated.<br><br>No mitigation measure is recommended. However, if there is any antiquity or supposed antiquity found in the course of the construction works, AMO will be consulted and notified. |

## 7.3 Fu Tei Au Site of Archaeological Interest (AM98-0910)

| Proposed Works Area | Proposed Works and Dimensions | Potential Archaeological Impact | Proposed Mitigation Recommendations |
|---|---|---|---|
| W13<br>(FKT-DMA02-1)<br><br>(**Figures 3-4**) | Construction of District Meter Chamber<br>c.W170 x L210 x H250cm | Based on the review, the proposed works are not expected to affect archaeological resources.<br><br>***Acceptable impact.*** | After review, the construction environment and the procedures are considered acceptable. Insignificant impact is anticipated.<br><br>No mitigation measure is recommended. However, if there is any antiquity or supposed antiquity found in the course of the construction works, AMO will be consulted and notified. |

## 7.4 Ngau Hom Sha Site of Archaeological Interest(AM04-1983)

| Proposed Works Area | Proposed Works and Dimensions | Potential Archaeological Impact | Proposed mitigation Recommendations |
|---|---|---|---|
| W14<br>FKT-DMA02A-1<br><br>**(Figures 5-6)** | Construction of District Meter Chamber<br>c.W170 x L170 x H200cm | Although some disturbance from road work is expected, the area has known archaeological potential. Based on previous findings, archaeological materials and deposits ranging from Song to Ming period may exist within the works area.<br>***Acceptable with mitigation.*** | Despite known disturbances, the area has potential for archaeology.<br>It is recommended to monitor the excavations for the chamber during the construction phase as part of an **Archaeological Watching Brief**. |

# 8 DISCUSSION AND SUMMARY

8.1.1 The proposed constructions of chambers are relatively small in size and in locations currently under hard surface and known to have been previously disturbed to some extent. Three (3) proposed works locations however, are within known Sites of Archaeological Interest and some adverse impact on potential archaeological artefacts and deposits can be expected. Level of determined archaeological potential of the proposed works areas is based mainly on availability of previous archaeological testing, similarity of topography or geological deposits with known potential and recorded archaeological deposits in the vicinity, while the nature of the works means that each location has some known disturbance from previous water works.

8.1.2 Based on existing information, no mitigation was recommended at locations, except W14. It is recommended to monitor the excavations for the chamber (W14) during the construction phase as part of an Archaeological Watching Brief (AWB).

8.1.3 An AWB should be undertaken by a qualified and licensed archaeologist during excavation works at the construction stage. In this case, whereby the works are relatively small, the entire excavation process for the chamber should be inspected. Details of the AWB programme, methodology and the application of licence under the Antiquities and Monuments Ordinance (Cap. 53) for conducting the AWB should be prepared by an archaeologist and submitted to AMO for review and comment once the detailed construction programme has been finalized.

8.1.4 For other proposed works within 50m of the heritage sites, the impact to the concerned heritage is considered minimal. After reviewing the construction procedures, insignificant impact is anticipated during construction stage for all proposed works.

8.1.5 However, if there is any antiquity or supposed antiquity found within the proposed works areas or any potential damages to the heritage sites nearby in the course of the construction works, AMO will be consulted and notified.

# 9 REFERENCE AND BIBLIOGRAPHY

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HKIA 2002. Agreement No. CE109/98, Deep Bay Link, Investigation and preliminary design, CHIA report.

HKGS 1988. *Solid and Superficial Geology, Sheet 5, Tsing Shan*.

Peacock, B. and Nixon, T. 1986. *Report on the Hong Kong Archaeological Survey, Summary Site Data Sheets*. (ID5)

古物古蹟辦事處: <全港文物普查 1997 第一地區(元朗區)工作報告>, 1997 年。(AMO 1997) (YL9)

古物古蹟辦事處: <元朗西部地區考古覆查工作報告>, 1999 年。(AMO 1999) (YL20)

莫稚、李海榮:<香港元朗上白泥虎地凹遺址 2003 年度發掘報告>, 2003 年。(Mo and Li 2003) (YL41)

# 10 SUPPORTING ILLUSTRATIONS

| Works | Figure No. |
|---|---|
| W1 (FKT-DMA02AA-1) (**W1**) | **(Figures 1-2)** |
| W13 (FKT-DMA02-1) (**W13**) | **(Figures 3-4)** |
| W14 (FKT-DMA02A-1) (**W14**) | **(Figures 5-6)** |

10.1.1 The figure is shown in the following pages.

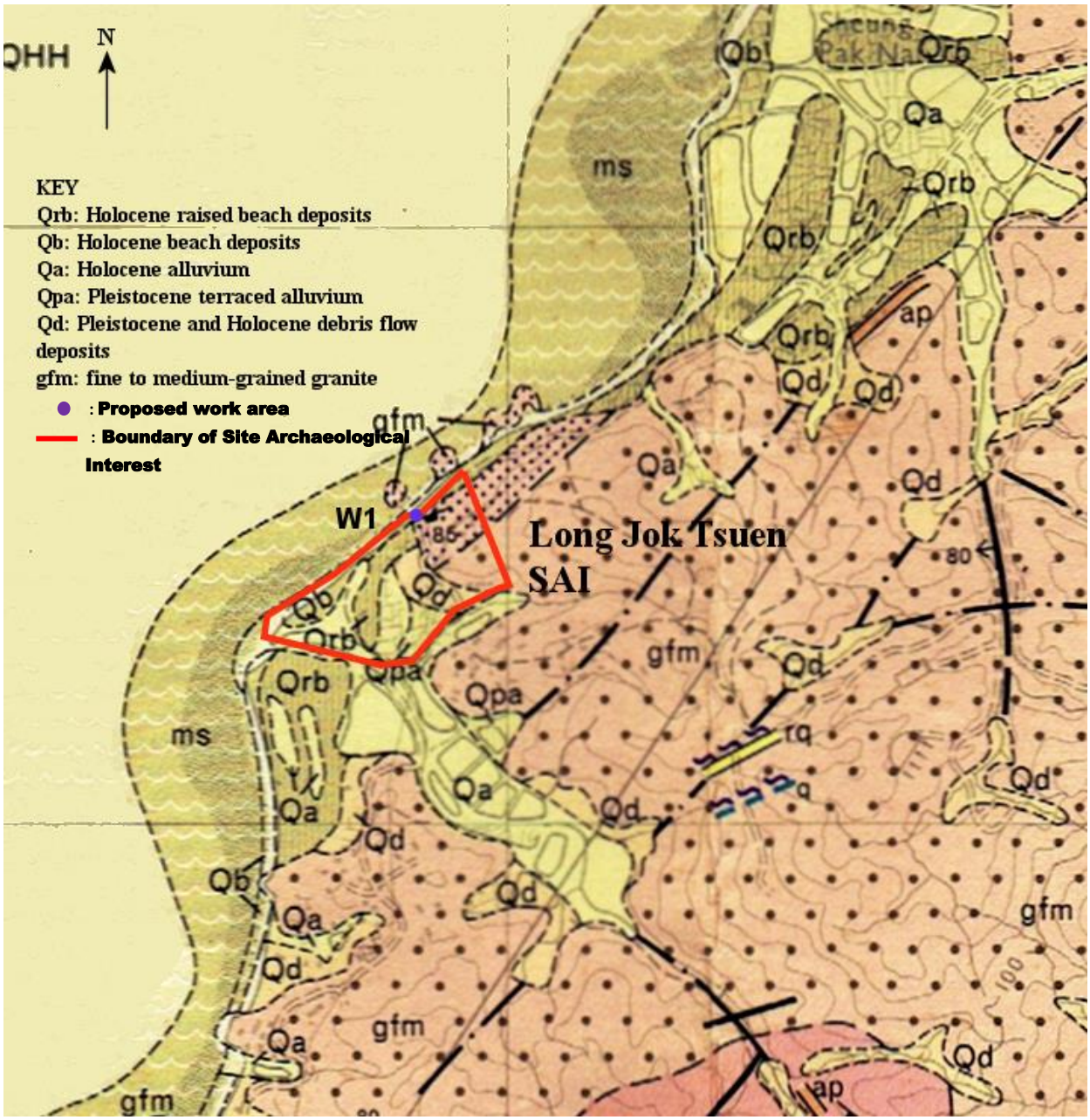



**Figure 1** Geological Map showing Long Jok Tsuen Site of Archaeological Interest and proposed works location W1.

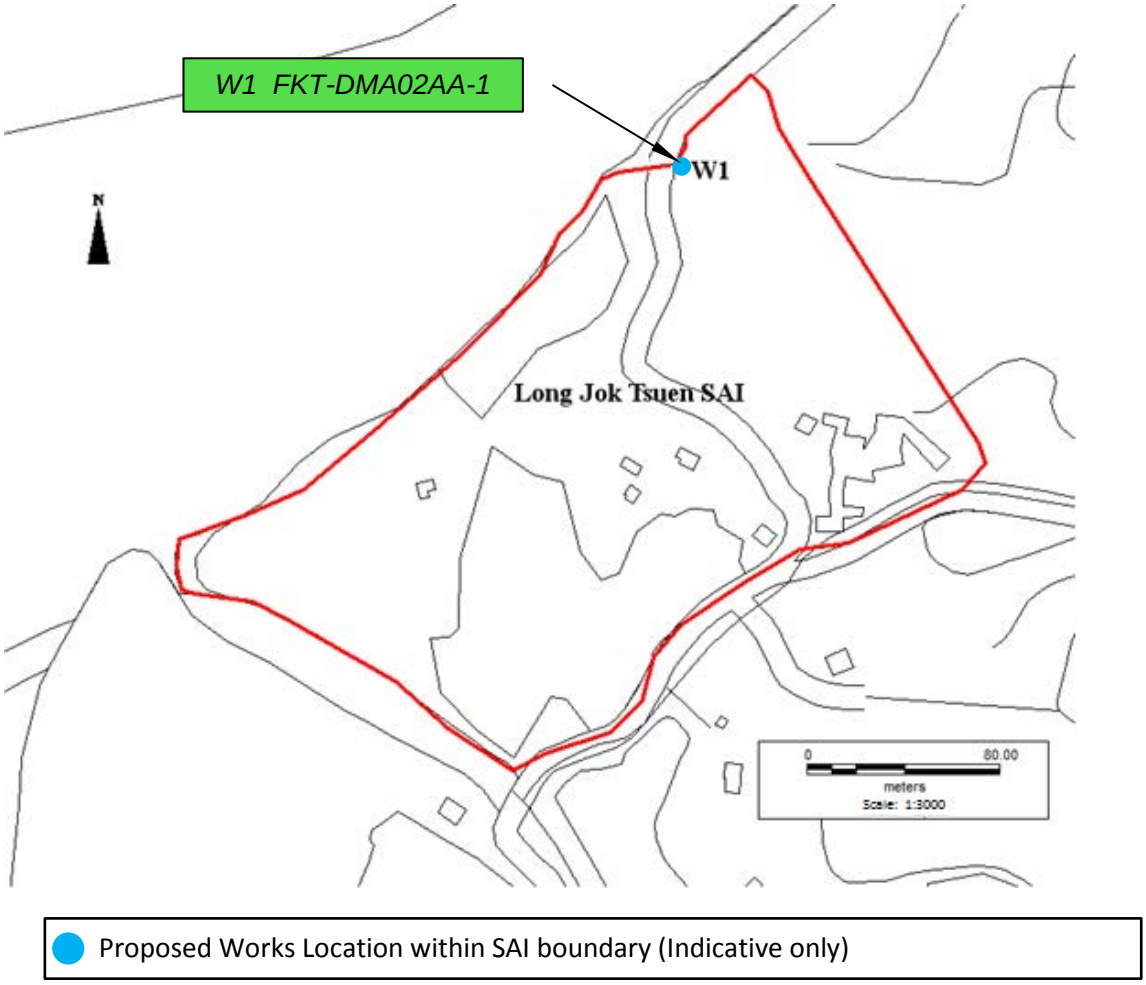



**Figure 2** Long Jok Tsuen Site of Archaeological Interest (AM98-0916) and works location W1 inside the SAI boundary.

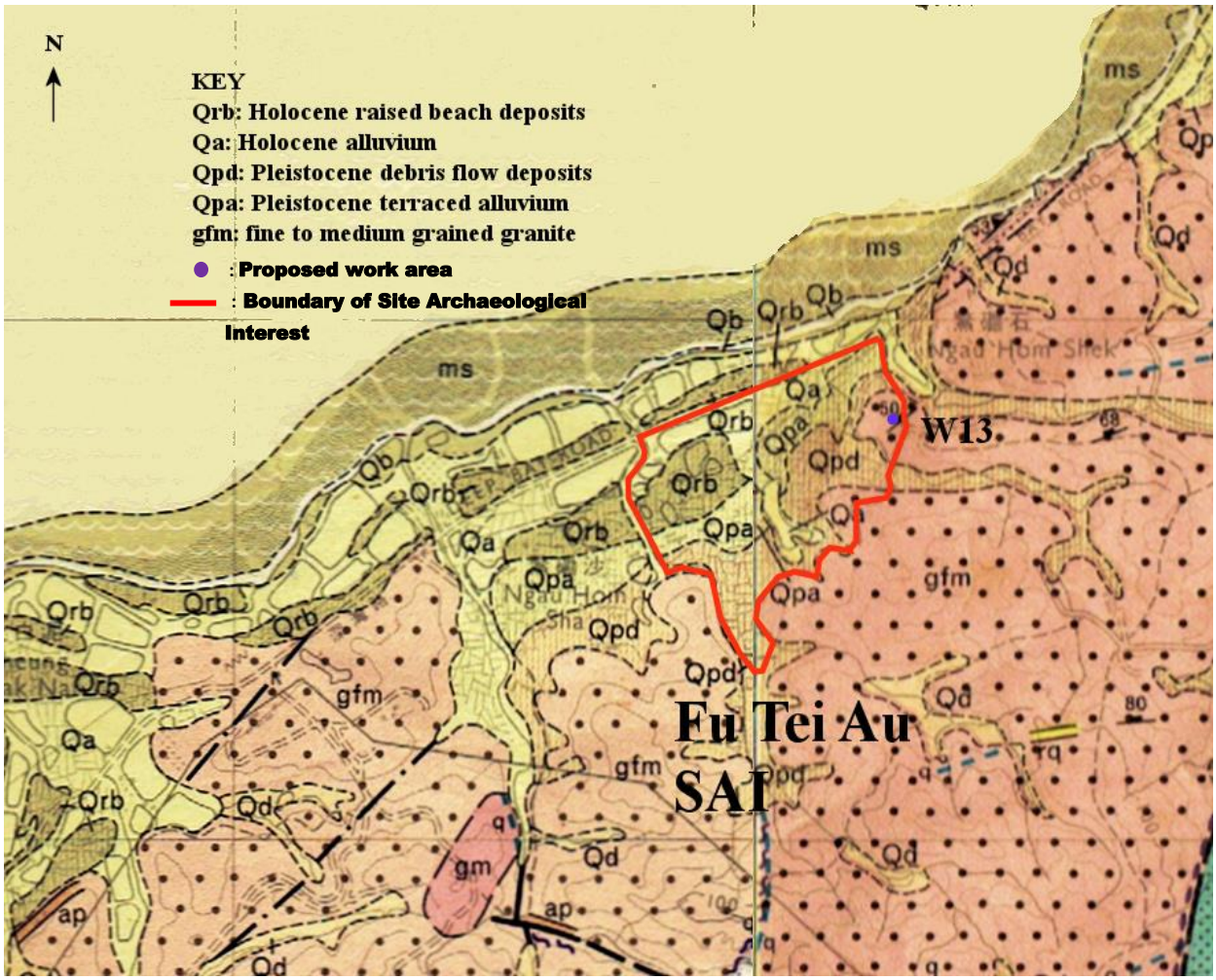



**Figure 3** Geological Map showing Fu Tei Au Site of Archaeological Interest and proposed works location W13.

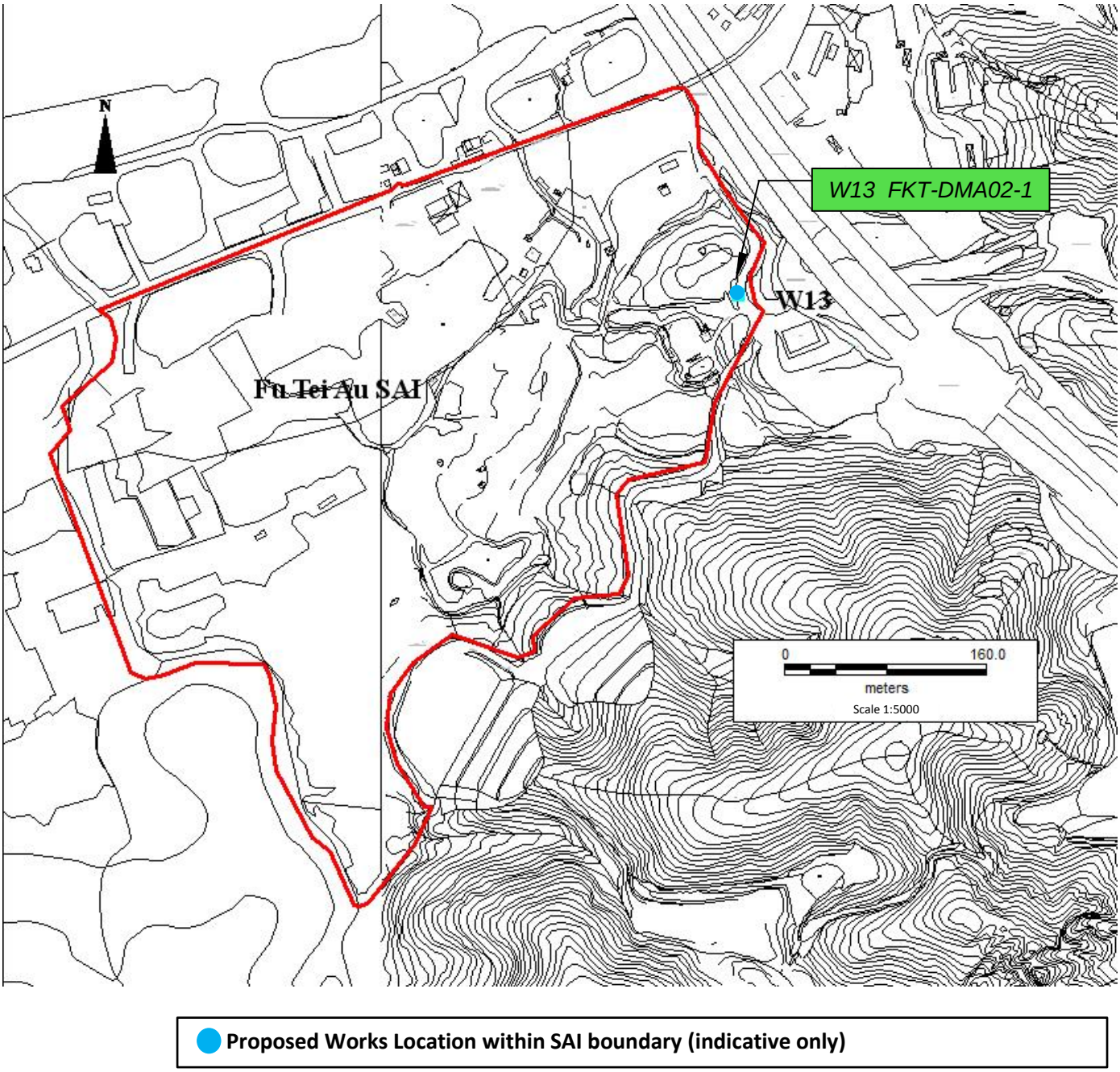



**Figure 4** Fu Tei Au Site of Archaeological Interest (AM98-0910) and works location W13 inside the SAI boundary.

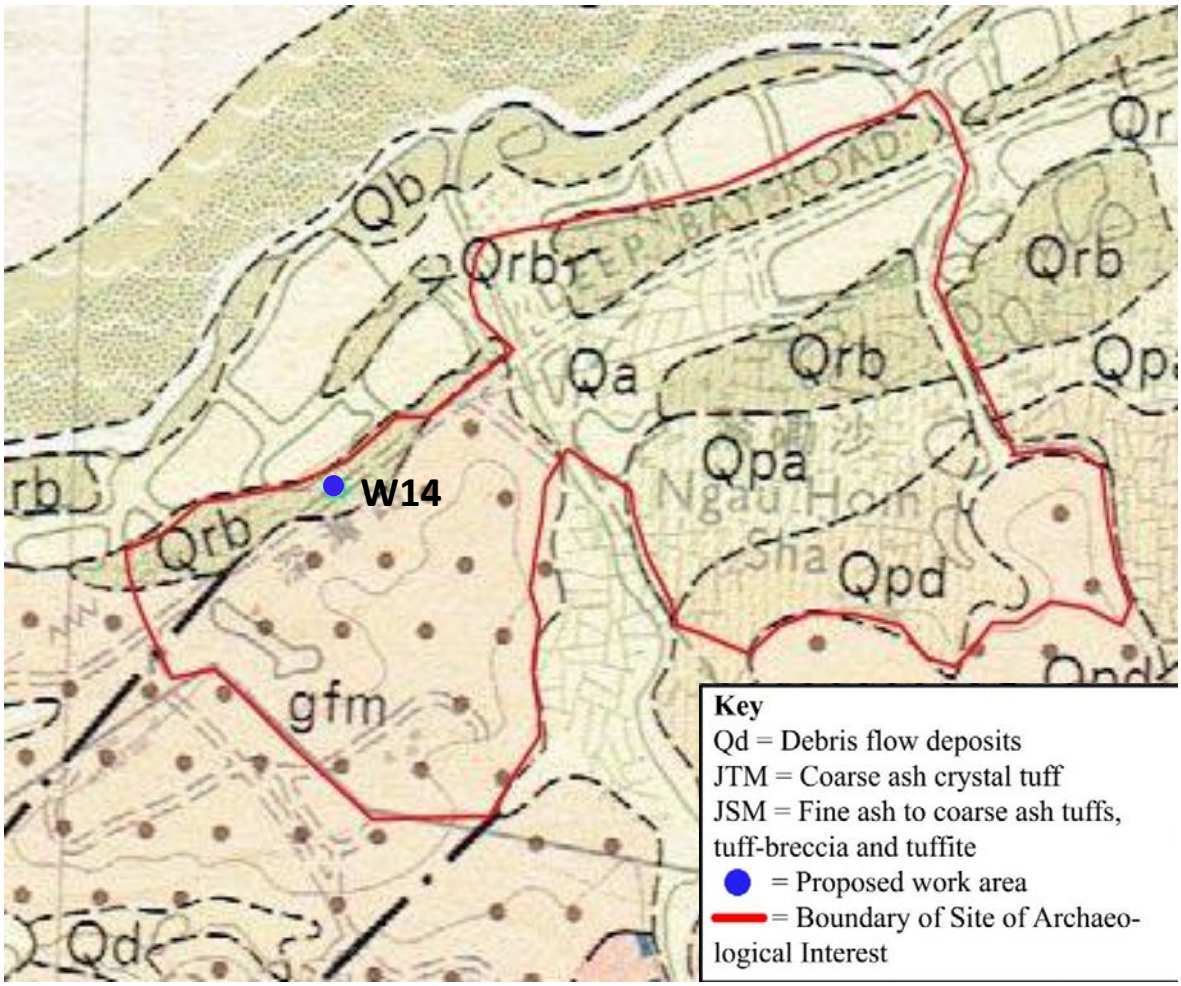



**Figure 5** Geological Map showing Ngau Hom Sha Site of Archaeological Interest and proposed works location W14.

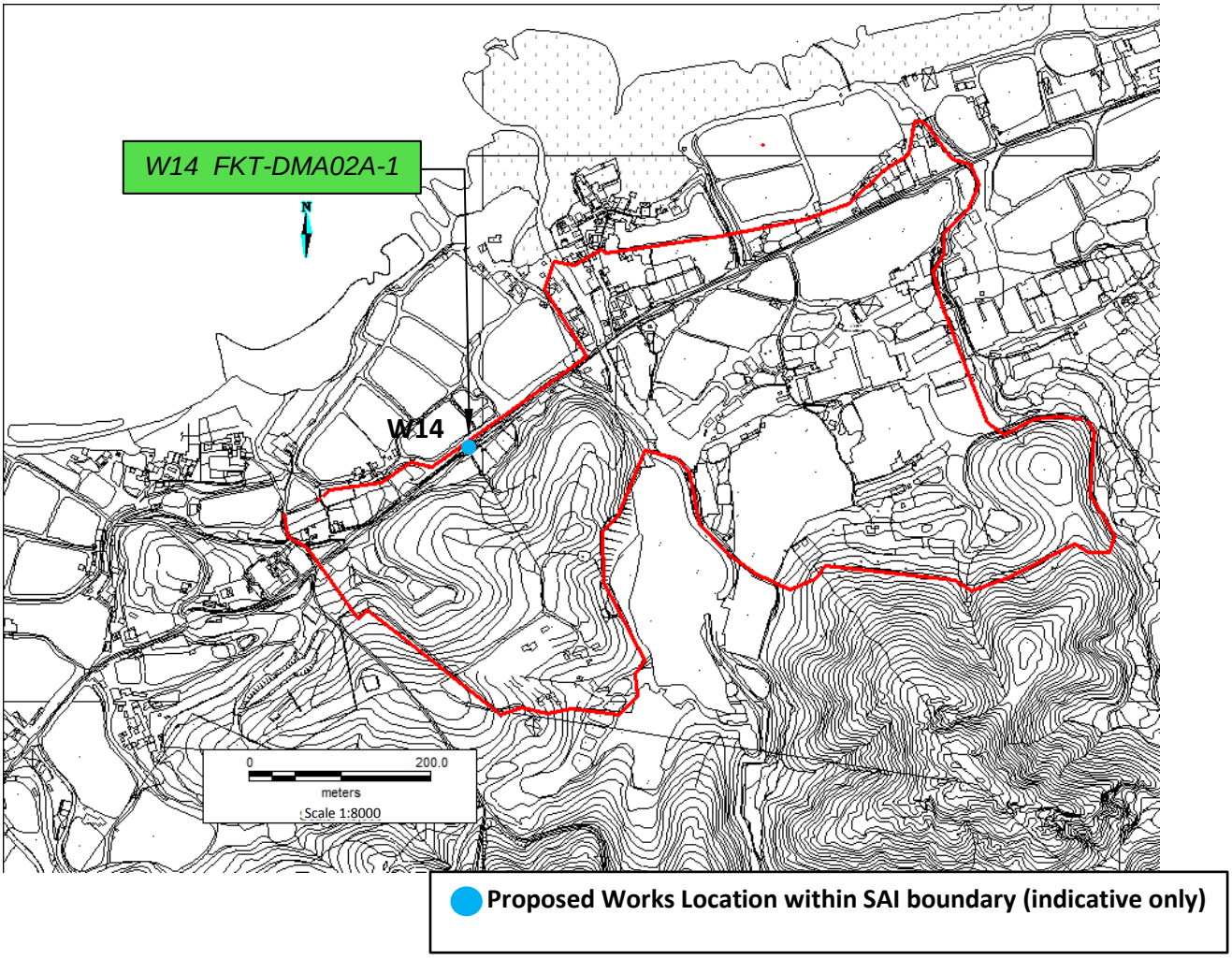
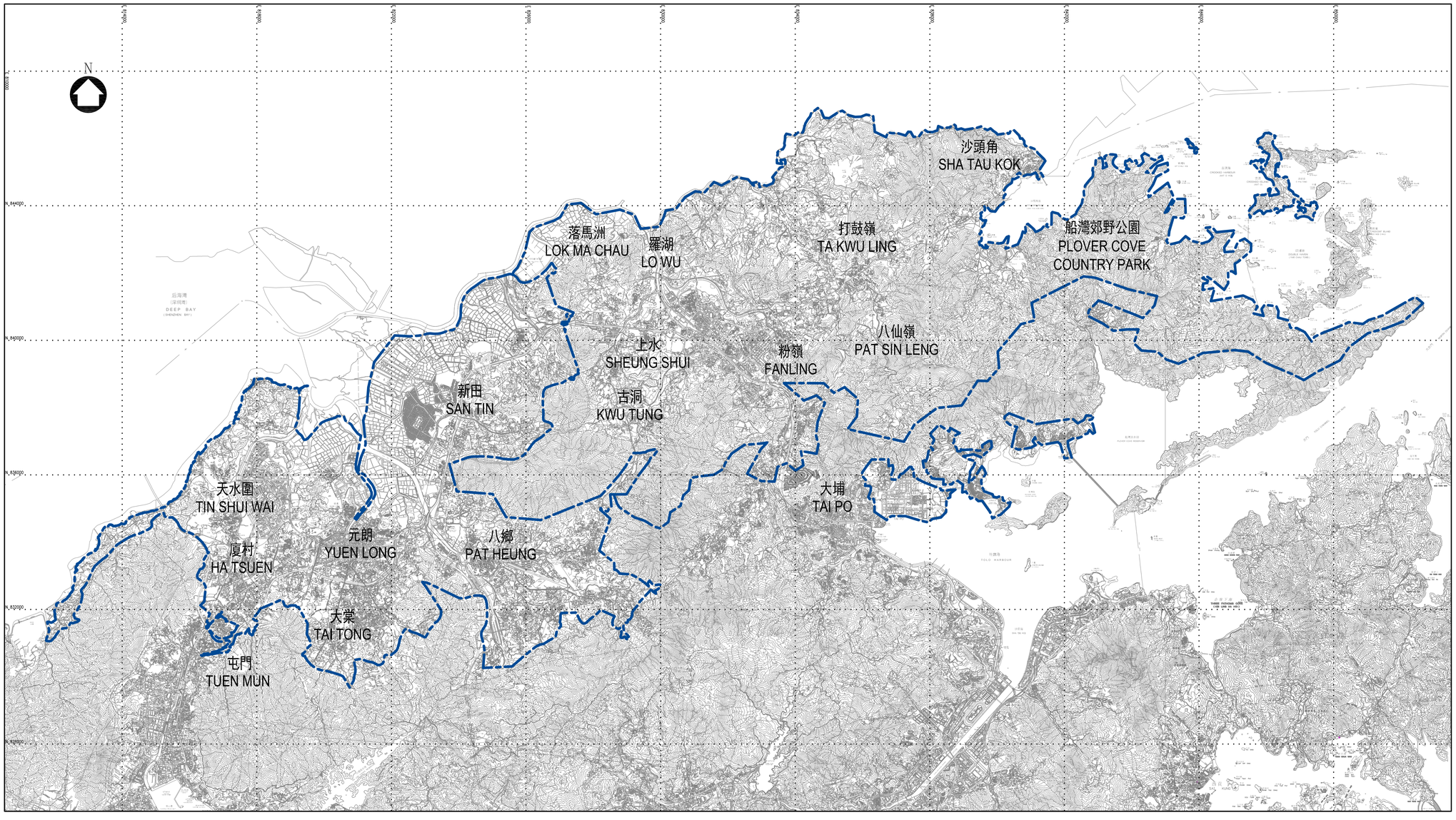



**Figure 6** Ngau Hom Sha Site of Archaeological Interest (AM04-1983) and works location W14 inside the SAI boundary.




LEGEND:

STUDY BOUNDARY

CLIENT

水務署
Water Supplies Department

PROJECT

CE38/2016(WS)
Implementation of Water Intelligent Network (WIN),
Remaining District Metering Areas and Pressure Management Areas
in Yuen Long and Sheung Shui & Fanling Major Supply Zones -
Investigation, Design and Construction

TITLE

SCOPE OF SHEUNG SHUI & FANLING MSaZ
AND YUEN LONG MSZ

| DESIGNED | | CHECKED | |
|---|---|---|---|
| DRAWN | | APPROVED | |

| SCALE AT A1 | STATUS | REV |
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Drawing No.

91475/FIGURE A



PRINTED ON: 2018-05-10
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# Appendix A

# Standard drawings for DMA, PMA and CPP

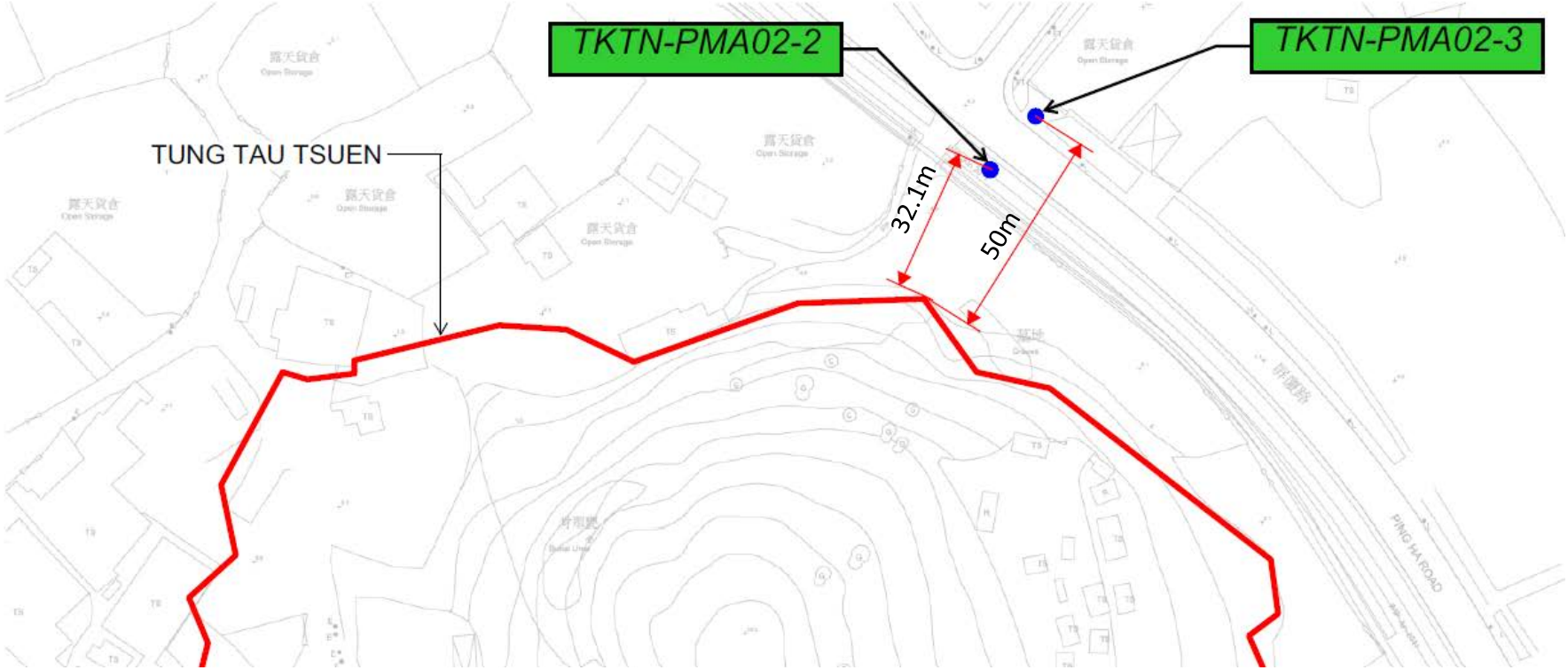
**Agreement No. CE 38/2016 (WS)**

**Implementation of Water Intelligent Network (WIN), Remaining District Metering Areas and Pressure Management Areas in Yuen Long and Sheung Shui & Fanling Major Supply Zones - Investigation, Design and Construction**

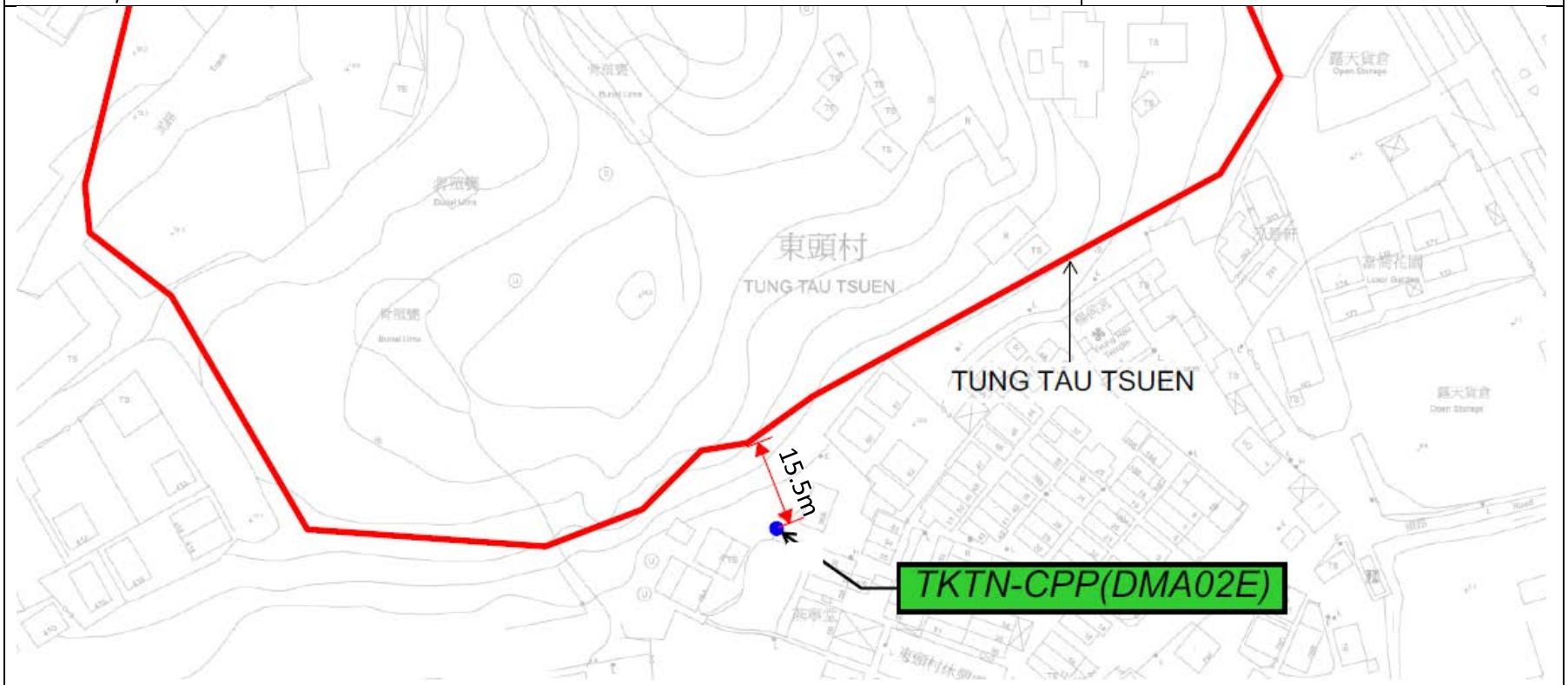
# Heritage Impact Assessment Report

## Appendix A –Sites of Archaeological Interest within 50m of Proposed Works Areas

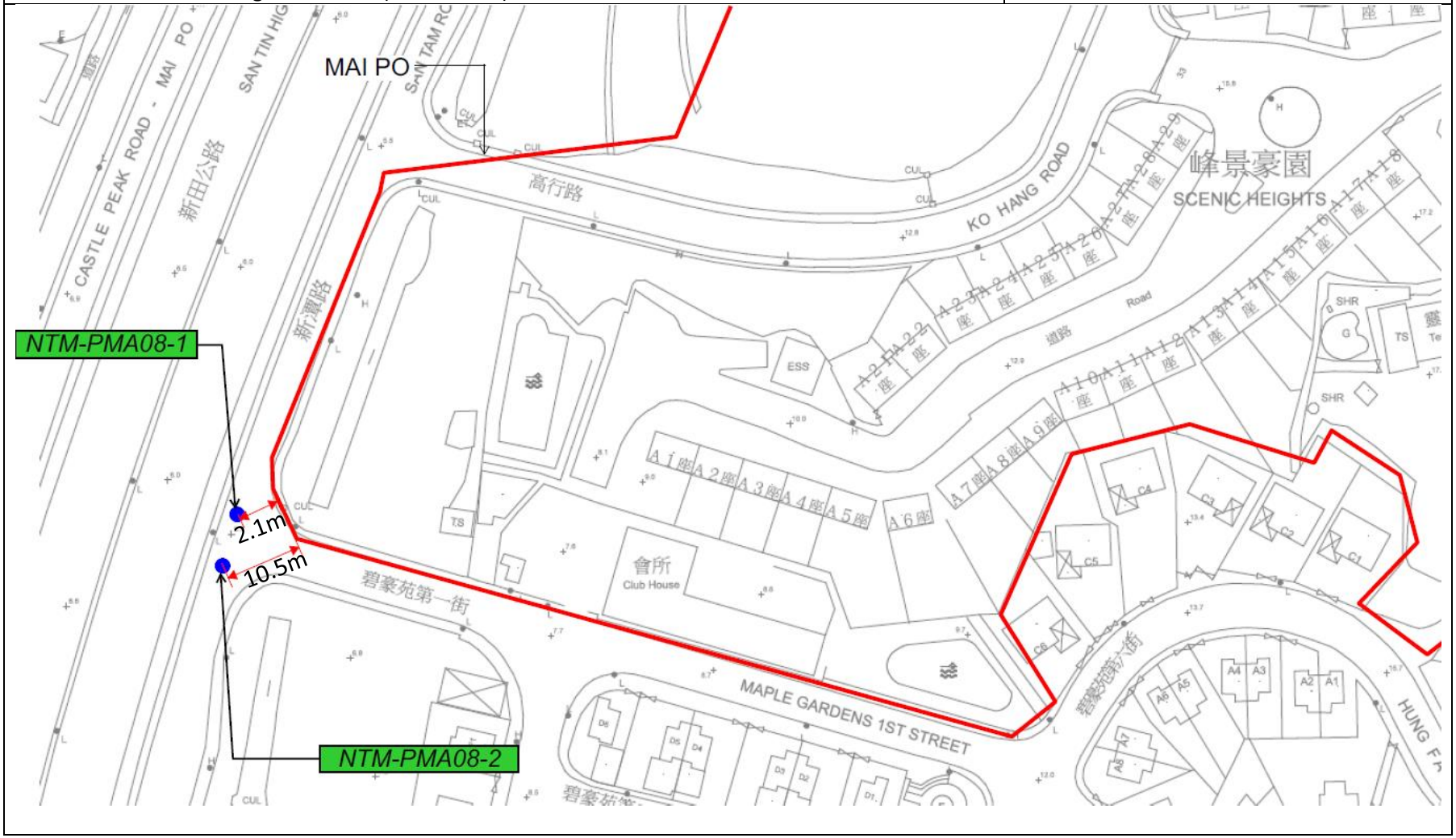
| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| Tung Tau Tsuen Site of Archaeological Interest (AM90-0426) | |
| *Northern part* | ***32.1m and 50m*** |



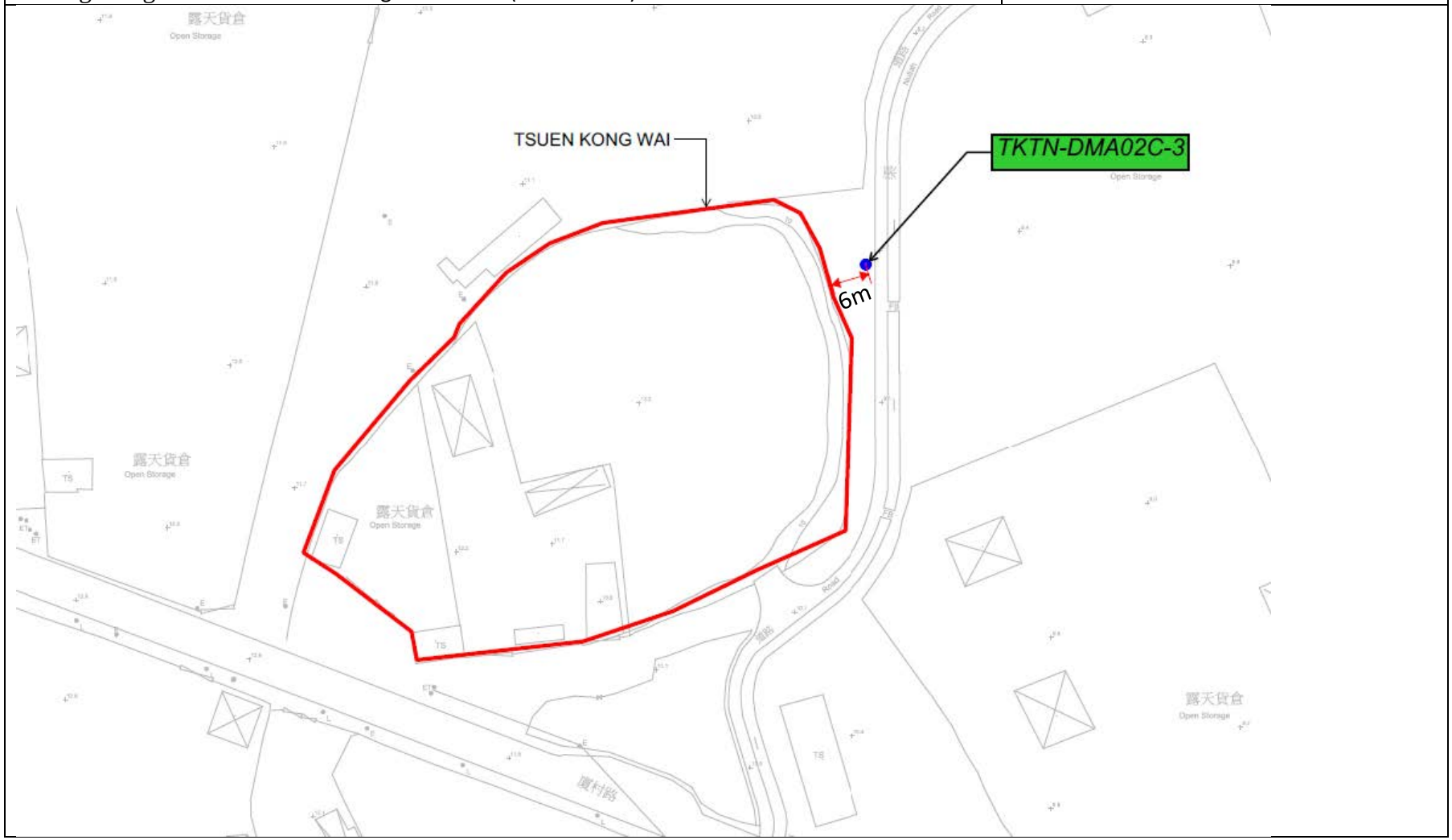
| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| *Southern part* | ***15.5m*** |



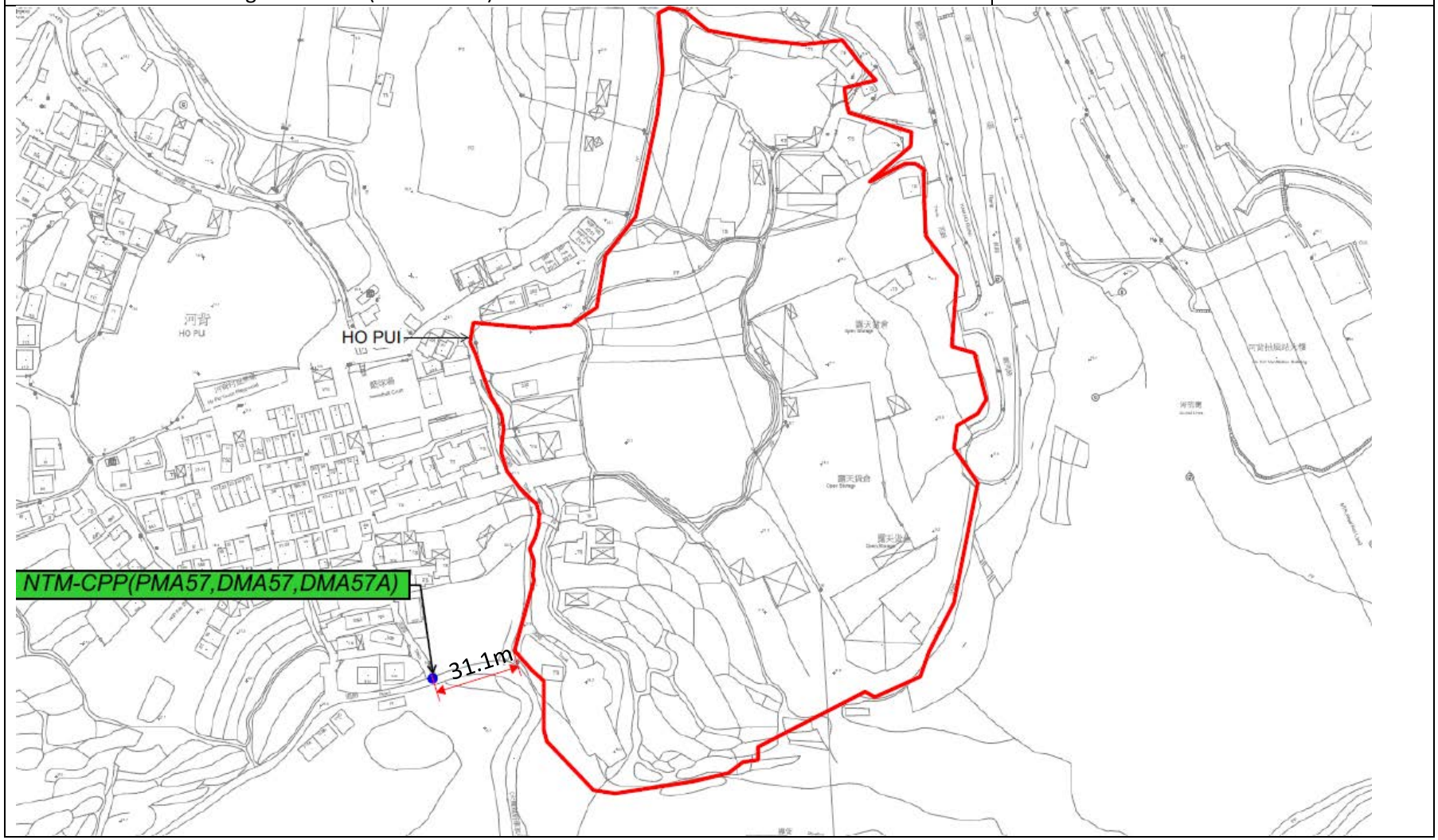
| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| Mai Po Site of Archaeological Interest (AM96-0688) | ***2.1m and 10.5m*** |



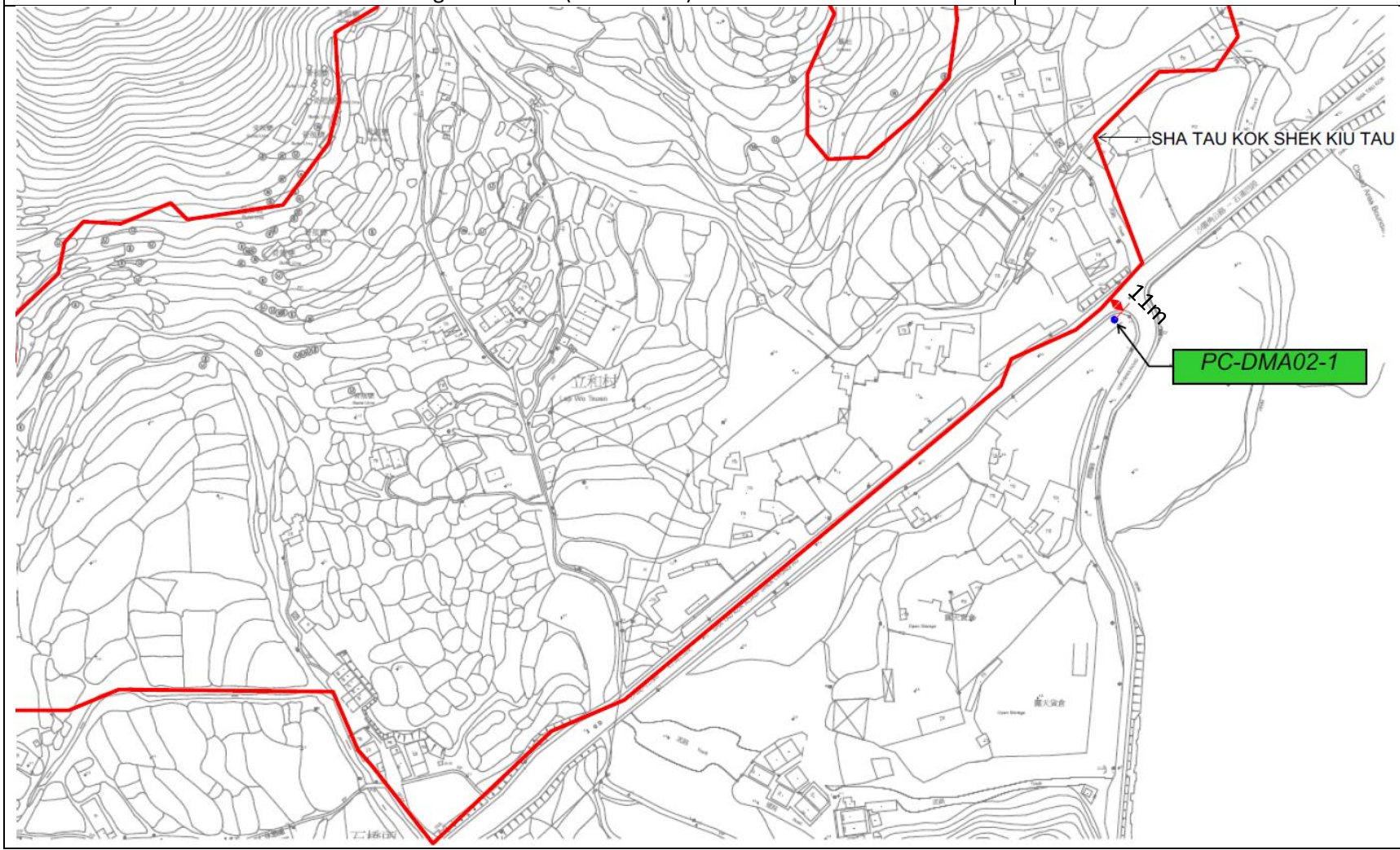
| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| Tseung Kong Wai Site of Archaeological Interest (AM01-1629) | ***6m*** |



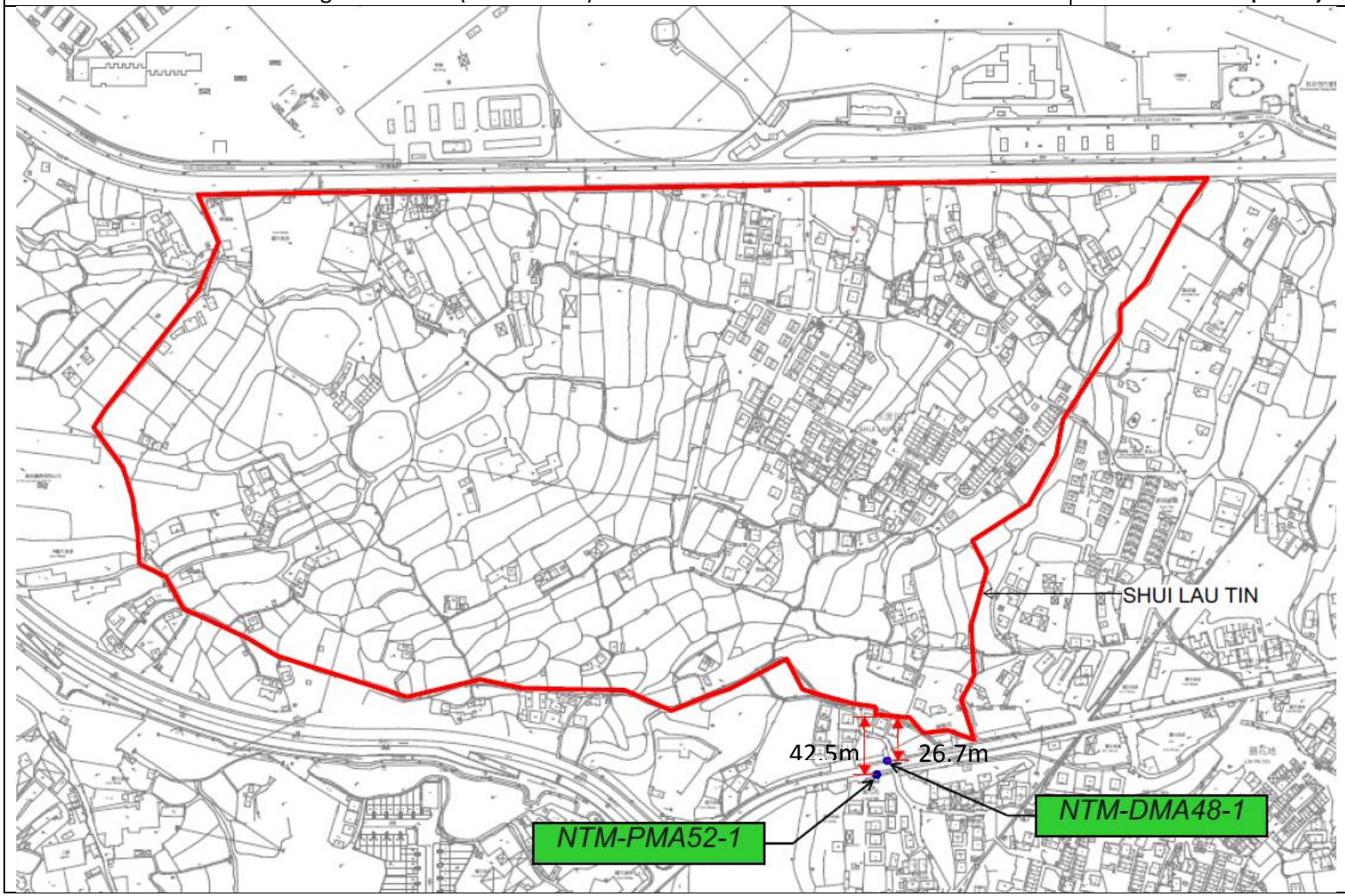
| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| Ho Pui Site of Archaeological Interest(AM99-1421) | ***31.1m*** |



| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| Sha Tau Kok Shek Kiu Tau Site of Archaeological Interest (AM00-1618) | ***11m*** |

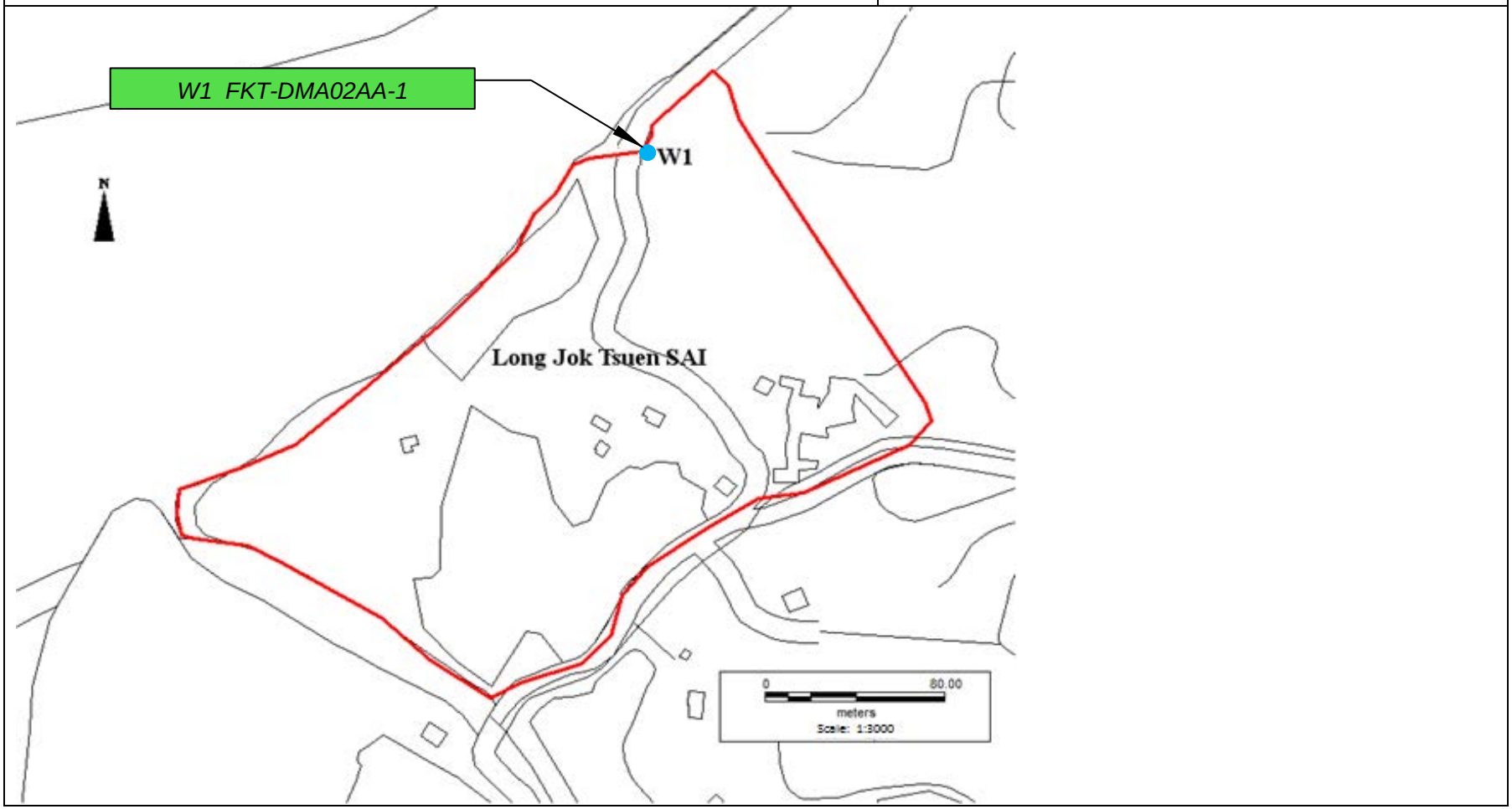


| ***Sites of Archaeological Interest within 50m of Proposed Works Areas*** | ***Distance from works*** |
|---|---|
| Shui Lau Tin Site of Archaeological Interest (AM00-1609) | ***26.7 and 42.5m (south)*** |

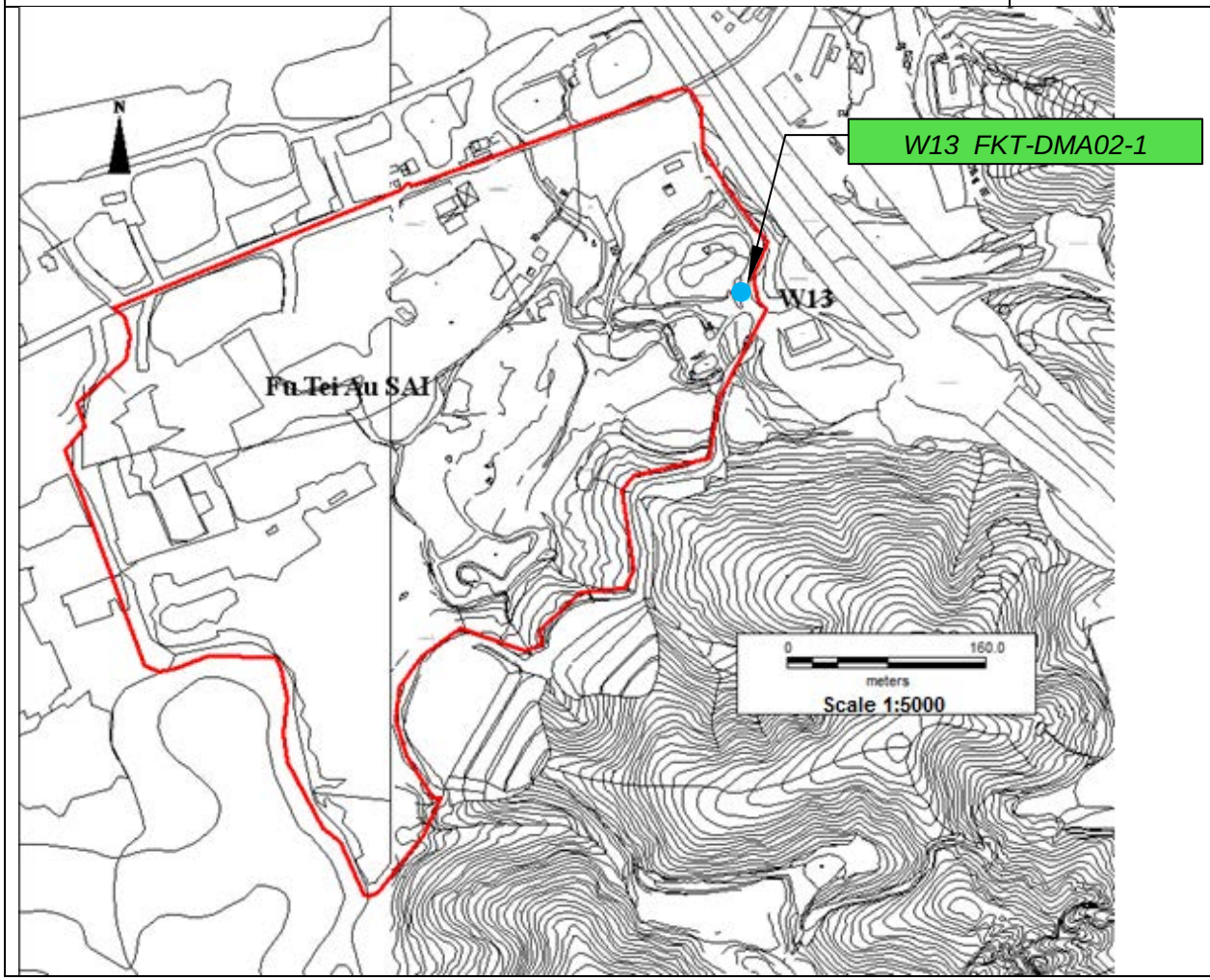


## Appendix A –Proposed Works identified within Sites of Archaeological Interest

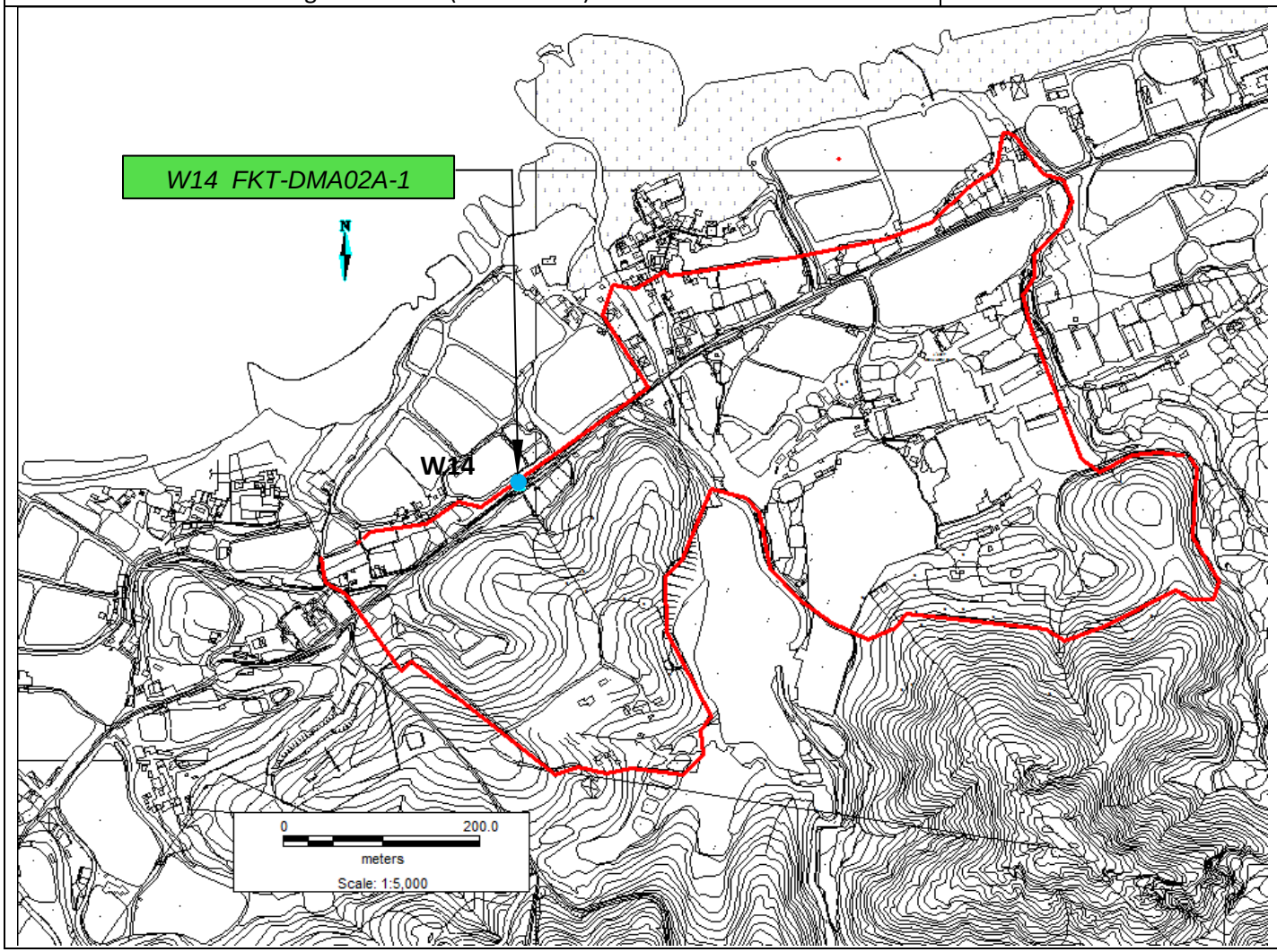
| ***Proposed Works identified within Sites of Archaeological Interest*** | ***Distance from works*** |
|---|---|
| Long Jok Tsuen Site of Archaeological Interest (AM98-0916) | ***inside*** |



| ***Proposed Works identified within Sites of Archaeological Interest*** | ***Distance from works*** |
|---|---|
| Ngau Hom Sha **S**ite of Archaeological Interest (AM04-1983) | ***inside*** |

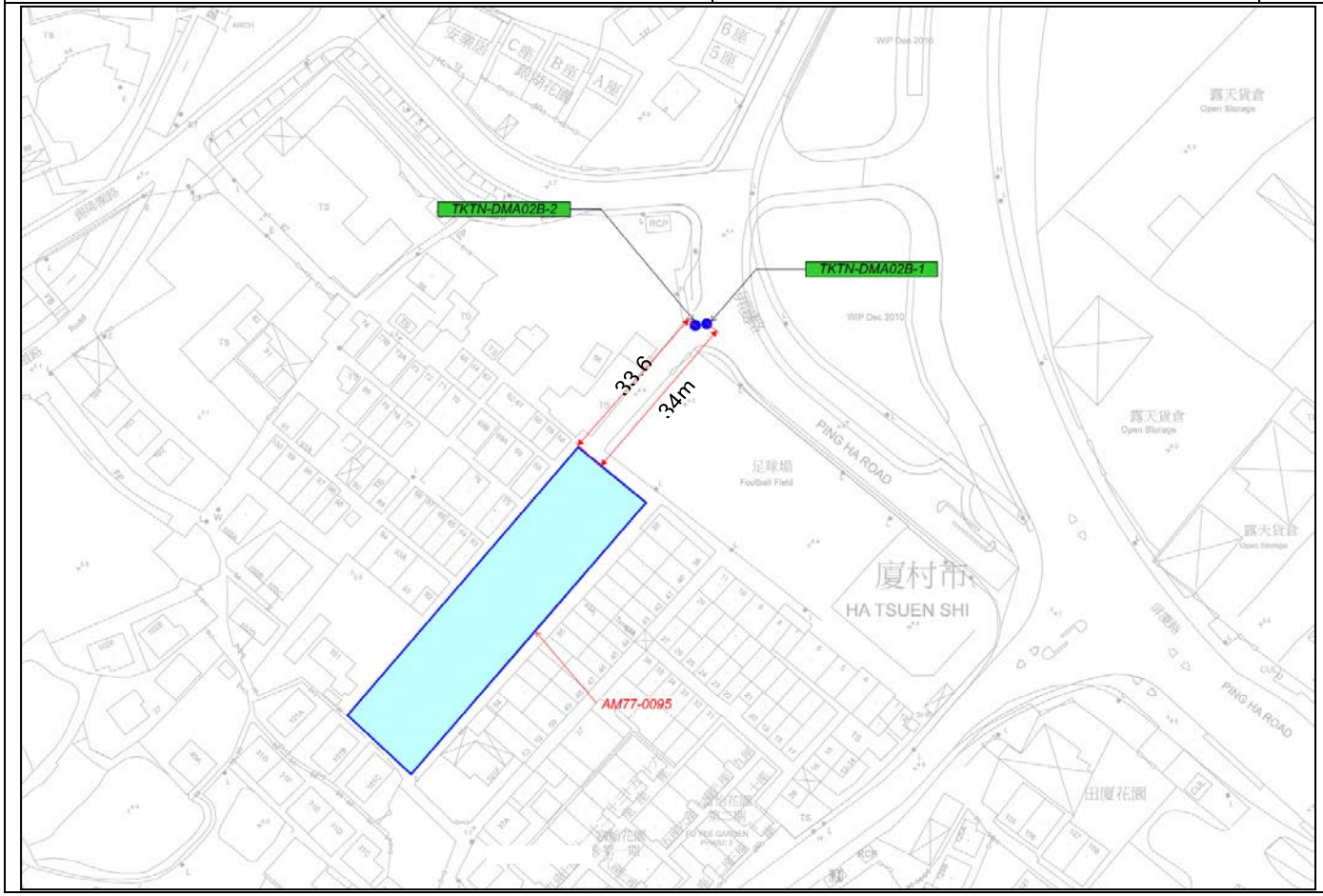


| ***Proposed Works identified within Sites of Archaeological Interest*** | ***Distance from works*** |
|---|---|
| Fu Tei Au Site of Archaeological Interest (AM98-0910) | ***inside*** |

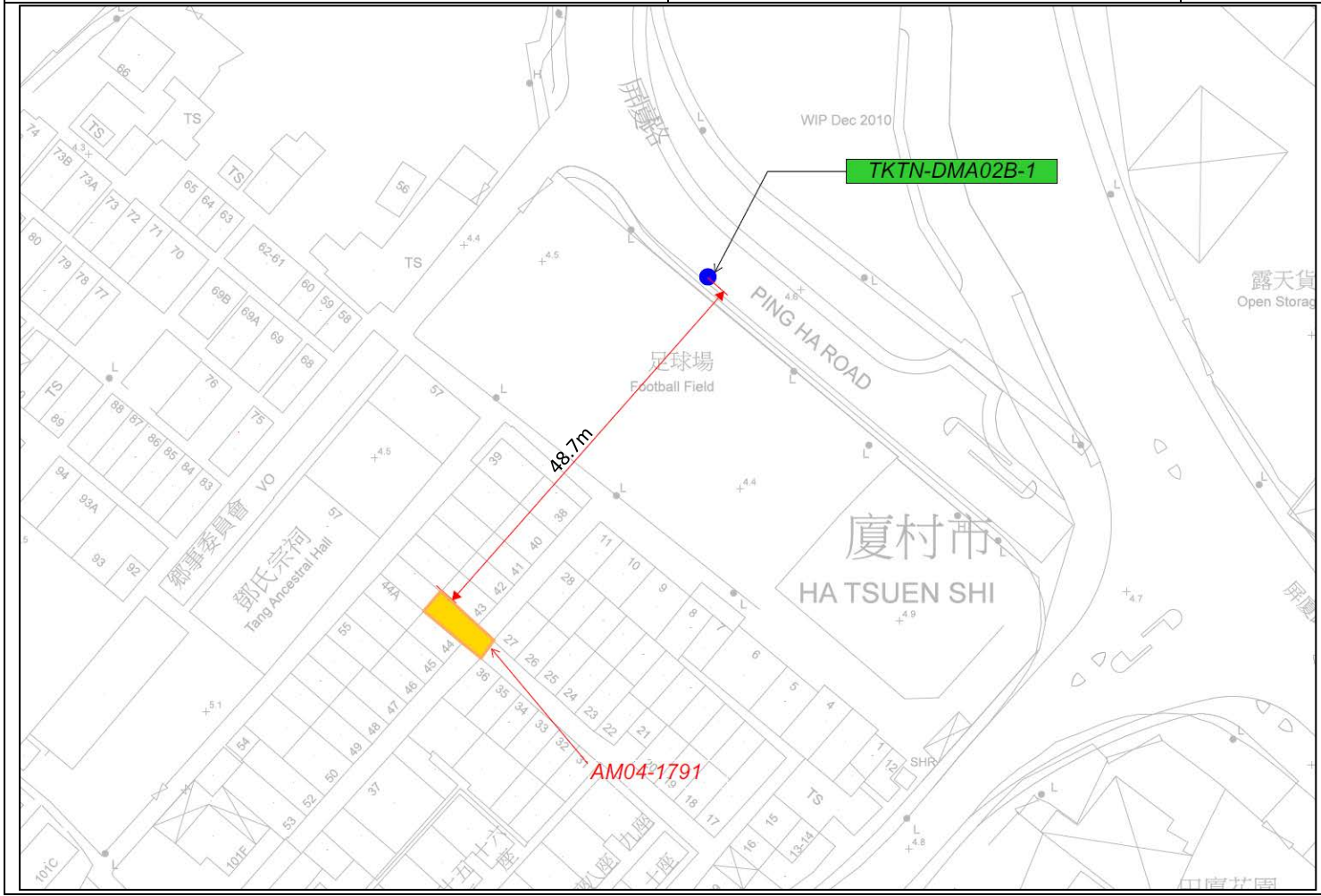


## Appendix A –Proposed works identified within 50m of Historical Buildings

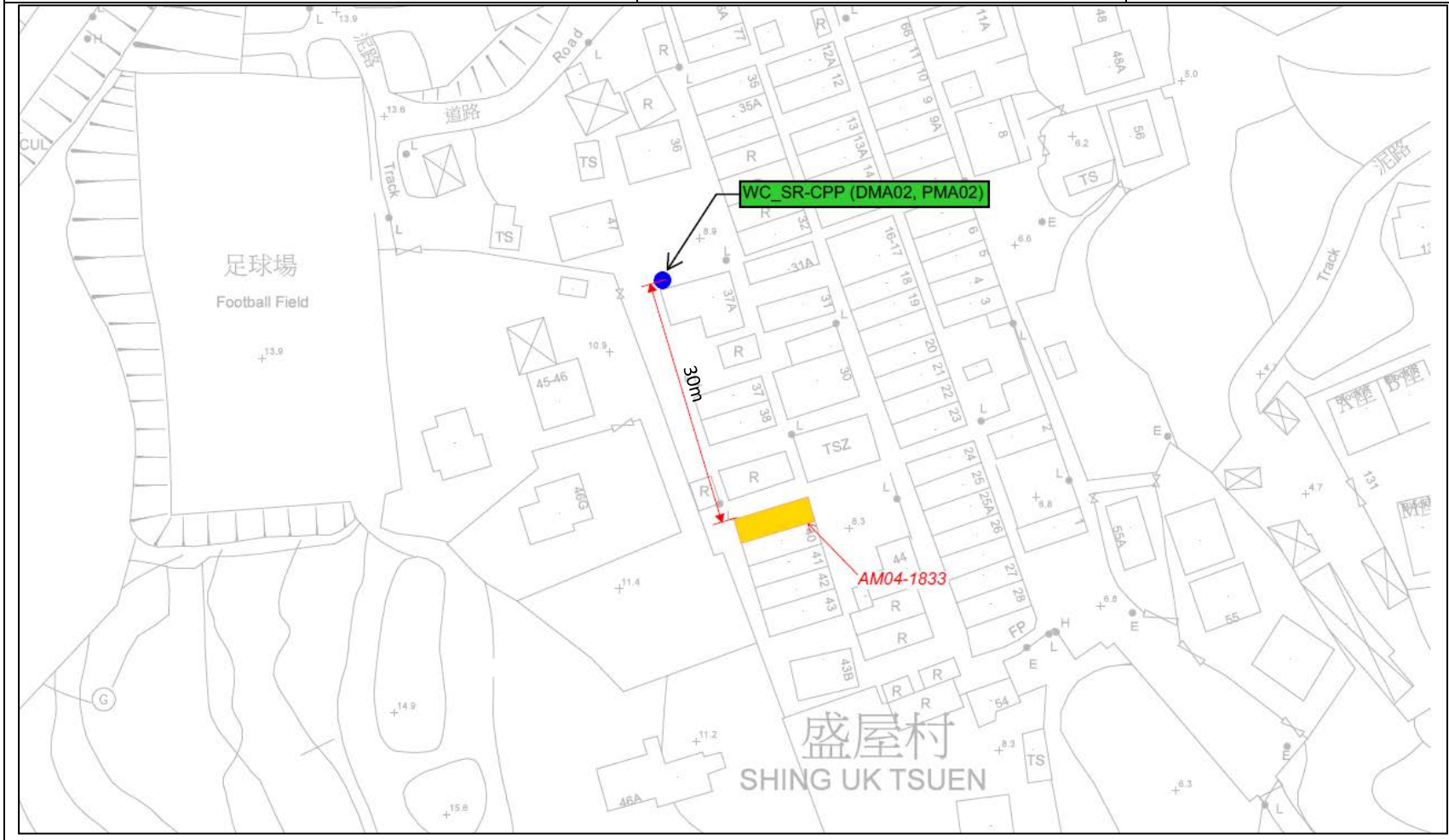
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Tang Ancestral Hall, Ha Tsuen, Yuen Long, New Territories (AM77-0095) | Declared Monument | ***33.1m and 33.6m*** |



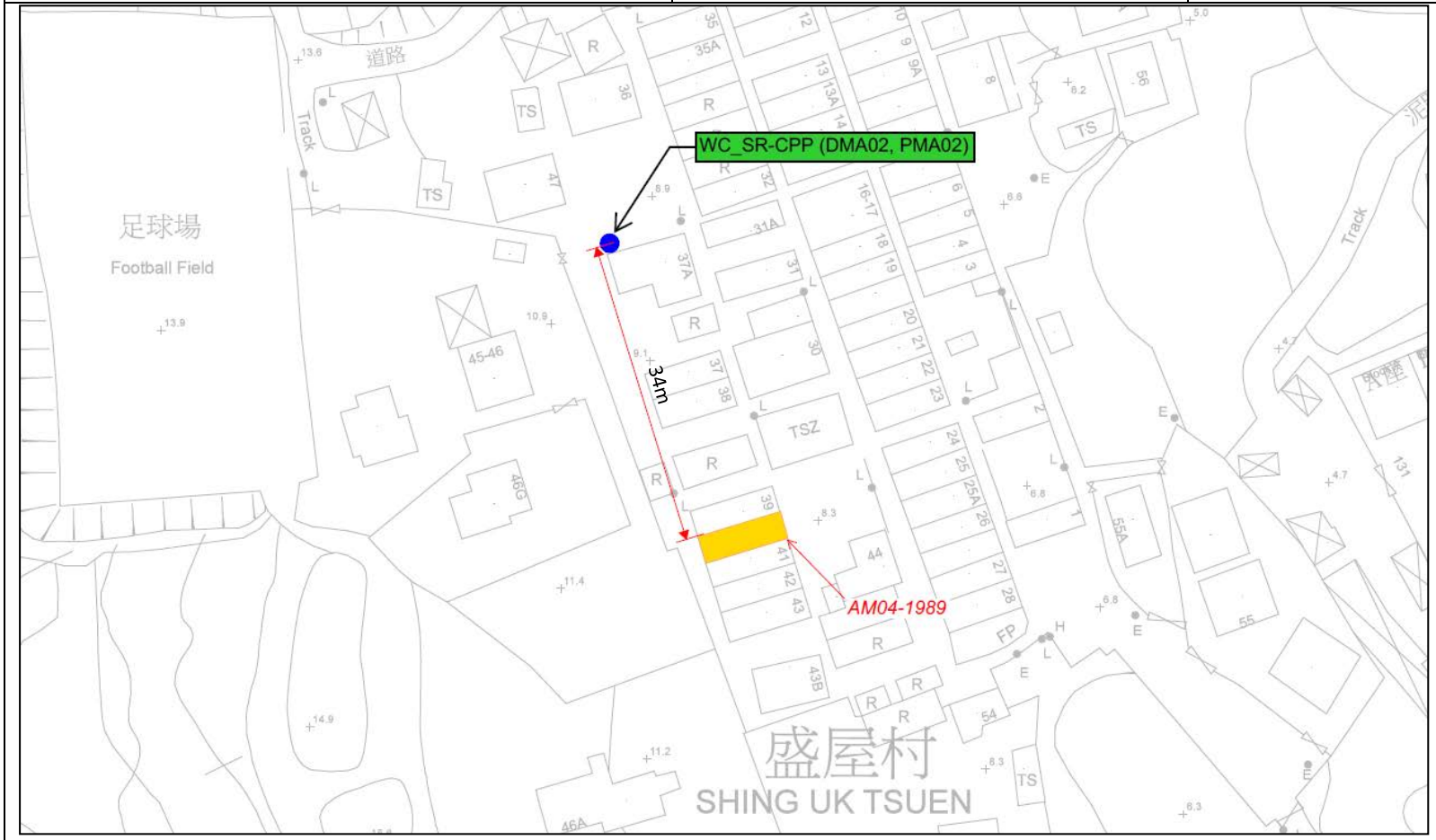
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Kwan Tai Temple, Ha Tsuen, Yuen Long, New Territories (AM04-1791) | Grade 2 | ***48.7m*** |



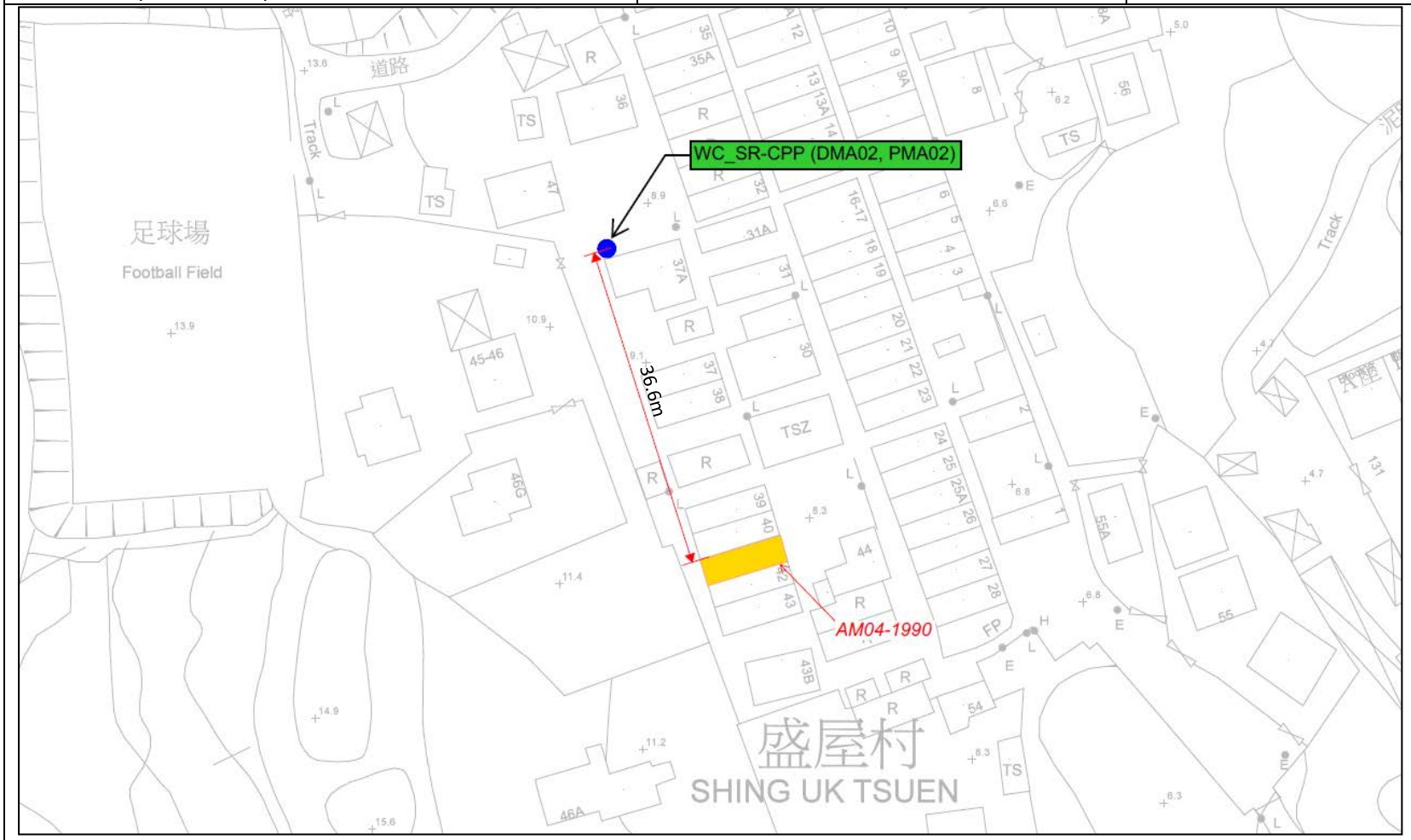
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 39 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories (AM04-1833) | Grade 3 | ***30m*** |



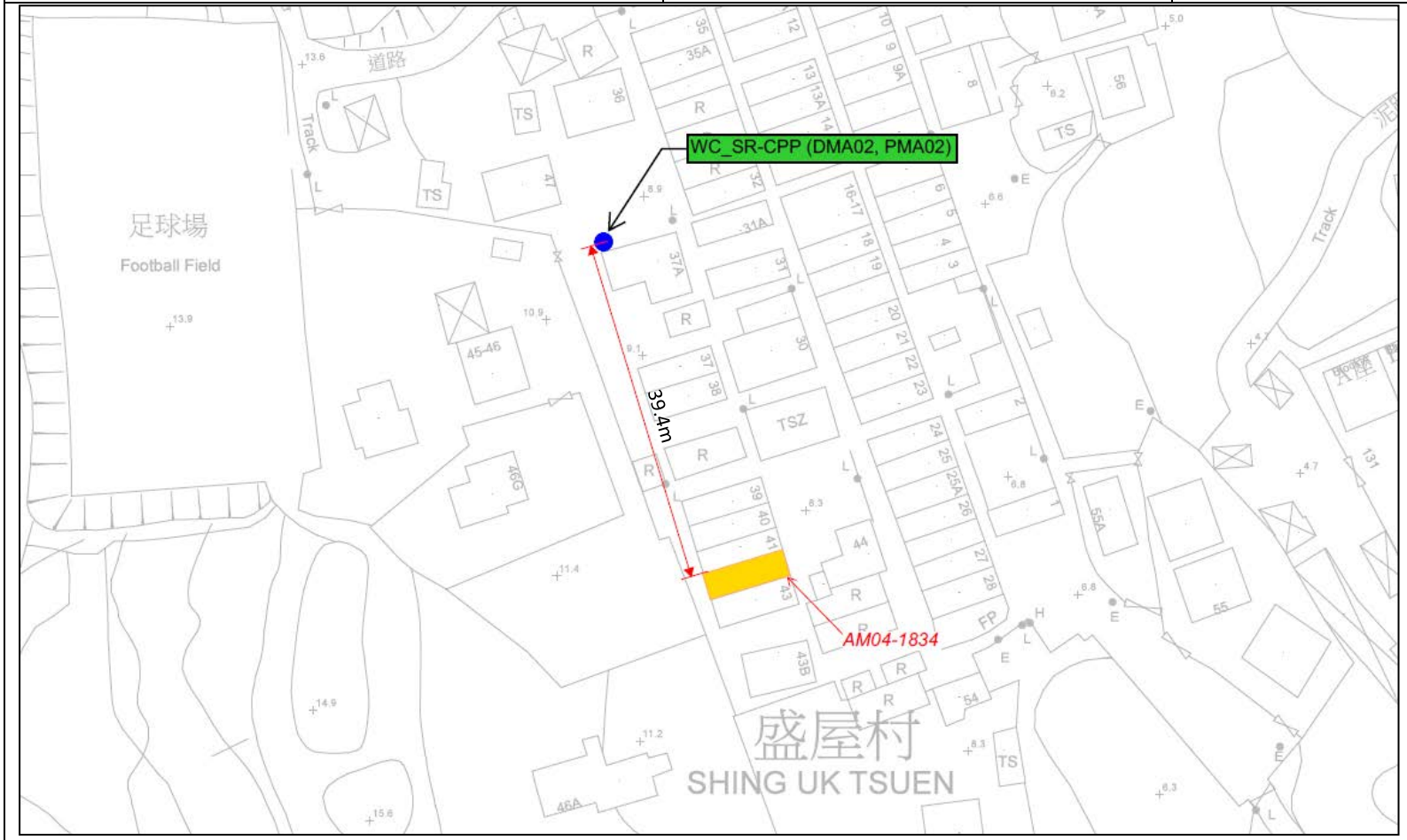
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 40 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories (AM04-1989) | Grade 3 | ***34m*** |



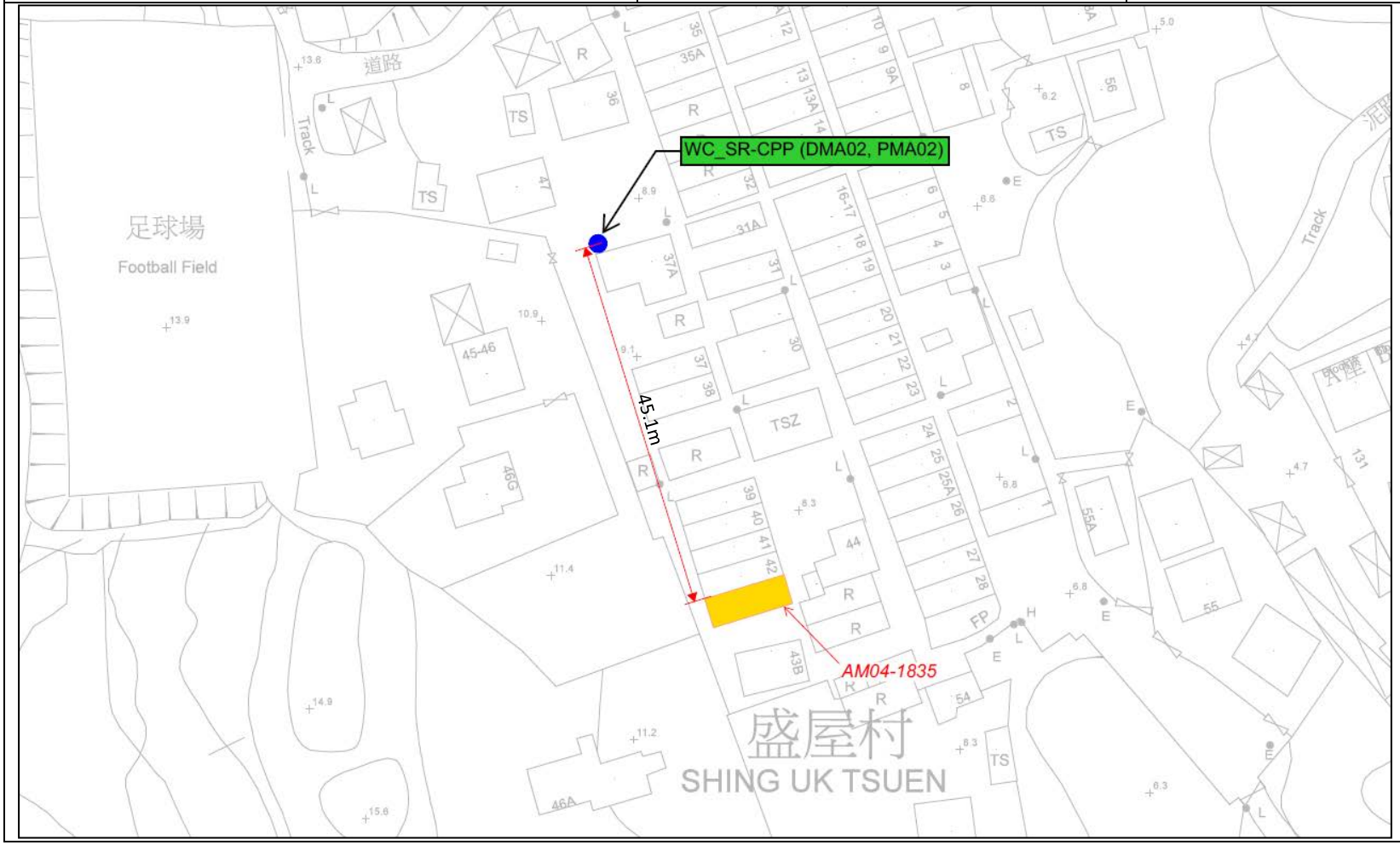
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 41 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories -(AM04-1990) | Grade 3 | ***36.6m*** |



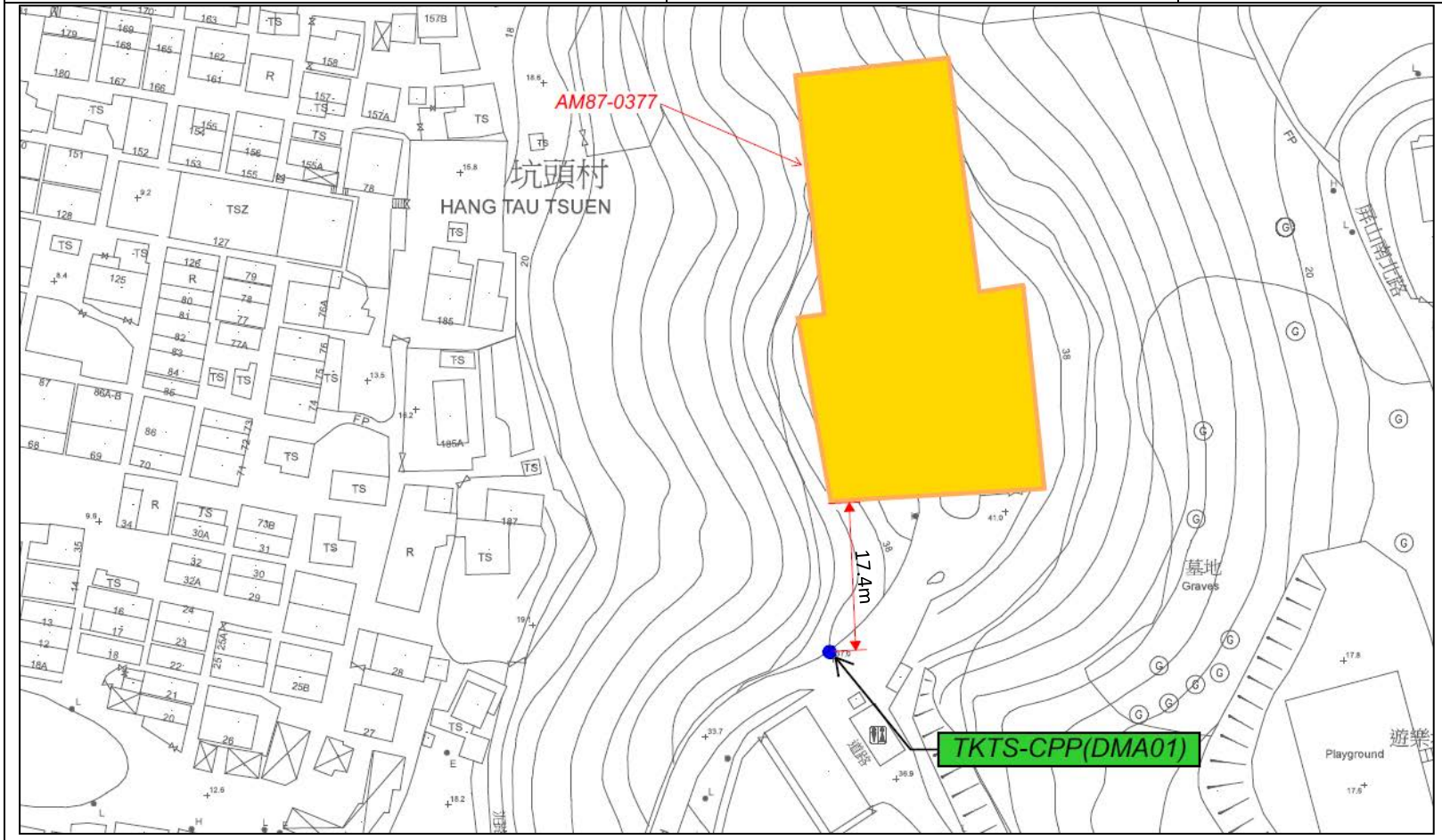
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 42 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories (AM04-1834) | Grade 3 | ***39.4m*** |



| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 43 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories (AM04-183) | Grade 3 | ***45.1m*** |

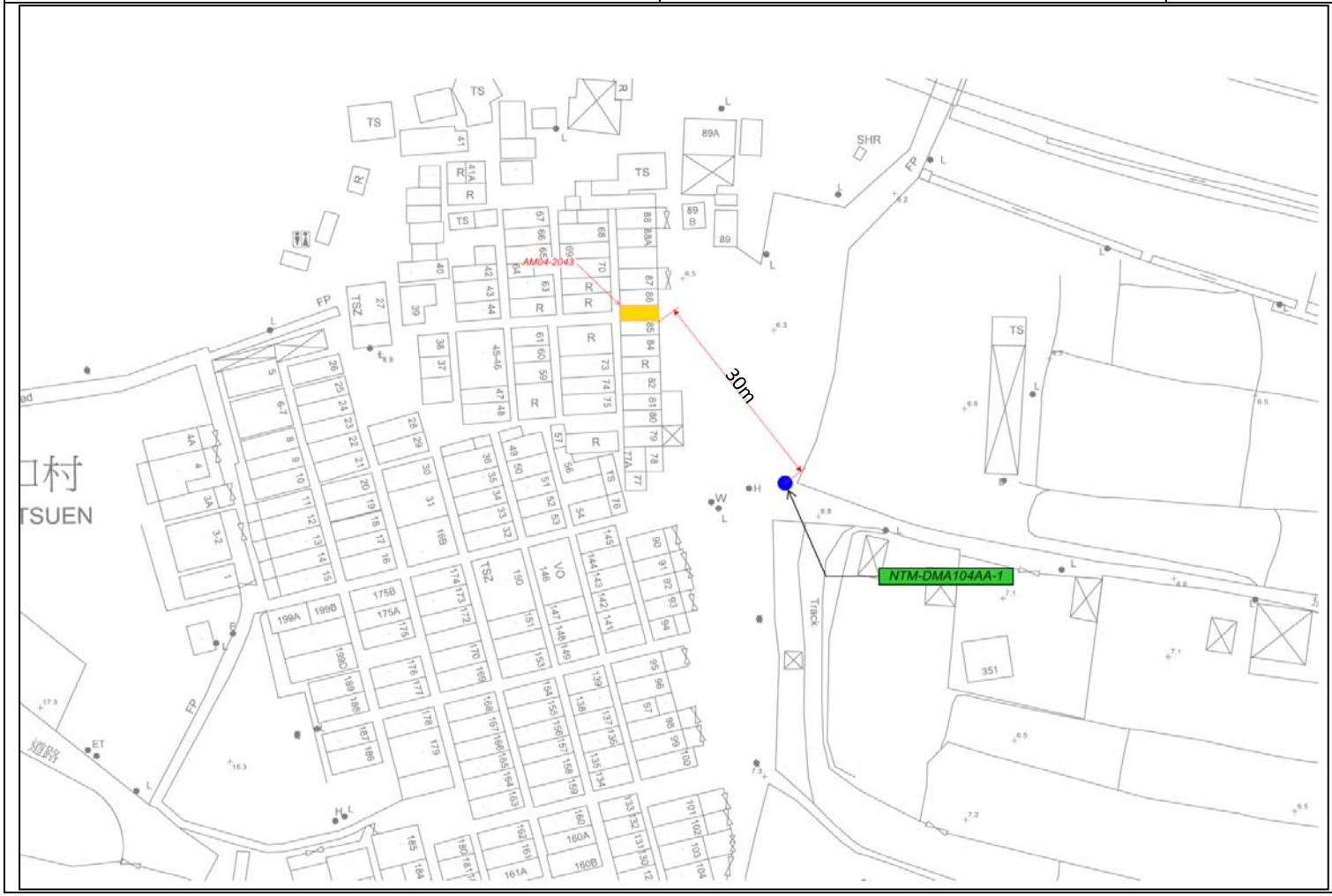


| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Old Ping Shan Police Station, Ping Shan, Yuen Long, New Territories (AM87-0377) | Grade 2 | ***17.4m*** |

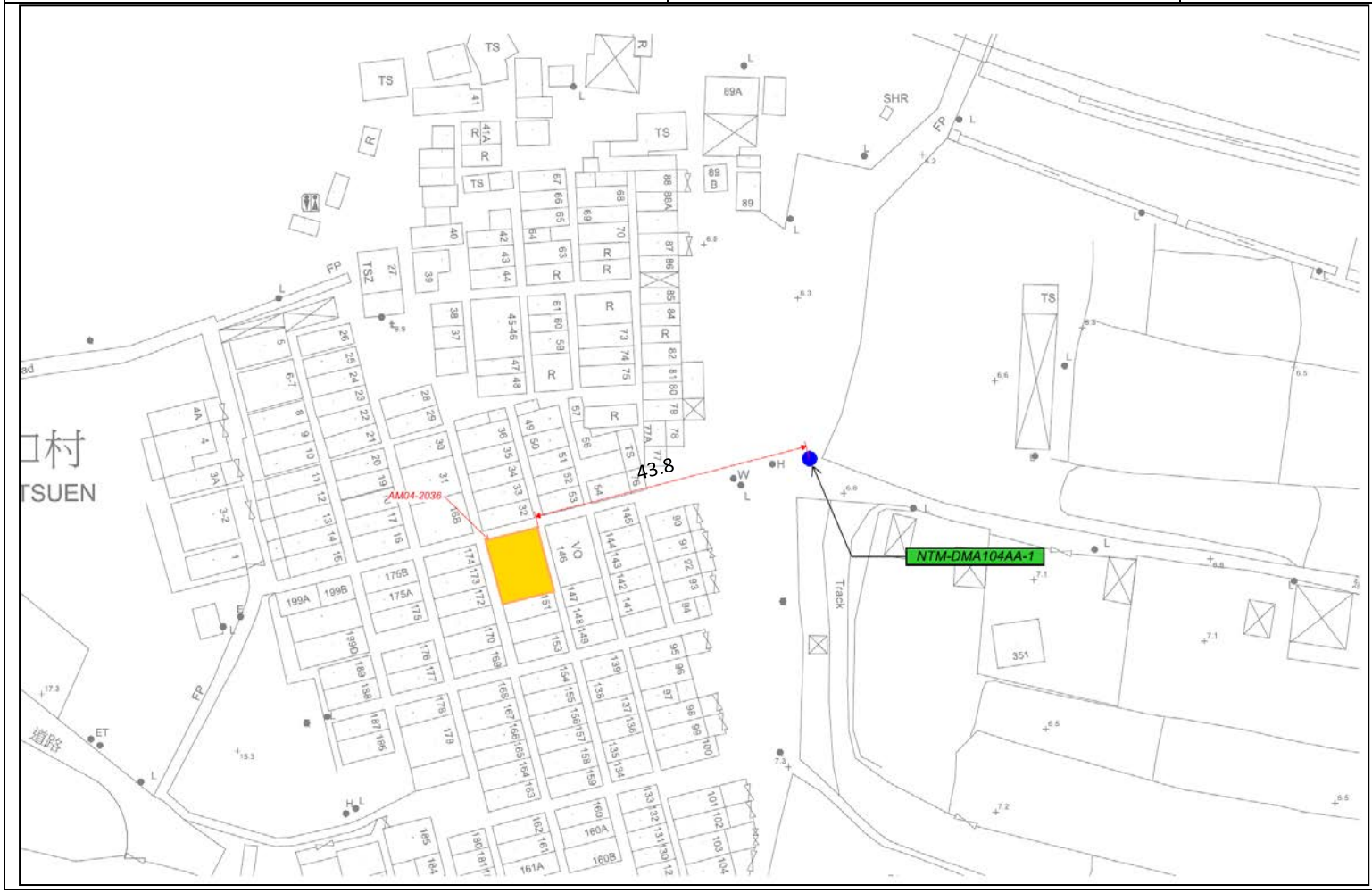


| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Yan Tun Kong Study Hall, No. 127 Hang Mei Tsuen, Ping Shan, Yuen Long, New Territories (AM01-1645) | Declared Monument | ***36.3m*** |

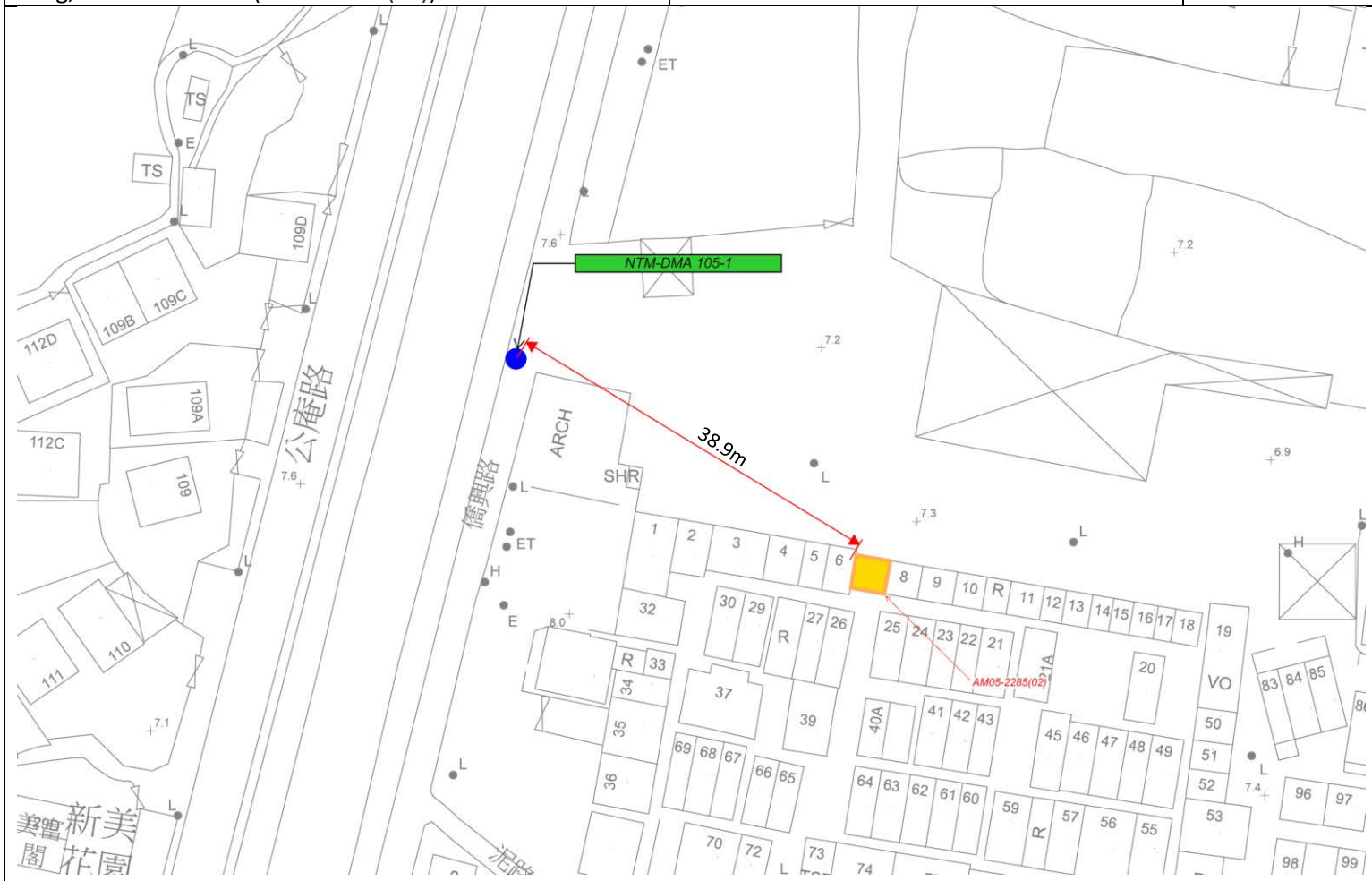
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Entrance Gate, Lam Hau Tsuen, Ping Shan, Yuen Long, New Territories (AM04-2043) | Grade 3 | ***30m*** |



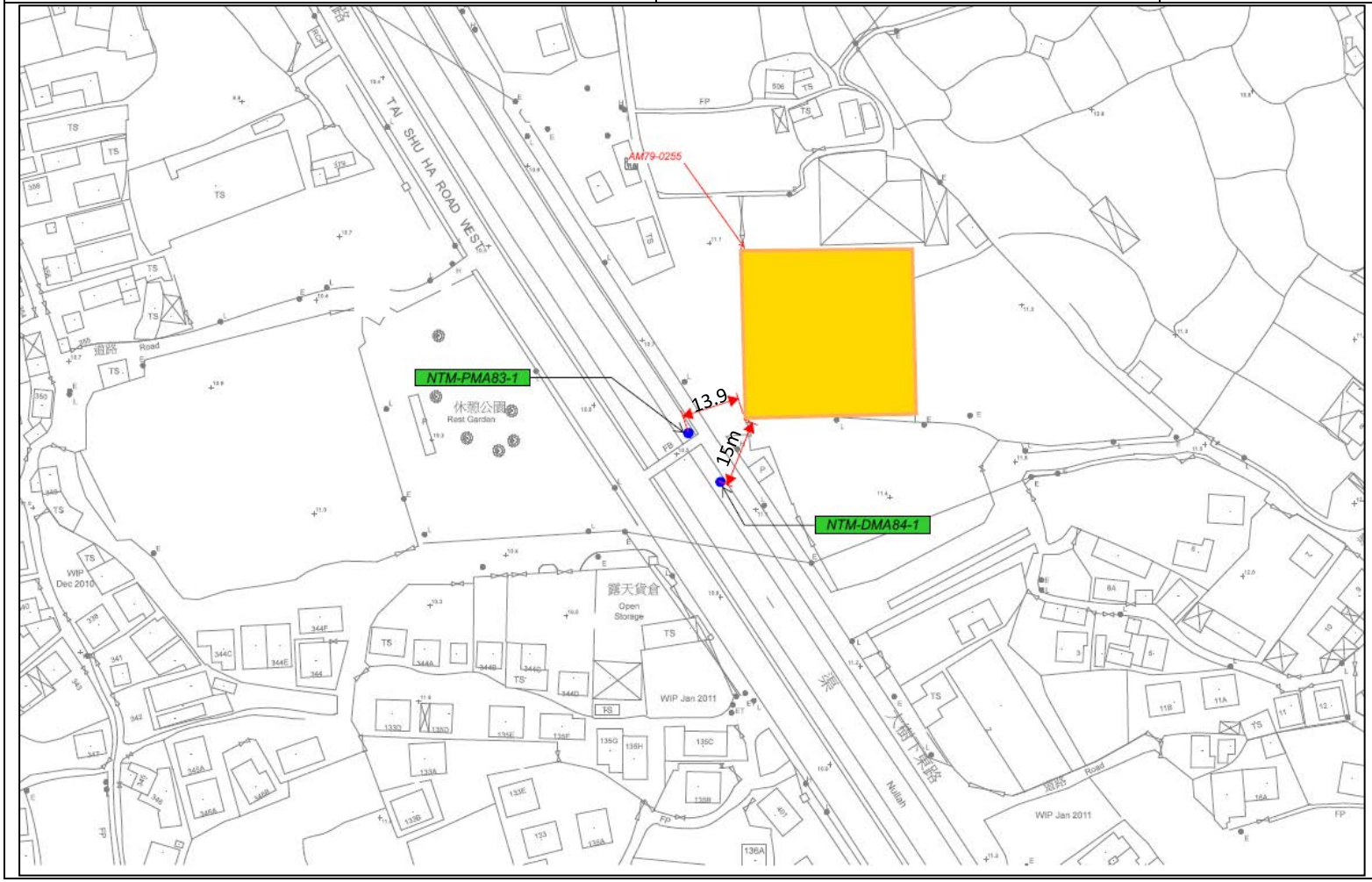
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Yan Shau Tong, No. 150 Lam Hau Tsuen, Ping Shan, Yuen Long, New Territories (AM04-2036) | Grade 3 | ***43.8m*** |



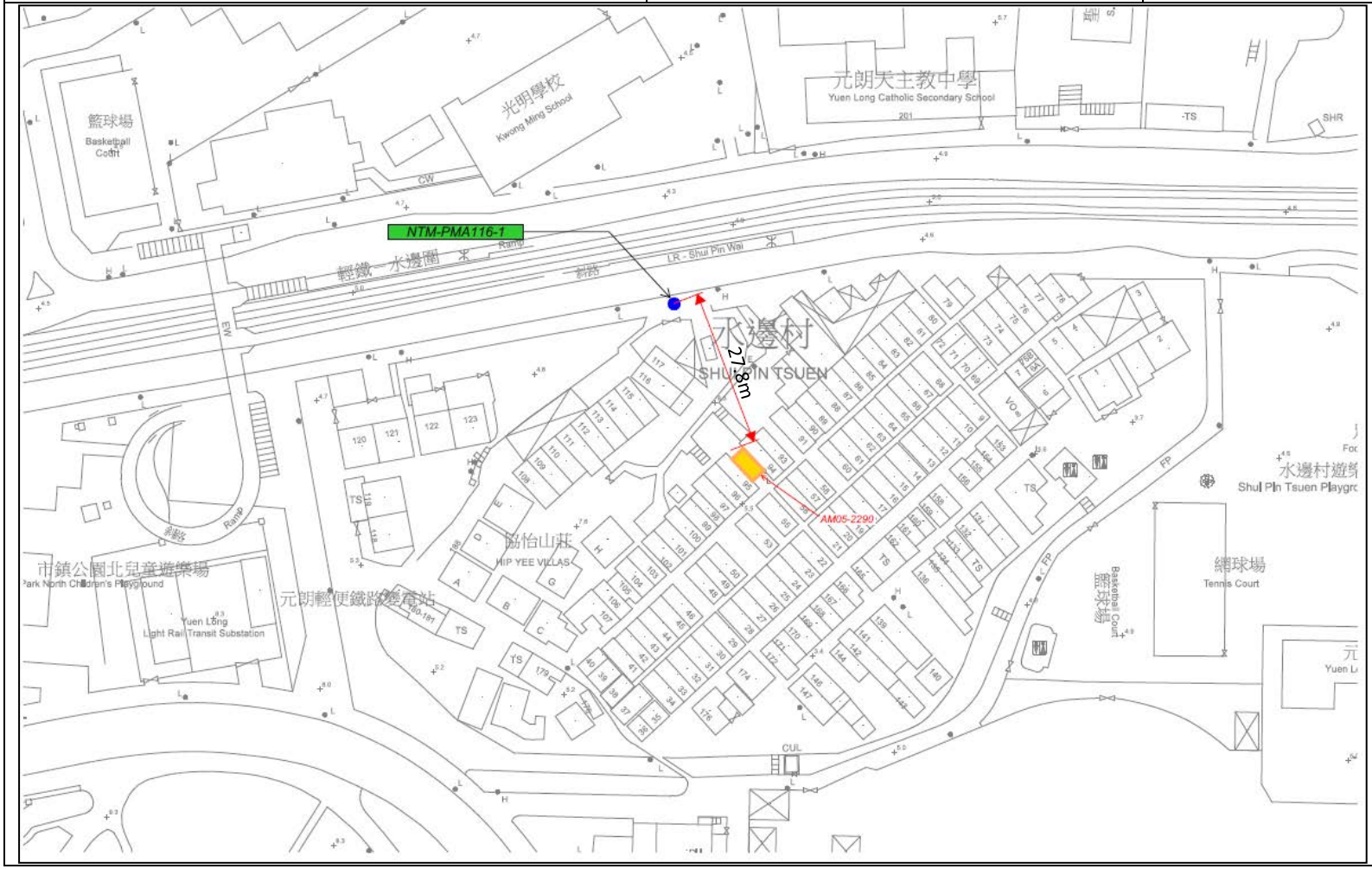
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Entrance gate, No.7 Tin Liu Tsuen, Shap Pat Heung, Yuen Long, New Territories (AM05-2285(02)) | Grade 3 | ***38.9m*** |



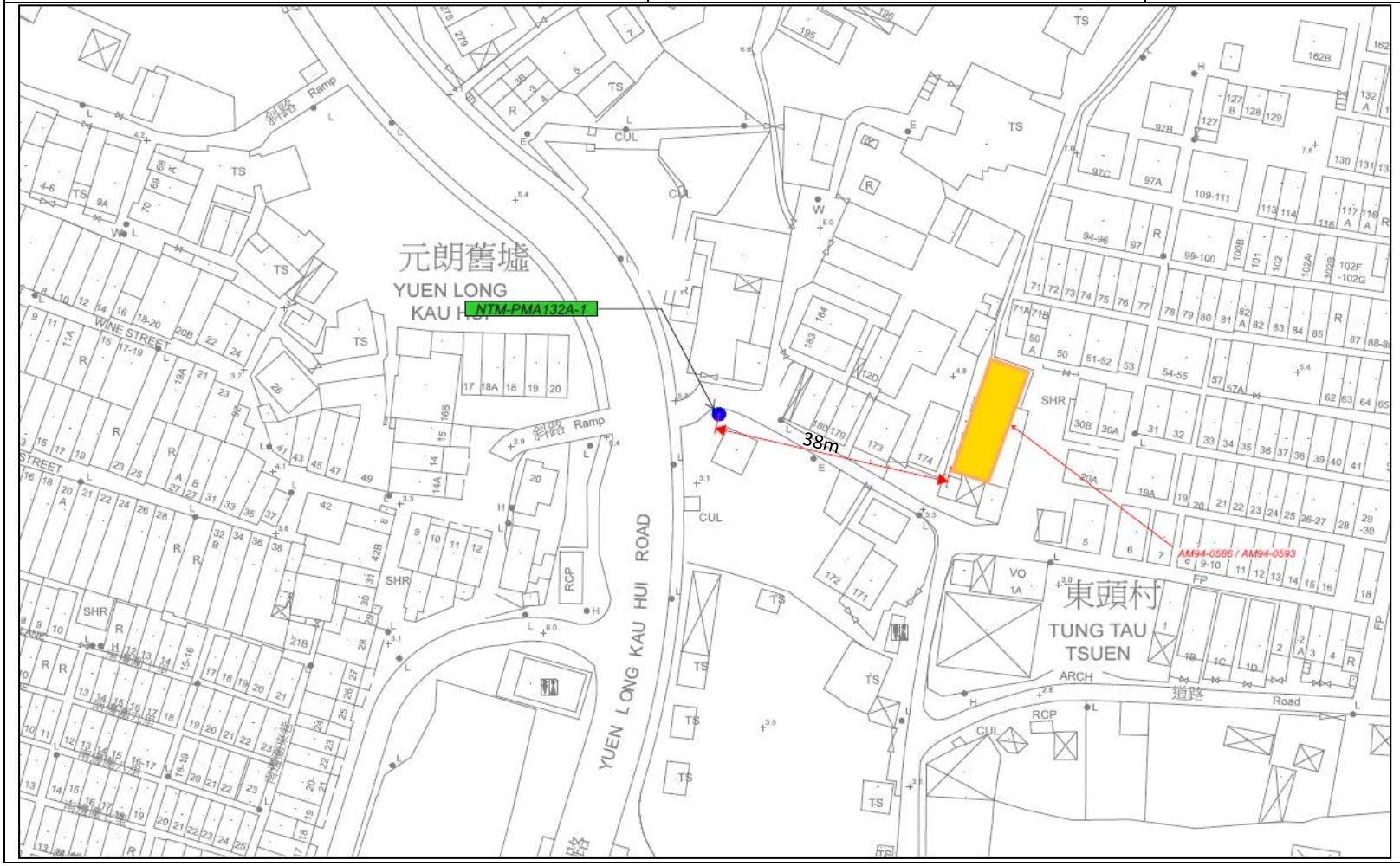
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Tin Hau Temple, Nga Yiu Tau, Shap Pat Heung, Yuen Long, New Territories (AM79-0255) | Grade 2 | ***13.9m and 15m*** |



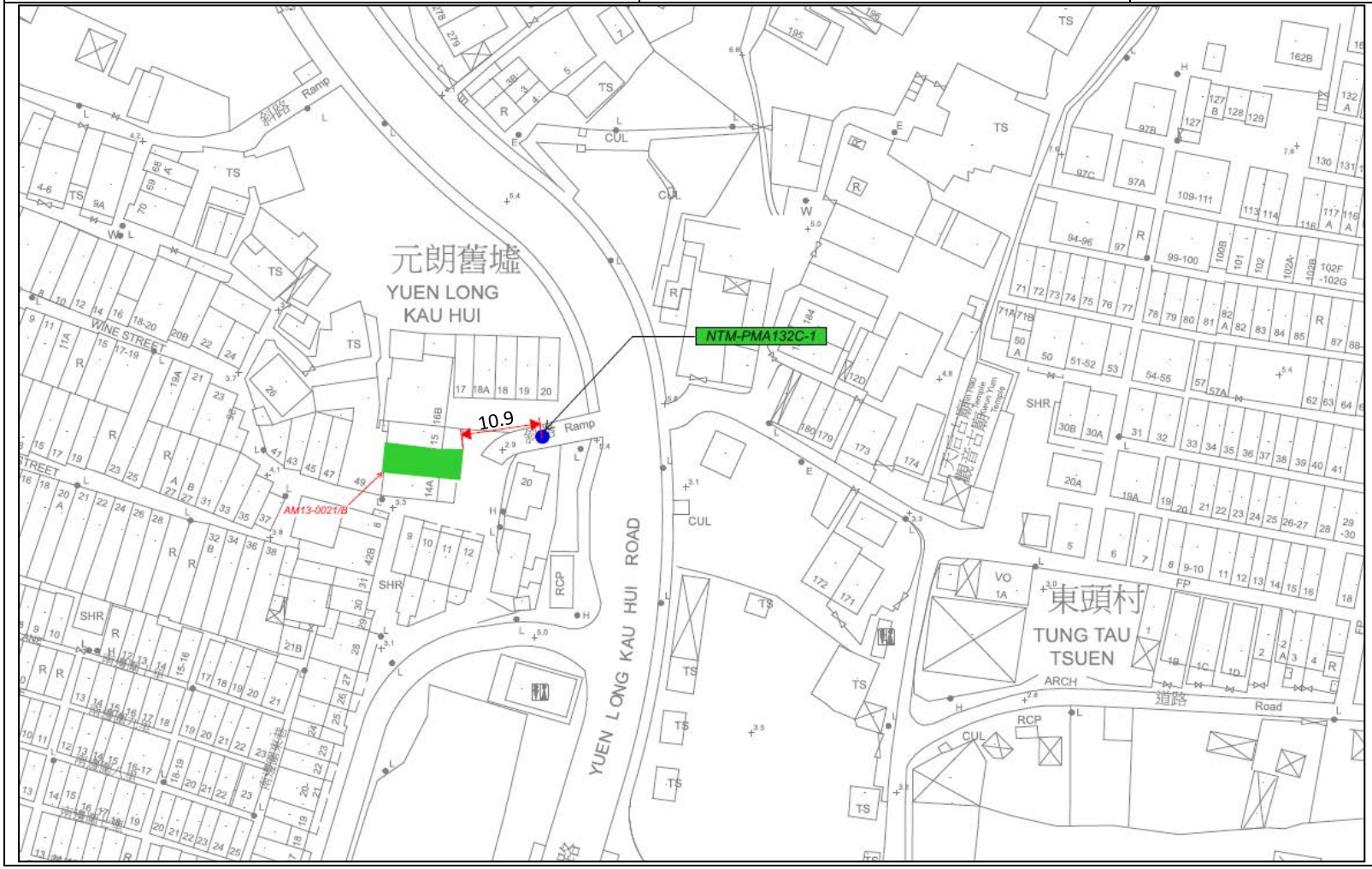
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Shrine, Shui Pin Tsuen, Wang Chau, Yuen Long, New Territories (AM05-2290) | Grade 3 | ***27.8m*** |



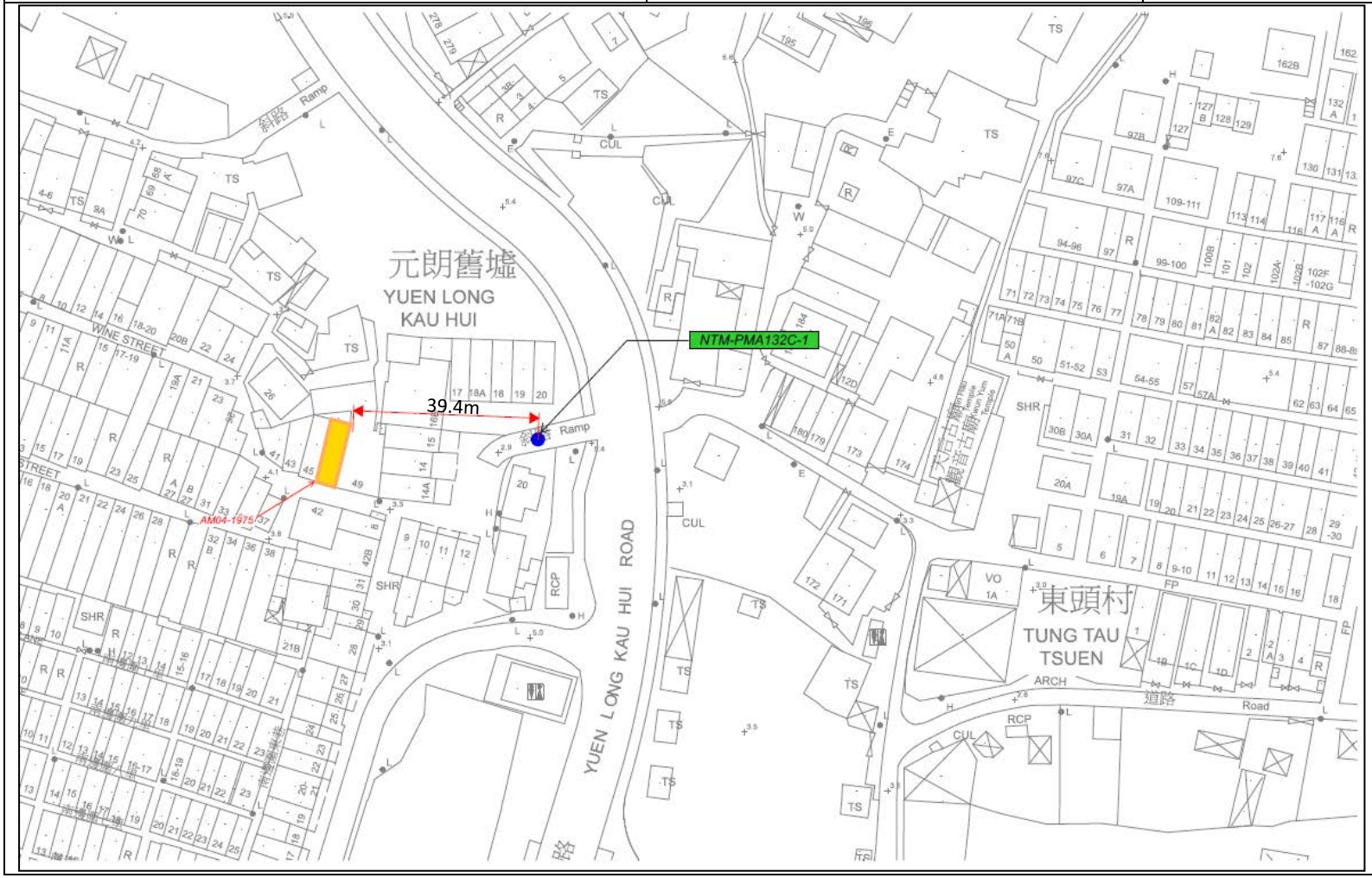
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Kwun Yam/Tin Hau Temple, Yuen Long Kau Hui, New Territories (AM94-0586/AM94-0593) | Grade 3 (both) | ***38m*** |



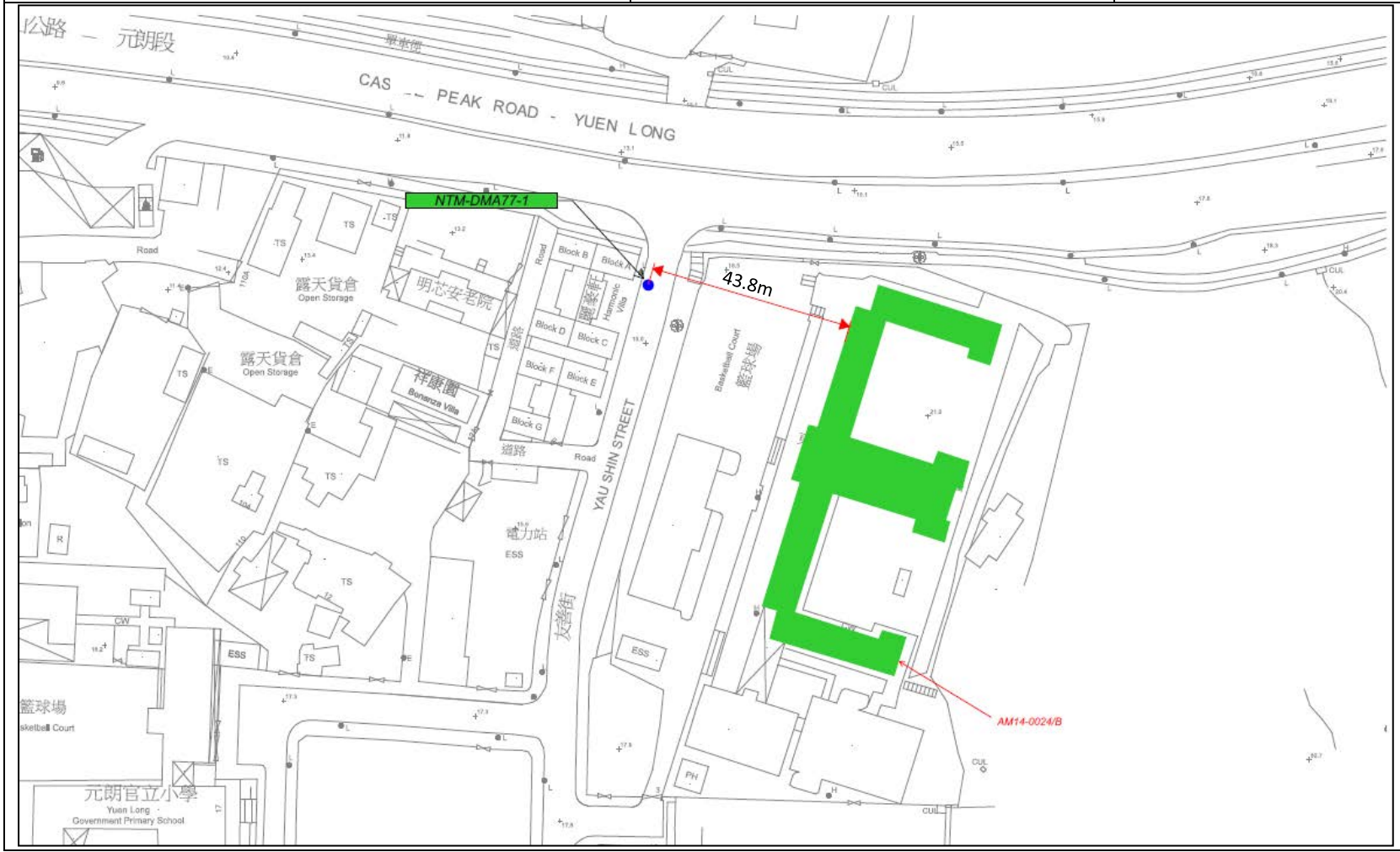
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 14 Tung Mun Hau (East Entrance Gate), Yuen Long Kau Hui, Yuen Long, New Territories (AM13-0021/B) | Grade 2 | ***10.9m*** |



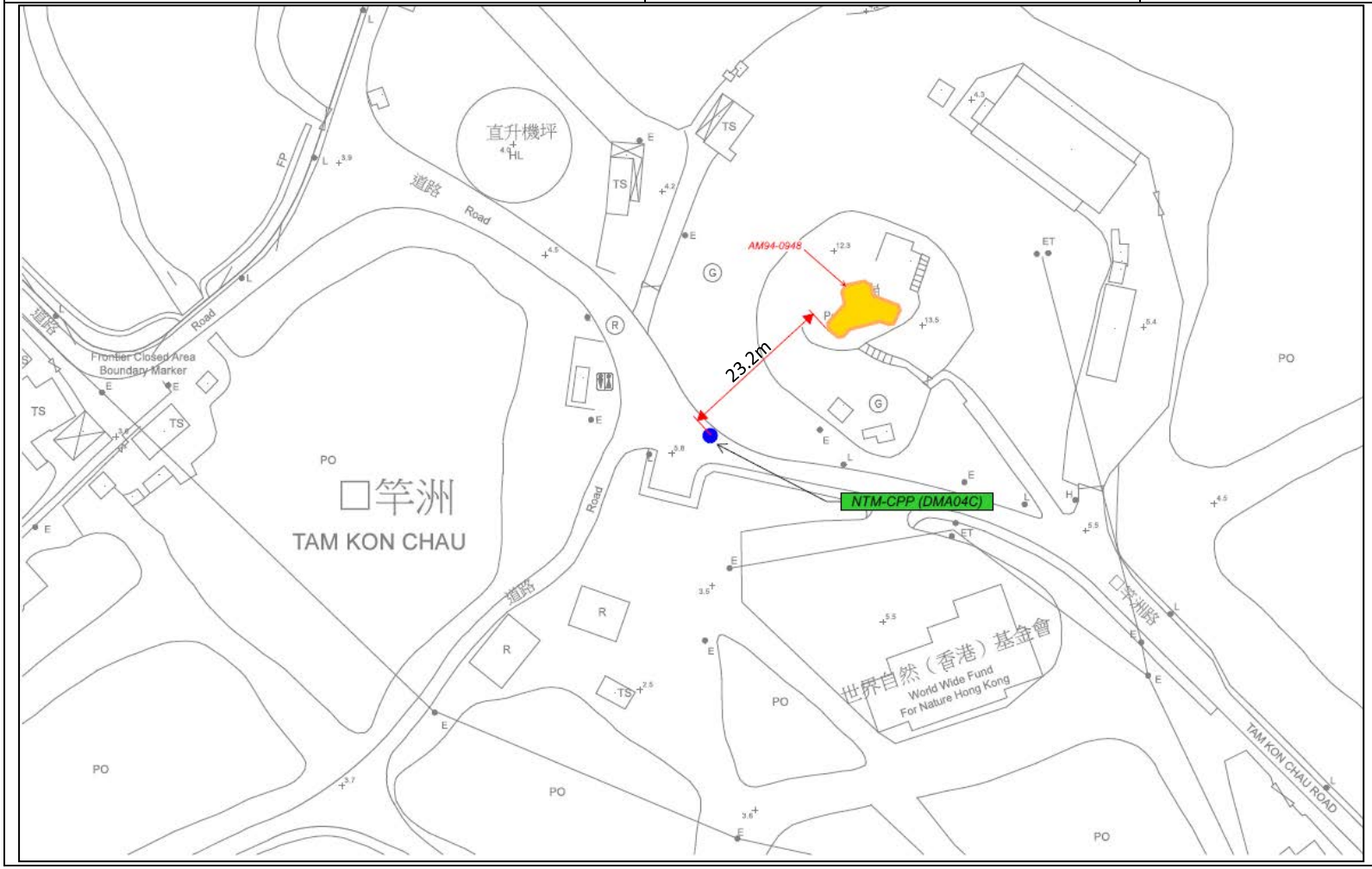
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| No. 47 Lee Yuk Street, Yuen Long, New Territories (AM04-1975) | Grade 2 | ***36.9m*** |



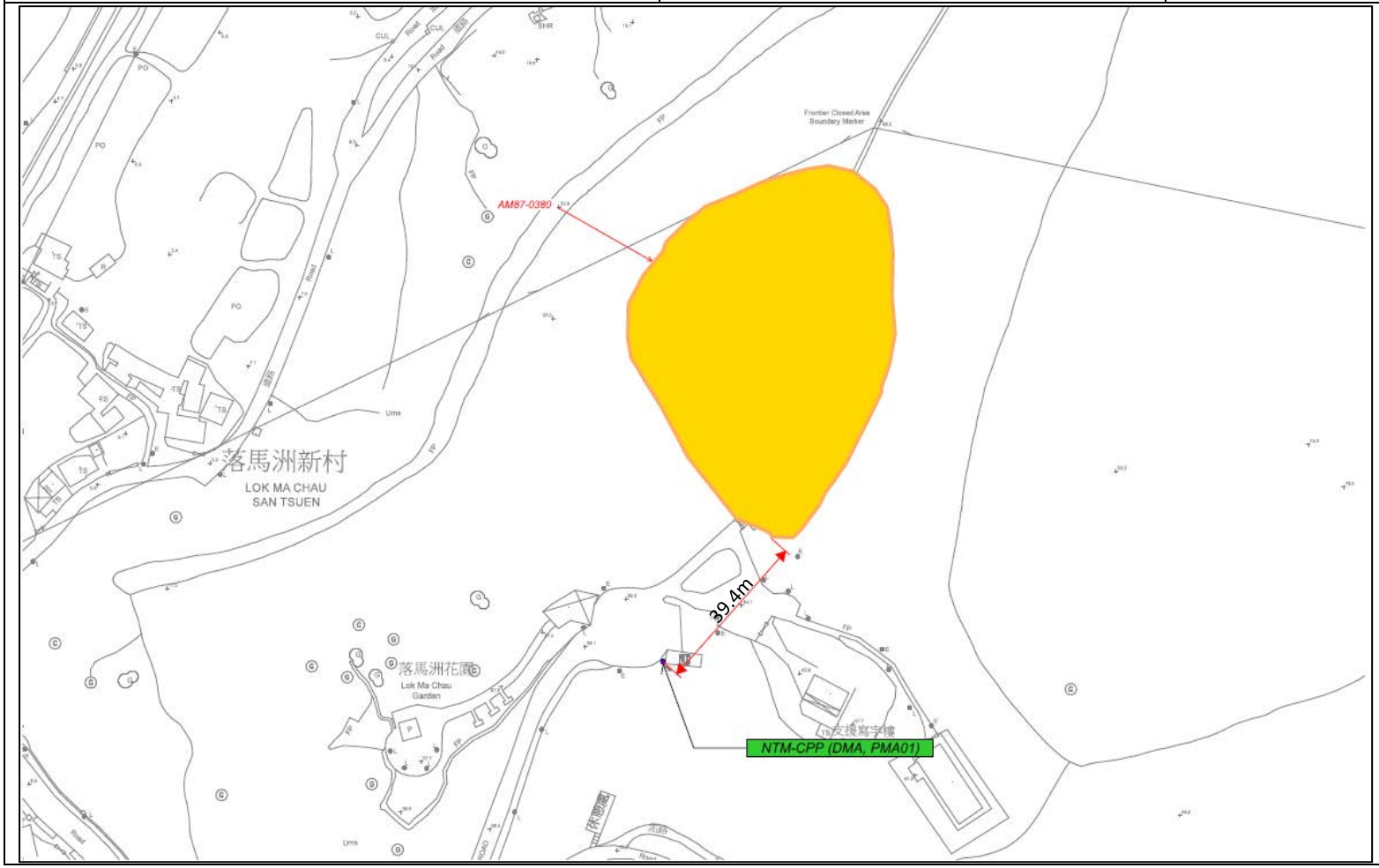
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Former Yuen Long Public Middle School, No. 3 Yau Shin Street, Au Tau, Yuen Long, New Territories (AM14-0024/B) | Grade 2 | ***43.8m*** |



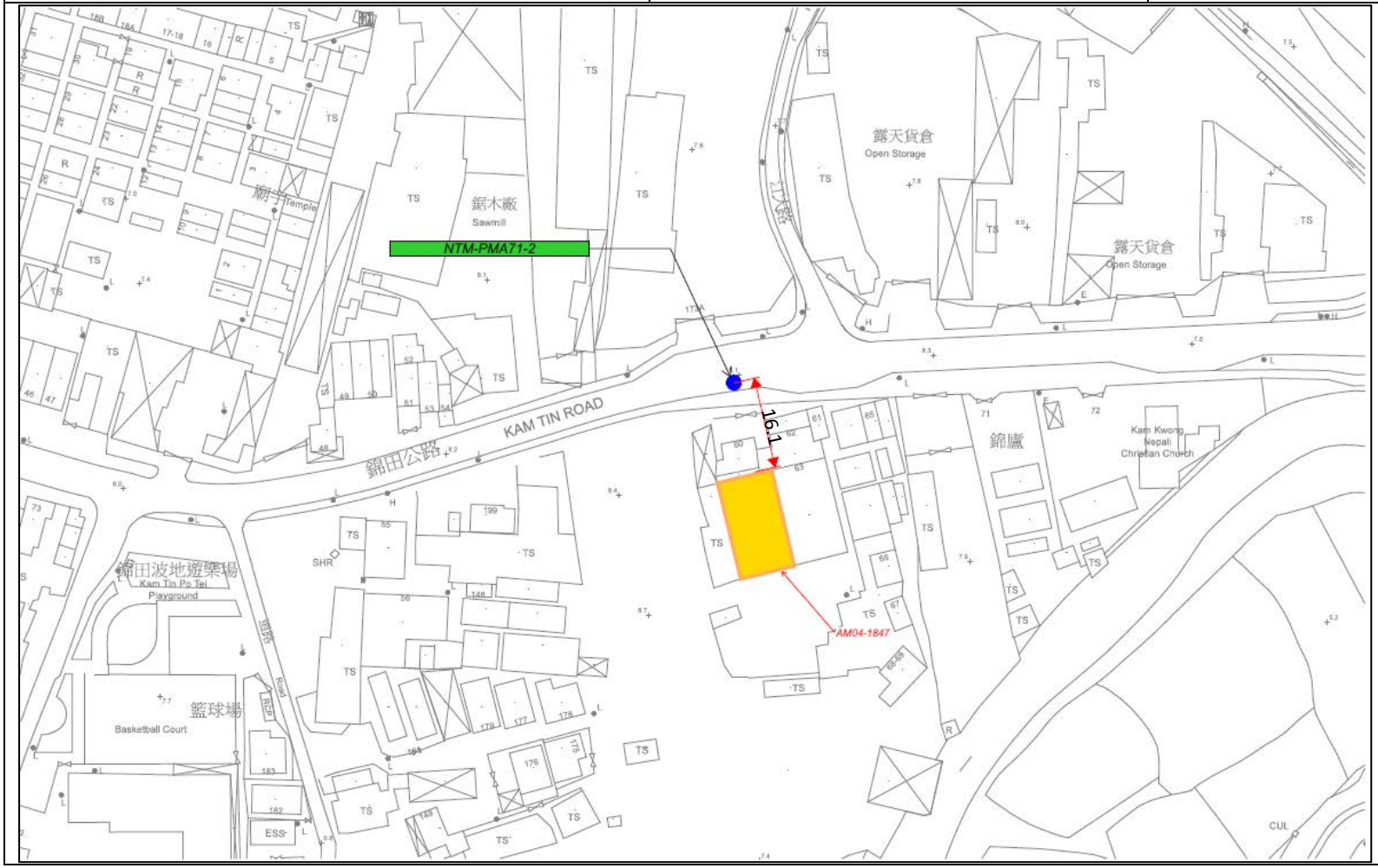
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| MacIntosh Fort (Pak Hok Chau), Pak Hok Chau, Mai Po, New Territories (AM94-0948) | Grade 2 | ***23.2m*** |



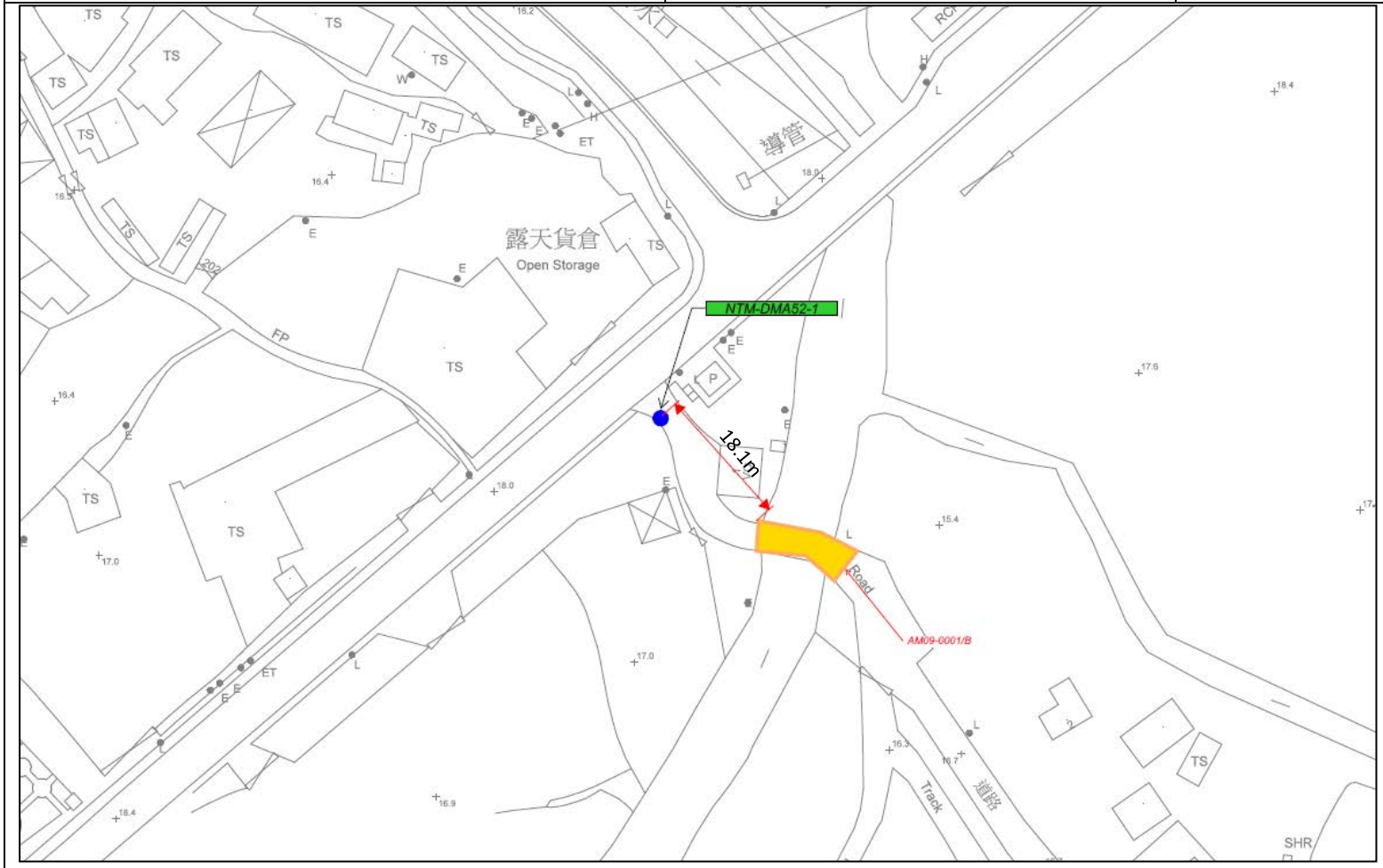
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Lok Ma Chau Police Station, No. 100 Lok Ma Chau Road, Lok Ma Chau, Yuen Long, New Territories (AM87-0380) | Grade 2 | ***39.4m*** |



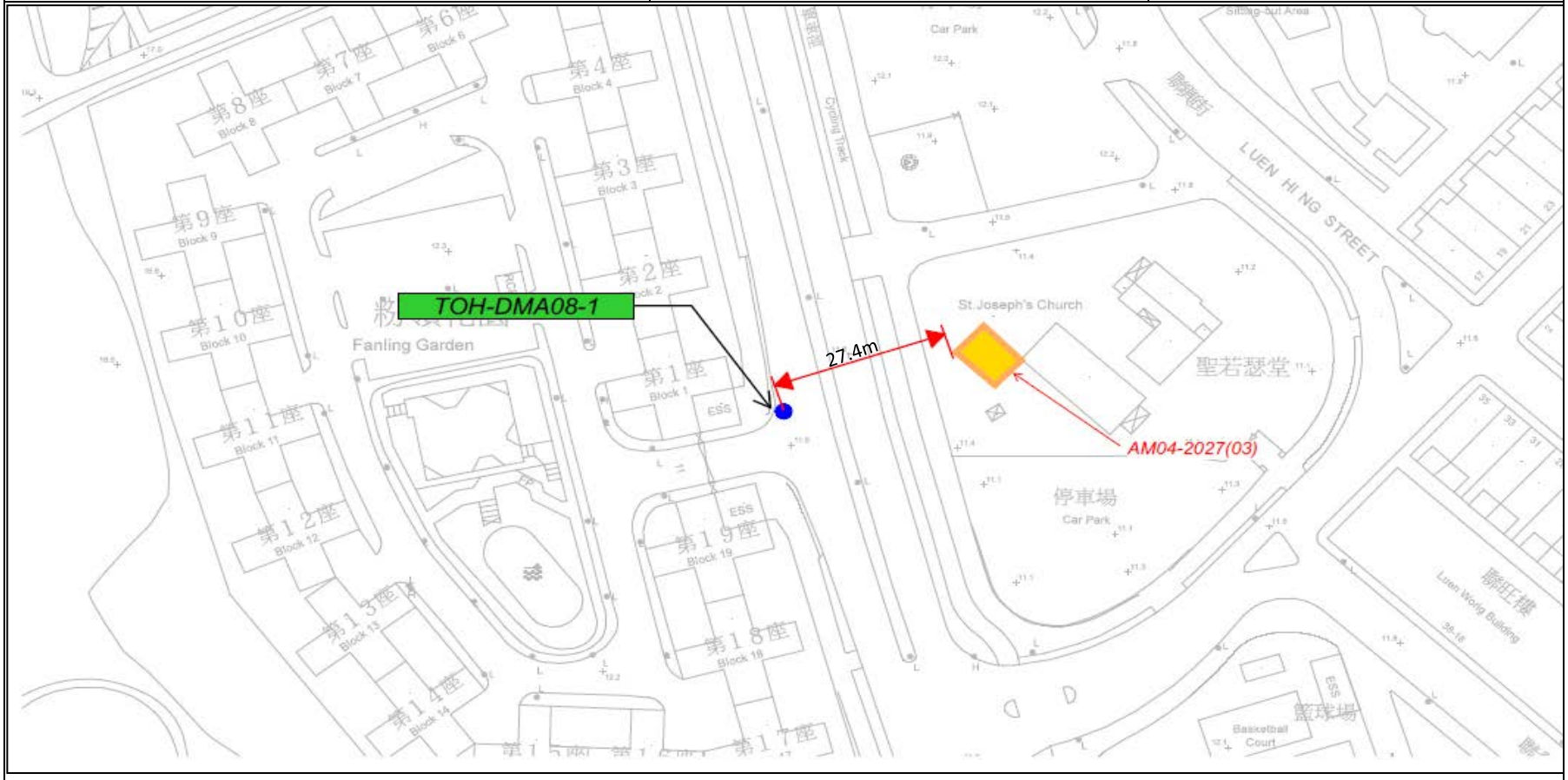
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Kang Sam Tong, No. 64 Wing Lung Wai, Kam Tin, Yuen Long, New Territories (AM04-1847) | Grade 3 | ***16.1m*** |



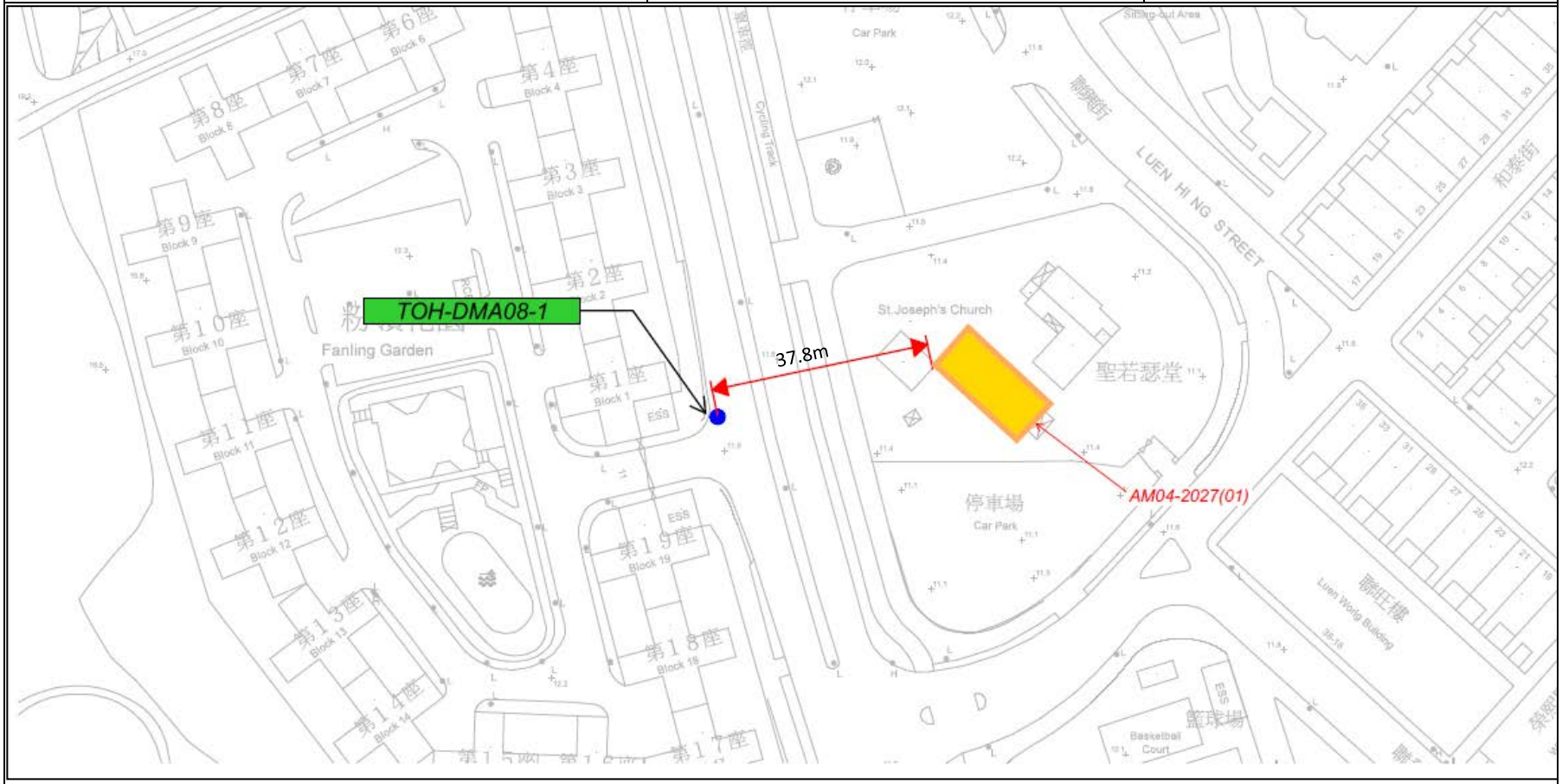
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Lee Tat Bridge, Shui Tsan Tin, Pat Heung, Yuen Long, New Territories (AM09-0001/B) | Grade 3 | ***18.1m*** |



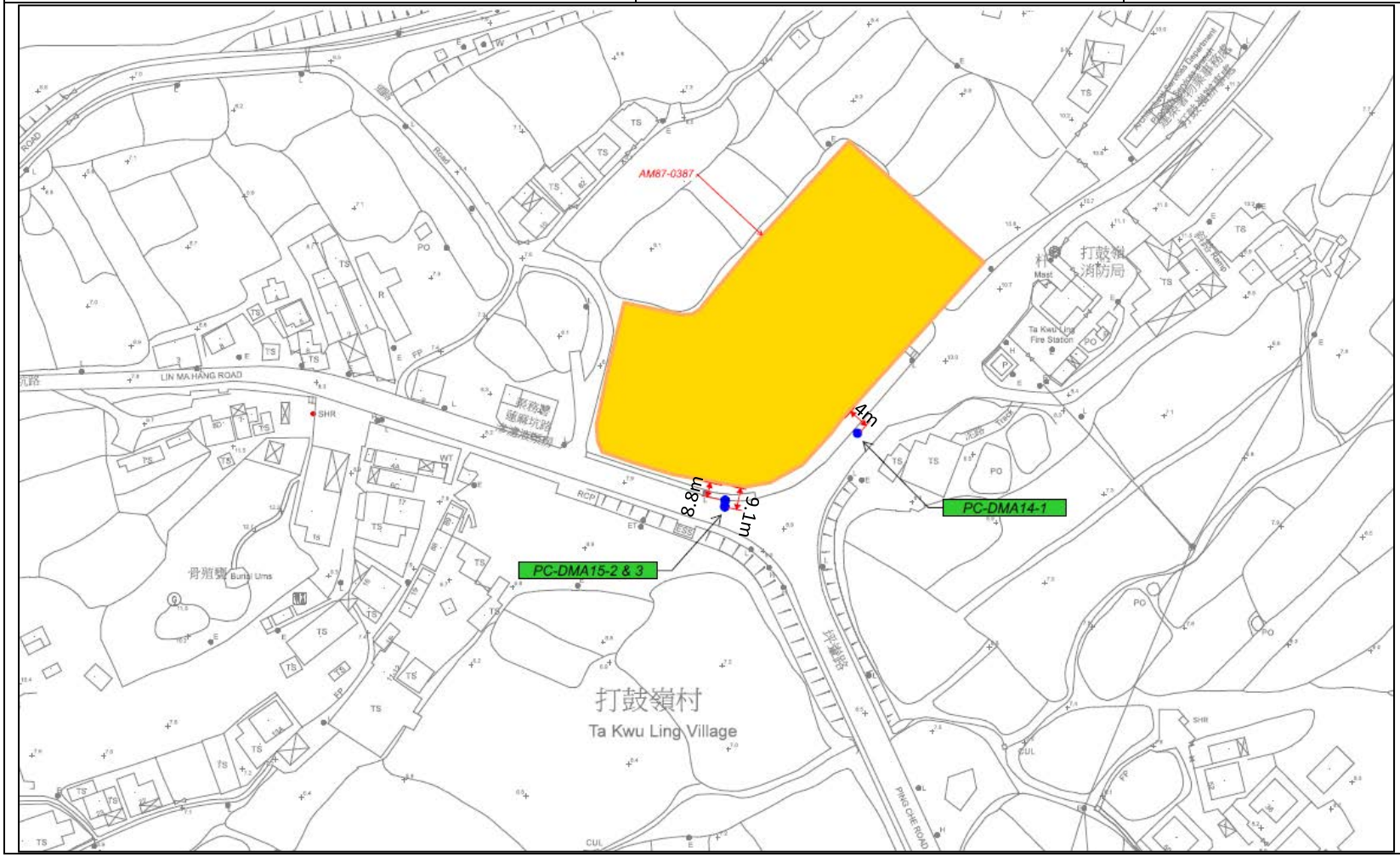
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| St. Joseph's Church, Father's Residence, No. 5 Wo Tai Street, Luen Wo Hui, Fanling, New Territories (AM04-2027(03)) | Grade 3 | ***27.4m*** |



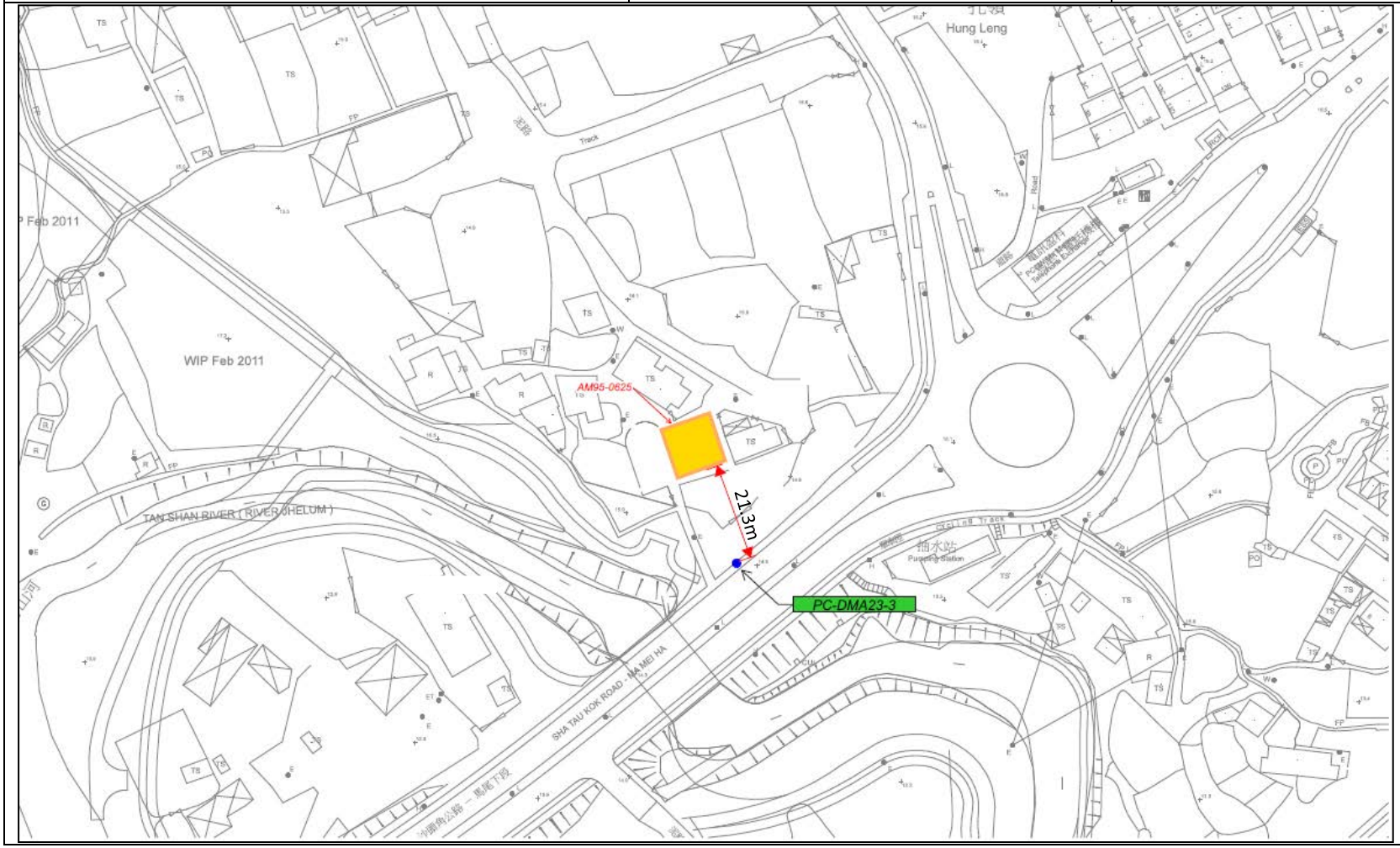
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| St. Joseph's Church, Church Building and Bell, No. 5 Wo Tai Street, Luen Wo Hui, Fanling, New Territories (AM04-2027(01)) | Grade 3 | ***37.8m*** |



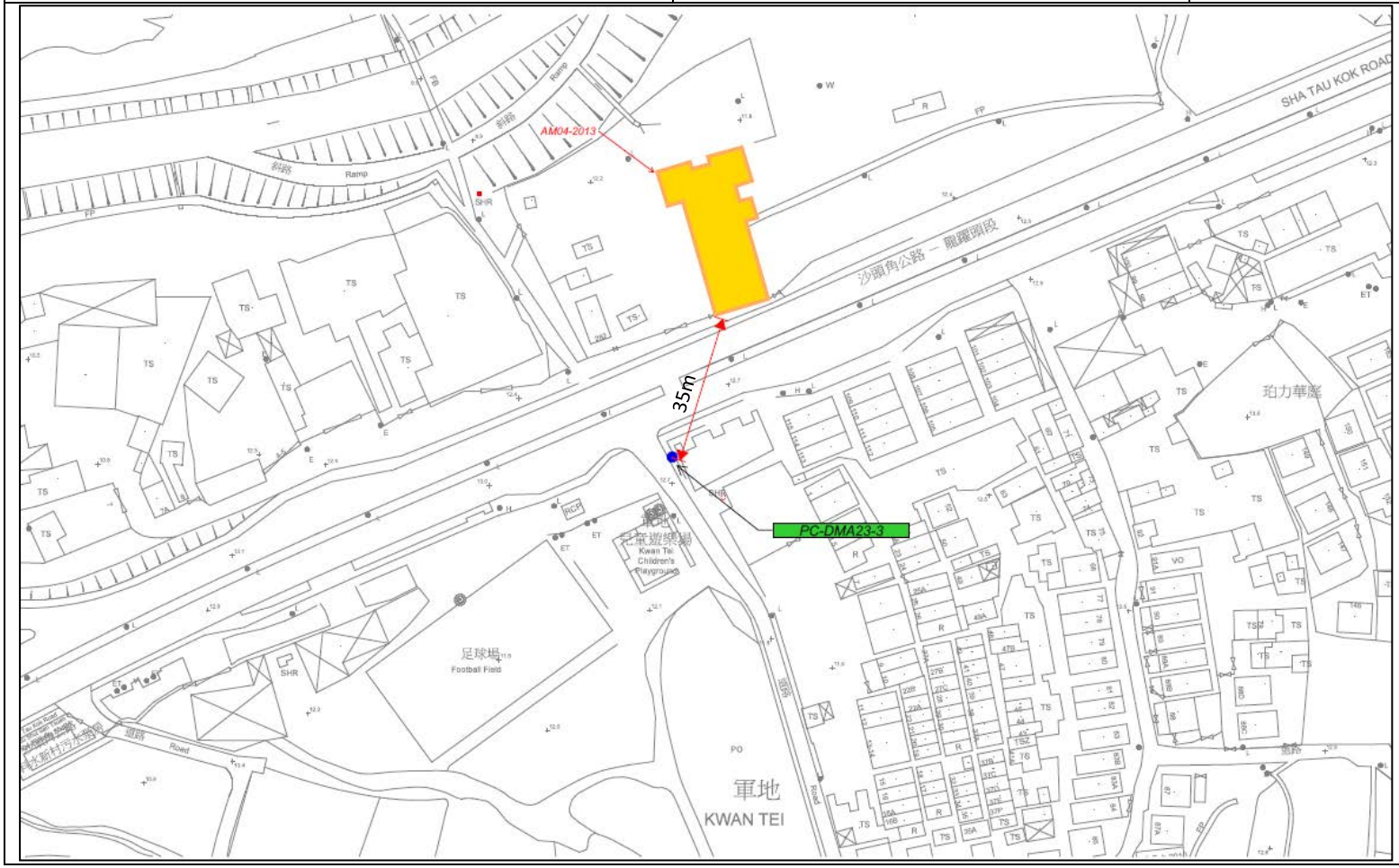
| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Ta Kwu Ling Police Station, Ping Che Road, Ta Kwu Ling, New Territories (AM87-0387) | Grade 3 | ***4m, 8.8m and 9.1m*** |



| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Hung Shing Temple, Hung Leng, Fanling, New Territories (AM95-0625) | Grade 3 | ***21.3m*** |



| ***Proposed works identified within 50m of Historical Buildings*** | | |
|---|---|---|
| Sam Tung Uk, Kwan Tei North, Fanling, New Territories (AM04-2013) | Grade 2 | ***35m*** |



# Appendix B

# Sites of Archaeological Interest (SAI) potentially affected and proposed works inside boundaries of the SAIs

**Agreement No. CE 38/2016 (WS)**

**Implementation of Water Intelligent Network (WIN), Remaining District Metering Areas and Pressure Management Areas in Yuen Long and Sheung Shui & Fanling Major Supply Zones - Investigation, Design and Construction**

# Heritage Impact Assessment Report

## List of Proposed Works Identified Within 50m of Historical Building in the List of 1,444 Historic Building Assessment (as of 6 September 2018)

| Item | Name / Type of Chamber in the vicinity of Historical Sites | AMO Research File Ref | Name of Historic Sites | Approx. Distance (m) | District | Comfirmed Grading |
|---|---|---|---|---|---|---|
| 1 | TKTN-DMA02B-2<br>TKTN-DMA02B-1 | (AM77-0095) | Tang Ancestral Hall, Ha Tsuen, Yuen Long, New Territories | 33.6<br>34 | Yuen Long | Declared Monument |
| 2 | TKTN-DMA02B-1 | (AM04-1791) | Kwan Tai Temple, Ha Tsuen, Yuen Long, New Territories | 48.7 | Yuen Long | Grade 2 |
| 3 | TKTS-CPP (DMA01B, PMA01B) | (AM01-1645) | Yan Tun Kong Study Hall, No. 127 Hang Tau Tsuen, Ping Shan, Yuen Long, New Territories | 36.3 | Yuen Long | Declared Monument |
| 4 | WC_SR-CPP (DMA02, PMA02) | (AM04-1833) | No. 39 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories | 30 | Yuen Long | Grade 3 |
| 5 | WC_SR-CPP (DMA02, PMA02) | (AM04-1989) | No. 40 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories | 34 | Yuen Long | Grade 3 |
| 6 | WC_SR-CPP (DMA02, PMA02) | (AM04-1990) | No. 41 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories | 36.6 | Yuen Long | Grade 3 |
| 7 | WC_SR-CPP (DMA02, PMA02) | (AM04-1834) | No. 42 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories | 39.4 | Yuen Long | Grade 3 |
| 8 | WC_SR-CPP (DMA02, PMA02) | (AM04-1835) | No. 43 Shing Uk Tsuen, Wang Chau, Yuen Long, New Territories | 45.1 | Yuen Long | Grade 3 |
| 9 | TKTS-CPP (DMA01) | (AM87-0377) | Old Ping Shan Police Station, Ping Shan, Yuen Long, New Territories | 17.4 | Yuen Long | Grade 2 |
| 10 | NTM-DMA104AA-1 | (AM04-2043) | Entrance Gate, Lam Hau Tsuen, Ping Shan, Yuen Long, New Territories | 30 | Yuen Long | Grade 3 |
| 11 | NTM-DMA104AA-1 | (AM04-2036) | Yan Shau Tong, No. 150 Lam Hau Tsuen, Ping Shan, Yuen Long | 43.8 | Yuen Long | Grade 3 |
| 12 | NTM-PMA105-1 | (AM05-2285(02)) | Entrance gate, No.7 Tin Liu Tsuen, Shap Pat Heung, Yuen Long, New Territories | 38.9 | Yuen Long | Grade 3 |
| 13 | NTM-DMA84-1<br>NTM-PMA83-1 | (AM79-0255) | Shap Pat Heung, Yuen Long, New Territories | 13.9<br>15 | Yuen Long | Grade 2 |
| 14 | NTM-PMA116-1 | (AM05-2290) | Shrine, Shui Pin Tsuen, Wang Chau, Yuen Long, New Territories | 27.8 | Yuen Long | Grade 3 |
| 15 | NTM-DMA132A-1 | (AM94-0586/AM94-0593) | Tin Hau Temple (Tin Hau Tsuen), Yuen Long Hau Hui, New Territories | 38 | Yuen Long | Grade 3 |
| 16 | NTM-PMA132C-1 | (AM04-1975) | No. 47 Lee Yuk Street, Yuen Long, New Territories | | | |
| 17 | NTM-CPP (DMA04C) | (AM94-0948) | MacIntosh Fort (Pak Hok Chau), Pak Hok Chau, Mai Po, New Territories | 23.2 | Yuen Long | Grade 2 |
| 18 | NTM-CPP (DMA01, PMA01) | (AM87-0380) | Lok Ma Chau Police Station, No. 100 Lok Ma Chau Road, Lok Ma Chau, Yuen Long, New Territories | 39.4 | Yuen Long | Grade 2 |
| 19 | NTM-PMA71-2 | (AM04-1847) | Kang Sam Tong, No. 64 Wing Lung Wai, Kam Tin, Yuen Long, New Territories | 16.1 | Yuen Long | Grade 3 |
| 20 | NTM-DMA52-1 | (AM09-0001/B) | Lee Tat Bridge, Shui Tsan Tin, Pat Heung, Yuen Long, New Territories | 18.1 | Yuen Long | Grade 3 |
| 21 | TOH-DMA08-1 | (AM04-2027(03)) | St. Joseph's Church, Father's Residence, No. 5 Wo Tai Street, Luen Wo Hui, Fanling, New Territories | 27.4 | Sheung Shui | Grade 3 |
| 22 | TOH-DMA08-1 | (AM04-2027(01)) | St. Joseph's Church, Church Building and Bell, No. 5 Wo Tai Street, Luen Wo Hui, Fanling, New Territories | 37.8 | Sheung Shui | Grade 3 |
| 23 | PC-DMA14-1<br>PC-DMA15-2<br>PC-PMA15-3 | (AM87-0387) | Ta Kwu Ling Police Station, Ping Che Road, Ta Kwu Ling, New Territories | 4<br>8.8<br>9.1 | Sheung Shui and Fanling | Grade 3 |
| 24 | PC-PMA19-1 | (AM95-0625) | Hung Leng, Fanling, New Territories | 21.3 | Sheung Shui and Fanling | Grade 3 |
| 25 | PC-DMA23-3 | (AM04-2013) | Sam Tung Uk, Kwan Tei North, Fanling, New Territories | 35 | Sheung Shui and Fanling | Grade 2 |

## List of Proposed Works Identified within 50m of Historical Building in the List of New Items and New Categories with Assessment Results (as at 6 September 2018)

| Item | Name / Type of Chamber in the vicinity of Historical Sites | AMO Research File Ref | Name of Historic Sites | Approx. Distance (m) | District | Comfirmed Grading |
|---|---|---|---|---|---|---|
| 1 | TKTN-CPP (DMA03CB) | (AM14-0014/B) | Former Lau Fau Shan Police Station, No. 1 Shan Tung Street, Yuen Long, New Territories | 11.2 | Yuen Long | Grade 3 |
| 2 | NTM-PMA132C-1 | (AM13-0021/B) | No. 14 Tung Mun Hau (East Entrance Gate), Yuen Long Kau Hui, Yuen Long, New Territories | 10.9 | Yuen Long | Grade 2 |
| 3 | NTM-DMA77-1 | (AM14-0024/B) | Former Yuen Long Public Middle School, No. 3 Yau Shin Street, Au Tau, Yuen Long, New Territories | 43.8 | Yuen Long | Grade 2 |

## List of Proposed Works Identified within 50m from boundary of Sites of Archaeological Interest

| Item | Name / Type of Chamber in the vicinity of Sites of Archaeological Interest | AMO Research File Ref | Name of Sites of Archaeological Interest | Approx. Distance (m) | Comfirmed Grading |
|---|---|---|---|---|---|
| 1 | TKTN-PMA02-2 | (AM90-0426) | Tung Tau Tsuen Site of Archaeological Interest | 32.1 | - |
| | TKTN-PMA02-3 | | | 50 | - |
| 2 | TKTN-CPP (DMA02E) | (AM90-0426) | | 15.5 | - |
| 3 | TKTN-DMA02C-3 | (AM01-1629) | Tseung Kong Wai Site of Archaeological Interest | 6 | - |
| 4 | NTM-PMA08-1 | (AM96-0688) | Mai Po Site of Archaeological Interest | 2.1 | - |
| | NTM-PMA08-2 | | | 10.5 | - |
| 5 | NTM-CPP(PMA57, DMA57,DMA57A) | (AM99-1421) | Ho Pui Site of Archaeological Interest | 31.3 | - |
| 6 | NTM-PMA48-1 | (AM00-1609) | Shui Lau Tin Site of Archaeological Interest | 26.7 | - |
| | NTM-PMA52-1 | | | 42.5 (South) | |
| 7 | PC-DMA02-1 | (AM00-1618) | Sha Tau Kok Shek Kiu Tau Site of Archaeological Interest | 11 | - |

## List of Proposed Works Identified within sites of Archaeological Interest

| Item | Name / Type of Chamber in the Sites of Archaeological Interest | AMO Research File Ref | Name of Sites of Archaeological Interest | Approx. Distance (m) | Comfirmed Grading |
|---|---|---|---|---|---|
| 1 | FKT-DMA02AA-1 | (AM98-0916) | Long Jok Tsuen Site of Archaeological Interest | Inside | - |
| 2 | FKT-DMA02-1 | (AM98-0910) | Fu Tei Au Site of Archaeological Interest | Inside | - |
| 3 | FKT-DMA02A-1 | (AM04-1983) | Ngau Hom Sha **S**ite of Archaeological Interest | Inside | - |