土木工程拓展署
Civil Engineering and Development Department

土木工程處
Civil Engineering Office

Agreement No. CE 74/2015 (CE)
Site Formation and Infrastructures for Development at Pok Fu Lam South – Investigation, Design and Construction

Heritage Impact Assessment (HIA) Report
(Rpt Ref. 250269-REP-090-06)

7th Issue | December 2019

ARUP

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Glossary

AAB	Antiquities Authority Board
AMO	Antiquities and Monuments Office
CEDD	Civil Engineering and Development Department
FCC	Foreign Correspondence Club
HD	Housing Department
HEC	Hong Kong Electric
HIA	Heritage Impact Assessment
HKSAR	Hong Kong Special Administrative Region
HOS	Home Ownership Scheme
ICOMOS	International Council on Monuments and Sites
KLWN	Kai Lung Wai North
KLWS	Kai Lung Wan South
THB	Transport and Housing Bureau
TFS	Technical Feasibility Study
TPDM	Transport Planning and Design Manual
RC	reinforced concrete
RCD	reversed circulation drill
SIL	South Island Line
SSF	Subsidised Sale Flats
UNESCO	United Nations Education, Science and Culture Organisation
WFN	Wah Fu North
WKS	Wah King Street
WLP	Wah Lok Path
WWII	Second World War

EXECUTIVE SUMMARY

The proposed site formation and infrastructure works for public housing development at Pok Fu Lam South is deemed necessary and outweighs the preservation *in situ* of part of the landscape and its structures within. The proposed housing development may further affect the Old Dairy Farm Co., a 19th century agri-industrial landscape in Pok Fu Lam, and cause some impact to few farm structures within the Study Area. Three Graded historic structures and four Nil Grade structures recorded in the field survey, are near or within the Project Site Boundary.

The works adjacent to Grade 3 Paddock C18 cannot be avoided and mitigation measures will be required. A condition survey followed by vibration, settlement and tilting monitoring, and possible structural remedial measures are recommended.

1 INTRODUCTION

1.1 Background of Project and Objectives of HIA

Background of Project

1.1.1 The Government has announced in the 2014 Policy Address the partially lift of the development moratorium at the south of Pok Fu Lam, i.e. the area close to Wah Fu Estate. This area will be used for public housing development and future redevelopment of Wah Fu Estate. The five sites under the Project (the Sites) as shown on **Figure 2**, namely Wah Lok Path (WLP), Wah King Street (WKS), Wah Fu North (WFN), Kai Lung Wan North (KLWN) and Kai Lung Wan South (KLWS), will provide about 8 920 units of Public Rental Housing (PRH) and Home Ownership Scheme (HOS)/Subsidised Sale Flats (SSF) units. The Project, together with the future redevelopment of Wah Fu Estate, will provide about 11 920 additional units of PRH and HOS/SSF units. Aggregate area of the Sites is about 17.4 hectares. The Project Site Boundary is as shown on **Figure 2**.

1.1.2 CEDD is tasked with the provision of essential infrastructures and the formation of the Sites to the agreed spatial layout (including residential blocks and other facilities) and development parameters supporting the proposed public housing developments there by the Hong Kong Housing Authority at a later stage. Housing Department (HD) has put forward proposals on the housing types, development parameters and planning layouts for the Sites. It is targeted to complete the housing development in phases from 2024 to 2026. The Housing Site Development Boundary lies within the Project Site Boundary as shown on **Figure 2**.

1.1.3 CEDD commissioned Arup on 5 February 2015 under Agreement No. CE 62/2014 (CE) 'Site Formation and Infrastructural Works for Proposed Public Housing Development at Pokfulam South – Feasibility Study' to determine the scope of site formation and infrastructural works to make available the formed land for housing development, to assess the various impacts due to the provision of these infrastructures and housing developments and to recommend the mitigation measures to keep the potential impacts due to the development within the acceptable level of the current standard/regulation.

1.1.4 In March 2015, Transport and Housing Bureau (THB) signed out a Project Definition Statement (PDS) to justify and define the scope of the "Site Formation and Infrastructure Works for Development at Pok Fu Lam South" and CEDD then completed a Technical Feasibility Study (TFS) confirming its technical feasibility. The TFS was subsequently approved by DEVB in September 2015 and the project was included into Cat B under PWP Item No. B795CL.

1.1.5 CEDD commissioned Arup on 20 June 2016 under Agreement No. CE74/2015(CE) Site Formation and Infrastructures for Development at Pok Fu Lam South – Investigation, Design and Construction' (this Assignment). During the Investigation phase, a substantial number of Old Dairy Farm remnants were found to be located within or near Chi Fu Road site. In order to minimise impact to the remnants, it was decided to abandon this site. At about the same time, habitat of high ecological value was found near the centre of Kai Lung Wan site and the avoidance measure was adopted. The site area of Kai Lung Wan site was therefore significantly reduced, and the reduced site became Kai Lung Wan North site. In order to maintain the flat production for the public housing developments, a new site near Shek Pai Wan Road was identified and this site was named as Kai Lung Wan South site.

1.1.6 Seven New Items (N276-278, N289, N294, N320 and N330) identified during the Investigation Phase remain within the Study Area. They are marked on **Figure 2** and are part of this HIA. They were evaluated by Antiquities Advisory Board (AAB) between 7 September 2017 and 22 March 2018 as one Grade 2 (Old Dairy Farm, Manure Pit; **GB-1**), two Grade 3 (Old Dairy Farm, Paddock C18; **GB-2** and Paddock C17; **GB-3**) Historic Buildings and four Nil Grade Buildings (Paddock C32, a silo, a dairy and manure pit). (AAB 2018)

1.1.7 These seven items are referenced as follows on **Figure 2**:

Table 1.1 Summary of Referencing of the Identified Heritage

HIA Report ID no.	Previous New Item no.	Description	Grading	AMO File Reference no.
GB-1	N294	Manure Pit	Grade 2	AM93-0539(32)
GB-2	N276	Paddock C18	Grade 3	AM93-0539(14)
GB-3	N278	Paddock C17	Grade 3	AM93-0539(16)
HB-1	N289	Silo	Nil Grade	N/A
HB-2	N320	Dairy	Nil Grade	N/A
HB-3	N277	Paddock C32	Nil Grade	N/A
HB-4	N330	Manure Pit	Nil Grade	N/A

Scope of the Project

The scope includes:

1.1.8 Formation of platforms at WLP, WKS, WFN, KLWN and KLWS including the necessary geotechnical and slope stabilisation works, new slopes, earth retaining structures and natural terrain hazard mitigation works and its associated maintenance access;

1.1.9 Landscaping works, including associated tree protection/preservation, felling, transplanting and compensatory works;

1.1.10 Protection of existing cable tunnels, existing underground extra-high voltage cables and the future South Island Line (SIL) (West) tunnel;

1.1.11 Road works including construction of new access roads, local road widening works and junctions improvement works; and

1.1.12 Ancillary infrastructural works including permanent/temporary public transport terminus, utility diversion, street lighting, traffic aids, new and improvement/ diversion to drainage, sewerage and waterworks, road drainage, roadside fence and street furniture and environmental mitigation measures.

1.1.13 Further details on the works are presented in **Section 4**.

Objectives of HIA

1.1.14 Under the previous consultancy Agreement No. CE62/2014(CE) 'Site Formation and Infrastructural Works for Proposed Public Housing Developments at Pokfulam South – Feasibility Study' (FS), the FS consultants conducted a desktop study and found that there were no "heritage sites" (including declared/proposed monuments, sites and buildings graded by the Antiquities Advisory Board (AAB), recorded sites of archaeological interest and Government historic sites identified by Antiquities and Monuments Office (AMO)) within the project boundary or in its vicinity (i.e. not more than 50m measured

from the project boundary). Subsequently, seven items of Old Dairy Farm remnants near the project boundary were proposed for assessment of the heritage value and grading by the AAB. The grades of these items were confirmed between 7 September 2017 and 22 March 2018, with grades including Grade 2, Grade 3 and Nil Grade.

1.1.15 In accordance with the Heritage Impact Assessment (HIA) Mechanism stipulated in Development Bureau Technical Circular (Works) No. 6/2009, it is considered necessary to conduct a Heritage Impact Assessment (HIA) to assess the heritage implications of the proposed engineering works on graded historic buildings and devise mitigation measures if impact is unavoidable. On-site preservation of the graded historic buildings or any alternative means of preservation will be determined as necessary.

1.1.16 As agreed with AMO, under this contract, it has been identified HIA should be focused on the historic items near the project site boundary and within 50m from these items (hereafter Study Area as shown on **Figure 2**). The relevant structures are Old Dairy Farm's Manure Pit (GB-1), Grade 2; Paddock C18 (GB-2), Grade 3; and Paddock C17 (GB-3), Grade 3. Four Nil Grade structures, including a silo (HB-1), a dairy (HB-2), Paddock C32 (HB-3) and a manure pit (HB-4) in the same area were also identified in this report. These heritage sites are located east of Pok Fu Lam Road, near proposed access road to Kai Lung Wan North, and proposed public housing developments of Wah Fu North and Kai Lung Wan North. A field survey to assess condition of structures was undertaken within the Study Area on July 2, 2019.

1.2 Authorship

1.2.1 Archaeological Assessments Limited was commissioned on 27th of May 2019 by ARUP to undertake the HIA. Key personnel in the HIA are:

- Julie Van Den Bergh (Main consultant)
- Kathy Chan (Researcher)

1.3 The Scope of this HIA

1.3.1 HIA scope identifies that the three Graded historic structures (GB-1 to 3) among the seven heritage sites (see **Figure 2**) should be mainly considered within this HIA.

2 CULTURAL SIGNIFICANCE OF THE SITE

2.1 Understanding the Landscape

Old Dairy Farm Landscape

2.1.1 The Old Dairy Farm in Pok Fu Lam was the first large-scale dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983) (CPCL 2013: 7 and 13; AAB 2018). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period (Leung 2009: 61).

2.1.2 The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson (**Plate 1**) and five local influential businessmen, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AAB 2018; Ting 2018 8; CPCL 2013: 7). The idea to create a dairy farm in Hong Kong was first raised by Dr. Patrick Manson who saw a financial opportunity in providing hygienic and affordable fresh milk to the Europeans in Hong Kong (CPCL 2013: 7).

Plate 1 Sir Patrick Manson (1844-1922)

(Industrialhistoryhk.org)

Manson was a Scottish physician who spent many years practicing medical treatment in Taiwan, Amoy before moving to Hong Kong in 1883 (HKAM 2003: 145). He discovered the link between mosquito and malaria and has been deemed "the Founding Father of Tropical Medicine" (To & Yuen 2012). Manson was also the founder of the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong Faculty of Medicine (HKAM 2003 145). It is worth mentioned that "the father of the nation"—Dr. Sun Yat-sen was among the first medical students of Manson; he used the medical training facility—Alice Memorial Hospital, also co-founded by Manson—as a meeting place with his revolutionary comrades against the Qing government (To &Yuen 2012). A century later, a descendant of Manson revealed that Manson once helped rescuing Sun from death when Sun was detained by the Qing Embassy in London back in 1896 (SCMP 2007).

2.1.3 With an initial capital of $30,000 the Old Dairy Farm chose a 120-hectare land in Pok Fu Lam, on which a herd of 80 imported dairy cows were kept by experts in livestock (Leung 2009: 60). The seaward hilly land provided cool breezes and dependable fresh water to cattle in disease-ridden sub-tropical summer (AAB 2018; CPCL 2013: 7). Moreover, the location is close to town center for convenient supply but relatively separated from the main populated area where the risk of infectious disease/plague outbreaks were high (AAB 2018; CPCL 2013: 7).

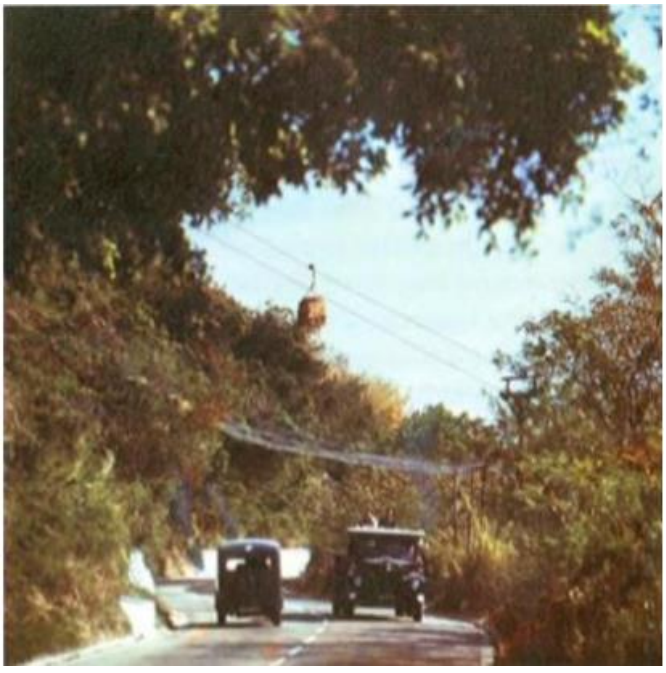
2.1.4 In 1896, despite these precautions, plague followed by a rinderpest epidemic killed most of the herd (Leung 2009: 60; Waters 1990: 237). Meanwhile, the increasing demand for fresh milk pushed the company expand the farm site and increase the livestock. Therefore,

1898 onward, the company adopted a new strategy to stop disease from spreading, namely, by isolating herds in separated cowsheds and each cowshed attended by its own team of workers (AAB 2018). Each cowshed was accompanied by paddock, cowboy quarters, fodder store, manure pit, silo (**Figure 1**).

To counterbalance the risk induced by single farm product, the company also added in pigs and poultry (**Plate 2**) to the farm in the early 20th century (CPCL 2013: 8; Leung 2009: 61) as well acquired the Hong Kong Ice Company and changed its firm title to The Dairy Farm, Ice and Cold Storage Co., Ltd., Hong Kong in 1918 (CPCL 2013: 7 footnote 5). Other structures and facilities of the farm included dairy, offices, blacksmith shop, refrigeration plant, and senior staff quarters and ropeway (CPCL 2013: 8-9).

Plate 2 View of poultry farm in 1935 (Moddsey no date)

2.1.5 Around 1941 to 1945, the farm occupied a vast land spanning from Sassoon Road in the north down to today's Wah Fu Estate in the south. By 1936, the herd size of the farm climbed up to 5th or 6th in the world and the number of cowsheds reached 50 in 1957 (AAB 2018).



In the early days, all necessary materials and produce had to be carried from the seashore to the top of the hill by workers ('coolies'). This would have been costly but was eventually eliminated by electric overhead ropeway between the farm stores and the wharf and godown by the sea. (**Plate 3**)

Plate 3 Dairy Farm overhead ropeway crossing Victoria Road. (Cameron 1986:193)

2.1.6 During its prosperous days before the WWII, the company and the nearby village— the village of Pok Fu Lam—developed a deep and interdependent relationship. As the company's business prospered, more residents were attracted to settle in the village in order to work in the farm. A demographic report in 1921 indicated that a large number of the population in Pok Fu Lam village work for the company as cowboys, telephone operators, drivers, choreman and coolies (AAB 2019; Ting 2018 9; CCDS 2012: 120). From the perspective of the villagers, the whole dairy farm landscape was part of their

collective childhood or working memory (Ting 2018: 9). In 2014, the World Monuments Fund included Pok Fu Lam village into its watch list, the relationship between the Dairy Farm and the village was covered (WMF 2017).

2.1.7 During the Japanese Occupation in 1941 to 1945, the farm was taken over by the Japanese troops. Farm operation basically was paralyzed as most staff left and farm animals sent away as war resources by the Japanese to China (AAB 2018).

2.1.8 After the war, in order to attend the increasing demand for residence, the government resumed a large amount of the Farmland. Residential estates including Wah Fu Estate, Baguio Villa and Chi Fu Fa Yuen were erected upon the old farmland (AAB 2018). Road modifications to the area throughout the 1960s to 1970s also cut away some old farm structures (Crown Lands and Survey Office 1968 &1978). In 1981, due to business policy reclassification, the farm business was excluded from mainstream. The Dairy Farm Company thus sold off the herd and land and most of the main structures of the farm were demolished or abandoned (AAB 2018).

2.1.9 The Study Area was originally part of the Old Dairy Farm's land lot D.F.L.No.3 (PRO 1933). According to the Deed, the building numbered 68 and painted in green was completed on the 13th day of February 1933. It refers to cowshed and Quarters associated with Paddock C32 (Nil Grade). Building number 59 on the deed plan is associated with Paddock C18 (Grade 3). And Building number 65 was associated with Paddock C17 (Grade 3), but the structure is believed demolished. Building number 64 is believed the Dairy (Nil Grade). As the plan annexed in the deed was for the purpose of charging crown rent for buildings only, the paddocks were not mapped.

Early Settlement

2.1.10 The Pok Fu Lam Village, situated next to existing Chi Fu Fa Yuen along the Pok Fu Lam Road is associated with the Old Dairy Farm. Prior to Dairy Farm, around 1860's, few stone houses would have been constructed. Its population grew significantly after war when many Chinese fled to Hong Kong which led to growth of the village. The villagers were mainly farmers, worked in town or provided labour for the nearby Dairy Farm. The village includes the Grade 3 Historic Building, No. 97 Pok Fu Lam Village built around 1914. Staff quarters for the Dairy Farm, such as graded historic buildings Block A and Block B were constructed adjacent to the village. (**Plate 4**)

Plate 4 Old Dairy Farm, Staff Quarters Block A and B rising behind the village of Pok Pu Lam (AMO GIS Website)

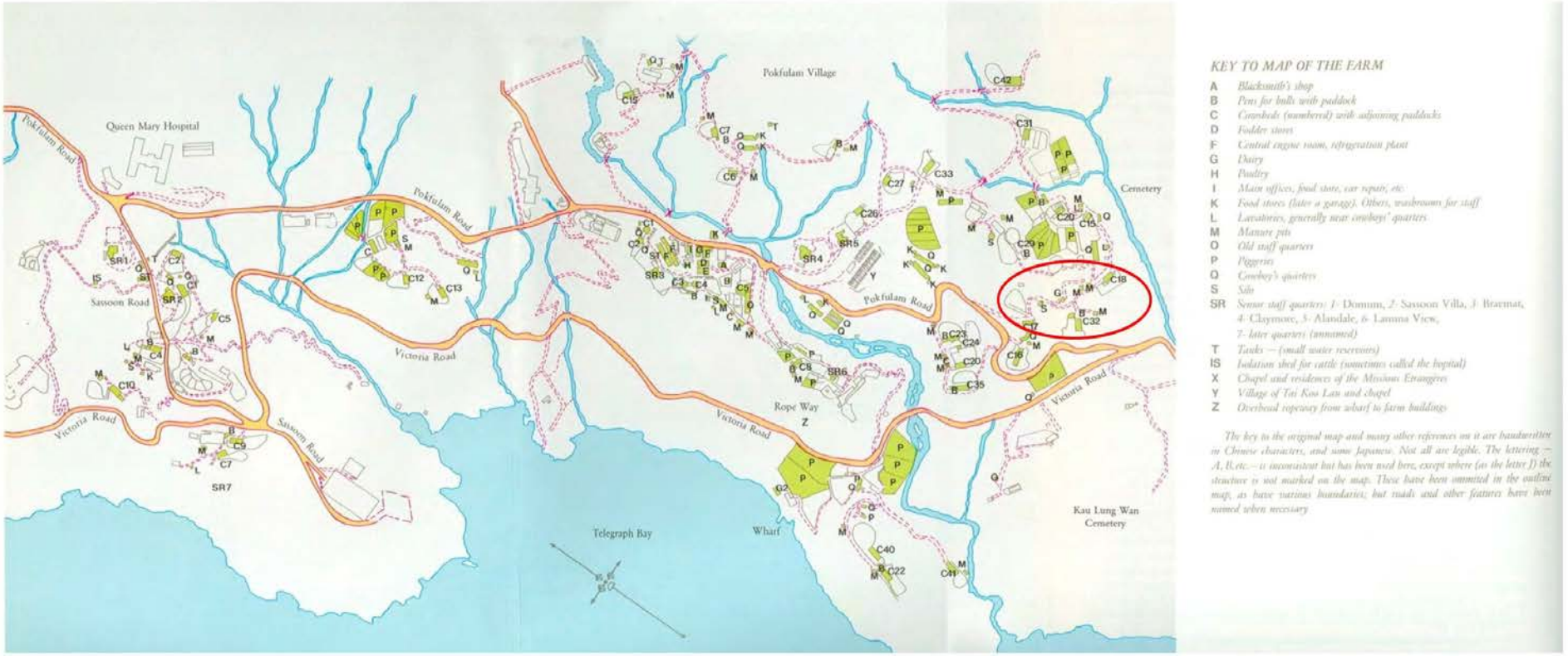


Figure 1 Map taken from Cameron (1986) which shows all known Old Dairy Farm Co. structures in green. The area relevant to the HIA is circled in red.

Mappings of resources

2.1.11 A field evaluation was conducted to identify the resources within the Study Area. The Study Area which partly overlaps with the Project Site Boundary, is marked on **Figure 2**.

2.1.12 A catalogue of the Graded and Nil Grade historic resources within the Study Area can be found in **Appendix A**. The resources are marked on **Figure 2**.

2.2 Graded Historic Buildings Within the Study Area

2.2.1 One Grade 3 Historic Building (GB-02) lies within the Project Site Boundary and a further Grade 2 (GB-01) and Grade 3 (GB-03) Historic Buildings were identified within the Study Area, as shown on **Figure 2.** Further illustrations are provided in **Appendix A**. They are:

Old Dairy Farm, Manure Pit, Pok Fu Lam, H.K. (KLWN Site) (AM93-0539(32)), Grade 2 (GB-1)

2.2.2 The manure pit was constructed before 1931. It is the largest remaining manure pit of the Old Dairy Farm and was built with a high standard of masonry work. Heavy stone buttresses were constructed to take the pressure of the internal loading. The walls are of volcanic rock, laid in "squared coursed-rubble" style. A small opening at the base drained off the liquid discharge. The roof has collapsed and there is much rubble and plant growth in the interior of the pit.

Old Dairy Farm, Paddock C18, Pok Fu Lam, H.K. (KLWN Site) (AM93-0539(14)), Grade 3 (GB-2)

2.2.3 Paddock C18 was built before 1931. The paddock includes the remains of the entrance of the paddock with the stone piers still exist. The entrance connects to a track leading cows up to the paddock. The cement surface of the track had been grooved to prevent cows from slipping. Near the entrance is a small enclosure, which could have been used as a temporary bull pen. The paddock walls are built of volcanic rock laid in "coursed rubble" style, with narrow vertical openings (a typical feature of paddocks). The concrete water tank is still intact. Field survey identified that the paddock includes a curved platform and buttress not currently mapped as part of the Grade 3 Historic Building. The paddock is constructed on a steep slope and the curved platform and buttress are likely built to support the upper structure. The buttress supports the wall in the south east corner where the slope descends rapidly; it is an integral part of the structure and appears to have been repointed several times. There is evidence for subsidence of the buttress with a large crack along its northern edge.

Old Dairy Farm, Paddock C17, Pok Fu Lam, H.K. (KLWN Site) (AM93-0539(16)), Grade 3 (GB-3)

2.2.4 Paddock C17 was built before 1941. The paddock once served Cowshed C17 which has since been demolished. Unlike at Paddock C18 there are no vertical openings in the wall. A stone pier connecting to the entrance gateway and the remains of two iron rings for fastening the gate remain. The condition of Paddock C17 has already been affected by previous slopeworks along Pok Fu Lam Road.

2.3 Other Historic Resources within the Study Area

2.3.1 In addition to the recognized, i.e. Graded Historic Buildings, a number of structures as shown on **Figure 2** were assessed as Nil Grade. They are:

Old Dairy Farm, Silo (HB-1)

2.3.2 Silos in the Old Dairy Farm were built in form of circular towers made of stone, reinforced concrete, cement and lime mortar and this one is no different. The top would have been covered by a conical roof, but this has since disappeared. The associated loading platform is preserved at this silo and the inside is paved with cement. The painted scale numbers to gauge the content of the silo, are still visible.

Old Dairy Farm, Dairy (HB-2)

2.3.3 The building was found damaged with only the masonry base/foundation remaining. The base is constructed of coursed-rubble volcanic rocks and concrete steps, leading to the top of the stone base are located on the west side. The floor is cement pavement. Some evidence shows that the upper building was constructed with red bricks and concrete.

Old Dairy Farm, Paddock C32 (HB-3)

2.3.4 Paddocks are one of the main farm structures and each paddock had an association with a cowshed and manure pit. Remains of a red brick structure near the paddock may be part of cowshed; there are no signs of the manure pit which has disappeared since long time ago. The paddock area is now covered in thick vegetation and harbours a wild boar which hampered access. According to AMO (2019f) the paddock remains include part of perimeter wall made of volcanic rocks.

Old Dairy Farm, Manure Pit (HB-4)

2.3.5 The manure pit is built on steep slope with the top of manure loading area level with upper ground surface. The building of which only the walls remain is made of volcanic rocks, laid in "coursed rubble" style. An opening is set on one of the walls which would have allowed drainage of liquids.

2.3.6 A summary of the identified resources is presented in **Table 2.1** below. Further descriptions of the Graded and Nil Grade structures can be found in **Appendix A**.

Table 2.1 Summary of Identified Heritage

ID	Structure	Grading
GB-1	Old Dairy Farm, Manure Pit, Pok Fu Lam, H.K. (KLWN Site) (AM93-0539(32))	Grade 2
GB-2	Old Dairy Farm, Paddock C18, Pok Fu Lam, H.K. (KLWN Site) (AM93-0539(14))	Grade 3
GB-3	Old Dairy Farm, Paddock C17, Pok Fu Lam, H.K. (KLWN Site) (AM93-0539(16))	Grade 3
HB- 1	Old Dairy Farm, Silo	Nil Grade
HB-2	Old Dairy Farm, Dairy	Nil Grade
HB-3	Old Dairy Farm, Paddock C32	Nil Grade
HB-4	Old Dairy Farm, Manure Pit	Nil Grade

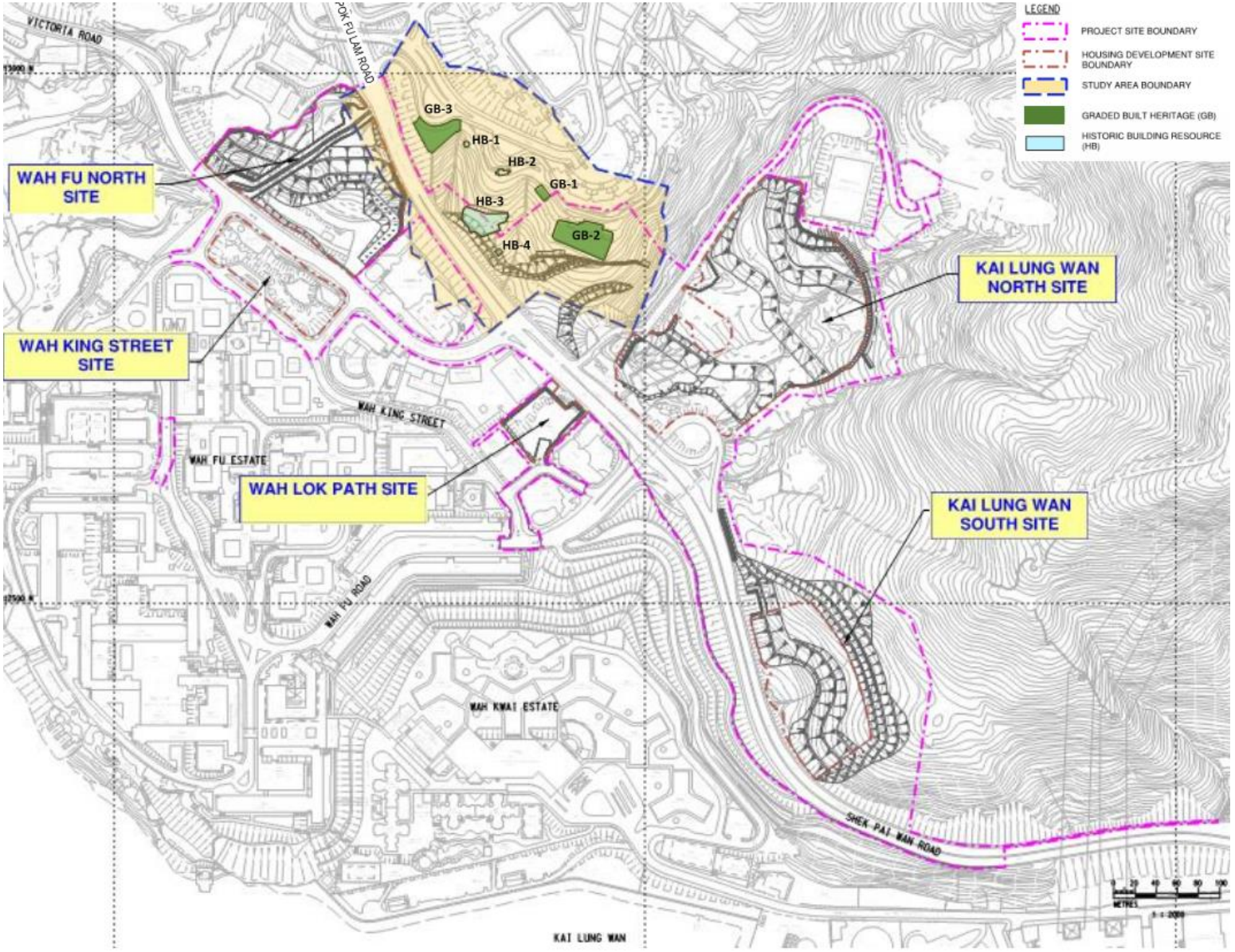


Figure 2 Location of the Heritage Sites: Graded Historic Structures, and Nil Grade Structures within the Study Area

2.4 Dairy Farm heritage sites and associated heritage interest outside the Study Area

2.4.1 The Old Dairy Farm landscape includes a large number of structures spread over a large area. The map produced by Nigel Cameron in his book *The milky way: the history of Dairy Farm* (1986) includes a map which shows the spread, see **Figure 1**.

2.4.2 Overall some of the surviving structures of the Old Dairy Farm at Pok Fu Lam include cowsheds, paddocks, silos, manure pits, piggeries, stream crossings, staff quarters and ancillary structures. The condition of the buildings, structures and features varies.

2.4.3 The ancillary structures were necessary for the efficient operation of the farm and to house and provide a workspace for staff. They include water tank, water filters, a dairy, stream crossings and masonry parapet walls. The stream crossings were built to allow the animals to cross small streams and ravines in the hilly parts of the farm landscape. A list of the graded heritage sites is appended in **Appendix B**.

2.4.4 Annually and likely a tradition for the past 200 years, a fire dragon dance event is held on the eve of Mid-Autumn Festival (the 15th day of the eighth lunar month) at Pok Fu Lam Village. The parade starts around Pokfulam Road, through the village and snakes down to the sea below via Pokfulam Road, Wah Fu Road and Waterfall Bay Road. Finally, the villagers wearing life jackets will take the dragon into the sea. The practice is currently on the Representative List of the Intangible Cultural Heritage of Hong Kong. There have been (unconfirmed) reports of efforts by Pokfulam Village Cultural Landscape Concern Group to get the Fire Dragon Dance listed on the UNESCO list of intangible heritage. To date Hong Kong has no entries on the UNESCO Intangible Heritage List.

2.5 Understanding the Site

2.5.1 The destruction of the Old Dairy Farm landscape started in WWII when five of the seven senior staff quarters were damaged. It continued in the 1960's with the resumption by Government of farmlands for badly needed housing shortage. It is particular the construction of housing, such as Wah Fu Estate around 1967-1978 and Chi Fu Fah Yuen around 1978-1981 which led to the irrevocable changed nature of the Old Dairy Farm landscape. At the same time the import of milk from China resulted in reduced sales and abandoning of the farmlands, allowing the buildings to be abandoned and dilapidate.

2.5.2 The architectural style of the Old Dairy Farm landscape can be described as functional, although some of the blocks constructed in 1960's (staff quarter blocks A and B) were designed by prominent architects (Chau & Lee Architects & Engineers) of the local modernist movement. The modernist idea of the 1950's included radical simplification of form, a rejection of ornament, and adoption of glass, steel and concrete as preferred materials.

2.5.3 Overall the structures, buildings and features were constructed from late 19th century to closure with volcanic stone, brick and concrete to serve a purpose and were maintained over time.

2.5.4 Despite the neglect since 1980's, enough original elements of the dairy landscape remain to showcase and educate the public. In addition, a number of associated heritage buildings have received recognition and new life. One of such buildings is the octagonal cowshed near the Bethanie, which was converted to the Wellcome Theatre. Another

example is the Old Dairy Farm Depot in Central which currently houses Fringe Club and FCC.

2.6 Statement of Cultural Significance of the Old Dairy Farm Landscape

2.6.1 Old Dairy Farm landscape is the oldest dairy farm in Hong Kong. Only comparable commercial set up, Kowloon Dairy Farm was established in 1904 on Boundary Street and relocated to Clearwater Bay in 1930's. The location of the landscape was carefully chosen taking in account factors to allow for success of industry. They include an isolated site away from the disease-ridden slums in Sheung Wan but proximity to central district of Hong Kong Island. Although it was sloping seaward on a piece of land rising to 500 feet above sea level, making the site receive cool breezes which were especially important for dairy farming during the sub-tropical summer in Hong Kong. Furthermore, the location had a reliable water supply and good drainage. (AAB 2018) Although the dairy farm ceased operations by the 1980's, the company lives on and still operates in Hong Kong (at places such as Wellcome and products such as Dairy Farm milk) as well as abroad.

2.6.2 The agri-industrial landscape includes administrative and residential buildings, farm buildings and structures and associated structural (such as water crossings and retaining walls) and non-structural (streams, meadows) features. A number of Old Dairy Farm buildings/structures have been graded (see **Appendix B**), and many more structural remains, albeit not all in good condition, are present. Few were designed by prominent architects of the modernist movement. The fields have long since abandoned and the integrity of the landscape has been affected by the development around and within the landscape. The elements of the landscape, however, retain a high degree of authenticity despite the deplorable condition of some. The structures provide tangible connections for local staff, such as the cowboys, and their families, who lived and worked at the dairy farm. Furthermore, guided tours are organized by Caritas and Pokfulam Village and indicate an ongoing public interest in the agri-industrial landscape and its history. (https://zh-hk.facebook.com/PokfulamVillage.org)

3 CONSERVATION POLICIES AND GUIDELINES

3.1 Introduction

3.1.1 In Hong Kong, only Declared Monuments have statutory protection. A place, building, site or structure is after consultation with the Board and by notice in the Gazette declared to be a monument and henceforth protected under the Antiquities and Monuments Ordinance (Cap. 53). There are no Declared Monuments within the current Study Area, and only three Graded Historic Buildings are identified. A grading system has been in place as a government administration mechanism for classifying historic buildings based on heritage significance since the 1980's. It has no legal basis but highlights buildings and structures of particular heritage interest which should be considered for preservation. The significance assessment is based on the following criteria: historical interest, architectural merit, group value, social value and local interest, authenticity and rarity followed by a comparative rating based on three parameters, including historical, topographical and contextual.

3.1.2 The three grades are defined as follows;

a) Grade 1. Grade-1 buildings are those of outstanding merits, of which every effort should be made for preservation if possible;

b) Grade 2. Grade-2 buildings are those of special merits, of which efforts should be made for selective preservation; and

c) Grade 3. Grade-3 buildings are those of some merits, of which preservation in some form would be desirable and alternative means could be considered if preservation is not practicable.

3.1.3 The grading of the three structures recorded in the vicinity of the Study Area by Antiquities Advisory Board (AAB) implies not only heritage significance, but in this case the emphasis of significance points heavily to group value (wide ranging surviving structures, features and buildings), social value & local interest (within living memory and special interest groups), and authenticity and rarity (oldest commercial agricultural industry).

3.2 International conservation guidelines and best practices

3.2.1 Internationally, conservation principles which may be applied include the Burra Charter (2013), Hoi An Protocols (2009) and English Heritage (2008) China Principles for Conservation of Heritage Sites in China (2015), of interest in impact assessments is also ICOMOS guidelines on HIA for Cultural World Heritage Properties (2011).

i. Burra Charter. The Australia ICOMOS Charter for Places of Cultural Significance (2013)

3.2.2 The Burra Charter applies to Australia but can easily be adopted for Hong Kong. The following paragraph paraphrases why the Burra Charter is of importance in this study:

Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records, that are important expressions of [Hong Kong] identity and experience. Places of cultural significance reflect the diversity of our

communities, telling us about who we are and the past that has formed us and the [Hong Kong] landscape. They are irreplaceable and precious.

3.2.3 The Charter defines cultural significance as embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. It advocates cautious approach on change and warns on placing emphasis on single values of heritage. The latter is particularly important when considering the cultural significance of the Old Dairy Farm as a landscape, rather than a cluster of graded and ungraded buildings or structures.

ii. Hoi An Protocols For Best Conservation Practice In Asia. Professional Guidelines for Assuring and Preserving the Authenticity of Heritage (2009)

3.2.4 The Hoi An Protocols put forward the idea that heritage conservation is essential to the preservation of cultural identity and the basis to sustained and equitable social and economic development. It builds on not only Nara Document of Authenticity (1994) but takes in account national charters including China Principles for Conservation of Heritage Sites in China (2002, updated in 2015), Burra Charter, ICOMOS New Zealand for the Conservation of Places of Cultural Heritage Value (1992), Indonesia Charter for Heritage Conservation (2003), and INTACH Charter for the Conservation of Unprotected Architectural Heritage and Sites in India (2004). The authenticity of a heritage should be understood in terms of location and setting, form, materials and design, use and function, and immaterial or essential qualities. The Hoi An Protocols note that rapid development often threatens the survival and compromises the authenticity of cultural heritage in the region.

3.2.5 The Protocols are divided into five heritage resources, including Cultural Landscapes which is relevant to this study. Old Dairy Farm landscape can be understood as development of suitable landscape which has been adapted to create opportunities and respond to constraints.

iii. English Heritage. Conservation Principles, Policies and Guidance (2008)

3.2.6 English Heritage or Historic England as they are rebranding themselves, set forth six guiding principles it believes is important to sustainably manage an historic environment. In doing so however, there is a prime understanding that the historic environment is being conserved which for Old Dairy Farm landscape is not yet the case as only individual buildings have been identified for preservation.

3.2.7 There are some interesting observations however, in the documents which are particularly relevant to the Old Dairy Farm landscape, such as:

Experience shows that judgements about heritage values, especially those relating to the recent past, tend to grow in strength and complexity over time, as people's perceptions of a place evolve. It is therefore necessary to consider whether a place might be so valued in the future that it should be protected now. [Para. 67 of Conservation Principles, Policies and Guidance (2008)]

Value-based judgements about elements of the historic environment have implications both for places and for everyone with an interest in them. Such judgements provide the basis for decisions about whether, or to what extent, a place should be conserved, …. It may have important financial and other consequences for owners, while the refusal to

designate may mean the loss of a place to which some people attached considerable significance. Consistency of judgement is therefore crucial to the public acceptability and fairness of the process. [Para. 80 of Conservation Principles, Policies and Guidance (2008)]

3.2.8 And regarding enabling development Historic England states the following:

Enabling development that would secure the future of a significant place, but contravene other planning policy objectives, should be unacceptable unless:

a. it will not materially harm the heritage values of the place or its setting
b. it avoids detrimental fragmentation of management of the place;
c. it will secure the long-term future of the place and, where applicable, its continued use for a sympathetic purpose;
d. it is necessary to resolve problems arising from the inherent needs of the place, rather than the circumstances of the present owner, or the purchase price paid;
e. sufficient subsidy is not available from any other source;
f. it is demonstrated that the amount of enabling development is the minimum necessary to secure the future of the place, and that its form minimises harm to other public interests;
g. the public benefit of securing the future of the significant place through such enabling development decisively outweighs the disbenefits of breaching other public policies. [157]
h. Enabling development is development that would deliver substantial benefit to a place, but which would be contrary to other objectives of national, regional or local planning policy. It is an established planning principle that such development may be appropriate if the public benefit of rescuing, enhancing, or even endowing a significant place decisively outweighs the harm to other material interests. Enabling development must always be in proportion to the public benefit it offers. [Para. 158 of Conservation Principles, Policies and Guidance (2008)]

iv. Australian Heritage Council. Ruins: A Guide to Conservation and Management (2013)

3.2.9 This document is of particular interest as a number of the structures within the dairy landscape are in poor condition.

3.2.10 Cultural significance is defined as one or all of the following; aesthetic, historic, scientific, social or spiritual value for past, present or future generations. For Old Dairy Farm landscape, the historic and social value are of particular relevance, whereby;

Ruins are sometimes the only remaining physical evidence of significant historical events, phases, activities or way of life. p.15; and

The strong and special associations between a community or cultural group and a place are the essence of social significance. Such attachments are felt by people alive today and often endure across generations.p.16

3.2.11 Section 4.2 and to some extent Sections 4.3 to 4.8 of the document talk about the need for management of the heritage:

In many cases ruins lack a management regime and may have no group or individual with a direct interest in their survival. Until a decision is made about their management, they are in a dynamic state and will continue to deteriorate through natural attrition and other impacts.

Decisions may therefore need to be made by a government authority on behalf of the wider public. A management regime for a ruin needs to reflect its values, location, condition and the community's management expectations.

3.2.12 Section 6.10 offers advice on when the decision is made to remove the ruin. This decision is appropriate when the heritage is completely lost due to natural process; letting the ruin go aids the preservation of more significant elements; when the condition of the ruin is an unacceptable risk to public safety or where the significance of the place does not warrant the investment of substantial resources required to make them safe; or where pressure for alternative use of the site is deemed to outweigh the heritage significance of the place.

v. ICOMOS Guidelines on Heritage Impact Assessment for Cultural World Heritage Properties (2011)

3.2.13 In general, it can be stated that the AMO Guidelines for Cultural Heritage Impact Assessment are in line with the ICOMOS Guidelines. The ICOMOS Guidelines are highlighted here for two reasons; firstly, there is an emphasis on (stating and agreeing) a clear definition of the heritage significance of the property and secondly, an understanding that an overall assemble of attributes of significance should be preserved rather than individual items.

3.3 Guiding Conservation Principles

3.3.1 The Guiding Conservation Principles for Old Dairy Farm landscape and individual heritage resources have been distilled from the above identified relevant grading appraisals, guidelines and best practices. They can be summarised as follows:

- Grade 2 buildings are understood to be of special merits and efforts should be made for selective preservation (AAB 2019)
- Grade 3 buildings are understood to have some merits and preservation in some form would be desirable but alternative means could be considered if preservation is not practicable (AAB 2019)
- Heritage conservation is essential to the preservation of cultural identity and the basis to sustained and equitable social and economic development (Burra Charter 2013:1; Burra Charter 2013: Article 24, Hoi An Protocols 2009:2; Australian Heritage Council 2013: section 3.6)
- The communities or public especially if there is a close attachment should be involved in the decision of preservation and management of the heritage (Australian Heritage Council 2013: section 7.6, English Heritage 2008: Burra Charter 2013: article 26.3)
- Overall assemble of attributes of significance should be preserved rather than individual items (Burra Charter 2013: article 5; ICOMOS 2011:1-2)
- While the proposed development is necessary, safeguarding and ensuring a future for the heritage should be considered (English Heritage 2008:157-158)
- Heritage should not be un-managed and preservation should be financial realistic (Australian Heritage Council 2013: sections 2.1, 4.3).

4 HERITAGE IMPACT ASSESSMENT

4.1 Understanding the cultural significance of the Study Area

4.1.1 The Study Area covers an area largely situated between Pok Fu Lam Road and Chi Fu Road, adjacent to Chi Fu Fa Yuen and Yar Chee Villas Blocks (both residential buildings), near the Hong Kong Archery Club. It occupies an area of the dairy landscape itself first established in 19th century and which includes paddocks, manure pits, silo, dairy and piggeries which would have been situated at the south-eastern end of the dairy landscape. The structures within the Study Area date mainly to the 1930's and 1940's and their condition is fair although existing development impacts have already affected parts of Paddock C17 (GB-3) and Paddock C32 (HB-3) and the surrounding environment of the cluster of heritage sites.

4.1.2 Architecturally, the structures within the Study Area are be described as functional. They are constructed with stone, brick and cement. Features indicate the use of the structures such as loading platforms, piers, scale for loading feed, etc are visible. The historic structures and remnants are accessible but not easily so; despite this, public tours are occasionally organized to learn about agri-industrial farm activities and life at Pok Fu Lam. The available tours currently take place outside the Study Area.

4.2 Understanding the development constraints, requirements and concerns

4.2.1 The Project consists of the site formation and the infrastructural works at Wah Lok Path Site, Wah King Street Site, Wah Fu North Site, Kai Lung Wan North Site, and Kai Lung Wan South Site. Works will include formation of platforms, including the necessary geotechnical and slope stabilisation works, new slopes and earth retaining structures and natural terrain hazard mitigation works and its associated maintenance access; protection of existing cable tunnel, existing underground extra-high voltage cables and the proposed MTR tunnel; landscaping works, including associated tree protection/preservation, felling, transplanting and compensatory works; road works including construction of new access roads and road widening / improvement works at Pok Fu Lam Road and Shek Pai Wan Road, and ancillary infrastructural works including lift towers, staircases, footbridges, utility diversion, street lighting, traffic aids, new and improvement/diversion to drainage, sewerage and waterworks, street furnitures and environmental mitigation measures.

4.2.2 Only the proposed works at WFN Site and KLWN Site may affect the identified heritage sites and are relevant in this HIA. It concerns the proposed access road to KLWN, slope works for WFN Site and housing developments at KLWN and WFN. Drawings showing the proposed works are attached in **Appendix D** and a description of the proposed works follows:

<u>Access Road to Kai Lung Wan North (KLWN) Site</u>

Proposed works

4.2.3 The proposed access road to KLWN Site on the hilly terrain may directly affect paddock C32 (HB-3) and nearby manure pit (HB-4) which are both Nil Grades, and is located in close proximity to the Grade 3 Paddock C18 (GB-2).

4.2.4 Site formation works are required for the formation of the proposed access road to the housing site and to retain the level difference between the proposed access road and the adjacent hilly terrain. The works are mainly divided into two parts: road widening along

the existing Pok Fu Lam Road, and construction of new access road connecting existing Pok Fu Lam Road to the proposed housing site as shown in **Figure 3**. Part of paddock C32 (HB-3) and Manure pit (HB-4) which are both Nil Grades will be removed to facilitate the works.

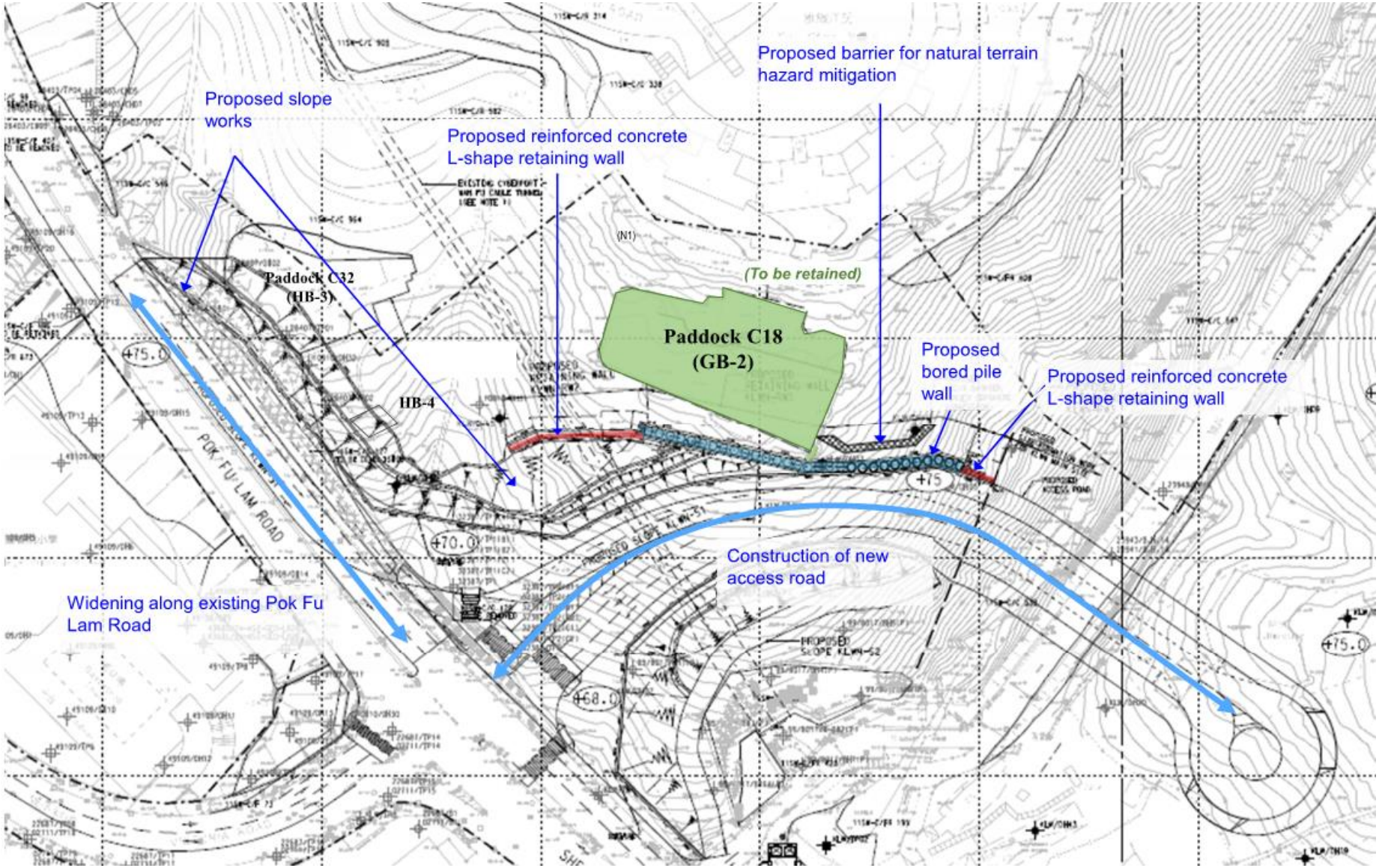


Figure 3 Layout Plan of Proposed Works

4.2.5 For the widening works of Pok Fu Lam Road, existing slope along the road will be trimmed and further set back and a new cut slope with max. height of 15m and gradient of 50 degree will be formed. Soil nails will also be installed as the stabilization measures of the newly formed cut slope.

4.2.6 The proposed new cut slope for the widening of Pok Fu Lam Road turns at the junction of the Pok Fu Lam Road and new access road to the proposed housing site and runs along the western side of the new access road.

Design development

4.2.7 KLWN site, which has been identified as one of the five sites in Pok Fu Lam South for public housing development, is located in hilly terrain with high level difference not only within the site but also with the adjacent public road network. In order to provide an access road to this housing site with geometry satisfying the stringent requirement of Transport Planning and Design Manual (TPDM) published by the Transport Department of HKSAR Government, the only practical solution is to connect to the existing road junction of Pok Fu Lam Road / Victoria Road / Shek Pai Wan Road by converting the T-junction to cross-junction and from this the access road will need to make a right angle turn to reach KLWN site.

4.2.8 The right-angle bend of the road is constrained by Old Dairy Farm, Paddock C18, a Grade 3 Historic Structure at the north side and an existing portal of Hong Kong Electric (HEC)'s cable tunnel at the south side. In addition, the bend radius has to meet the minimum allowable radius set by TPDM. It has been found that the resulting road alignment can avoid Old Dairy Farm, Paddock C18 entirely and there is sufficient horizontal clearance between the proposed construction works of the road and Old Dairy Farm, Paddock C18.

Design constraints

4.2.9 While attempt has been tried to move the road further away from Old Dairy Farm, Paddock C18, it was found not practical in order to meet the minimum bend requirement of TPDM and the presence of the HEC tunnel portal.

4.2.10 Furthermore, to meet the platform level at KLWN housing site, the proposed new access road is also aligned such that it provides sufficient headroom to the WSD maintenance access road underneath.

4.2.11 In the vicinity of Paddock C18, due to the space constraint of less than 5 m (minimum) between Paddock C18 and western edge of the proposed new access road, there is no sufficient space for the formation of the cut slope (including rock cut slope) to retain the level difference of maximum 24m between Paddock C18 and road level of the new access road.

Design considerations

4.2.12 The rock cut slope scheme in-lieu of the (bored pile) retaining wall scheme for the formation of proposed new access road near Paddock C18 was explored but the formed slope profile, despite generally considered to impose less visual impact, will be in conflict with the road alignment of the proposed new access road, or otherwise the alignment shall be shifted southern (further away from Old Dairy Farm, Paddock C18) to allow sufficient space for the new rock cut slope. Relatively steep slope angle for rock cut slope was also considered. As such, the rock cut slope scheme is considered not feasible, as illustrated in **Figure 4**.

In terms of the type of retaining wall near Paddock C18, the alternative of pre-bored H piles which would require a large number of tie backs going underneath Paddock C18 was explored but the rigidity is much lower than a bored pile wall and as such may not serve the purpose. For pre-bored H piles, excavation of soil and rock and grouting would still be required.

Design solutions

4.2.13 Despite more expensive, bored pile wall is inevitably proposed to retain the large level difference between Paddock C18 and the new access road. Bored pile wall is chosen due to high rigidity, which in turn induces less movement to the ground / structure at the back of the wall. The impact to the adjacent structure during construction, e.g. vibration, is also relatively small. Reinforced Concrete (RC) L-shape/inverted T-shape retaining wall are proposed as a transition portion between proposed bored pile wall and the proposed new cut slope where further away from Paddock C18 and space is less constrained. In other words, Paddock C18 could be retained with the adoption of bored pile wall.

4.2.14 At the eastern side of the Paddock C18, mitigation measures for the natural terrain hazard for the proposed road in form of a barrier is also proposed along the top of the bored pile wall.

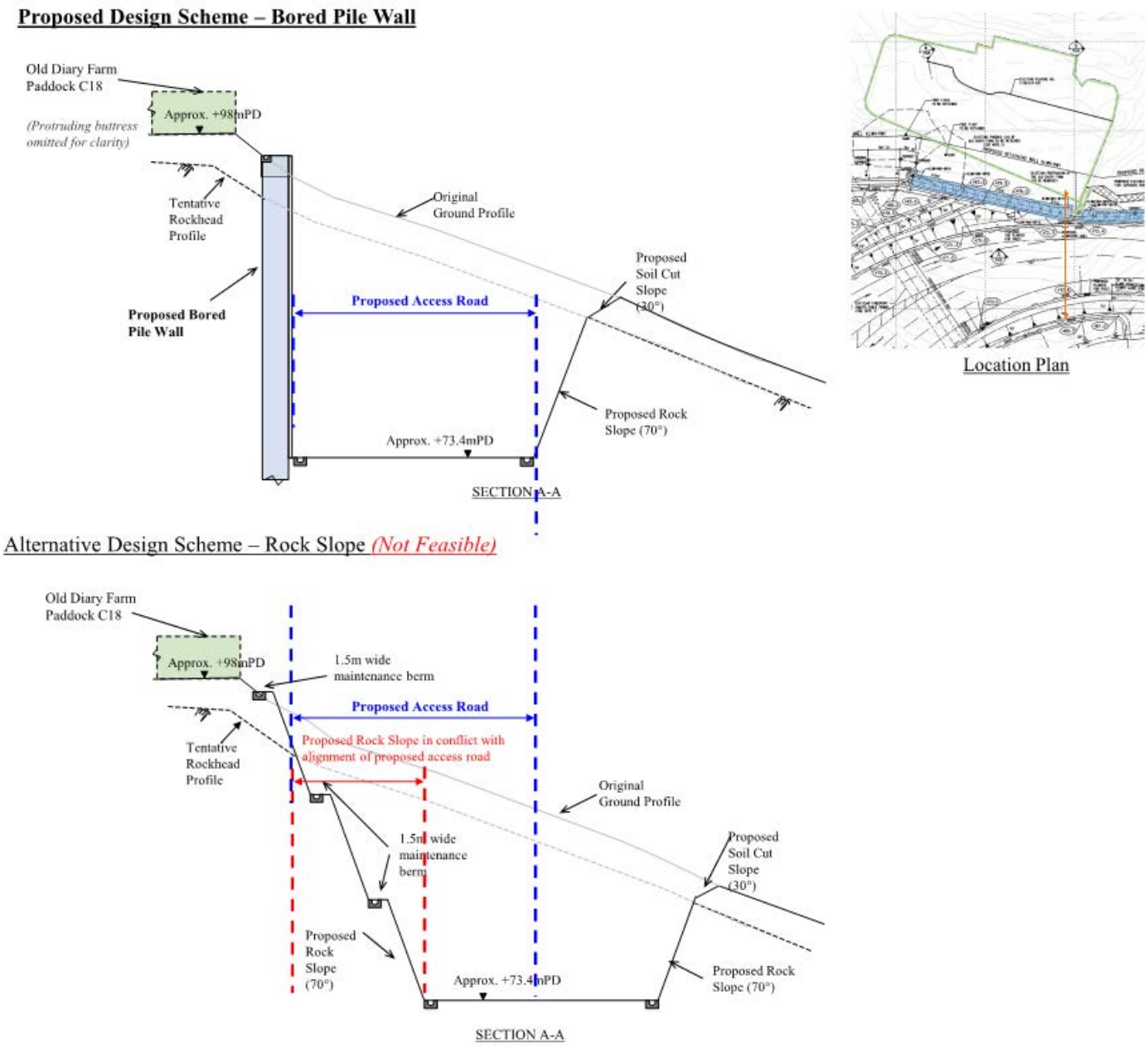


Figure 4 Sections showing the Selection of Design Scheme near Paddock C18

Construction Method

4.2.15 As illustrated on **Figure 5**, the site formation works for the proposed access road will be constructed by gradual excavation and removal of the soil and rock from existing ground level to the proposed road level together with the construction of the proposed cut slopes at two sides of the road. For the portion with bored pile wall / RC retaining wall, the walls will be constructed to retain the level difference prior to the excavation for the proposed access road.

4.2.16 The construction of bored pile wall involves excavating a hole in the ground, followed by inserting steel reinforcement cages and concreting. In the soil portion, the hole is envisaged to be formed by installing a steel casing through the ground, followed by removing soil within the casing by grabbing. In the rock portion, the hole is envisaged to be formed by reversed circulation drill (RCD) through which a drill bit penetrates through the rock at the bottom of the hole. No chiselling will be allowed for the bored pile construction for the KLWN site as a precautionary measure for vibration control. After the formation of hole to the design level, steel reinforcement cages will be inserted to the hole followed by concreting. Key construction plants required for the bored pile construction generally includes the casing oscillator/rotator, RCD, crawler crane and dump truck. Due to the hilly terrain, construction of temporary working platform for the stationing of plants and temporary haul works for access are envisaged.

4.2.17 The construction of L-shape / inverted T-shape RC retaining wall involves the excavation of existing ground in soil / rock, followed by construction of RC wall and backfilling behind the wall. Construction of temporary retaining structures such as sheet pile wall may sometimes be required to facilitate the excavation works and provision of sufficient space for the construction of RC wall. Key construction plants required for the RC retaining wall generally includes the excavator, hydraulic breaker and crawler crane.

4.2.18 The construction of slope works generally involve direct excavation and removal of soil and rock from the existing ground level to the proposed ground level. Construction plants generally required for the slope construction includes excavator, hydraulic breaker, crawler crane and dump truck. If slope stabilization works such as installation of soil nails are required to enhance the slope stability, drilling rigs will also be required.

4.2.19 Based on the available ground information, the estimated maximum greenfield settlement at the location of Paddock C18 near the proposed bored pile wall is in the range of 20mm to 30mm. Associated monitoring measures are further discussed in **Section 4.3**.

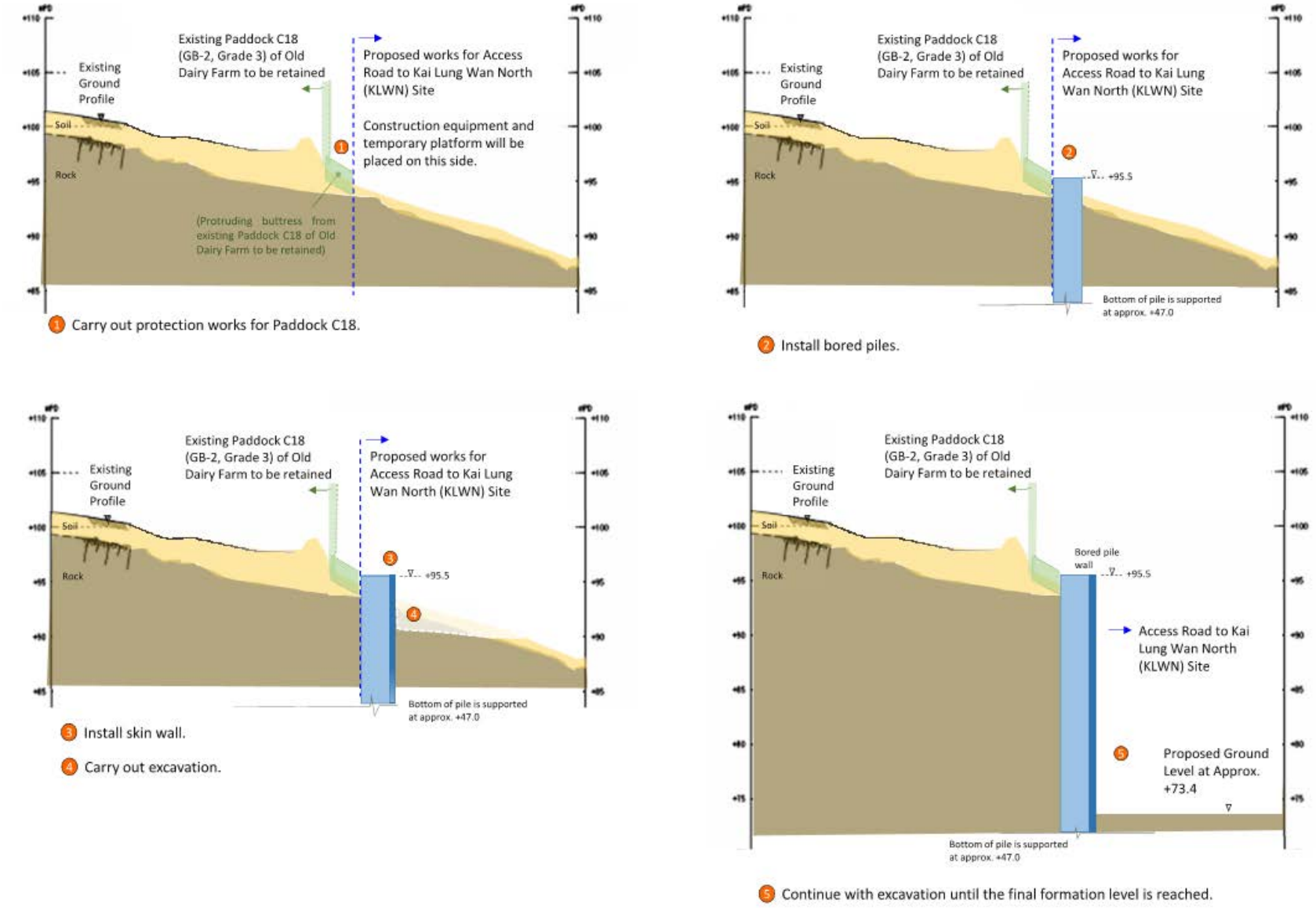


Figure 5 Construction Method of Proposed Works near Paddock C18

Kai Lung Wan North (KLWN) Site

Proposed works

4.2.20 The proposed works within the KLWN site generally includes the construction of bored pile walls, soldier pile walls, fill slopes, soil / rock cut slopes and excavation/removal of soil and rock so as to provide the required platform for the development of public housing. No chiselling will be allowed for the bored pile construction as a precautionary measure for vibration control.

Wah Fu North (WFN) Site

Proposed works

4.2.21 As illustrated on **Figure 6**, the proposed works within the WFN site generally includes the construction of bored pile walls, soldier pile walls, fill slopes, soil/rock cut slopes and excavation/removal of soil and rock so as to provide the required platform for the development of public housing. No chiselling will be allowed for the bored pile construction as a precautionary measure for vibration control.

4.2.22 The WFN Site is located at approximately 32m away from the existing Paddock C17 (GB-3) at the opposite side of the Pok Fu Lam Road.

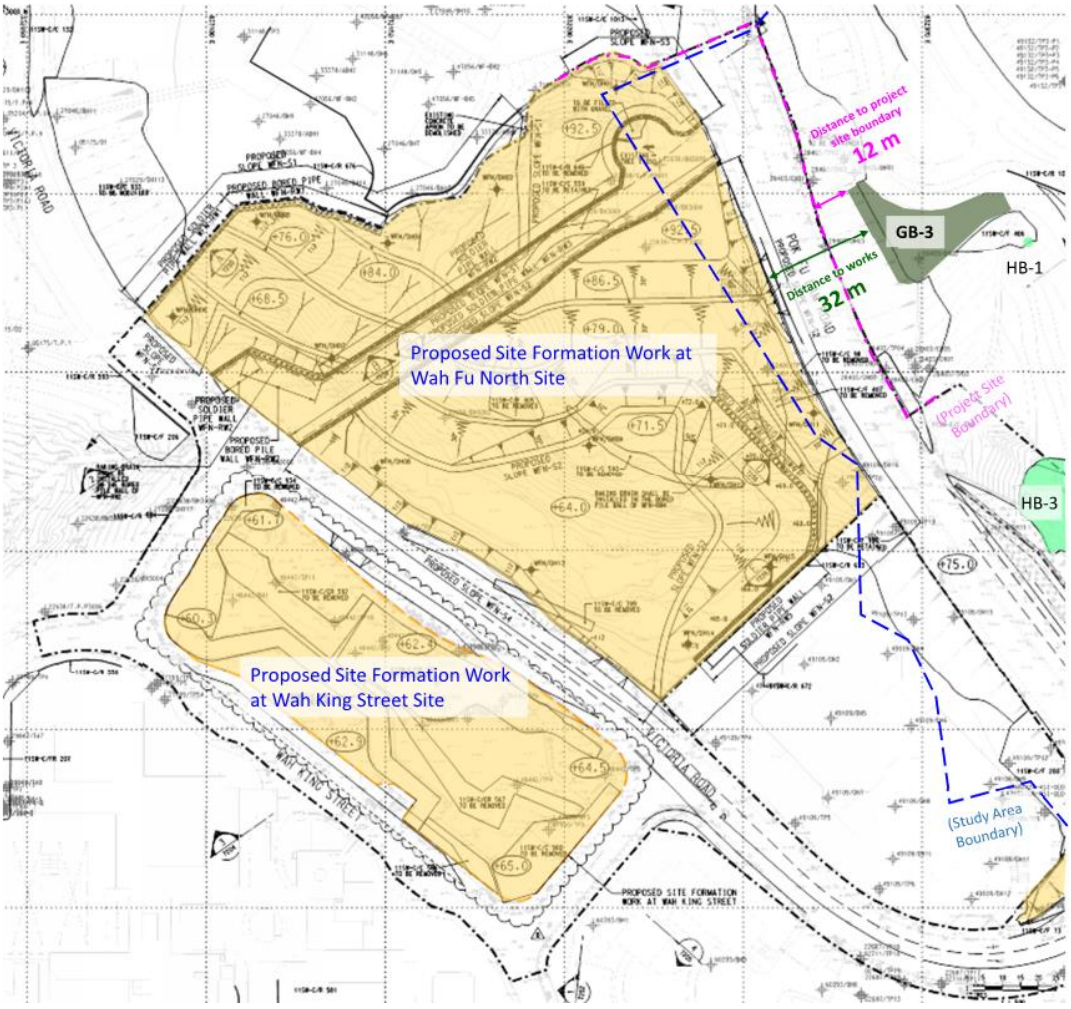


Figure 6 Proposed Construction Works at Wah Fu North Site near Paddock C17 (GB-3)

4.3 Identification of potential impacts, assessment and recommended mitigation measures

Identification of potential impacts on Old Dairy Farm landscape

4.3.1 The proposed housing development may further isolate the farm areas of the Old Dairy Farm Co. and cause potential impact on the farm structures and features. Previous developments have already eroded the unity of the landscape but overall a significant amount of buildings, structures, features remain (see **Appendix B**). Few Old Dairy Farm buildings have been revitalized and received a new purpose as theatre, art and entertainment venue (such as Wellcome Theatre, Fringe Club/FCC) etc. The impacts on a section of the landscape by the development are limited. Further future developments are advised to consider cumulative development impacts which may lead to loss of the landscape and significance. **Appendices C** and **D** illustrates infrastructure works constructed under the current development adjacent to the heritage sites.

4.3.2 The annual Fire Dragon parade travels along Pok Fu Lam Road, Wah Fu Road and Waterfall Bay Road and as such through the Project Site Boundary.

Identification of potential impacts on heritage within Study Area

4.3.3 With parts overlapping with the Study Area, the Project Site Boundary (**Figure 2**), as mentioned before, includes Paddock C18 (a Grade 3 structure), and two Nil Grade structures.

(1) Paddock C18 (Grade 3) (GB-2)

Paddock C18 is located within the Project Site Boundary and works are located immediately adjacent to the buttress at the southern corner of the Paddock and enclosure wall of Paddock along the east. The buttress wall (see **Figure 7**) is in relative good condition for the first 1.95m and remainder is damaged. The buttress is found separating from the main wall, likely by slope erosion (**Figure 7b**). Evidence of repointing (reapplying of bonding material between stones) suggests that it is not the first time the integrity of the south east corner is affected by the steep slope. The space between the proposed access road and the existing Paddock C18 of the Old Dairy Farm is limited and the level difference cannot be retained by a slope option due to space constraint. As such immediately adjacent to Paddock C18 and in particular the buttress, a pile wall will be bored. To avoid affecting the buttress wall, local modification to the design of the bored pile wall is made as shown on drawings in **Appendix D**. Further works in close proximity include the construction of a flexible barrier to the south and cutting of a rock slope.

(2) Paddock C32 and Manure Pit (Nil Grade) (HB-3 and HB-4)

Majority of Paddock C32 and the manure pit are located within the Project Site Boundary. Under the current geotechnical design for the project, it is proposed to partially remove Paddock C32 along the southwest and whole of the manure pit to allow for slope cutting.

View of buttress wall; generally looking north.

Figure 7a Buttress Wall at Paddock C18 (GB-2)

Heavily damaged buttress end

Buttress wall separating from main wall

Figure 7b Buttress Wall at Paddock C18 (GB-2)

4.3.4 The following two Graded historical structures are located near (slightly outside) the Project Site Boundary, but still within the Study Area, and are not expected to be directly affected by the slope and access road works (**Figure 2**):

- Manure Pit (AM93-0539(32)), a Grade 2 Historic structure (GB-1)
- The Manure Pit is located over 50m from the nearest works at the access road. Hence potential impact from the construction works are considered negligible.Paddock C17 (AM93-0539(16)), a Grade 3 Historic structure (GB-3)

  Paddock C17 is located 32m from the proposed development at WFN Site where site formation and infrastructure works will be performed. The Grade 3 Historic Building is however, topographically situated over 15m higher than Pok Fu Lam Road and 10m higher than the highest point of the WFN Site. With Pok Fu Lam Road positioned between the heritage site and the development site, vibration from construction works will remain minimal.

4.3.5 Nil Grade structures HB-1 and HB-2, i.e. the Silo and Dairy (**Figure 2**) are also not expected to be affected by the slope and access road works.

4.3.6 Construction impacts arising from vibration, settlement, tilting, or possible structural integrity impacts may be expected as well as possible access issues may arise. Tentative monitoring measures against vibration and settlement are shown on **Figure 8**. Upon contract award of the construction works, AMO will be consulted to confirm the monitoring measures to be adopted after conducting the condition survey prior to commencement of construction works.

4.3.7 No further impacts are identified during the operational phase.

Figure 8 Indicative Locations of Monitoring Instruments *(Subject to further detailed geotechnical design)*

Assessment of development on heritage within Study Area

4.3.8 Evaluation of potential impacts show that the proposed public housing development has the potential to both directly and indirectly affect heritage elements of the Former Old Dairy , a 19th century agri-industrial landscape.

4.3.9 The definitions of level of significance for the elements are based on *Conservation Plan: A Guide to the Preparation of Conservation Plans for Places of European Cultural Significance* by Kerr (2013) and taken from *Heritage Impact Assessment Conservation Management Plan Revitalisation of the Rear Portion of the Cattle Depot at To Kwa Wan* (AGC Design Ltd 2015:54-55) and includes six levels: exceptional, high, moderate, low, neutral and intrusive. The following table describes the definition of the levels (taken from AGC Design Ltd 2015:54-55):

Table 4.1 Definition for Level of Significance for Heritage Elements

Level of Significance	Definition
Exceptional	Where an individual space or element is assessed as displaying a strong contribution to the overall significance of the place. Spaces, elements or fabric exhibit a high degree of intactness and quality, though minor alterations or degradation may be evident.
High	Where an individual space or element is assessed as making a substantial contribution to the overall significance of the place. Space, elements of fabric originally of substantial quality, yet may have undergone considerable alteration or adaptation resulting in presentation, which is either incomplete or ambiguous. The category also includes spaces, elements or fabric of average quality in terms of design and materials, but which exhibit a high degree of intactness.
Moderate	Where an individual space or element is assessed as making a moderate contribution to the overall significance of the place. Spaces, elements or fabric originally of some intrinsic quality, and may have undergone alteration or degradation. In addition, elements of relatively new construction, where the assessment of significance is difficult, may be included. This category also includes original spaces, elements or fabric of any quality, which have undergone extensive alteration or adaptation.
Low	Where an individual space or element is assessed as making a minor contribution to the overall significance of the place, especially when compared to other features. Spaces, elements or fabric originally of little intrinsic quality, any may have undergone alteration or degradation. This category also includes original spaces, elements or fabric of any quality which have undergone extensive alteration or adaptation to the extent that only isolated remnants survive (resulting in a low degree of intactness and quality of presentation).
Neutral	Where an individual space or element is assessed as having an unimportant relationship with the overall significance of the place. Spaces elements or fabric are assessed as having little or no significance.
Intrusive	Where an individual space or element detracts from the appreciation of cultural significance, by adversely affecting or obscuring other significant areas, elements or items.

4.3.10 The impact assessment levels are based on the AMO issued *Guidelines for Cultural Heritage Impact* Assessment and include five evaluated impact levels (Beneficial, Acceptable, Acceptable with Mitigation Measures, Unacceptable and Undetermined).

4.3.11 Currently, the development does not include any enhancement of the Diary Farm significance but is deemed necessary to facilitate the resolution of affordable housing shortage in Hong Kong. The following table summarises the assessment of the Graded historical structures.

Table 4.2 Evaluation of Proposed Work Impacts on Identified Heritage

Heritage Site	Heritage significance		Potential works and distance from heritage site	Significance of affected heritage elements	Assessment
Old Dairy Farm Co.	The agri-industrial landscape has been affected since WWII with many of the pastures gone and buildings and structures destroyed or dilapidated. It concerns, however, the oldest commercial dairy farm in Hong Kong and the landscape has a connection to Sir Patrick Masson, a historical figure of note and importance in Hong Kong and abroad. In addition, several buildings have been graded and revitalized and public tours are organized by concern groups.		Public housing development The works will occur adjacent and within the southeast of the former Dairy Farm Co..	The integrity of the Old Dairy Farm Co. has already been affected, although the authenticity of the individual elements has been retained to a high degree. The proposed works under the project will avoid Graded Historic Structures. The significance of the study area within the Old Dairy Farm Co. is deemed **MODERATE**.	The Old Dairy Farm Co. has already been compromised by previous developments, including for instance within current Project Site Boundary the construction and slope works for Pok Fu Lam Road, carpark construction (over Paddock C16), St Paul's College Primary School (over part of piggeries), etc. Further isolation of heritage sites will occur, and some structures will have to be removed or partly removed to allow for the works. The public housing development is deemed necessary however, and hence impact on the said sites is unavoidable.
Individual structures belonging to the Old Dairy Farm landscape within Study Area					
ID	Graded Historic Buildings				
GB-1	Manure Pit (AM93-0539(32)), Grade 2	Manure pits in the Old Dairy Farm were designed to contain manure of the farm animals. The manure pit was built before 1931. This manure pit was the largest built and with exception of its roof, is in relatively good condition. It shows the working of the manure	Closest proposed works involve bored pile wall construction at 51m away.	The heritage site will not be affected by proposed works, the individual significance of the heritage site will not be affected. The significance of Grade 2 Manure Pit is **MODERATE**.	Part of Old Dairy Farm Co. and one of five graded manure pits known on the farm. Manure pits are part of the operation of the farm, has educational value and is in relatively good condition. The works are at a sufficient distance to the heritage and no impacts are expected for this Grade 2 historic structure. Access to the heritage sites should continue to be possible via Chi Fu Road.

Heritage Site	Heritage significance		Potential works and distance from heritage site	Significance of affected heritage elements	Assessment
		pit with loading on the top and seepage of liquids through hole at base.			***The impact is minimal and acceptable.***
GB-2	Paddock C18 (AM93-0539(14)), Grade 3	Paddocks were an integral part of the dairy farm. C18 is one of some 50 built paddocks. Paddocks were integral structure designed with cowsheds. It was constructed in or before 1931.	Construction of bored pile wall adjacent to Paddock C18 and adjacent to south the construction of a flexible barrier.	The proposed works will not directly affect the Paddock structure but have the ability to indirectly cause changes through vibration, settlement or tilting. The stone buttress has a total protruding length just over 3.15m although the last 1.2m is severely damaged. There is possible evidence for repointing of stonework but stone work appears original and supports the enclosure wall in the south corner. As the buttress only forms small part of the paddock, the significance of the buttress is LOW. The enclosure wall near the proposed retaining walls consists of original stone wall and is in relative good condition. As an inherent element of the paddock, the significance of the enclosure wall MODERATE.	Part of Old Dairy Farm Co. and one of ten graded paddocks. The remains include some original elements such as grooved track at entrance and metal rings on piers which have educational potential. A curved platform and buttress in south east corner to structurally support the paddock is missing from the mapped Grade 3 historic structure both are clearly associated; (see inset **Figure 2).** To avoid damages to the buttress, local modification of the bored pile wall was proposed and the design would be confirmed based on onsite conditions. The redesign / relocation of the proposed bored pile wall was explored (see **Section 4.2**) but was deemed not feasible and unsafe. As such, construction of the bored pile wall at the said location cannot be avoided. A reinforced concrete inverted T-shape retaining wall and reinforced concrete L-shape retaining wall are proposed adjacent to the paddock's enclosure wall. A flexible barrier at 2m away from the paddock's enclosure wall is proposed. The

Heritage Site	Heritage significance		Potential works and distance from heritage site	Significance of affected heritage elements	Assessment
				The overall significance of Grade 3 Paddock C18 is **MODERATE**.	works involve excavation works for anchor and posts foundations but are not considered major earthworks and therefore no significant impacts are anticipated. As the flexible barrier aims to control erosion on the steep slope, it will ultimately benefit integrity of the paddock too. The further preservation of this Grade 3 historic structure is promoted as far as practicable to avoid potential damages to the paddock through possible contact with equipment or vibration, settlement or tilting of soils during construction of the bored pile wall and flexible barrier. Mitigation measures are proposed in the following sections. Access to the heritage sites should continue to be possible via Chi Fu Road. The access road is deemed necessary to allow for public housing at Kau Lung Wan North site. ***Acceptable impact with mitigation.***
GB-3	Paddock C17 (AM93-0539(16)), Grade 3	Paddocks were an integral part of the dairy farm. C17 is one of some 50 built paddocks. Paddocks were integral structure designed with cowsheds and associated	Paddock C17 is located 32m from the closest proposed site formation works at WFN Site (and 60m away from construction of bored	The heritage site will not be affected by proposed works, the individual significance of the heritage site will not be affected. The paddock has been affected by previous slope and road works and	Part of Old Dairy Farm Co. and one of ten graded paddocks. The proposed works are located at a distance from the heritage site which is deemed a sufficient distance and no further adverse impacts are expected for this Grade 3 historic structure under the proposed project.

Heritage Site	Heritage significance		Potential works and distance from heritage site	Significance of affected heritage elements	Assessment
		with manure pit. It was constructed in the expansion days of the farm around 1930's or 1940's. The paddock has already been affected by previous road and slope works.	pile wall). However, it is topographically situated over 15m higher than Pok Fu Lam Road and 10m higher than the highest point of the WFN Site, with Pok Fu Lam Road sitting between it and the development site.	its associated cowshed was demolished, but original elements pertaining to its function remain. The significance of Grade 3 Paddock C17 is **MODERATE**.	Access to the heritage sites should continue to be possible via Chi Fu Road. ***The impact is minimal and acceptable.***

Recommended Mitigation Measures

4.3.12 Mitigation recommendations are necessary as potential adverse impacts have been identified. Mitigation measures for built heritage may include a range of measures. The descriptions below will provide the detailed requirements for recommended mitigation actions in this report.

Condition Survey (CS)

4.3.13 A condition survey will be carried out by qualified building surveyor or engineer in advance of works for identified heritage sites that may be affected by ground-borne vibration, settlement and tilting or may be structurally stressed by works. The Condition Survey Report should contain descriptions of the structure, identification of fragile elements, an appraisal of the condition and working methods for any proposed monitoring and precautionary measures that are recommended.

4.3.14 The condition survey report for the identified heritage sites must be submitted to AMO for comment before construction activities commence. The location of proposed monitoring points in the building/structure should avoid damaging the historic fabric, and any other remedial actions (such as possible structural support of buttress and southeast corner during construction phase) should be agreed by AMO prior to implementation. The contractor should conduct the approved monitoring and precautionary measures.

Vibration Monitoring (VM)

4.3.15 Monitoring of vibrations should be undertaken during the construction works to ensure that safe levels of vibration are not exceeded. The relevant levels of acceptable vibration, a monitoring schedule, the location of monitoring equipment, the frequency of monitoring, reporting requirements and format will depend on the structural condition of the heritage site and will be evaluated and recommended in the Condition Survey Report. Provisionally an Alert, Alarm and Action (AAA) vibration limit of 5 / 6 / 7.5 mm/s should be adopted. The AAA level may be revised pending recommendations of the Condition Survey Report. A list of action upon reaching each of the AAA level will be implemented, including site inspection, assessment of effect on the heritage site, review of works being undertaken in vicinity, prediction of further responses, agreement of further action plan to control vibration, etc. The location of any monitoring equipment must be approved by AMO before installation. Reinstatement to all affected areas is required.

Settlement Monitoring (SM)

4.3.16 Mechanical subsidence of structural heritage remains may arise during construction phase (refer to **Section 4.2.19** on anticipated settlement). Monitoring should be carried out by the Contractor using crack gauges to monitor horizontal or vertical movement across a crack on a flat surface. A monitoring schedule, the location of monitoring equipment, the frequency of monitoring, reporting requirements will be evaluated and recommended in the Condition Survey Report. Provisionally AAA standards of 50/70/100% of the estimated value are recommended. A list of action upon reaching each of the AAA level will be implemented, including site inspection, assessment of effect on the heritage site, review of works being undertaken in vicinity, prediction of further responses, agreement of further action plan to control settlement, etc.

Tilt Monitoring (TM)

4.3.17 The Condition Survey Report will recommend equipment, frequency and AAA standards to monitor any discernible tilting at the identified heritage sites as a result of their

exposure and /or due to nearby works. Provisionally AAA standards of 1/2000. 1/1500 and1/1000 are recommended.

Provision of Buffer Zones (BZ)

4.3.18 A buffer zone should be provided to separate the structure from the construction works. The buffer zone will act as a 'reminder' to the construction workers and site personnel that care should be taken when working near these structures. The buffer zone should be clearly marked out by temporary fencing. The buffer zone should be made at least 1m from the proposed works or if this is not possible as large as the site restrictions allow.

Provision of Protective Covering (PC)

4.3.19 Protective covering in the form of geotextile sheeting and sandbag covering (**Figure 9**) should be provided for external walls and surfaces (that contain historical elements) in close proximity to works areas, i.e. areas where a buffer zone alone cannot provide protection from equipment and works activities.

Placing geotextile over heritage structures.

Placing sandbags along the structure after it has been covered by geotextile.

Placing of warning signs.

Figure 9 Proposed Protection Provision for Historical Elements

Provision of Public Access (PA)

4.3.20 Any proposed works in close proximity to buildings or structures used by the public have the potential to create an unsafe environment for members of the public.

4.3.21 The contractor should ensure that current public access is retained, if possible through provision of clearly marked divisions (such as fencing, signs), which separate construction works areas from heritage site and public area.

4.3.22 Access to the heritage sites is currently difficult due to dense vegetation and steep terrain and public access (**Figure 10**), although currently possible, is not expected during the works. However, for the safety of the public, separation of works and heritage sites not affected by works should be clearly marked.

Preservation by Record (PR)

4.3.23 A full cartographic and photographic survey should be conducted for identified heritage sites or part thereof and which will be demolished during works, prior to the construction works. The survey report should be submitted to AMO for review and record purposes.

4.3.24 It is also recommended to salvage masonry / brick materials from those Old Dairy Farm buildings/structures which have been identified for demolition. The salvaged materials can be used for future repair of those fellow graded Old Dairy Farm buildings/structures where feasible. The salvaged materials should be handed over to AMO in liaison with its Heritage Conservation Unit.

Summary on Recommended Mitigation Measures

4.3.25 Following the above assessment mitigation measures may be required during different stages of the proposed development. Summaries on recommended mitigation measures during different stages of the development are presented next.

Mitigation before and during construction phase

4.3.26 Mitigation measures required for the Graded historical structures are presented in **Table 4.3**. As mentioned in **Table 4.2**, the Manure Pit (GB-1) and Paddock C17 (GB-3) are considered to be relatively far away from the proposed construction works and therefore impact is negligible.

4.3.27 Prior to construction, preservation by record is recommended for the Nil Grade structures affected by the development including the manure pit (HB-4) and the part to be demolished of Paddock C32 (HB-3). Condition survey for Paddock C32 is also recommended.

Table 4.3 Summary of mitigation before and during construction phase

ID	Heritage site	Grading status	Summary of works	Recommended mitigation measures	
				Before construction	During construction
GB-2	Paddock C18	Grade 3	Pile wall construction including excavation Construction of flexible barrier	CS	VM, SM, TM, BZ, PC, PA

Mitigation during operational phase and cumulative impacts

4.3.28 Upon development of the housing sites, no further impact on the heritage sites is anticipated during operation of the development. Existing access path to the heritage sites as shown on **Figure 10** is not affected by the proposed works and development, which is further illustrated on the photomontage in **Appendix C**. Therefore, no mitigation measures are deemed necessary.

Figure 10 Current Location of Paddock C18 and Existing Footpath to Paddock C18

5 CONCLUSION OF HIA FINDINGS

5.1.1 As the first large-scale dairy farm established in Hong Kong which has operated for about a century (1886 to 1983) (CPCL 2013: 7 and 13; AAB 2018), the Old Dairy Farm landscape has educational, public and historic value. It is the first agri-industrial landscape to be developed in Hong Kong with ties to influential members of the public. In addition, there is public interest in visiting and learning about the Old Dairy Farm landscape. The structures of the Dairy Farm which lie within the Study Area form part of the southeastern end of the working farm with paddocks, dairy, silo and manure pits. Their construction and use within the farm is not unique. The condition of the structures varies and architecturally they can be described as functional. A number of them have surviving features (painted scale, metal rings, liquid seepage opening, loading platforms, etc.) which refer to their use, are authentic and educational. The necessity of proposed public housing development is considered in the interest of the community as a whole. While preservation of the affected heritage sites has been attended to, preservation of some Nil Grade structures are deemed impracticable, such as the manure pit (HB-4) and paddock C32 (HB-3).

5.1.2 While the proposed public housing development will benefit the community as a whole, it is expected that the proposed public housing development will affect the Old Dairy Farm landscape by further isolating buildings and structures and their environment. The baseline review identified seven Old Dairy Farm landscape structures, including three Graded and four Nil Grade structures within the Study Area.

5.1.3 Necessary and unavoidable slope works will occur in close proximity to the Grade 3 Paddock C18 (GB-2) which may affect a buttress; nevertheless local modification of the bored pile wall design which is subject to confirmation of the onsite conditions, has been proposed to avoid damages to the buttress. A condition survey undertaken by a qualified building surveyor or engineer should be undertaken for the Paddock C18 such that appropriate measures can be taken to protect the structure during the construction phase from possible vibration, settlement and tilting impacts. Additional protective measures such as fencing (physical barrier), covering by geotextile and sandbags may be appropriate to separate works from buttress and enclosure wall of Paddock C18 during the construction phase. AMO will be consulted during the construction phase in case issues arise.

5.1.4 Despite accorded Nil Grade, it is recommended to preserve by record on the Nil Grade structures affected by the development including the manure pit (HB-4), the part to be demolished of Paddock C32 (HB-3), and any old historical remnants. Condition survey for Paddock C32 should also be conducted such that appropriate measures can be taken to protect the structure during the construction phase.

5.1.5 Access to the heritage sites outside the works areas should be retained and construction areas clearly marked to avoid endangering the public during the construction phase.

5.1.6 Summary of the findings and mitigation recommendations for the Graded historical structures are presented in **Table 5.1**.

Table 5.1 Summary of assessment and recommended mitigation measures

ID	Structure	Grading	Works	Assessment	Mitigation actions
GB-1	Manure Pit (AM93-0539(32))	Grade 2	Closest proposed works involve bored pile wall construction at 51m away.	Part of Old Dairy Farm Co. and one of five graded manure pits. Manure pit has educational aspects and is in relatively good condition. The works are at a sufficient distance to the heritage and no impacts are expected for this Grade 2 historic structure. **The impact is minimal and acceptable.**	**No mitigation required**
GB-2	Paddock C18 (AM93-0539(14))	Grade 3	Construction of bored pile wall adjacent to Paddock C18 and adjacent to south the construction of a flexible barrier.	Part of Old Dairy Farm Co. and one of ten graded paddocks. The remains include some original elements such as grooved track at entrance and metal rings on piers which have educational potential. A buttress (and curved platform) to structurally support the paddock is missing from the mapped Grade 3 historic structure but is clearly associated; see inset **Figure 2**. The preservation of this Grade 3 historic structure is promoted as far as practicable to avoid potential damages to the paddock through possible contact with equipment or vibration, settlement or tilting of soils during construction of the bored pile wall and flexible barrier. The flexible barrier is setback such that it is not in contact with the historic structure. The redesign / relocation of the proposed bored pile wall was explored (see **Section 4.2**) but was deemed not feasible. The access road is necessary to allow for public housing at Kau Lung Wan North site. **Acceptable impact with mitigation.**	**Condition survey prior to construction phase followed by implementing protective measures, including applying buffer zone and protective coverings, and vibration, settlement and tilt monitoring during construction; Local modification of the proposed bored pile wall to avoid damages to be made to the buttress; Provision to structurally safeguard the integrity of buttress and southeast corner during construction phase, if deemed necessary during condition survey.**
GB-3	Paddock C17 (AM93-0539(16))	Grade 3	Closest proposed site formation works are at 32m away but the paddock is at over 15m higher than Pok Fu Lam Road and 10m higher than the highest point of the site. Construction of bored pile wall is at 60m away.	Part of Old Dairy Farm Co. and one of ten graded paddocks. The paddock has been affected by previous slope and road works and its associated cowshed was demolished. The proposed works are located at a distance from the heritage site which is deemed a sufficient distance and no further adverse impacts are expected for this Grade 3 historic structure under the proposed project. **The impact is minimal and acceptable.**	**No mitigation required**

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Appendix A

Detailed Information of Heritage Resources in Cultural Mapping

Ref: GB-1	**Title:** Old Dairy Farm, Manure Pit, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: near Kai Lung Wan North site		**Figure Ref: 3**
Orientation: N/A		**Grading:** Grade 2 (confirmed on 7 Dec 2017)
Surrounding Environment: Set into a slope below the present Chi Fu Fa Yuen; located to the east of a creek.		
Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period. Manure pits in the Old Dairy Farm were designed to contain manure of the farm animals. During dry season the manure could be taken out and spread on to pasture as fertilizer if needed. The location of manures pit was set close to herds for easy dumping of the dung but not too to affect the herds. The Manure Pit in concern was probably built before 1931 (AMO 2019d).		
Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7). Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called “the Founding Father of Tropical Medicine” (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).		
Inscriptions: N/A		
Architectural Appraisal: The Manure Pit is the largest of its kind in the farm. Made of good quality masonry, the structure stands on a very steep slope, with its top level with ground surface, for loading the manure from top. It consisted of walls supported by heavy stone buttresses from outside. On the top, the roof has been missing. The southwestern wall also appears to be damaged at top. It is reportedly with a small opening at the base for liquid discharge (AMO 2019d).		
Interior: N/A		
Existing Condition: Fair, with some damage and vegetation overgrown.		
Past and Present Uses: Used to be a manure pit; now abandoned.		
Modifications: No obvious modification were noticed.		
Photographic Record:		

General view, looking northeast

Top view, looking southeast.

Internal view showing northeast and southeast wall, looking east.

Internal view showing northeat and northwest wall, which level with ground surface, looing north.

Ref: GB-2	**Title:** Old Dairy Farm, Paddock C18, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: near Kai Lung Wan North site		**Figure Ref: 3**
Orientation: N/A		**Grading:** Grade 3 (confirmed on 7 Sept 2017)
Surrounding Environment: Set into a slope below the present Chi Fu Fa Yuen.		
Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period. Paddock C18 was one of some 50 built paddocks the Old Dairy Farm owned. It is probably built before 1931 as it was already mapped on the Old Dairy Farm's Lot 3 Deed in 1931 (PRO 1933).		
Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7). Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called "the Founding Father of Tropical Medicine" (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).		
Inscriptions: N/A		
Architectural Appraisal: Paddocks are one of the main farm structures designed for cows to rest or exercise. Each paddock had an associated with cowsheds. Paddock C18 is associated with cowshed C18 as marked on the 1941 to 1945 Japanese survey map (PRO 1942 to 45), which building was demolished. What is left standing on the site is comprised of an entrance marked with piers, a track with grooved concrete pavement, a possible small bull pen with water tank and the main area enclosed by stone walls. The piers still have metal rings attached, which were previously used to close the gates. The enclosing walls measure about 1.6m high and were built by cut volcanic rocks in "coursed rubble" style. The top was paved with cement mortar into a rounded shape (AMO 2019e). External corner of paddock wall towards the slope seems to be supported by buttress which protrudes in plan.		
Interior: N/A		
Existing Condition: Fair, enclosing wall partially damaged, vegetation overgrown.		
Past and Present Uses: Used to be a paddock; now abandoned.		
Modifications: No obvious modification were noticed.		
Photographic Record:		

Masonry remain related to Paddock C18, looking northwest.

Entrance to Paddock C18, looking southeast

Pier attched to side wall of track, looking east.

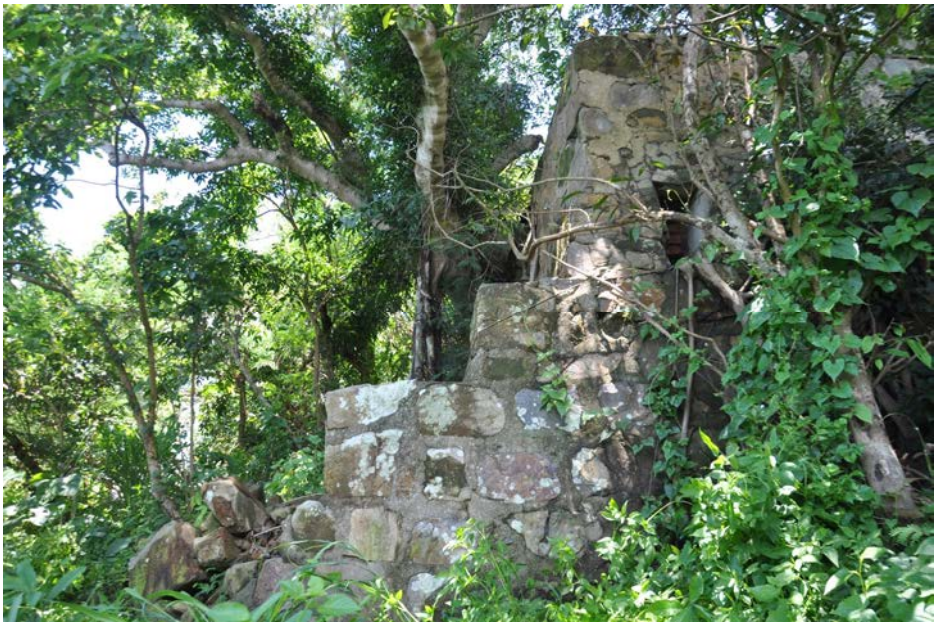
Track with grooved concete pavement, looking northeast.

Possible bull pen with a concrete water tank, looking southwest.

Danmaged enclosing wall near the water tank, looking south.

Enclosing wall of Paddock C18

Curved platform along the south west of the Paddock base



External view of protruding buttress at southeast corner of Paddock C18; also showing a possible draining hole at ground level (from inside), now sealed with red bricks, looking west.

Ref: GB-3	**Title:** Old Dairy Farm, Paddock C17, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: near Wah Fu North site		**Figure Ref: 3**
Orientation: N/A		**Grading:** Grade 3 (confirmed on 7 Sept 2017)

Surrounding Environment: Set into a slope below the present Chi Fu Fa Yuen; located to the immediate west of a creek.

Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period.

Paddock C17 was one of some 50 built paddocks the Old Dairy Farm owned. Paddocks were integral structure designed with cowsheds. According to AMO, Paddock C17 was built before 1941 (2019a). However, its associated cowshed C17 was already mapped in the Old Dairy Farm's Lot 3 Deed in 1931 (PRO 1933). It is therefore believed the paddock could be built at the similar time to cowshed C17.

Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7).

Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called "the Founding Father of Tropical Medicine" (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).

Inscriptions: N/A

Architectural Appraisal: Paddocks are one of the main farm structures designed for cows to rest or exercise. Each paddock had an associated with cowsheds. Paddock 17 was once associated with cowshed 17, but the cowshed was totally demolished, and the paddock also partially truncated by road and slope modification works.

The remaining paddock was bounded by two remaining short masonry walls. Measured c.a.1.60m in height and 40cm in thickness, the walls are built with cut volcanic rocks in "coursed rubble" style, with a pointy ridge made of cement mortar. According to AMO (2019a), a pier can still be found attached to one of the short walls, which indicates the original entrance; however, due to wild boar encounters and thick vegetation, this feature couldn't be investigated. Another stone structure possibly related to the paddock is located at current east entrance to the paddock, bounded by cut slope of a branch road of Chi Fu Road. The ground has a concrete pavement. A silo (AMO coding N289) is located at close proximity.

Interior: N/A

Existing Condition: Poor, severe vegetation overgrown, became habitat or feeding ground of wild boars.

Past and Present Uses: Used to be part of a paddock; now abandoned.

Modifications: Truncated by road and slope modifications; associated cowshed C17 was demolished.

Photographic Record:

General view, looking southwest.

Masonry structure remain related to Paddock 17 at current east entrance, looking northwest.

View of southwest paddock wall next to steep slope, looking southwest.

Front view of internal southwest paddock wall showing masonry style, looking Southeast.

View of northern padoock wall, looking northwest

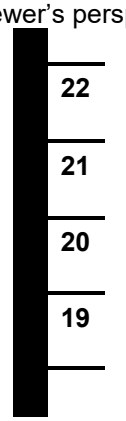
Ref: HB-1	**Title:** Old Dairy Farm, Silo, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: near Wah Fu North site		**Figure Ref: 3**
Orientation: N/A		**Grading:** Nil grade (confirmed on 7 Dec 2017)
Surrounding Environment: Set into a steep and vegetated slope below the present Chi Fu Fa Yuen; located to the immediate east of a creek.		
Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period. This silo is one of six silos the Old Dairy Farm owned up to 1950s (AMO 2019b). Silos were designed to convert surplus green fodder in summer into silage for less-sufficient winter season. The silo is believed to be built between 1931 and 1941.		
Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7). Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called “the Founding Father of Tropical Medicine” (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).		
Architectural Appraisal: Silos in the Old Dairy Farm were built in form of circular towers made of stone, reinforced concrete, cement and lime mortar. The silos stand on steep slopes or along existing hill sides. In their full height the silos measure 10m tall, with wall tapering towards the top. The top was covered by a conical roof, right below where a loading platform and entrance were designed to load green fodder from the top (AMO 2019b). The silo in concern has the top roof missing. But the loading platform still remains. The stone wall was built in “coursed-rubble” style with cut square volcanic rocks. The inside was paved with cement. Scale in feet is painted on the internal wall (AMO 2019b).		
Interior: N/A		
Existing Condition: Poor, vegetation overgrown, stones near top come loose.		
Past and Present Uses: Used to be a silo for fodder conversion; now abandoned.		
Modifications: No obvious modification were noticed.		
Photographic Record:		

General view, looking southeast.

Inscriptions of scale marked on interior, looking southeast.

Inscriptions

(from the viewer's perspective) :



Remark: the inscription probably continues downward, but the full sight was limited by restricted viewpoint.

Ref: HB-2	**Title:** Old Dairy Farm, Dairy, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: between WFN and KLWN sites		**Figure Ref: 3**
Orientation: N/A		**Grading:** Nil grade (confirmed on 22 Mar 2018)

Surrounding Environment: Set into slope below the present Chi Fu Fa Yuen; located to in between two creeks.

Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period.

The dairy was believed built before 1931 as it was already mapped on the Old Dairy Farm's Lot 3 Deed (PRO 1933).

Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7).

Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called "the Founding Father of Tropical Medicine" (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).

Inscriptions: N/A

Architectural Appraisal: The building was largely damaged, only a masonry base/foundation left. The base is constructed of coursed-rubble volcanic rocks (AMO 2019c). Concrete steps is located on the west side, leading to the top of the base. The floor is with cement pavement. Breakage of internal wall shows that the upper building was made of red bricks and concrete.

Interior: N/A

Existing Condition: Poor, vegetation overgrown, building largely demolished.

Past and Present Uses: used to be a dairy; now abandoned.

Modifications: No obvious modification were noticed.

Photographic Record:

General view, looking northwest.

General view, looking northeast.

Internal view of floor pavement, looking northeast.

Close-up view showing buiding material inside the Dairy, looking northeast.

Ref: HB-3	**Title:** Old Dairy Farm, Paddock C32, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: near Kai Lung Wan North site		**Figure Ref: 3**
Orientation: N/A		**Grading:** Nil grade (confirmed on 7 Sept 2017)
Surrounding Environment: Set into vegetated slope below Chi Fu Fa Yuen; occupied a large area in between two creeks.		
Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period. Paddock C32 was one of some 50 built paddocks the Old Dairy Farm owned. It is built before 1933 (AMO 2019f).		
Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7). Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called “the Founding Father of Tropical Medicine” (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).		
Inscriptions: N/A		
Architectural Appraisal: Paddocks are one of the main farm structures designed for cows to rest or exercise. Each paddock had an associated with cowsheds. Paddock C32 is associated with cowshed C32 as marked on the 1941 to 1945 Japanese survey map (PRO 1942 to 45), which building was demolished. The paddock area is now covered in thick vegetation and became habitat of wild boar. An identifiable feature is a red brick structural remain, which is believed part of cowshed building. According to AMO (2019f) there is still part of perimeter wall remain made of volcanic rocks.		
Interior: N/A		
Existing Condition: Poor, vegetation overgrown.		
Past and Present Uses: Used to be a paddock and cowshed; now building demolished and abandoned.		
Modifications: Southwest part of the Paddock was truncated by road and slope works and removed.		
Photographic Record:		

General view of Paddock C32, covered by overgrown vegetation, looking northeast.

Possible remain of cowshed building, looking northwest.

Mansonry structual remain at Paddock 32, looking southwest.

Ref: HB-4	**Title:** Old Dairy Farm, Manure Pit, Pok Fu Lam, H.K.	**Category:** Commercial, industrial, farming
Address: near Kai Lung Wan North site		**Figure Ref: 3**
Orientation: N/A		**Grading:** Nil grade (confirmed on 7 Dec 2017)
Surrounding Environment: Set into vegetated slope below Chi Fu Fa Yuen; located close to a creek on the east.		
Historical Appraisal: The Old Dairy Farm in Pok Fu Lam was the first dairy farm set up in Hong Kong and it was in operation for about a century (1886 to 1983). The farm once occupied a vast hilly land in Pok Fu Lam, produced fresh and hygienic milk, meat and poultry and eggs to Hong Kong residents during the Colonial Period. Manure pits in the Old Dairy Farm were designed to contain manure of the farm animals. During dry season the manure could be taken out and spread on to pasture as fertilizer if needed. The location of manures pit was set close to herds for easy dumping of the dung but not too to affect the herds. The Manure Pit in concern is built before 1941 (AMO 2019g).		
Associated Historical/ Cultural Events or Individual: The Dairy Farm was initially founded in 1886 by Dr. Patrick Manson and five the then influential businessmen in town, i.e. Paul Catchick Chater, Phineas Ryrie, Granville Sharp, William Henry Ray and James Billington Coughtire (AMO 2019a; Ting 2018 8; CPCL 2013 7). Dr. Patrick Manson was a Scottish physician who made profound contribution in the development of tropical medicine, hygiene and parasitology, and was called “the Founding Father of Tropical Medicine” (To & Yuen 2012). Manson also founded the Hong Kong College of Medicine for Chinese, which later evolved to the University of Hong Kong. Dr. Sun Yet-sen was one of his first students. News report reveals that Manson participated in the rescue of Sun while he was detained by the Qing Embassy in 1896 (SCMP 2007).		
Inscriptions: N/A		
Architectural Appraisal: The manure pit is built on steep slope with the top manure loading area matching ground surface. The building is made of volcanic rocks, laid in “coursed rubble” style. Only remains still standing are the walls, the roof is missing. An opening is set on one of the walls (AMO 2019g).		
Interior: N/A		
Existing Condition: Poor, damaged, severely wrapped by tree roots and vines.		
Past and Present Uses: Used to be a manure pit; now abandoned.		
Modifications: No obvious modification to the manure pit were noticed.		
Photographic Record:		

General view towards inside from top, showing internal walls wrapped by tree roots and vines looking southeast.

View of external wall, showing wall wrapped in tree roots and vines, looking southwest.

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b. *Historic Building Appraisal Old Dairy Farm in Pok Fu Lam, Hong Kong– Silos.* Accessed from:http://www.aab.gov.hk/historicbuilding/en/N289_Appraisal_En.pdf. Accessed on July 2, 2019.
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d. *Historic Building Appraisal Old Dairy Farm at Pok Fu Lam, Hong Kong – Manure Pits.* Accessed from: http://www.aab.gov.hk/historicbuilding/en/N294_Appraisal_En.pdf. Accessed on July 2, 2019.
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f. *Historic Building Appraisal Old Dairy Farm in Pok Fu Lam, Hong Kong – Cowsheds, Bull Pen and Paddocks.* Accessed from: http://www.aab.gov.hk/historicbuilding/en/N277_Appraisal_En.pdf. Accessed on July 3, 2019.
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Appendix B

List of Graded Historic Buildings Part of Old Dairy Farm Landscape

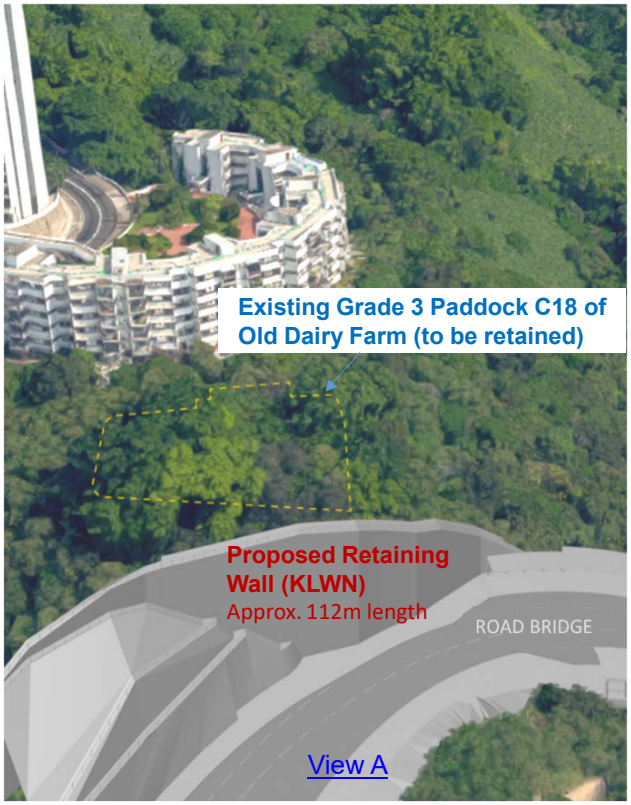
Appendix B – List of Graded Historic Buildings part of Old Dairy Farm Co. Landscape

Grading	AMO ID	Name
2	AM93-0539(01)	Old Dairy Farm, Main Office Building
2	AM93-0539(02)	Old Dairy Farm, Cowshed (The Wellcome Theatre)
1	AM93-0539(03)	Old Dairy Farm, Senior Staff Quarters
3	AM93-0539(05)	Old Dairy Farm, Paddock C3S
3	AM93-0539(08)	Old Dairy Farm, Cowshed and Paddock C34
3	AM93-0539(11)	Old Dairy Farm, Paddock C20
3	AM93-0539(13)	Old Dairy Farm, Bull Pen with Paddock
3	AM93-0539(14)	Old Dairy Farm, Paddock C18
3	AM93-0539(16)	Old Dairy Farm, Paddock C17
3	AM93-0539(17)	Old Dairy Farm, Paddock C42
3	AM93-0539(18)	Old Dairy Farm, Paddock 43
3	AM93-0539(19)	Old Dairy Farm, Paddock C9
3	AM93-0539(20)	Old Dairy Farm, Cowshed 9B
3	AM93-0539(21)	Old Dairy Farm, Cowshed and Paddock C12
3	AM93-0539(22)	Old Dairy Farm, Cowshed C11
2	AM93-0539(26)	Old Dairy Farm, Silo
3	AM93-0539(28)	Old Dairy Farm, Silo
3	AM93-0539(29)	Old Dairy Farm, Silo
2	AM93-0539(30)	Old Dairy Farm, Manure Pit
2	AM93-0539(32)	Old Dairy Farm, Manure Pit
3	AM93-0539(33)	Old Dairy Farm, Manure Pits
2	AM93-0539(34)	Old Dairy Farm, Manure Pit
2	AM93-0539(35)	Old Dairy Farm, Manure Pit
3	AM93-0539(37)	Old Dairy Farm, Staff Quarters Block A
3	AM93-0539(38)	Old Dairy Farm, Staff Quarters Block B
3	AM93-0539(39)	Old Dairy Farm, Piggeries
3	AM93-0539(48)	Old Dairy Farm, Stream Crossing
3	AM93-0539(49)	Old Dairy Farm, Stream Crossing
3	AM93-0539(50)	Old Dairy Farm, Stream Crossing
3	AM93-0539(53)	Old wall between The Bethanie and Old Dairy Farm
3	AM93-0539(54)	Old Dairy Farm, Water Filter
3	AM93-0539(56)	Old Dairy Farm, Water Tank
2	AM93-0539(60)	Old Dairy Farm, Entrance Gate Pillar
3	AM93-0539(61)	Old Dairy Farm, Water Tank & Retaining Wall
3	AM93-0539(62)	Old Dairy Farm, Water Filter
3	AM93-0539(66)	Old Dairy Farm, Masonry Parapet Walls & Ramp
3	AM05-2126	No. 97 Pok Fu Lam Village

Appendix C

Photomontage of the Site and Proposed Development

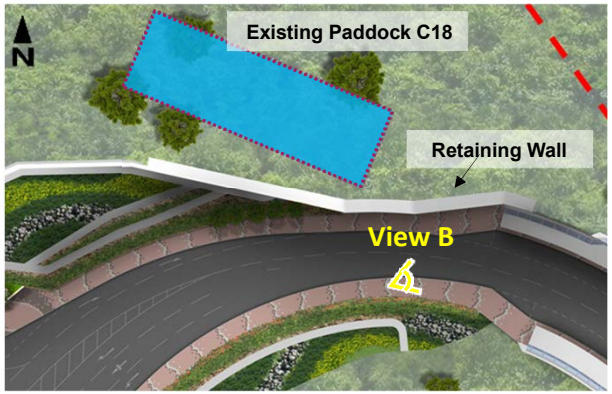
Note:
The photomontages shown are only for illustrative purposes only and the design may be subjected to further developments.



The 112m Retaining Wall is built-up of 3 sections:
(a) Reinforced concrete L-shape retaining wall;
(b) Bored pile wall;
(c) Reinforced concrete L-shape retaining wall.

Partial overall impression of the proposed development with existing Paddock C18 of Old Dairy Farm in aerial view

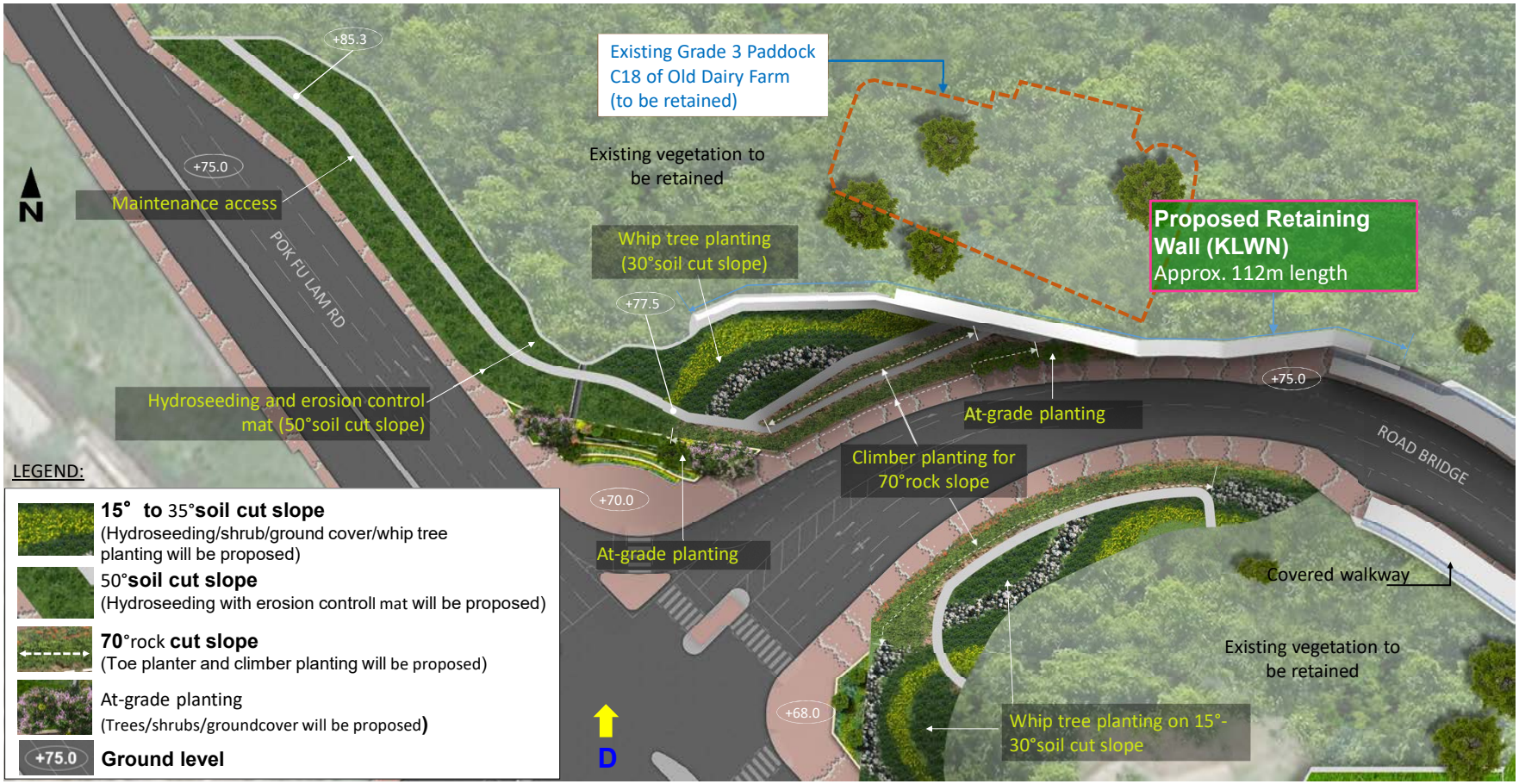
Appendix C
Figure C1 – Location of Graded Structure in relation to Proposed Development

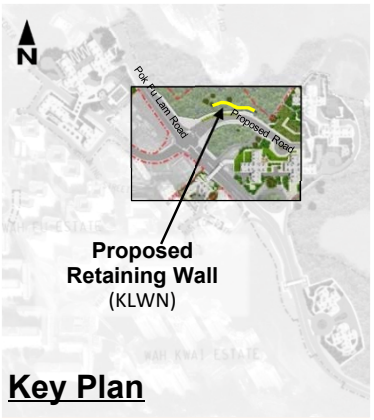


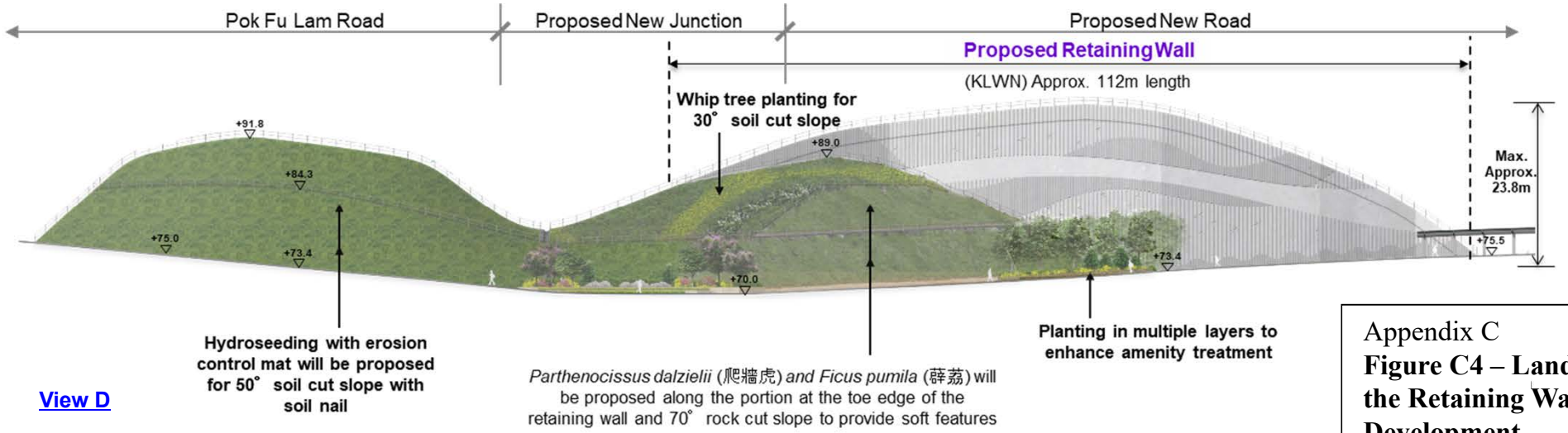
Appendix C

Figure C2 – View Towards Retaining Wall at the Proposed Development

Appendix C
Figure C3 – View Towards Road Bridge at the Proposed Development







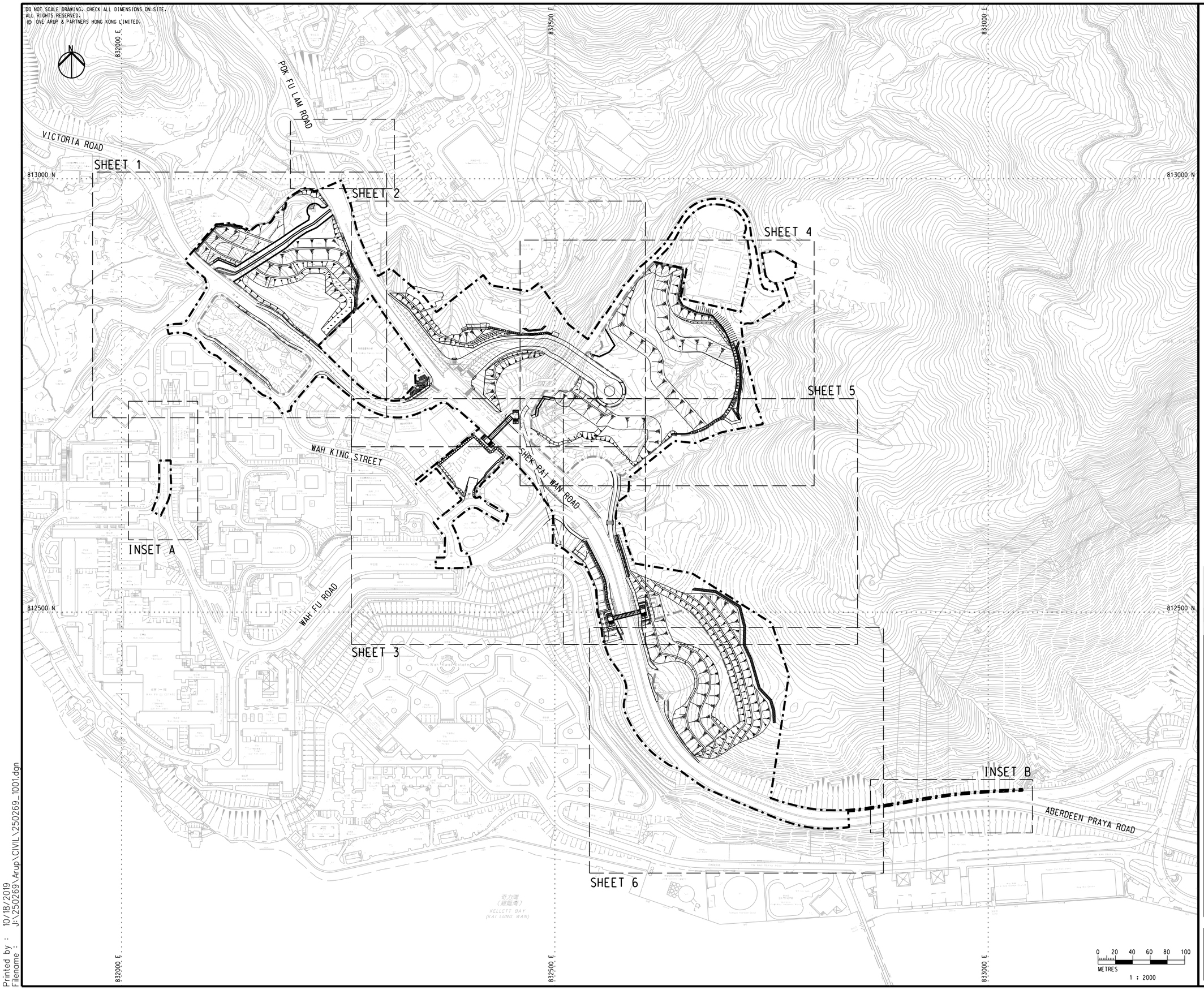
View D

Appendix C

Figure C4 – Landscape Design for the Retaining Wall at the Proposed Development

Appendix D

Drawings of proposed access road to Kai Lung Wan North (KLWN), and slope works for Wah Fu North (WFN) site



NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWING NOS. 250269/1011 TO 1016.

LEGEND

- SITE BOUNDARY
- HOUSING BOUNDARY
- PROPOSED BORED PILE WALL
- PROPOSED SOLDIER PIPE WALL
- PROPOSED RETAINING
- PROPOSED CUT SLOPE

Rev	Description	By	Date
A	FIRST ISSUE	SH	04/19

Consultant

ARUP

Contract No. and Title

Agreement No. CE 74/2015 (CE)

Site Formation and Infrastructures for Development at Pok Fu Lam South – Investigation, Design and Construction

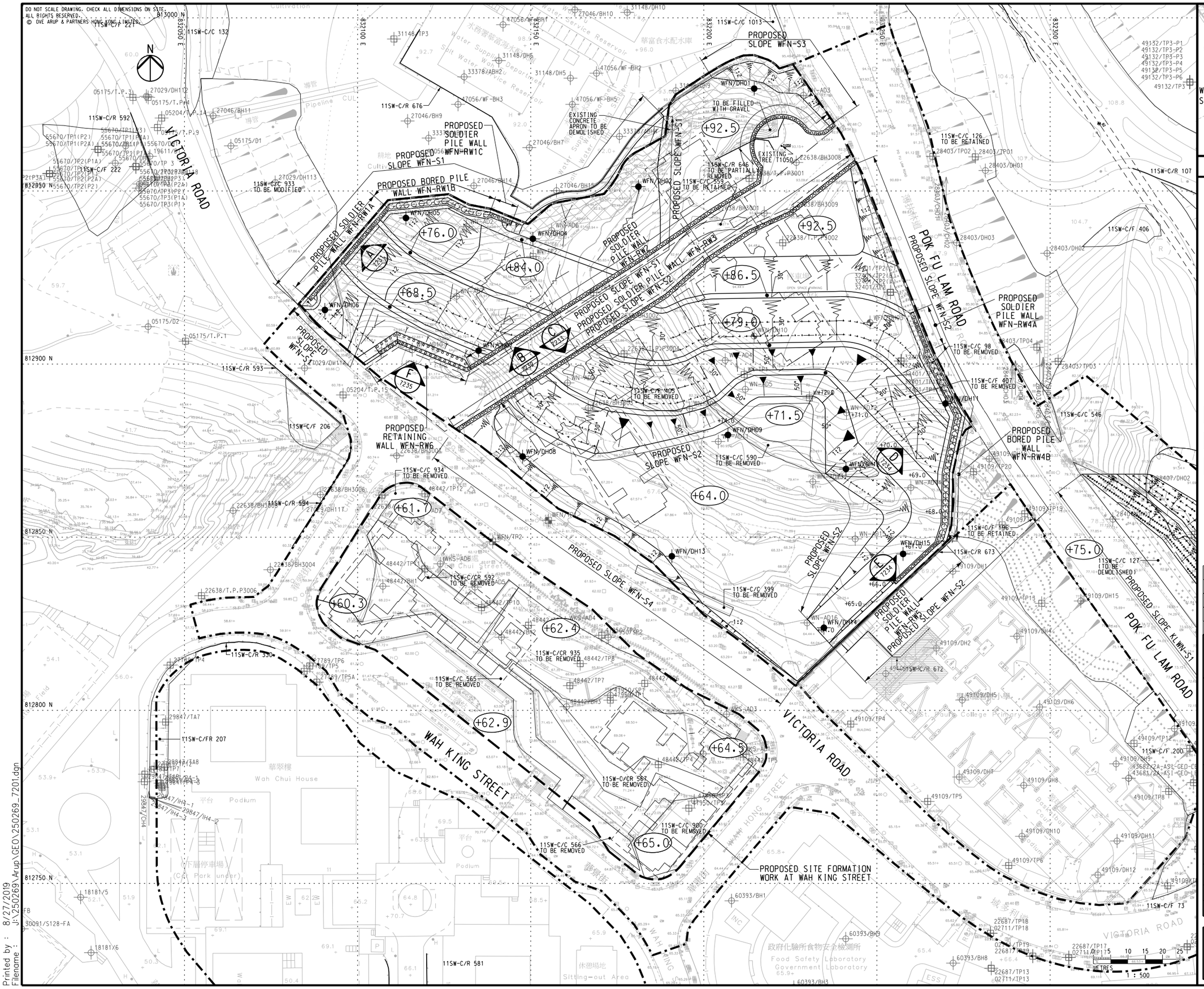
Drawing title

PROJECT KEY PLAN

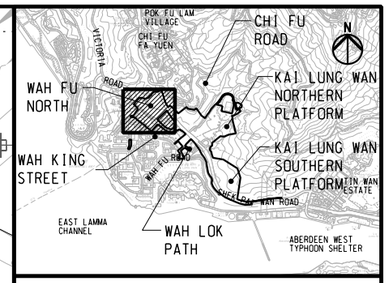
Drawing no.			Rev.
250269/1001			A
Drawn	Date	Checked	Approved
RY	04/19	CF	SYC
Scale		Status	
1:2000 @ A1		DETAILED DESIGN	

土木工程拓展署
Civil Engineering and Development Department

Printed by : 10/18/2019
Filename : J:\250269\Arup\CIVIL\250269_1001.dgn



KEY PLAN



NOTES

1. DRAINAGE LEGEND SHALL REFER TO DRAWING NO. 250269/7991.

LEGEND

- SITE BOUNDARY
- PROPOSED HOUSING DEVELOPMENT BOUNDARY
- WFN/DH01 — PROPOSED BOREHOLES (PHASE 2)
- WLP/DH02 — PROJECT-SPECIFIC EXISTING BOREHOLES
- 10439/PS1 — EXISTING BOREHOLES
- 32070/TP52 — EXISTING TRIAL PITS
- PROPOSED BORED PILE WALL
- PROPOSED SOLDIER PILE WALL
- PROPOSED CUT SLOPE
- PROPOSED ROCK SLOPE
- PROPOSED MAX. 1(V) : 2(H) FILL SLOPE
- +79 — PROPOSED FORMATION LEVEL (mPD)
- PROPOSED DRAINAGE RESERVED ZONE
- 11SW-C/F 407 — EXISTING FEATURE
- EXISTING SOIL NAIL

A	SECOND ISSUE	KL	08/19
-	FIRST ISSUE	RC	05/19
Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title

Agreement No. CE 74/2015 (CE)

Site Formation and Infrastructures for Development at Pok Fu Lam South – Investigation, Design and Construction

Drawing title

WAH FU NORTH AND WAH KING STREET SITE SITE FORMATION LAYOUT PLAN

Drawing no.			Rev.
250269/7201			A
Drawn AC	Date 05/19	Checked HYJL	Approved SYC
Scale 1:500 @ A1		Status PRELIMINARY	

CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 8/27/2019
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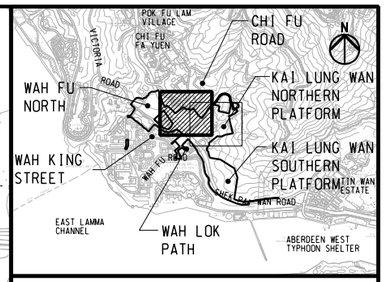

KEY PLAN

LEGEND

- SITE BOUNDARY
- WFN/DH01 — PROPOSED BOREHOLES
- KLW/TP01 — PROPOSED TRIAL PITS
- 10439/PS1 — EXISTING BOREHOLES
- 32070/TP52 — EXISTING TRIAL PITS
- PROPOSED BORED PILE WALL
- PROPOSED SOLDIER PILE WALL
- PROPOSED CUT SLOPE
- PROPOSED ROCK SLOPE
- PROPOSED MAX. 1(V) : 2(H) FILL SLOPE
- +92 — PROPOSED FORMATION LEVEL (mPD)
- PROPOSED SOIL NAIL
- EXISTING SOIL NAIL
- EXISTING ROCK DOWEL
- EXISTING ROCK BOLT

B	THIRD ISSUE	KL	09/19
A	SECOND ISSUE	KL	08/19
-	FIRST ISSUE	KL	04/19
Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title

Agreement No. CE 74/2015 (CE)

Site Formation and Infrastructures for Development at Pok Fu Lam South – Investigation, Design and Construction

Drawing title

KAI LUNG WAN NORTH SITE - SITE FORMATION LAYOUT PLAN

(SHEET 1 OF 2)

Drawing no.			Rev.
250269/7301			B
Drawn	Date	Checked	Approved
AC	04/19	HYJL	SYC
Scale		Status	
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CEDD 土木工程拓展署 Civil Engineering and Development Department

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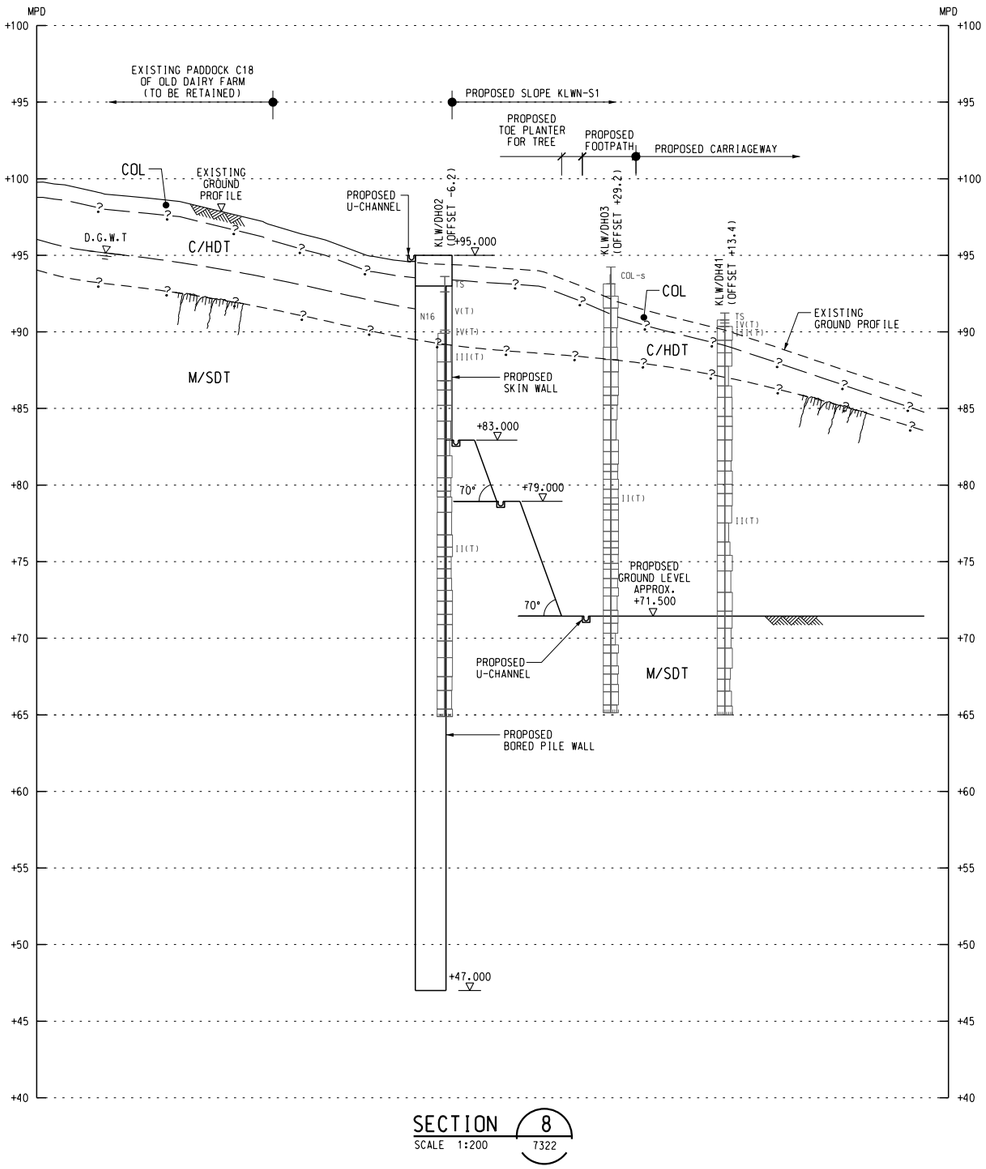
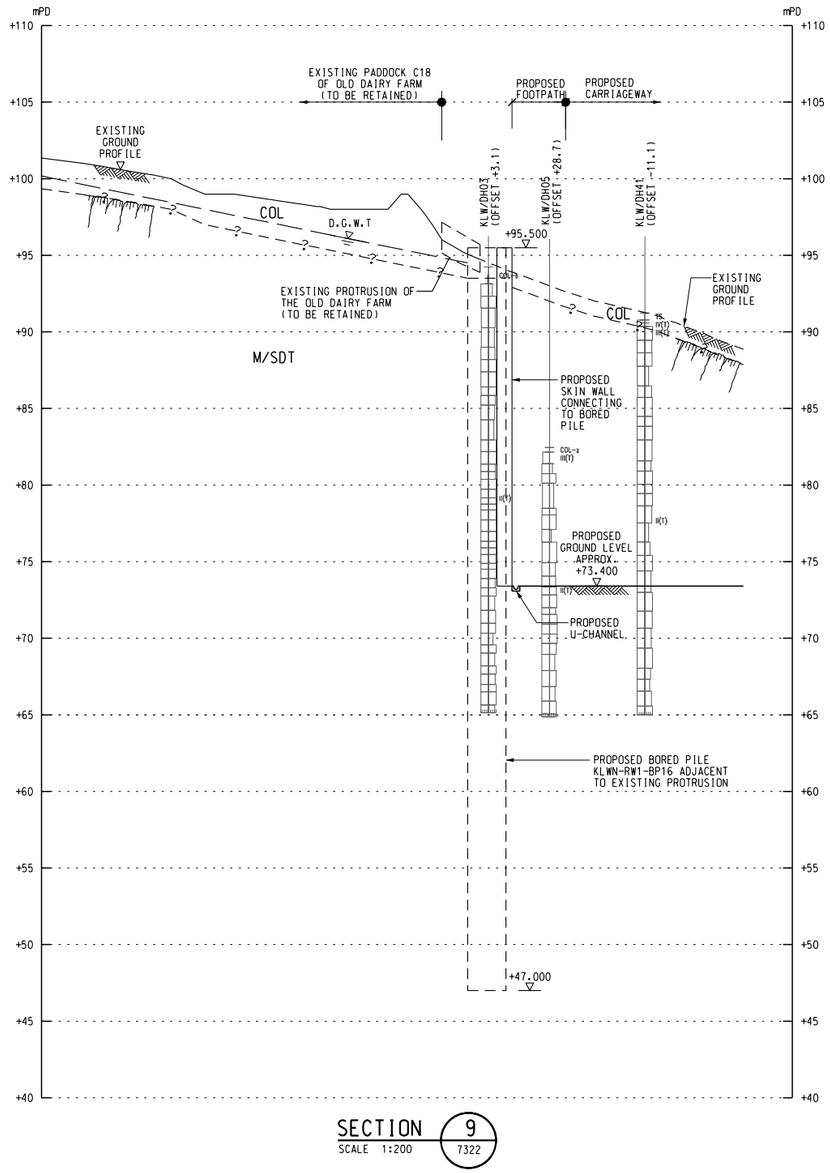


SECTION 8
SCALE 1:200 7322



SECTION 9
SCALE 1:200 7322

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METRES
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NOTES

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 250269/7005.
2. THE BOREHOLE INFORMATION AND GEOLOGICAL PROFILE PROVIDED IN THE DRAWING IS FOR INDICATIVE PURPOSES ONLY. THE CONTRACTOR SHALL CHECK AND CONFIRM THE ACTUAL INFORMATION FOR EACH BOREHOLE AS REQUIRED. THE CONTRACTOR SHALL NOTE THAT THE BOREHOLES SHOWN ARE OFFSET FROM THE ACTUAL SECTION LINE AND ACTUAL GEOLOGY ALONG EACH SECTION IS LIKELY TO VARY FROM THAT SHOWN.

Rev	Description	By	Date
B	THIRD ISSUE	KL	09/19
A	SECOND ISSUE	KL	08/19
-	FIRST ISSUE	KL	06/19

Consultant
ARUP

Contract No. and Title
Agreement No. CE 74/2015 (CE)
Site Formation and Infrastructures for Development at Pok Fu Lam South – Investigation, Design and Construction

Drawing title
KAI LUNG WAN NORTH SITE - RETAINING WALL KLWN-RW1, RW2, RW3 AND SLOPE KLWN-S1 SECTION
(SHEET 3 OF 3)

Drawing no.	Rev.
250269/7326	B

Drawn	Date	Checked	Approved
AC	05/19	HYJL	SYC

Scale	Status
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CEDD 土木工程拓展署 Civil Engineering and Development Department

Printed by : 9/12/2019
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