Annex A

HERITAGE IMPACT ASSESSMENT IN RESPECT OF THE REPORVISIONING OF HARCOURT ROAD FRESH WATER PUMPING STATION TO COTTON TREE DRIVE

BACKGROUND

The existing site for the Harcourt Road Fresh Water Pumping Station (HRFWPS) is located at the harbourfront area adjacent to the Hong Kong Academy for Performing Arts. The site has been identified as a potential site for other land uses in the Victoria Harbourfront development according to "Urban Design Study for the New Central Harbourfront" completed by the Planning Department in 2011.

2. The Project is to relocate the existing HRFWPS to a site adjacent to the Central Fire Station at Cotton Tree Drive as shown in Figure 1. The Project comprises construction of the proposed Cotton Tree Drive Fresh Water Pumping Station (FWPS) within an existing slope of the Hong Kong Park adjacent to the Central Fire Station and Flagstaff House (a declared monument under the Antiquities and Monuments Ordinance (Cap. 53)), together with the supply and installation of associated mechanical and electrical equipment for the Cotton Tree Drive FWPS; demolition of the existing HRFWPS upon commissioning of the Cotton Tree Drive FWPS, laying of fresh water mains along Queensway, Hennessy Road and the slip road of Cotton Tree Drive and associated architectural, drainage, geotechnical and landscaping works.

SITE SELECTION

3. The existing HRFWPS receives fresh water supply from Kowloon side and transfers water to the Gardens Fresh Water Service Reservoir and Garden Road Fresh Water Pumping Station via a trunk water main running westward along Harcourt Road and Cotton Tree Drive and also to Bowen Road Fresh Water Service Reservoir via another trunk water main running eastward along Arsenal Street. Figure 1 shows the location of HRFWPS (coloured green) and the routings of these two trunk water mains (coloured blue and red).

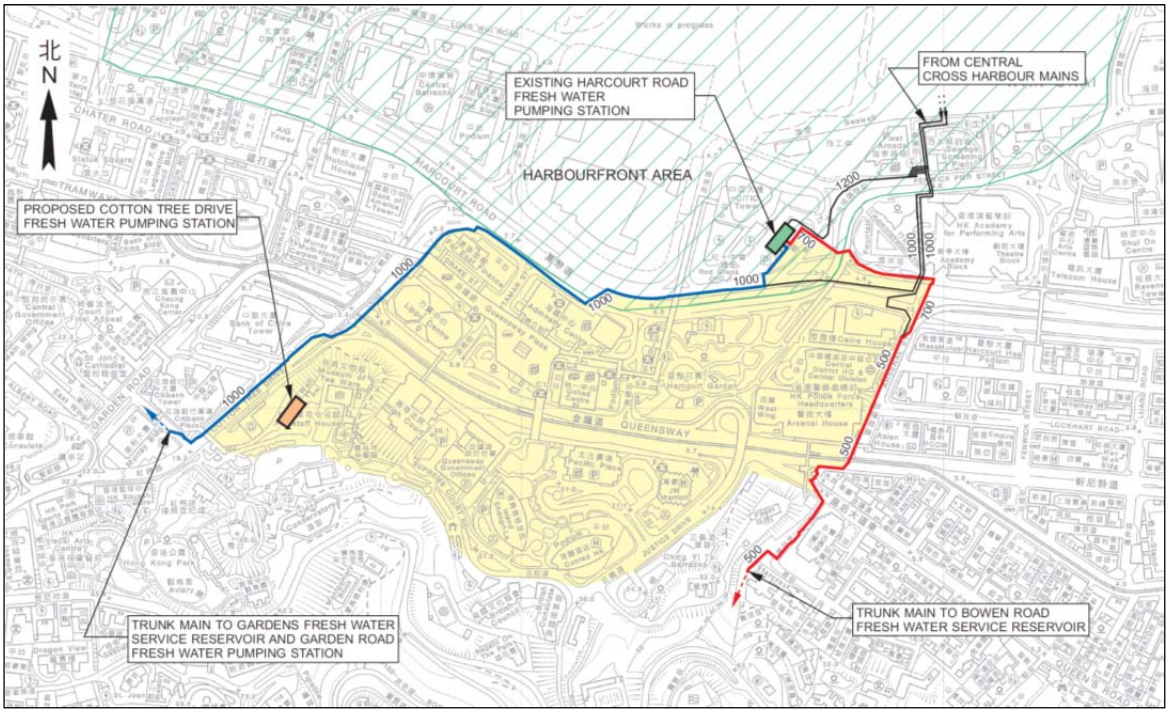


Figure 1: Location plan for the proposed pumping station in the study area and associated trunk mains
Source: provided by Water Supplies Department (WSD), modified by author

4. The choice of a suitable site for the new pumping station has the following constraints:

(a) Constraint 1 - the level of the pumping station should not be too high, otherwise, water from Kowloon side will not have enough water pressure to reach the new pumping station;

(b) Constraint 2 - the delivery mains of the new pumping station should be connected to the above-mentioned trunk mains in order to provide water supply to the existing service reservoirs while the suction mains from the Kowloon side should be connected to the new pumping station; and

(c) Constraint 3 – the pumping station cannot be relocated to the harbourfront area as the area will have other developments.

5. In view of constraint 1, the new pumping station cannot be relocated to the peak level or mid-levels. Taking constraints 2 and 3 into account, the areas suitable for the new pumping station are limited to the areas in the Central and Wan Chai districts between the mid-levels and the harbourfront area (see area marked up in yellow on Figure 1). However, the above areas in Central and Wan Chai districts are all well-developed with congested commercial and/or residential buildings. As the minimum area required for the new pumping station is 1,000 m^2, the possible area available is only the open space at the existing Hong Kong Park. It is not recommended to locate the new pumping station within the central part of the existing park as the amenity areas available

to the public will be greatly reduced and strong objection from the public will be expected. The proposed site recommended for relocating HRFWPS as shown in Figure1 (area coloured orange) is considered ideal in fulfilling the above constraints because the site is currently a slope which forms part of the outside perimeter of the Hong Kong Park and is not accessible to the public. Also the new pumping station will not affect any current public uses within the Hong Kong Park during both construction and operation stages and will not reduce the overall amenity areas available to the public in the Hong Kong Park.

HERITAGE IMPACT ASSESSMENT

6. In accordance with Development Bureau Technical Circular (Works) No. 06/2009, a heritage impact assessment (HIA) is to be carried out to examine the impact of the proposed Cotton Tree Drive FWPS and to devise mitigation measures if adverse impact is unavoidable.

HERITAGE ITEMS WITHIN STUDY AREA

7. The boundary of the study area, for the HIA, is indicated by the red line shown in Figure 2.

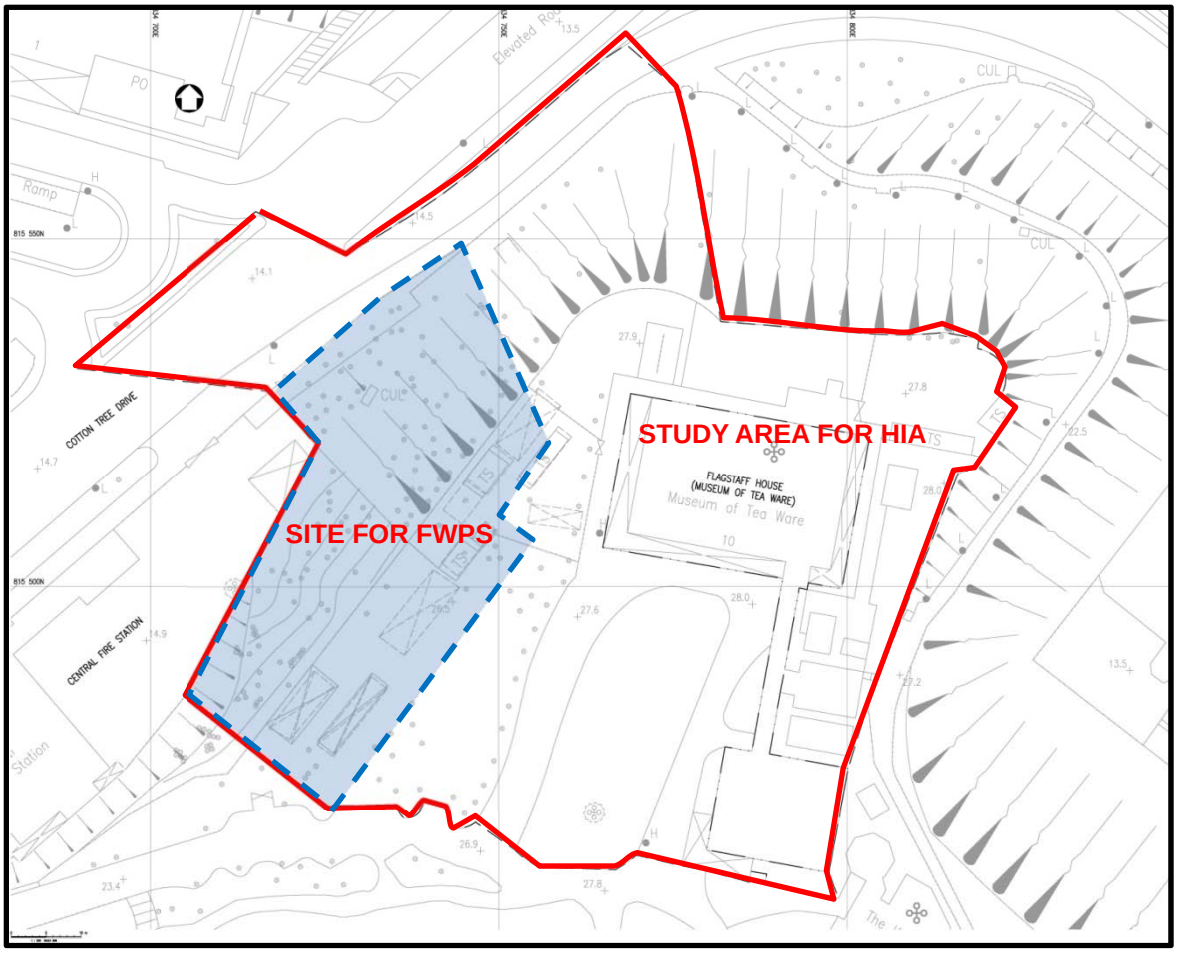


Figure 2: Site for the proposed Cotton Tree Drive FWPS and the study area for HIA
Source: provided by WSD, modified by author

8. Only two heritage items within the study area, namely the Flagstaff House and the old stone wall along the crest of the slope as shown in Figure 3, have been identified.

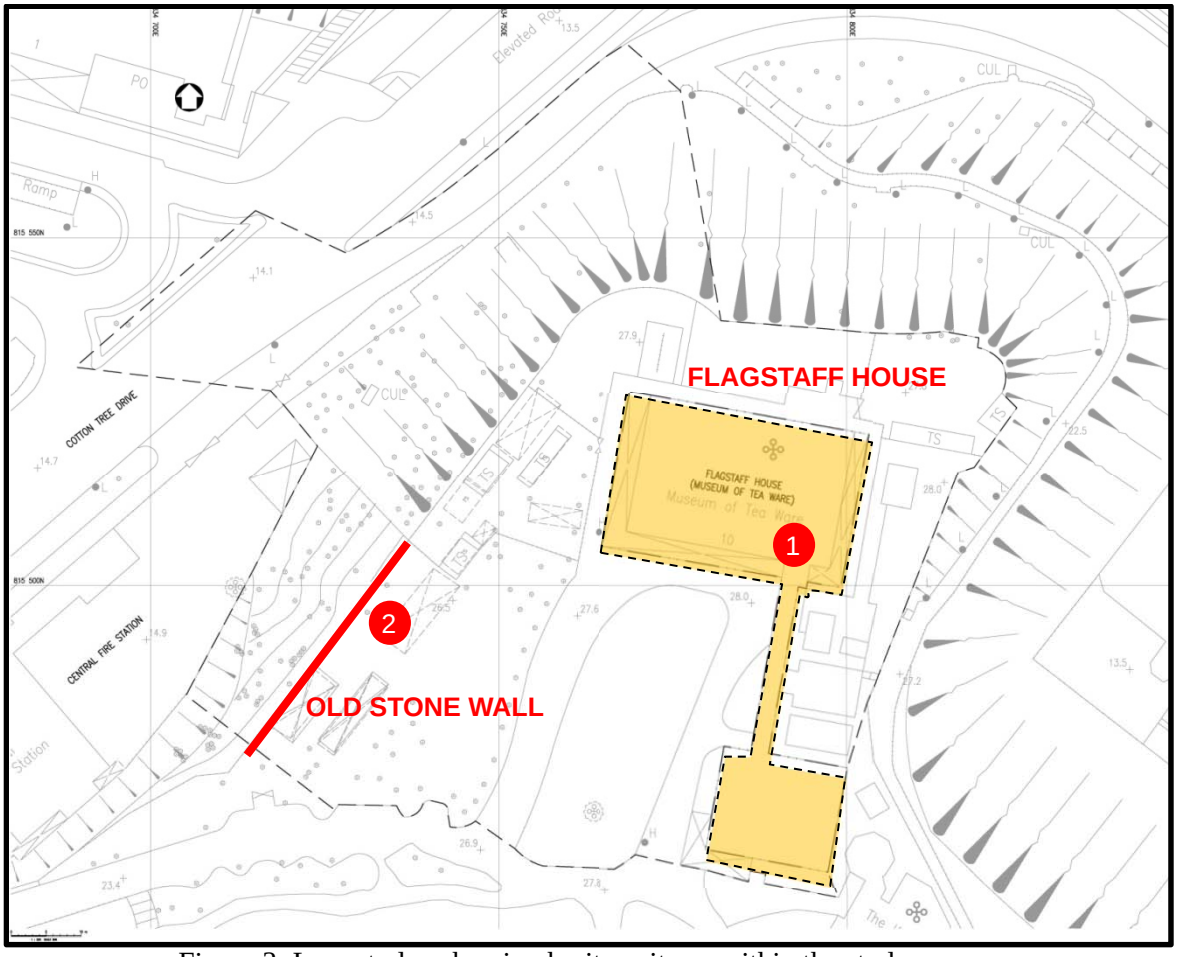


Figure 3: Layout plan showing heritage items within the study area
Source: provided by WSD, modified by the author

STATEMENT OF CULTURAL SIGNIFICANCE

9. The heritage values of the above heritage items within the study area are assessed in the following paragraphs:

A Historic Significance

- Flagstaff House

The Flagstaff House (see Figure 3) was part of the Victoria Barracks from 1846 to 1979. The Victoria Barracks, being a British military zone in the central location of Hong Kong over 130 years from 1840's to 1979, signify the ruling of British Forces in the British colony. Flagstaff House is the oldest surviving colonial style building in Hong Kong completed in 1846. It was the residence of the Commander of the British Forces, thus indicating the importance of the place

in history. The Flagstaff House was declared as a monument in 1989. The historical value of the Flagstaff House is considered to have an exceptional level of significance.

- Old stone wall

About 35 m in length of the existing old stone wall, as marked up in red on Figure 3, falls within the boundary of the site for the proposed pumping station. This stone wall forms part of the boundary wall of the Flagstaff House and has a history of over 150 years (see the photo of the stone wall taken in 1860 in Figure 4). Though the top part of the stone wall had collapsed/had been removed in the past (see Figure 5), the historical value of the stone wall is considered to have a moderate level of significance.

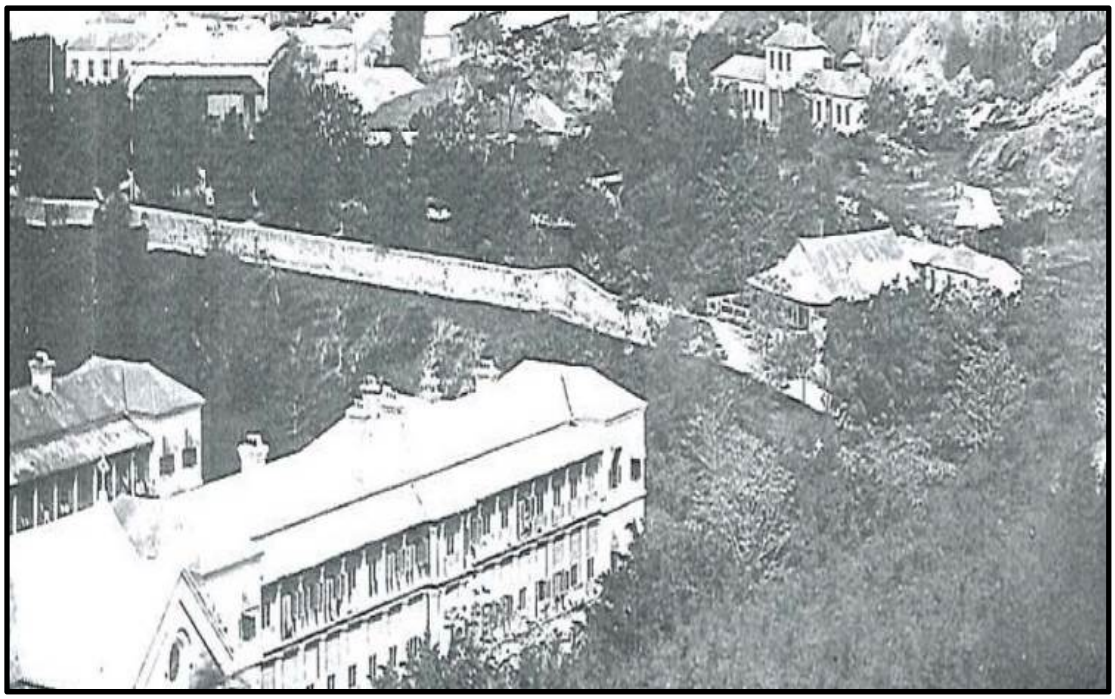


Figure 4: Photo of the neighboring site taken in 1860, from where the stone wall is clearly seen.
Source: Victoria Barracks, 1842-1979

Figure 5: Photo of the affected stone wall and a close-up of the damaged top capping stone
Source: the author

B Contextual Significance

The Flagstaff House is sited on a strategic location of Hong Kong Island, overlooking the center of Victoria Harbour. It was located next to the traditional central business district. This building, together with other historical buildings from the original Victoria Barracks which still remain, now becomes a part of the Hong Kong Park. The contextual value of the Flagstaff House is considered to have a high level of significance.

C Social Significance

The Flagstaff House, as part of the Victoria Barracks, was originally used for military purpose. As the residence of the Major-General, it had high security. This was a restricted area and ordinary people could not enter the place without special permission. Not until the handover of the building to the Hong Kong Government in 1979 and taking-over of the building by the Urban Council for public use in 1984 as the Museum of Tea Ware, there was no connection to the general public. The change from private to public use started the social connection. Being one of the attractions in the Hong Kong Park, the social value of the Flagstaff House is considered to have a high level of significance.

D Architectural Significance

The Flagstaff House has a colonial style two-storey main block connected to a single-storey service block by a covered walkway. Like other colonial building designs in the region during that period, it was common that the design was modified from the architectural pattern books. The building is considered to have a high level of architectural significance.

CURRENT STATUS OF THE MONUMENT

10. The monument, the Flagstaff House, has a beam and column structure with pad footings resting on a reinforced concrete slab. At present, the building is of good condition and used as the Museum of Tea Ware under the management of the Leisure and Cultural Services Department.

PROPOSED DESIGN SCHEME

11. Despite the site constraints and the limited space available for maneuvering maintenance vehicles within the pumping station compound, the FWPS has been designed to be below the ground level of the Hong Kong Park and be sited as far as possible away from the monument, the Flagstaff House,

with only a corner of the site being at a minimum distance of 10 m from the Flagstaff House (see Figure 6). Greening is provided as much as possible by the planting of trees at the ground level, the first floor level and on the roof of the FWPS structure and provision of vertical greening on the external façade of the building. The proposed landscape plan and section are shown in Figure 7. Details of the design scheme for the proposed pumping station are provided on the layout plan, sections and elevations at Appendix I. The combination of the underground structure and the proposed planting of trees and provision of vertical greening would significantly reduce the overall visual impact of the proposed pumping station. The photomontages of the existing views and future views for the proposed pumping station at the key public viewing points are at Appendix II.

12. In order to minimise the ground movement at the Flagstaff House during the construction works for the pumping station, a bored pile wall is proposed to be constructed along the boundary of the site as shown in Figure 6 (shown as a dotted green line).

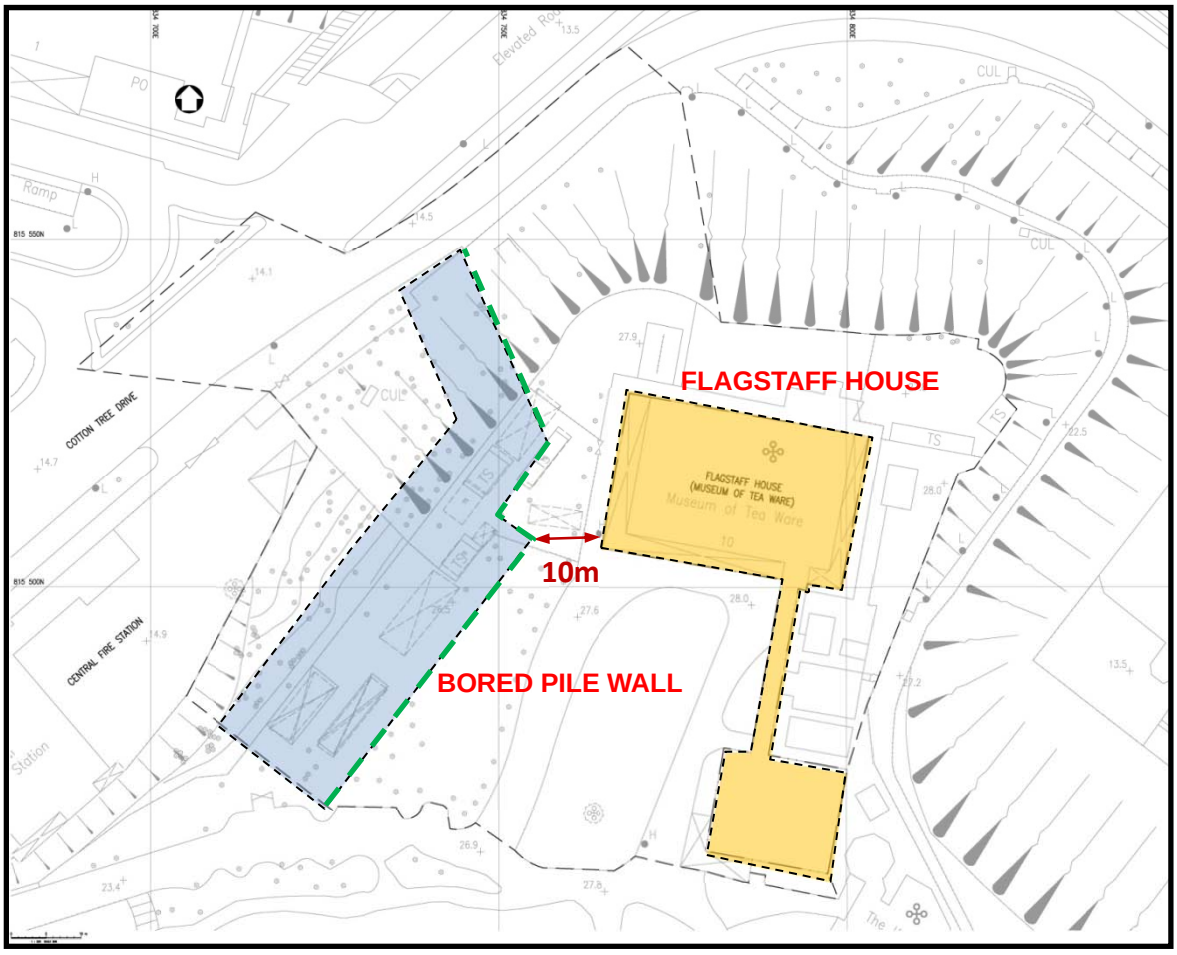
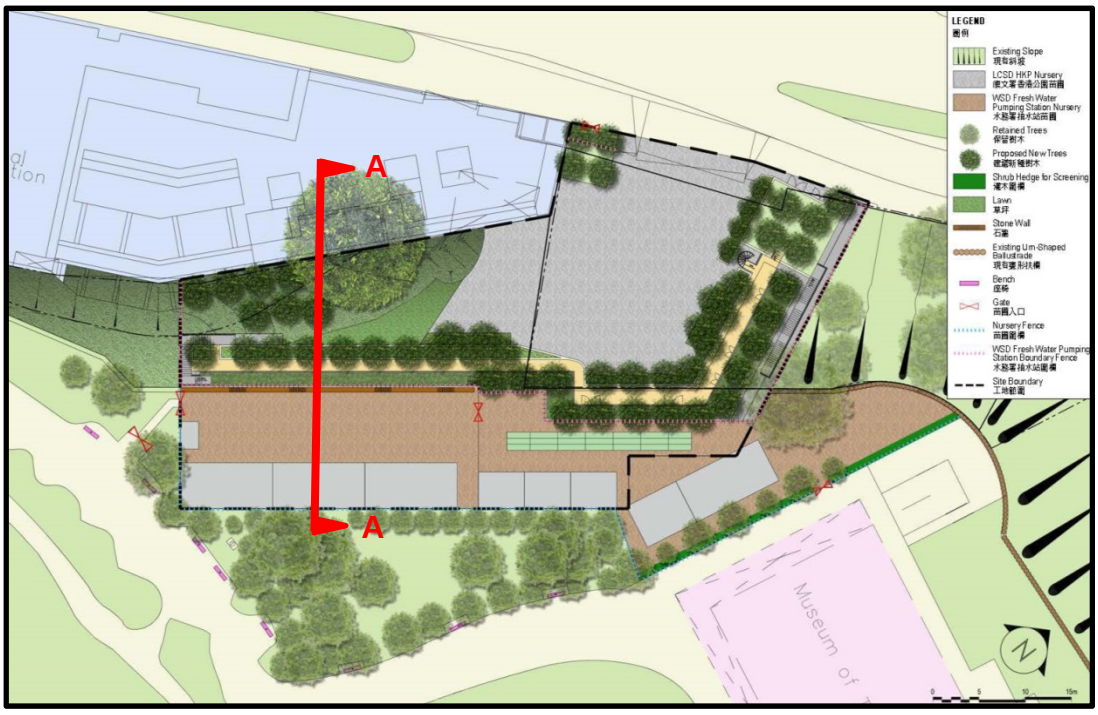
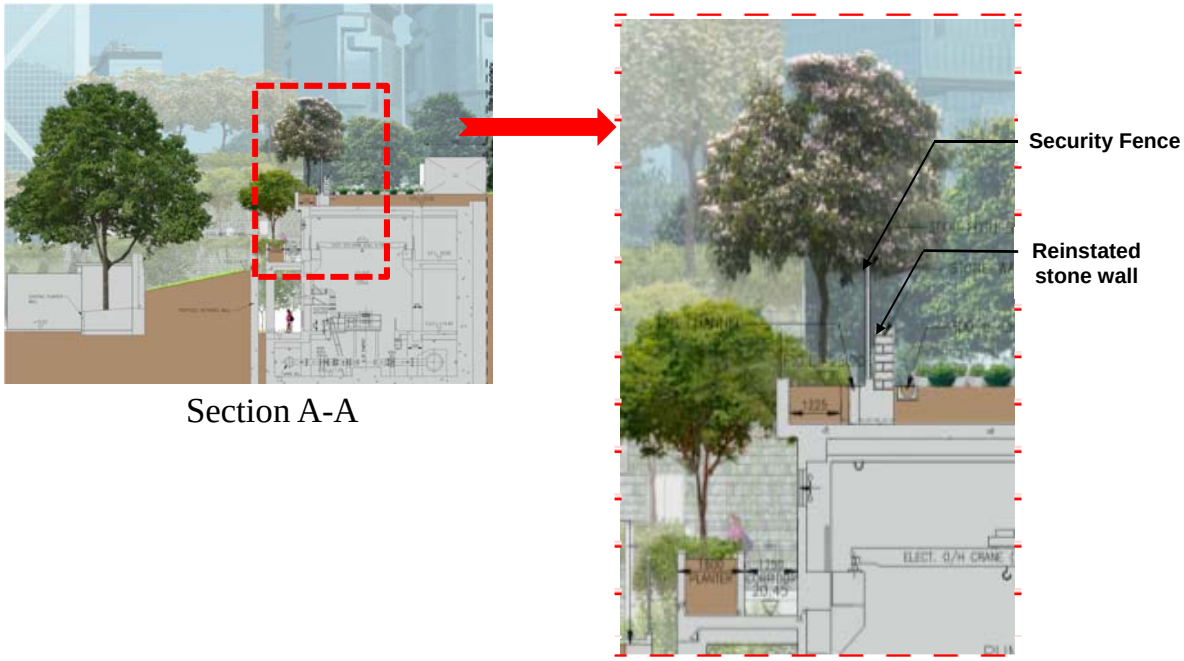


Figure 6: Separation between the proposed pumping station and the monument
Source: provided by WSD, modified by the author





Section A-A

Figure 7: Plan and section of the landscape design scheme
Source: provided by URBIS

HERITAGE IMPACT ASSESSMENT AND MITIGATION MEASURES

13. The potential impact on the above heritage items has been assessed for various stages of the project, including the planning stage, construction stage and operation stage, and is summarised below:

A. Flagstaff House

Potential Impact

No works will be carried out within the monument boundary. Hence no direct impact to the monument is expected. However the piling and excavation works may cause vibration and ground movement during the construction stage. Vibration and ground movement shall be kept minimal and closely monitored such that the effect on the monument and the artifacts stored within the Museum of Tea Ware during the construction stage will be insignificant. The Museum of Tea Ware shall continue to operate during the construction stage.

Visual impact of the proposed pumping station during the operation stage has also been significantly reduced by the combination of the underground structure and the proposed planting of trees and provision of vertical greening.

Mitigation Measures

The mitigation measures include:

- Design the structure of the pumping station such that it is below the existing ground level of the Hong Kong Park and is not visible from the Flagstaff House;
- Restore the existing slope landscape as far as possible by designing the building in stepped form with the planting of trees at the roof level, the first floor level and the ground level of the building and vertical greening on the external façade of the building;
- Carry out a condition survey for the existing conditions of the Flagstaff House prior to the commencement of construction works;
- Develop a monitoring proposal for monitoring ground movement and vibration such as installation of tell-tale and settlement markers prior to the commencement of construction works. Conditions of the monument shall be monitored during both the pre-construction and construction stages;
- Construct a bored piled wall (shown as a dotted green line in Figure 6) to support the ground and minimise the ground movement during the construction of the pumping station in accordance with the requirements of the AMO;
- Carry out site monitoring of ground movement and vibration and record any significant change during the course of construction; and

- Carry out regular reviews on the condition of the building and artifacts within the building and record any significant change during the course of construction.

B. Old stone wall

Potential Impact

As the existing slope is required to be trimmed off for the construction of the pumping station, it is not possible to preserve in-situ that part of the stone wall falling within the construction site of the pumping station. About 35 m of the old stone wall will be temporarily removed to facilitate the construction of the pumping station, and subsequently it will be reinstated at the existing location after completion of the construction work for the pumping station. During operation, the new railing and security fence for safety and security purpose may also cause visual impact to the old stone wall.

Mitigation Measures

The mitigation measures include:

- Carry out a detailed cartographic and photographic survey for the affected part of the stone wall prior to temporary removal of the wall and commencement of the construction works;
- Reinstate the wall on the roof of the new pumping station at its existing location to maintain the continuity of the stone wall; and
- New railing and security fence shall be in simple design to avoid visual impact to the stone wall.

C. Pre-construction stage:

Prior to commencement of the construction works on site, the contractor is required to carry out a condition survey for the existing conditions of the Flagstaff House, and a detailed cartographic and photographic survey for the affected portion of the stone wall.

Method statement (e.g. for removal and reinstatement of the stone wall, monitoring of ground movement and vibration, etc.), safety measures (e.g. protection measures to the stone wall during the course of construction works) and alternative proposals (should the situation be found varied from the original detail / design intent) are to be submitted to the AMO for comment prior to commencement of the works. Works for monitoring of ground movement and vibration such as installation of

tell-tale and settlement markers shall be completed prior to commencement of the construction works. All records are to be submitted to the AMO.

D. During construction stage:

The removal and reinstatement of the stone wall shall be carried out by the approved specialist under the Category of "Repair and Restoration of Historic Buildings" under the construction contract.

Site monitoring of ground movement (e.g. installation of tell-tale and settlement markers prior to the commencement of the works) will be carried out to ensure that the construction works will not affect the nearby declared monument, the Flagstaff House. Monitoring records shall be submitted by the contractor to the engineer for record and monitoring on the changes during the course of the construction works.

In case the specified settlement and vibration limits are likely to be exceeded, construction method and procedures shall be reviewed by the contractor and rectification measures shall be provided to the satisfaction of the engineer prior to proceeding further with the construction works.

CONCLUSION

14. Considering the limitations and technical constraints on site selection, the proposed FWPS has to be located at the proposed site at Cotton Tree Drive. A buffer of 10m has been allowed between the declared monument, the Flagstaff House and the site to ensure that the construction works would have no direct impact on it. Furthermore, the design scheme for the proposed FWPS has proposed to reinstate the affected old stone wall with adequate landscape and greening to reduce the visual impact. Thus the overall impact of the project should be acceptable with the mitigation measures recommended.

Water Supplies Department
March 2014

APPENDIX I – Design Scheme for the proposed pumping station

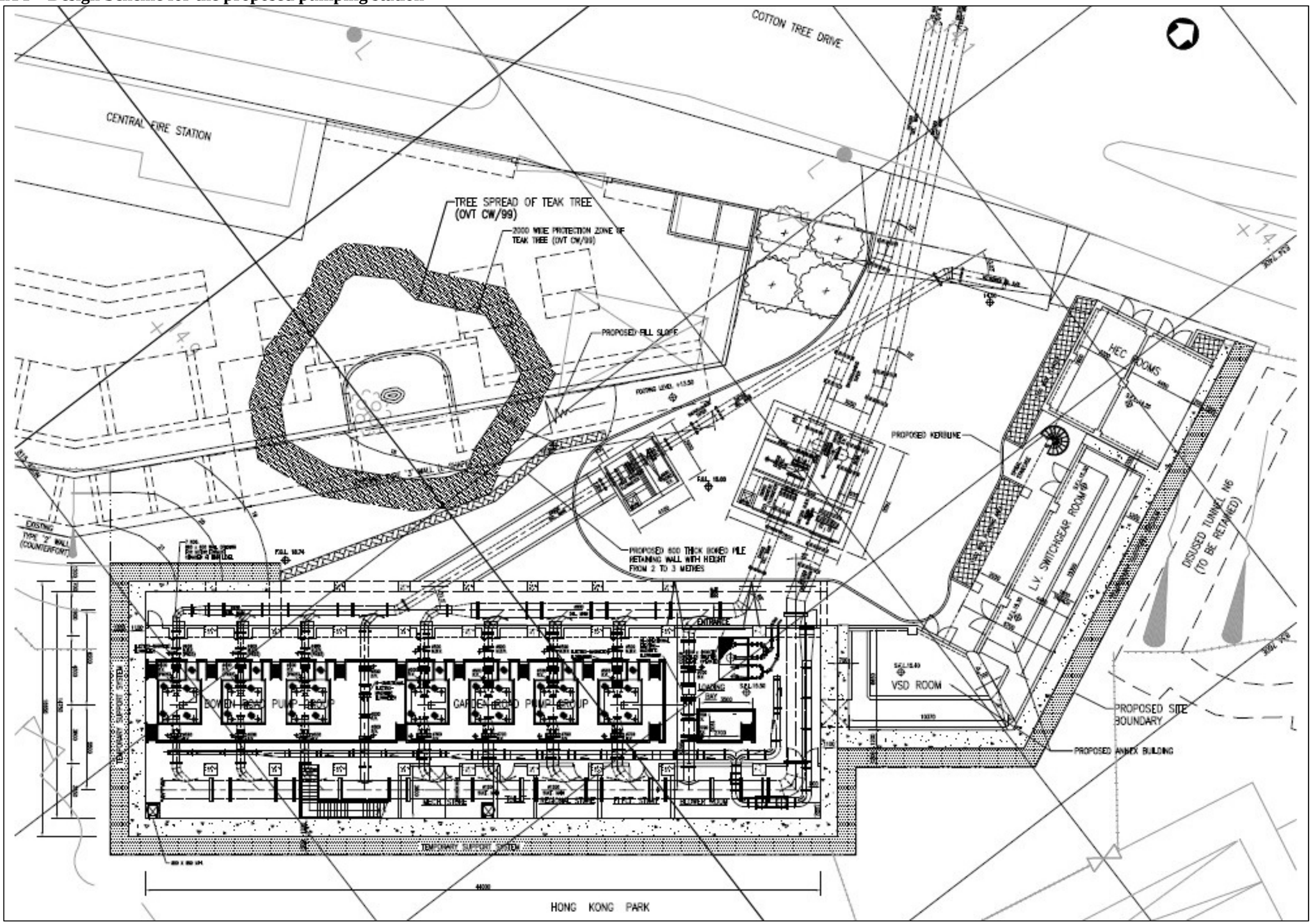


Figure 8: Proposed layout plan of the FWPS
Source: provided by WSD

Annex A

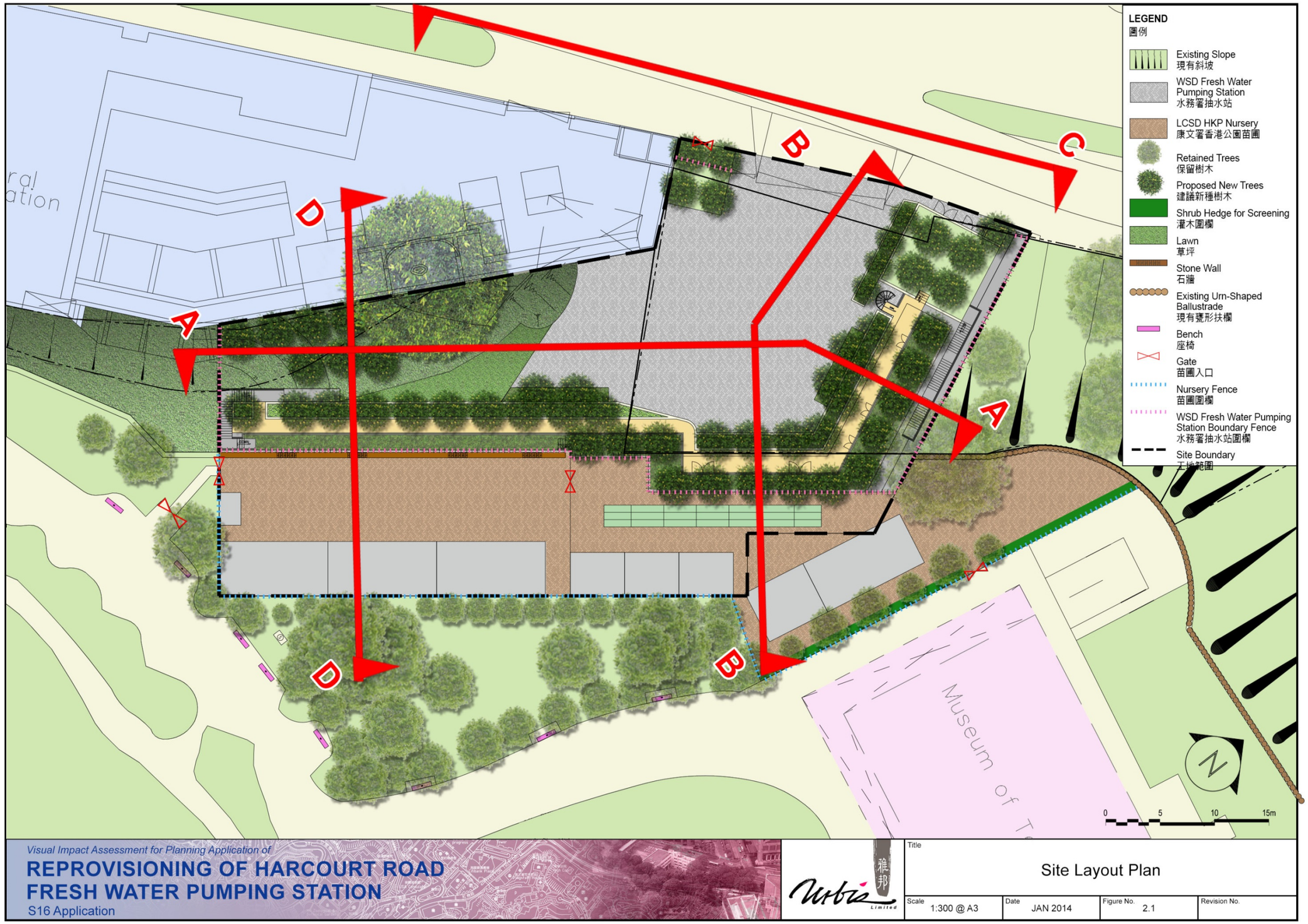


Figure 9: Proposed landscape layout plan
Source: provided by URBIS

Figure 10: Proposed Elevation A
Source: provided by URBIS

Figure 11: Proposed Elevation B
Source: provided by URBIS

Figure 12: Proposed Elevation D
Source: provided by URBIS

Figure 13: Proposed Elevation C
Source: provided by URBIS

APPENDIX II – Photomontages at the key public viewing points

Figure 14: View from Queensway Plaza Fairmount House Pedestrian Bridge (existing view), Source: provided by URBIS

Figure 15: View from Queensway Plaza Fairmount House Pedestrian Bridge (Future view for the proposed development), Source: provided by URBIS

Annex A

Figure 16: View from the elevated footbridge at the eastern side of Cheung Kong Center (existing view), Source: provided by URBIS

Figure 17: View from the elevated footbridge at the eastern side of Cheung Kong Center (Future view for the proposed development) Source: provided by URBIS

Figure 18: View from the Hong Kong Park (existing view), Source: provided by URBIS

Figure 19: View from the Hong Kong Park (Future view for the proposed development), Source: provided by URBIS