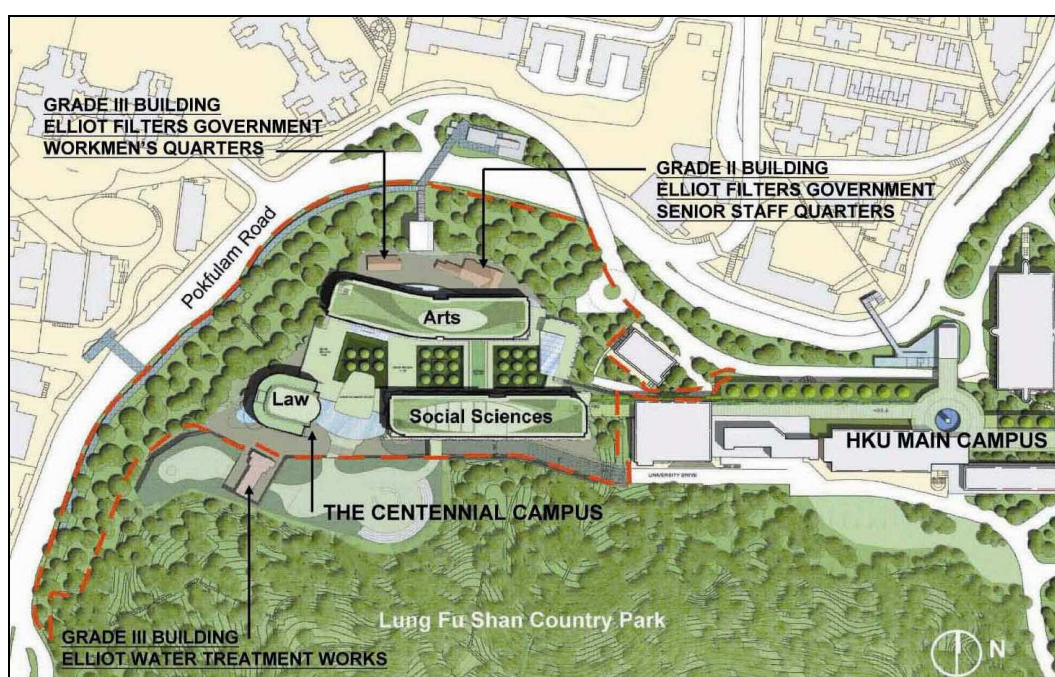


Heritage Impact Assessment for Centennial Campus Project, The University of Hong Kong

prepared in accordance with
DEVB Technical Circular (Works) No. 11/2007,
the Guidelines for Built Heritage Impact Assessment (BHIA)
(as at 16 May 2008)



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This Heritage Impact Assessment report for the Centennial Campus Project, The University of Hong Kong is prepared in accordance with DEVB Technical Circular (Works) No. 11/2007, the Guidelines for Built Heritage Impact Assessment (BHIA) (as at 16 May 2008) (hereinafter referred to as the “*Guidelines*”), and the presentation follows the sequences in the *Guidelines*.

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EXECUTIVE SUMMARY

1.0 BACKGROUND

1.1 The University of Hong Kong will celebrate its centenary in 2011. The implementation of the new '3+3+4' academic structure and a new four year curriculum will add 50% more students and 200 more teachers to the University's population by 2012. Consequently, expansion westward into the former Water Supplies Department (WSD) Elliot filters site was adopted, with the new section to be known as Centennial Campus. The site retains three historic buildings related to the activities of the WSD –

- Elliot Pumping Station and Filters, Senior Staff Quarters – Grade II historic building,
- Elliot Pumping Station and Filters, Workmen's Quarters – Grade III historic building, and
- Elliot Pumping Station and Filters, Treatment Works Building – Grade III historic building.

1.2 The three historic buildings will be preserved in-situ, adopted and integrated into the Centennial Campus development, and become part of the campus. Heritage impact assessment to these buildings has to be carried out as a requirement for funding application for the Centennial Campus project. The Heritage Impact Assessment report is prepared in accordance with the DEVB Technical Circular (Works) No. 11/2007, the Guidelines for Built Heritage Impact Assessment (BHIA) (as at 16 May 2008).

2.0 BASELINE STUDIES

2.1 The University has employed heritage consultant to carry out in-depth desk top study and field evaluation to these three historic buildings and conservation management plan has been prepared for each of them. Condition survey, measured drawings and photographic record have also been prepared before the commencement of the project.

3.0 IMPACT ASSESSMENT STUDY

3.1 Impact During Re-provisioning of Fresh and Salt Water Reservoirs

An Environmental Impact Assessment report – *Re-provisioning and Up-grading of Salt Water Services Reservoirs in Western District for Water Supplies Department* (hereinafter referred to as the EIA report), has been prepared in April, 2007 and submitted to Environmental Protection Department., The Elliot Treatment Works, a Grade III Historic Building, is located by the

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proposed access portal of the cavern and is retained in-situ. Direct impact to the Treatment Works in terms of encroachment upon the building is avoided. The construction plant and methods chosen for the Project and the concurrent adjacent works have given full consideration to the potential impacts to the Treatment Works. No TBM and blasting will be employed to minimize vibration impacts.

3.2 Impact During Construction of the Two Fresh Water Reservoirs

For the construction works of the proposed fresh water service reservoirs, sufficient temporary support, including temporary pipe pile walls with horizontal struts in close proximity of Treatment Works building, has been installed to protect the Treatment Works building. In addition, protective measures including nylon safety net has been implemented to protect the entire façade of the Treatment Works building. Regular daily monitoring for the Treatment Works building, including four numbers of settlement monitoring points and four numbers of tiltmeters in the vicinity of the building, have been carried out continuously. The interior and exterior are also inspected regularly.

3.3 Impact During Construction of the Centennial Campus

- 3.3.1 Protective measures in the form of Ground Stabilization Works will be carried out to the Senior Staff Quarters and Workmen's Quarters prior to the commencement of demolition of the existing reservoir, piling, excavation and soil nail works. The proposed works consist of a row of grouted piles around the Quarters which forms a separation barrier and protects them from disturbance from future construction works. Cement grout will then be applied around and under the Quarters to stabilize the soil base. Only non-percussive plants will be used and grouting will be carried out under low pressure not exceeding the original stress state of the soil. The proposal has been approved by Buildings Department and Geo-technical Engineering Office.
- 3.3.2 As the Treatment Works Building is situated away from the above works, the effect of these works is considered in-significant.
- 3.3.3 With the stabilization works in place, the effect of the construction works of the Centennial Campus is considered insignificant. It is anticipated that the historic buildings should not in any way be adversely affected by the Centennial Campus works.

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3.4 Visual Impact and Future Usage

3.4.1 The former WSD Elliot filters site is adopted as the Centennial Campus. The three historic buildings cannot be seen from Pokfulam Road, and they were located inside the locked filters site, which could only be seen at a distance outside the chain link fence. The historic buildings will be adopted and integrated into the Centennial Campus development. The original landscape and the settings of the three historic buildings will be changed, but the change on visual impact is considered to be acceptable.

3.4.2 A Working Group on Heritage has been set up by the Project Group for Centennial Campus and Main Campus Re-development of The University of the Hong Kong, and views on the potential functional uses of the three historic buildings.

3.4.3 Engagement workshops for the usage of the Senior Staff Quarters and Workmen's Quarters have been carried out on 8th and 9th October, 2008.

3.5 Evaluation

3.5.1 These three historic buildings have never been opened to the public, they are now adopted and integrated into the Centennial Campus development, and the campus is open to the public, thus the adaptation of these buildings will enhanced public awareness of conservation works. The impact on the historic buildings is therefore considered beneficial.

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A. Introduction

A.1 The Centennial Campus Project, particularly in relations to the three historic buildings

A1.1 The University of Hong Kong will celebrate its centenary in 2011. The implementation of the new '3+3+4' academic structure and a new four year curriculum will add 50% more students and 200 more teachers to the University's population by 2012. Consequently, expansion westward into the former Water Supplies Department (WSD) Elliot filters site was adopted, with the new section to be known as Centennial Campus. The site retains three historic buildings related to the activities of the WSD –

- Elliot Pumping Station and Filters, Senior Staff Quarters – Grade II historic building (hereinafter referred to as Senior Staff Quarters),
- Elliot Pumping Station and Filters, Workmen's Quarters – Grade III historic building (hereinafter referred to as Workmen's Quarters), and
- Elliot Pumping Station and Filters, Treatment Works Building – Grade III historic building (hereinafter referred to as Treatment Works Building).



Plate 1 – Elliot Pumping Station and Filters, Senior Staff Quarters
(Senior Staff Quarters)

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Plate 2 – Elliot Pumping Station and Filters, Workmen's Quarters
(Workmen's Quarters)



Plate 3 – Elliot Pumping Station and Filters, Treatment Works Building
(Treatment Works Building)

A1.2 These three historic buildings will be adapted and integrated into the new Centennial Campus. An A3 size site plan of the Centennial Campus Project with the locations of the three historic buildings is enclosed as Appendix 1 for reference.

A1.3 Information on the history of the three historic buildings can be found in the following literatures –

prepared by The Team Consultant

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- a. *“Water Supplies Department Buildings – Centennial Campus, Hong Kong University, Assessment of Cultural Heritage Value”*, January, 2006,
- b. *“Centennial Campus Site, Hong Kong University, Recording and Interpretation”*, March, 2006,
- c. *“Senior Staff Quarters Conservation Management Plan”*, July, 2006,
- d. *“Workmen’s Quarters Conservation Management Plan and Preliminary Interpretation Strategy”*, January, 2007, and
- e. *“Treatment Works Conservation Management Plan”*, August, 2007.

A.2 Effect of Centennial Campus Project on the three historic buildings

A2.1 The architect, Wong & Ouyang (H.K.) Limited, for the Centennial Campus Project appreciates the cultural heritage value of the site and the three historic buildings. The three historic buildings will be adopted and integrated into the Centennial Campus development, which will allow The University of Hong Kong to make the most of the opportunities presented by the history of the site and the historic buildings. Two views of the model of the Centennial Campus with the three historic buildings are included in Section C.3.2 for reference.

A2.2 The three historic buildings will be assigned the best use to ensure the adaptive re-use successfully link its new use with its old use. All future adaptation works will follow the guidelines recommended in the Conservation Management Plans by McDougall & Vines, to ensure that specifications and management of all works are carried out in a proper manner.

B. Baseline Study

B.1 Baseline Study

B1.1 The inventory of pre-1950 buildings are –

- Elliot Pumping Station and Filters Senior Staff Quarters – Grade II historic building (hereinafter referred to as Senior Staff Quarters),
- Elliot Pumping Station and Filters Workmen’s Quarters – Grade III historic building (hereinafter referred to as Workmen’s Quarters), and
- Elliot Pumping Station and Filters, Treatment Works Building – Grade III historic building (hereinafter referred to as Treatment Works Building).

B1.2 The direct and indirect impacts on the historic buildings are described in Section C of this study report.

B.2 The desk-top research and field evaluation for the baseline study have been completed.

B.3 Desk-top research has been completed during the preparation of the Conservation Management Plans of the three historic buildings by the Conservation and Heritage consultants, McDougall & Vines. The history of the site and the three historic building can be found in “Section 2 – History of the Site and Buildings” and “Section 3 – Architectural Assessment and

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Comparative Analysis” respectively of “*Water Supplies Department Buildings – Centennial Campus, Hong Kong University, Assessment of Cultural Heritage Value*”, January, 2006 and are extracted as below: –

“Section 2 History of the Site and Building

2.1 General Background History

Water supply for the residents of Hong Kong has consumed a considerable amount of time and planning by government authorities, since the early days of British colonial settlement on the island. The first public water supply, intended to supplement the hillside streams and wells which had proved unreliable both in quality and amount, was begun in 1860. Since then, with the constant growth of population and demand, the water supply system on Hong Kong Island has been extended and expanded to meet the needs of residents.

In 1859, the Government invited plans with an award of \$1,000 for development of water resources and in 1860 a clerk of works with the Royal Engineers, S. B. Rawling, produced a scheme to bring water to the city by a conduit from a reservoir at Pokfulam. The reservoir was constructed over the next three years at a cost of \$170,000, and in 1863 had an initial capacity of 2 million gallons. In addition, two inter-connected storage tanks were constructed- one in Bonham road and one in Robinson Road. Public water stand pipes were also provided. However, this proved inadequate and the Pokfulam reservoir capacity was increased in several stages to 68 million gallons by 1877 at an additional cost of \$223,000.

With the growth of population and more intensive settlement on Hong Kong island the amount of stored rainwater at Pokfulam was not sufficient to meet demand, even after expansion of its capacity, and distribution through the single conduit was problematic. While the original Pokfulam reservoir remained in service, several new water collection points were established in the late nineteenth and early twentieth century.

The major new reservoir in the system was the Tai Tam (Tytam or Taitam) reservoir. Damming of this valley to the east of the city of Victoria was begun in the 1880s, providing three times the storage capacity of Pokfulam. The water from Tai Tam was initially directed through the Filter Beds at Albany. Expansion of the scheme continued into the early twentieth century and this served the eastern sections of the island. A detailed history of the scheme is given in the Public Works report of 1917 in the Hong Kong Government Administrative Reports [AR1917, App Q, para 118].

An additional reservoir system, based on a private dam, was begun at Aberdeen in 1929, and expanded to its full capacity by 1932. This assisted with supplies to the west of the island, but was the last potential site for conventional water storage on the island. From 1930, water was delivered to the island from Kowloon reservoirs, through a submarine pipeline under Victoria Harbour.

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More recent developments have included the creation of 'fresh water lakes' by enclosing bays and sourcing water from mainland China. A separate sea water toilet flushing system has also been developed.

2.2 Establishing the Elliot Filter Beds

The site of the Centennial Campus is currently known as the Elliot Pumping Station and Filters. The area was developed as part of the public water supply system at a similar time to the establishment of the University, and is variously referred to as West Point or Elliot [or Elliott] Filter Beds in Government reports.

In order to increase the water supply to the western end of the island, a service reservoir between the Pokfulam reservoir and the city, at West Point, was proposed in 1910 – 11 and filter beds were part of the project. However, as much of the land surrounding the proposed reservoir and filter beds had been designated for use for the University, space was a problem in this location [AR1911, App P, para 117]. The Public Works report of 1912 [AR1912, App P, para 122] then stated that:

As mentioned in last year's Report, it was decided that, for lack of space, the necessary filter beds should be constructed on top of the service reservoir, which was to be located between the Students' Quarters and the residence of the Principal of the University, and plans and estimates were prepared accordingly. On further investigation and consideration of the matter, the conclusion was come to that the construction of these works, practically in the midst of the areas allotted to the University, would be likely, in course of time, to hamper the development of that institution and it was therefore decided that an endeavour should be made to find another site. The possibility of utilizing an area alongside the Pokfulam Road to the south-westward of Elliot Battery was under investigation at the close of the year.

In the following year's Public Works Report [AR1913, App P, para 121] it was noted that:

...a much more satisfactory site was available within the boundaries of the Battery and that there was a likelihood of the area in question being surrendered by the Military Authorities.

The year 1913 was a very busy one for Water Works construction and upgrading on Hong Kong Island. A new pumping station was constructed on Pokfulam Road, west of No. 1 Bridge, which included a pumping station, boiler-house, chimney shaft and quarters for Chinese staff [AR1913, App P, para 123]. The earlier Bonham Road pumping station, which this new pumping station replaced, was handed over to the University. Negotiations over the 'surrender' of the Elliot Battery site had not been completed by the

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end of 1913, but by the end of 1914, the new service reservoir and filter beds were well underway.

The Public Works report of 1914 [AR1914, App P, para 119] notes:

119. Additional Service Reservoir, & c, West Point. – *The negotiations with the Military Authorities mentioned in last year's Report were concluded and resulted in the transfer to the Colonial government of a large portion of the area occupied in connection with Elliot Battery. This alteration in the site necessitated a re-arrangement of the works as originally designed and consequently a Contract for the work was not let until the end of September. The scheme includes 6 Filter Beds, each provided with a pre-filter, of an average area of about 880 square yards, besides a service reservoir with a capacity of about 5 million gallons. The service reservoir will be divided by a cross-wall so as to admit of one compartment being used whilst the other is being cleaned out. The work also includes the necessary re-arrangements and extensions of mains to connect the new works with the West Point Filter Beds, the Pokfulam Road Pumping Station and the City mains.*

The Contractor commenced work on the 19th October and by the end of the year the excavation was well advanced...

The construction of the Filter Beds at West Point, on the land excised from the Elliot Battery, continued through 1915 [AR1915, App Q, para 132]. The work required diversion of part of Pokfulam Road and excavation of the service reservoir. In 1916 it was noted that the Military Authorities were granted some strips of colonial Government land in the vicinity in return for the Elliot Battery area.

The site proved difficult to excavate and a heavier retaining wall for the reservoir was needed, and completed by the end of 1916. Additional drains, conduits and pipes had also been installed by that time. A pipeline linked to the Tai Tam reservoir was also begun, as that reservoir was enlarged during 1916 to assist with water supply to the western districts. (During this year retaining walls on the University site also needed strengthening.)

The Public Works report of 1917 reported that the reservoir was ready for covering with concrete, and the amounts of reinforced concrete used were set out in detail, and the filter beds were all but complete by the end of 1917. An hydraulic motor house was erected over the pumping equipment during 1917 – 8, near to the Pokfulam Road pumping station. This meant that by 1918, an adequate and reliable water supply for the western side of the city was well in place, and by the end of 1919 it could be stated that:

The Reservoir now feeds the Western District of the City. ...All liabilities were discharged before the close of the year.

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Extract from 1923 survey of Western District

Into the early 1920s the West Point (Elliot) slow sand filter beds and a number of others in the water supply system were regularly upgraded, 'thereby increasing their efficiency', and the reservoir was also repaired to improve reliability and capacity. During 1926, washing the filter bed sand was assisted by the installation of light rail tracks and trucks. Electrical work was installed and other maintenance was undertaken.

In summary, by this time the elements of the western district system included the Pokfulam reservoir, Pokfulam Road pumping station (coal fired), Elliot (West Point) Filter beds and service reservoir. The location of these elements can be seen on the 1923 map of the area (above).

During the 1930s the water supply system continued to expand and new water collection sites were added. On the Elliot Filters site, the brick building, now known as the Treatment Works was constructed during 1930-1 to increase the speed and capacity of the filtration system. Additional water supply from the Aberdeen Reservoir, newly constructed in 1929, was transferred to the Elliot Filters via an 18-inch pipe, for distribution to the Western District.

The Public Works report of 1930 [AR1930, App Q, para 250 – 9] notes:

Filtration Plant – The Filtering Plant supplied by the Paterson Engineering Company arrived from England early in the year and a

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contract for the construction of the Filter Beds and Chemical House was let to Messrs. The Lai To Construction Co. on 30th June, 1930 for \$36,777.25.

By the end of the year the excavation had been completed and a commencement made with the concrete work in the inverts of the lower wash water tank and pure water and waste water channels.

The report for the next year [AR1931, App Q, para 285] continues with a description of the works:

...This plant which is one of the Paterson Rapid Gravity Type has been erected within one of the old slow sand beds at the Elliot Filter Beds...It consists of an Administration or Chemical House containing the chemical mixing and proportioning plant on the two upper floors and the pumps and compressors on the ground floor whilst the Upper Washwater Tank is carried on the roof. A covered operating gallery in which is situated all the automatic and hand controlling gear runs at right angles to the Chemical House....

This new rapid filtration system resulted in the removal of the original 1914 slow sand filter beds, and the construction of new concrete framed filter beds.

2.3 Staff Accommodation on the Site

The initial establishment of the water supply infrastructure on the site, the filter beds and the service reservoir, which began in 1914, was essentially complete by the end of 1919, but additional construction also took place to provide accommodation for staff. As with all public works sites, accommodation provided at the Elliot Filter Beds was of two classes – separating the senior (usually British) public service staff from the Chinese workmen.

The 1918 Public Works report [AR1918, App Q, para 113] notes that:

Quarters for watchmen, etc., were commenced before the end of the year.

And then in 1919 [AR1919, App Q, para 110], as part of a detailed description of the Elliot Filter Beds it is noted that:

The Quarters for the Chinese staff comprise a single-storied brick building with a Coolies' Room 14'0" x 24'0", a Watchman's Room 12'0" x 14'0", and an Office 12'0" x 14'0". Bathrooms, kitchens and latrine accommodation are provided.

In recording the next major works on the site, the Public Works report of 1923 [AR1923, App Q, para 96] notes the beginning of work on the 'Overseer's

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Quarters, Elliot Filter beds', under the listing of Public Works Extraordinary on Hong Kong island.

This work consisted of the site formation for, and the erection of, a two-floor building, each floor containing a four-roomed flat with Servants Quarters adjoining.

The contract which amounted to \$38,990.70 was let to Messrs Chan Tack & Co in June and the work commenced.

The typhoon in August caused considerable damage and delay, but subsequently the work proceeded satisfactorily, and by the end of the year the site preparation was practically complete.

The next year the following additional notes were made [AR1924, App Q, para 96] on the building's construction:

Early in the year, the site preparation was completed including the necessary retaining wall along the top of the site. It was found necessary to make this wall considerably longer and higher owing to the soft nature of the soil. In levelling the site, an outcrop of first quality grey granite was struck which was quarried and used for the erection of the quarters at a slightly lower total cost than would have resulted by the use of brick-work.

Expenditure on the building, to the end of 1924, was \$35,964.27.

The 1925 Public Works report [AR1925, App Q, para 97] notes for the 'Overseer's Quarters, Elliot Filter-Beds' that:

The buildings were completed and occupied in early January.

Unlike a number of other works, particularly accommodation quarters, no architect was named as being involved in the design and construction of this building, so it is assumed that the design was drawn up in the Government Architectural Office. [Further research will be undertaken on this aspect, as well as the use and occupancy of the building, and included in the Conservation Management Plan to be prepared for the Quarters.]

2.4 Later Developments

With the constant upgrade of public water supply infrastructure, little remains on this site if the initial elements apart from the accommodation buildings and the 'chemical house'. The service reservoir is intact but substantially upgraded.

The original 1913 Pokfulam Road pumping station was demolished in 1987 and replaced with the current Elliot Fresh Water and Salt Water Pumping Station. The 1930s filter beds were removed for the creation of Elliot No. 1

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and No. 2 Salt Water Service reservoirs in 1995 – 6. Additional staff quarters were constructed adjacent to the Senior staff quarters in 1985.

2.5 Summary Chronology

1910 – 11: West Point service reservoir site first considered, suggested location in middle of proposed Hong Kong University site

1912: Elliot Battery site to west of University land considered more appropriate location

1913: Pokfulam Road pumping station constructed (same location as current Elliot pumping station)

1914: West Point (Elliot Battery) service reservoir and sand filter beds constructed

1916: Reservoir walls strengthened

1918 – 19: Workmen's Quarters constructed

1923 – 24: Overseer's (Senior Staff) Quarters constructed

1929: Aberdeen Reservoir constructed and linked to Elliot site

1930 – 31: Treatment Works (Filtration) Building constructed – Rapid Feed Gravity System

2.6 Historical Sources

(See also Appendix One of this report)

*The most useful source of information on the development of this site has been the **Hong Kong Government Administrative Reports**. These are an annual set of documents, logically organised on true British Public Service principles, chronicling the business of governing the colony and containing detailed appendices, one of which lists and describes all public works, including water works. There are similar records, similarly arranged, for all British colonies in the nineteenth and early twentieth centuries.*

*Each year the Public Works Reports appendix contains a section for Hong Kong (island) headed **Maintenance of City and Hill District Water Works**. This covers the amount of water available and used, the upkeep of sites and equipment, general costs and other information such as annual rainfall figures at each reservoir site. **Specific works** are separately itemised in the annual Public Works Appendix, which is divided into 'types' of works for budget purposes, covering recurrent works, building ordinance works and extraordinary public works. The notes are in the form of numbered paragraphs in the Appendix. The references in square brackets above give the year, appendix letter and paragraph number for any useful historic information – viz. [AR1925, App Q, para 97].*

***Maps and plans** of the area are held at the Public Record Office, and the*

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evolution of land use and settlement can be followed graphically through analysis of these.

***General information** on the development of public water supplies for the whole of Hong Kong, Kowloon and the New Territories was obtained from the Water Supplies Department website and accompanying publications.*

Section 3 Architectural Assessment and Comparative Analysis

3.1 Workmen's Quarters

The Workmen's Quarters were constructed in 1918 – 9. The design would appear to come from the Government Architectural Office.

AMO description

This block is a simple rectangular single storey red brick building with a pitched roof of Chinese pan-and-roll tiles and gable ends. Projecting verandahs and balconies are featured on the front and rear verandahs.

The three door openings to the front elevation reflect the room arrangement inside as described in the Public Works report of 1919, with the coolies' room at one end (with three windows) and the watchman's room and the office accessed through separate doors. The service rooms are added to the rear of the basic rectangle, under separate verandah roof form. The verandah columns were manufactured by the HK Public Works Department.

During the 1910s and 1920s the Public Works reports have descriptions of similar small staff accommodation buildings being constructed, such as the Quarters for Sextons at the Mt Caroline cemetery [AR 1913, App P, para114(a)]. This was a brick building of five rooms with a tiled roof and basic facilities and verandah. It would seem to be of a similar design to the workmen's quarters at the Elliot Filter Beds site, and the usual standard of accommodation for Chinese workers.

As such, the building is a good indication of Chinese workmen's quarters on Government sites, and it does reflect the strict hierarchy of employment and relative standards of facilities provided within the Hong Kong Public Service.

3.2 Senior Staff Quarters

The senior staff quarters were constructed in 1923 – 4. The design would appear to come from the Government Architectural Office.

AMO description

Built in the early 1920s in Arts and Crafts style.....The building consists of a rectangular two storey main block with a narrow room-and-verandah annex of servants' quarters.

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The senior staff quarters is a two storey granite residence with pan-and-roll tiled roof and a narrow masonry wing to the side. Although it is designed with the appearance of one large house, the building is actually divided into two flats, one to each floor, and servants' rooms are located at both levels in the side wing. The front porch entrances provide access to each flat. The front elevation has a cantilevered verandah at the upper level with pairs of French doors opening onto it and pairs of windows below. Both the porch and balcony roofs have distinctive extended curved 'horned' ends to the hip ridges, which provides some local architectural reference. All windows and doors have timber louvred shutters. The rear elevation provides balconies at both levels. The retaining wall above Pokfulam Road is constructed of the same granite, quarried on site.

The Arts and Crafts classification for the style of this residence is appropriate as the building design is not based on the Edwardian Classical style used for many buildings of the late nineteenth and early twentieth centuries in Hong Kong. Rather, this residence reflects the colonial domestic architecture used throughout the British empire, based on a variation of the Bengali bungalow with some reference to the 'hand-made' qualities of the Victorian/Edwardian Arts and Crafts style. The use of rough honed granite for the walls and multi paned casement windows adds to the craftsman-like finishes typical of the work of many Arts and Crafts architects.

There are other buildings in Hong Kong (and indeed other colonies) of this general style and period, which this building can be identified with as part of an important set of (usually) residences, generally designed by the Government Architects Office. These include the early example of Island House, Tai Po (1904) through to Fan Ling Lodge in the 1930s. These residences are usually termed 'bungalows' although they range in scale from modest to substantial. Many of the major Government public works which required senior staff accommodation in the first three decades of the twentieth century were provided with bungalows similar to this one at the Elliot site, and these are noted in the Public Works reports. Generally, they were of two storeys and built in red brick, or stone when available. By the 1920s, the Arts and Crafts style itself had noticeable transitional qualities as the design trend was to turn to Art Deco, and this is evidenced in the simple but elegant internal details of this dwelling. It is also an interesting example of the use of reinforced concrete and other contemporary materials and details in an essentially traditional bungalow form.

The Senior Staff Quarters is an excellent example of small scale residential architecture of the 1920s in Hong Kong. Architecturally it presents a unified design externally, while internally it retains its unusual floor plan reflecting the two separate residences incorporated into one dwelling.

The quality and scale of the architectural work on this building, in comparison to the simple nature of the Workmen's quarters, is indicative of the status of senior staff, and it does reflect the strict hierarchy of employment and relative

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standards of facilities provided within the Hong Kong Public Service.

[Other examples of this period and style, provided by Mr Bob Horsnell from his research for the Antiquities and Monuments Office, include buildings at the Kowloon Hospital, the Shek O Country Club, St Stephen's College Stanley, the former Royal HK Yacht Club North Point, and a number of others. The stone work on the former Peak Café, which was originally a rickshaw drivers shelter is also of a similar finish.]

3.3 Treatment Works Building

The Treatment Works Building was constructed as a filtration plant in 1930 – 1. The design is functional and expresses the stages of the process within the structure, with the equipment spread over three levels, and the control mechanisms located in the projecting wing. The design was developed by the pumping equipment manufacturers – Paterson Engineering Company, Windsor House, Kings Way, London – to house their Rapid Gravity Filtration system.

AMO description

The structure is a reinforced concrete space frame of beams and columns, built into a rectangular plan with filter beds on either side.

This small brick and concrete building sits between the two raised walls of the salt water reservoirs and is three levels high, one of which sits below ground level. It comprises a reinforced concrete frame with red brick infill panels, metal framed windows, concrete lintels and sills. The sloping retaining walls around the treatment works are of coursed granite blocks which drain into a deep concrete drain at the base. The side filter tanks have been empty for some time and are now overgrown.

Internally, sections of the floor of the building are in green and white terrazzo, neatly patterned, with semi-circular steps leading to valve areas. Later changes have occurred to the rear sections which were used for office accommodation. The general colour scheme is blue, green and white. The 1930s water filtration equipment remains within the building.

The Public Works report for 1928 lists a similar reinforced concrete filtration plant constructed to house eight Paterson Rapid Gravity Filters at the Shing Mun Valley Waterworks Scheme. It is presumed that other filtration plants constructed at this time, in Kowloon and Aberdeen, would also have used the same type of structure and equipment for water filtering. This is to be verified by further research if required.

The Treatment Works Building is a compact utilitarian structure reflecting one stage in the pre-war development of filtration processes for the public water supply.”

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B.4 Field Evaluation

B4.1 General

The statement of cultural significance of the three historic buildings have been prepared by the Conservation and Heritage consultants, McDougall & Vines, and are described in “Section 4 – Assessment of Cultural Heritage Value” of “*Water Supplies Department Buildings – Centennial Campus, Hong Kong University, Assessment of Cultural Heritage Value*”, January, 2006, as following –

B4.1.1 “*Senior Staff Quarters*”

The Senior Staff Quarters is a two storey stone residence constructed in 1923 – 4. It also forms a typical part of the facilities provided on Government properties, particularly water works sites. It is essentially intact both externally and internally.

The Senior Staff Quarters is an excellent example of the colonial bungalow/Arts and Crafts style of residential architecture of the 1920s in Hong Kong. Architecturally it presents a unified design externally, while internally it retains its unusual floor plan reflecting the two separate residences incorporated into one dwelling.”

B4.1.2 “*Workmen’s Quarters*”

The Workmen’s Quarters is a simple brick structure constructed in 1919. It forms a typical part of the facilities provided on Government properties, particularly water works sites. It is externally intact but has undergone some internal modifications.

As such, the building is a representative example of frequently repeated Chinese workmen’s quarters on Government sites. It does reflect the strict hierarchy of employment and relative standards of facilities provided within the Hong Kong Public Service.”

B4.1.3 “*Treatment Works Building*”

The Treatment Works Building is a three storey concrete and brick structure built in 1930 – 1. It also forms a typical part of the infrastructure on 1920s – 30s water works sites. It is essentially sound and intact, both externally and internally.

The Treatment Works Building is a utilitarian structure reflecting one stage in the pre-war second world war development of filtration processes for the public water supply. It has some value as a representative example of those technical processes, particularly in the equipment which remains in situ. It replaced the original filtration system set up in 1914 – 5.”

B4.2 Field Survey on Historic Buildings and Structures

B4.2.1 Drawings of the Senior Staff Quarters and Treatment Works Buildings retrieved from the archive of WSD are enclosed as Appendix 2 to this study report. Measured drawings of the Senior Staff Quarters, the Workmen’s Quarters and Treatment Works Building are enclosed as Appendix 3 to this

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study report.

B4.2.2 Photographic record for the three historic buildings has been prepared.

B4.2.3 History of the three historic buildings given by a retired senior officer of the WSD is included as Appendix 4 to this study report.

B4.2.4 Heritage grading of the historic buildings –

The gradings of the historic buildings accorded by Antiquities Advisory Board are –

- **Senior Staff Quarters** – accorded with a Grade II status in 1994;
 - **Workmen’s Quarters** – accorded with a Grade III status in 1994; and
 - **Treatment Works Building** – accorded with a Grade III status 1994,
- and the historic and architectural appraisal of the three historic buildings are included in Section B4.1.

B4.3 There is no additional heritage site within the Centennial Campus site.

B.5 The Report of the Baseline Study

B5.1 Conservation Management Plans for the three historic buildings have been prepared by the Conservation and Heritage consultants, McDougall & Vines.

B5.2 A master layout plan showing the three historic buildings is shown below.

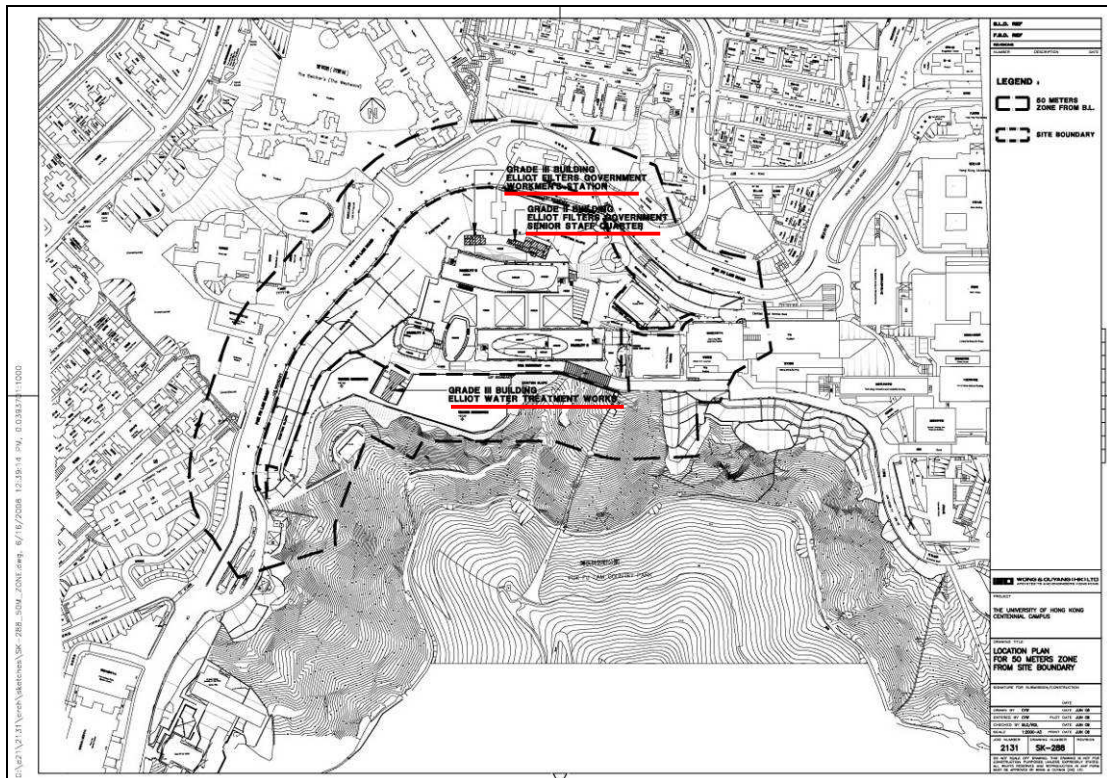


Plate 4 – Site plan of the Centennial Campus
with the three historic buildings high-lighted

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- B5.3 Photographic record for the three historic buildings has been prepared and submitted under separate cover.
- B5.4 Bibliography has been prepared by the Conservation and Heritage consultants, McDougall & Vines, and are described in the “Appendix One – Sources of Information”, in the Conservation Management Plans for each historic building. These appendices are extracted and enclosed as Appendix 5.

C. Impact Assessment Study

C.1 Identification of Impact on Heritage

C1.1 Identification of impact during construction

C1.1.1 Identification of impact during re-provision of fresh and salt water reservoirs –

An Environmental Impact Assessment report – *Re-provisioning and Up-grading of Salt Water Services Reservoirs in Western District for Water Supplies Department* (hereinafter referred to as the EIA report), has been prepared in April, 2007 and submitted to Environmental Protection Department. The following sections assessed the impact on the Treatment Works Building during the site formation work –

“Section 4 Possible Impact on the Environment

Sub-section 4.7 Cultural Heritage

4.7.1 Construction Phase

A Grade III Historic Building, the Elliot Treatment Works, is located by the proposed access portal of the cavern. Based on the current design scheme, the Elliot Treatment Works will be retained in-situ. Direct impact to the Treatment Works in terms of encroachment upon the building is avoided. The construction plant and methods chosen for the Project and the concurrent adjacent works have given full consideration to the potential impacts to the Treatment Works. No TBM and blasting will be employed to minimise vibration impacts. Some precautionary measures to protect the building structure of the Treatment Works against potential indirect impacts are considered appropriate and are discussed further in Section 5.7.

No known archaeological sites are identified within the boundary of the Site. The cavern to be excavated is located entirely within rocks with no archaeological potential. Impact on archaeological resources is not expected.

4.7.2 Operational Phase

As the Project will be used for water storage only, there will be no direct or indirect impact on cultural heritage resources.

Section 5 Environmental Protection Measures

Sub-section 5.7 Cultural Heritage

The construction plant list and construction methods to be employed for the

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Project and the concurrent adjacent works have given consideration to the minimization of potential vibration impact on the Elliot Treatment Works adjacent to the access portal during the construction phase. It is also recommended that a structural survey of the Elliot Treatment Works be undertaken by a specialist surveyor approved by the Antiquities and Monuments Office (AMO) to record the condition of the historic building. The survey should focus on the quality of construction and finishes and general condition of the structure and its finishes. A schedule of defects (including cracks) is to be prepared for submission to the Engineer and AMO and should be supported by photographic record. Based on the survey findings and review of construction method, a construction vibration limit should be established and agreed with AMO and the Engineer. Upon agreement with AMO and the Engineer, vibration monitoring is recommended during the construction stage. Where exceedance of the vibration limit is noted, the works should be stopped and the Contractor should be required to prepare a plan for the approval of the Engineer and AMO to ensure that the works could continue without exceedance of the vibration criteria. Should, at any time during the works, the Engineer note damage to the decoration and structure of the building, the works should be stopped and a method proposed by the Contractor to ensure no further deterioration in the structure of the building. Such measures may include selection of alternative construction plant, construction method.

As no operational impact is identified, no mitigation measure is considered necessary during the operation of the Project.”

The recommendations in the EIA report have been implemented.

C1.1.2 Identification of impact during the construction of the two fresh water reservoirs –

For the construction works of the proposed fresh water service reservoirs, sufficient temporary support, including temporary pipe pile walls with horizontal struts in close proximity of Treatment Works building, has been installed to protect the Treatment Works building. In addition, protective measures including nylon safety net has been implemented to protect the entire façade of the Treatment Works building. Regular daily monitoring for the Treatment Works building, including four numbers of settlement monitoring points and four numbers of tiltmeters in the vicinity of the building, have been carried out continuously. The interior and exterior are also inspected regularly.

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C1.1.3 Identification of the impact during the construction of the building in the Centennial Campus –

- (a) Construction works including basement construction, superstructure works are to be carried out adjacent to the historic buildings and their effects are briefly discussed below –

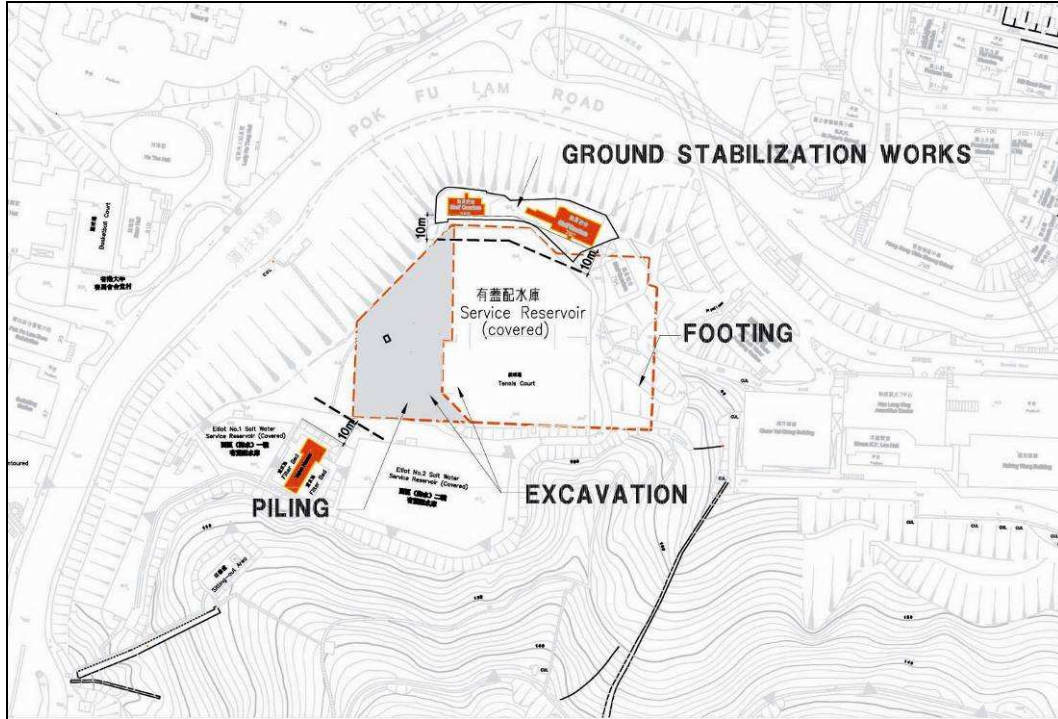


Plate 5 – Ground stabilization works and foundation works

- (i) **Ground Stabilization Works**
Bearing in mind the importance to avoid disturbance and settlement of the important heritage buildings, protective measures in the form of Ground Stabilization Works will be carried out to the Senior Staff Quarters and Workmen's Quarters prior to the commencement of demolition of the existing reservoir, piling, excavation and soil nail works. The proposed works consist of a row of grouted piles around the Quarters which forms a separation barrier and protects them from disturbance from future construction works. Cement grout will then be applied around and under the Quarters to stabilize the soil base. Only non-percussive plants will be used and grouting will be carried out under low pressure not exceeding the original stress state of the soil. The proposal has been approved by Buildings Department and Geo-technical Engineering Office.

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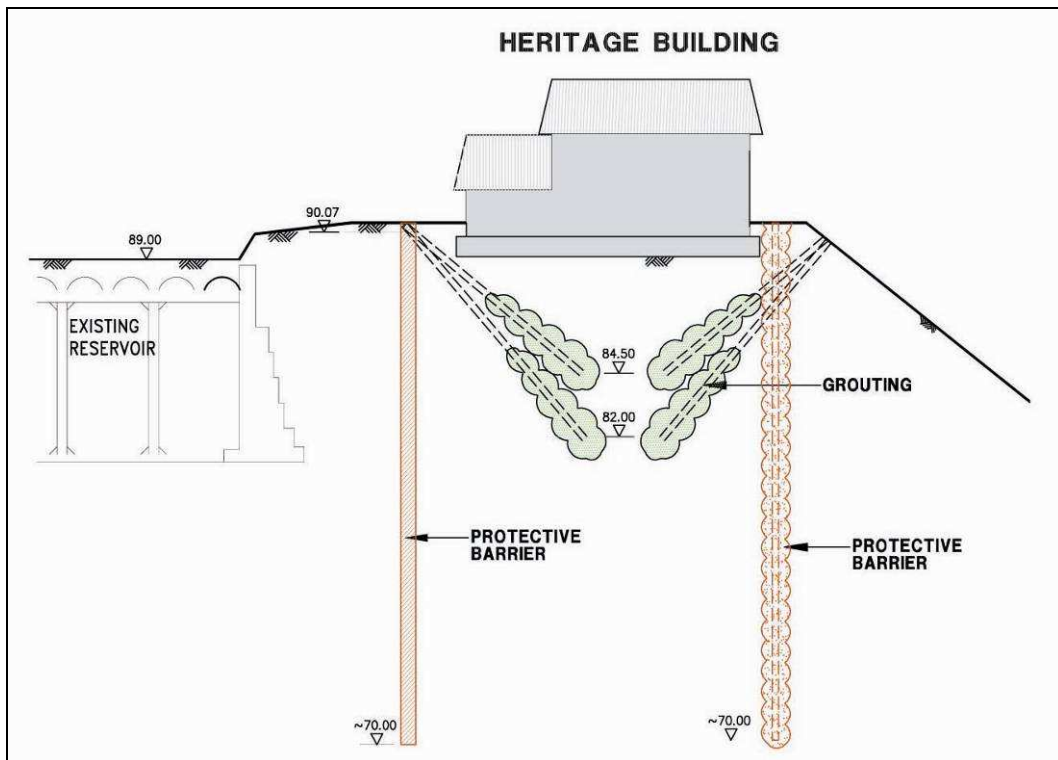


Plate 6 – Ground Stabilization Works – Schematic Section

(ii) Demolition of adjacent existing covered service (fresh water) reservoir – Prior to demolition, the existing covered service (fresh water) reservoir wall will be shored up with steel struts as a precautionary measure. The first bay of the reservoir roof adjacent to both Quarters will be taken down first so that the remaining roof structure is separated from the historic buildings and the disturbance minimized. Demolition works will be carried out using non-percussive methods such as saw-cutting and hydraulic crusher. The vibration induced will be minimal and the effect of demolition of the two existing fresh water reservoirs is considered insignificant in engineering terms.

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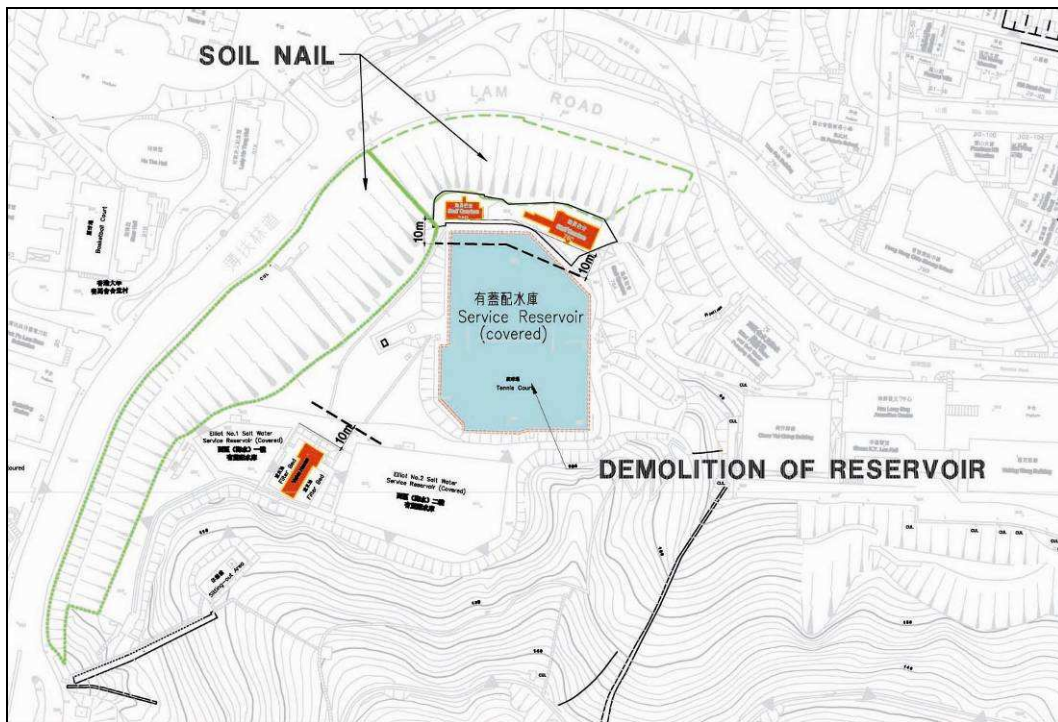


Plate 7 – Demolition of existing covered service (fresh water) reservoir
and soil nail works

(iii) Piling works –

Temporary soldier pile and permanent pre-bored rock socketted H-pile will be carried out adjacent to the Senior Staff Quarters and Workmen’s Quarters at minimum distance of 3 m. Pre-bored method with temporary casing to support the drill holes is proposed to minimize disturbance to both Quarters in terms of ground loss and vibration. The estimated vibration level of the proposed method is considered acceptable.

(iv) Excavation works –

Maximum six layers of tie-back ground anchors are proposed in addition to the soldier pile wall to provide lateral support for the excavation. The estimated differential settlement at the Senior Staff Quarters and Workmen’s Quarters due to deflection of soldier pile wall is considered acceptable.

(v) Soil nail works –

The proposed soil nail works in the downhill slope on the northern side of the Senior Staff Quarters and Workmen’s Quarters are considered insignificant in engineering terms. The soil nail installation involve small diameter hole drilling with non-percussive machines, carried out outside the ground stabilization zone under both Quarters. No vibration and disturbance will be induced to the heritage structures.

- (b) As the Treatment Works Building is situated away from the above works, the effect of these works is considered in-significant.

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- (c) With appropriate protective and monitoring measures to be implemented before and during construction of the Centennial Campus buildings, it is anticipated that the historic buildings should not in any way be adversely affected by the Centennial Campus works.

C1.2 Visual impact and future usage

C1.2.1 The former WSD Elliot filters site is adopted as the Centennial Campus. The three historic buildings cannot be seen from Pokfulam Road, and they were located inside the locked filters site, which could only be seen at a distance outside the chain link fence. The historic buildings will be adopted and integrated into the Centennial Campus development. The original landscape and the settings of the three historic buildings will be changed, but the change on visual impact is considered to be acceptable.

C1.2.2 A Working Group on Heritage has been set up by the Project Group for Centennial Campus and Main Campus Re-development of The University of the Hong Kong, and views on the potential functional uses of the three historic buildings, such as the following –

“The future uses of the buildings should reflect history, which could be the history of the University, the site context or the original functions of the building, but priority would be some association with the legitimacy corresponding to the role of the University.

The two Staff Quarters Buildings, being situated at an entrance location of the Centennial Campus, should be able to make a statement of the University, and could be linked up physically with built artifacts to frame a view of the campus, or linked together symbolically by circulation path or complementary building functions.”

C1.2.3 The adaptation of the three historic buildings will be given high respect to their cultural significance.

C1.2.4 Engagement workshops for the usage of the Senior Staff Quarters and Workmen’s Quarters have been carried out on 8th and 9th October, 2008.

C1.3 Evaluation

Evaluation of the impact on the historic buildings – beneficial impact. These three historic buildings have never been opened to the public, they are now adopted and integrated into the Centennial Campus development, and the campus is open to the public, thus the adaptation of these buildings will enhanced public awareness of conservation works.

C1.4 Integrate the historic buildings into the Centennial Campus Project

The three historic buildings will be adopted and integrated into the Centennial Campus development.

C1.5 Improvement works to the historic buildings

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C1.5.1 In the adaptation of the three historic buildings, improvement works will be carried out to bring them to satisfy the current statutory requirements. From preliminary examination, the following regulations are those that generally could not be met.

(a) 'Provision of Means of Escape'

Code: *The Code of Practice for the Provisions of Means of Escape in Case of Fire 1996* –

- Part II – General Provision of Means of Escape.
- Clause 9 Buildings with a Single Staircase.
- Clause 10 Exits from Rooms.
- Clause 11 Exits from Storeys.
- Clause 13 Access to Staircase(s) Within a Building.
- Clause 14 Direct Distance and Travel Distance.
- Clause 15 Discharge Value and Width of Staircase.
- Clause 16 Doors in Relation to Exits.
- Clause 17 Construction of Staircases.

(b) 'Fire Resistance Construction'

Code: *The Code of Practice for Fire Resisting Construction 1996* –

- Part II – Specific Requirements
- Clause 5 Compartmentation –
 - Clause 5.2 Compartment walls, compartment floors, separations and lobbies should be constructed such that all joints are completely filled with non-combustible material to prevent the passage of smoke or flame. No compartment should exceed the volume specified in Table 1 below.
- Clause 12 – Protection against the Spread of Fire and Flame between Floors.
- Clause 13 Roofs –
 - Clause 13.1 – all roofs, together with the members forming the roof structure, should be constructed of non-combustible materials.

(c) 'Fire Services Installation'

Code: *Code of Practice for Minimum Fire Service Installation and Equipment* –

- Part IV Requirements for Premises, difficulty for historic building in complying the following –
- Sprinkler, hose reel and detectors are usually not provided; and
- Fire services water tank is required for the water supply to the sprinkler system, there may be space and structural difficulties in the provision of the fire services water tank.

(d) 'Universal Accessibility'

Code: *Barrier Free Access 1997* –

- Chapter 4 Design Requirements for Persons with a Disability –
- Clause 4.1 Access.
- Clause 4.7 Doors –

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- Clause 4.7.1 Obligatory Design Requirements,
(b) The unobstructed area adjacent to the door handle on the leading face of a single door shall not be less than 380 mm in width.

(e) ‘Structural Loading Requirements’

Code: Chapter 123B Building (Construction) Regulations –

- Regulation 17 Imposed Loads –
- Table 1 Minimum Imposed Load – 5 Class No. 5 Usage requires 5kPa
- Difficulty for historic building in complying the following – most historic buildings could not satisfy the requirements on Regulation 17 – Imposed Loads, especially the 5kPa in Class No. 5 Usage in Table 1 Minimum Imposed Loads, for the floor slab in the upper floors.

(f) ‘Balustrade’

Code: Chapter 123B Building (Construction) Regulations –

- Regulation 8 Changes in Level –
- At the outer edge of all balconies, verandahs, staircases, landings or projections, or where there is a difference in adjacent levels greater than 600 mm, protective barriers shall be provided to restrict or control the movement of persons and vehicles.
- (2) Protective barriers provided under this regulation to restrict or control the movement of persons shall be –
 - (a) designed and constructed to minimize the risk of persons or objects falling, rolling, sliding or slipping through gaps in the barrier, or persons climbing over the barrier;
 - (b) at a height above the higher of the adjacent levels of not less than 1.1 m; and
 - (c) constructed as to inhibit the passage of articles more than 100 mm in their smallest dimension.
- (3) At the outer edge of all balconies, verandahs, floors, accessible roofs, or similar areas, the lowermost 150 mm of the protective barrier shall be built solid, but this sub-regulation shall not apply to roofs where no access is provided to the roof other than such access as may be necessary for maintenance work.

and

- Chapter 123B Building (Construction) Regulations
- Regulation 17 Imposed Loads –
- Clause (3) Protective barriers installed to restrict or control the movement of persons shall be designed to resist the minimum horizontal imposed loads specified in Table 3 when separately applied or the wind load (where applicable), whichever shall produce the more adverse effects.
- and Table 3 – Minimum Horizontal Imposed Loads on Protective Barriers to Restrict or Control the Movements of Persons.

(g) ‘Provision of Sanitary Fitments’

Code: Chapter 123I Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations –

- Regulation 6 Places of Public Entertainment

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C1.5.2 The approach to the addition and alteration works will follow the view of Development Bureau towards “Revitalization Historic Buildings Through Partnership Scheme, Lai Chi Kok Hospital”, which states “...it will be a complex issue to strike a balance between maintaining the architectural authenticity of historic buildings and complying with the current statutory requirements under the Buildings Ordinance....”

- (a) *As long as the site allows and there are technically feasible solutions within reasonable cost, the proposal should aim to comply with the statutory building control requirements through suitable modification works subject to essential features being preserved; and*
- (b) *Every effort should be made to preserve the façade of the historic buildings. Addition and alteration works, if necessary, should be undertaken at the back or other less visually prominent location of the buildings concerned. The original external facades of the buildings should clearly left unaltered and must not be disturbed: i.e. no major external additions or alterations to the premises will be allowed, unless permitted under these Conservation Guidelines. External redecoration is restricted to colours that are compatible with the age and character of the buildings and the paint system is to be reversible.....”¹*

C1.6 There will be no destruction work.

C.2 Mitigation Measures

C2.1 Boundaries of the historic buildings –

The boundaries of the three historic buildings have clearly been identified and marked on site.

C2.2 Enhancement of heritage values of the historic buildings –

The heritage values of the three historic buildings will be enhanced since they will be adopted and integrated into the Centennial Campus development.

¹ Development Bureau, Hong Kong SAR Government. *Revitalising Historic Buildings Through Partnership Scheme, Lai Chi Kok Hospital, Resource Kit.* p. 16.

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C2.3 Interpretation of the adaptation of the historic buildings –

C2.3.1 The three historic buildings will be adopted and integrated into the Centennial Campus development, and become part of the campus. These three historic buildings will be present with interpretation, and guidelines for interpretation have been prepared by the Conservation and Heritage consultants, McDougall & Vines, and are described in “Section 4 – Interpretation, sub-section 4.1 – Approach to Interpretation of the Site” of “*Centennial Campus Site, Hong Kong University, Recording and Interpretation*”, March, 2006, as following –

“4.0 INTERPRETATION

4.1 Approach to Interpretation of the Site

Interpretation of an historic site tells those who visit the site what happened at that place and why it is important. Interpretation should cover the historical reasons for the existence of the place, the activities carried on there, the consequences of the use of the site and the physical and social context in which it was established and functioned. It will be possible to use the physical elements currently located on the site and additional historic information determined through research to provide a full story for visitors. Clever and imaginative interpretation of the functions and use of the site will set the context for the changes to come with the expansion of the University campus.

It is recommended that the focus of interpretation of the Centennial Campus site should be its use as a water supply site and its subsequent incorporation into the University Campus. The interpretation should be centred on, or located in, already existing structures. No new buildings will be required specifically for interpretation purposes. However, conservation and adaptation of those buildings which are retained will be necessary.

Any collection of information and the creation of an interpretation strategy should be developed in consultation with the immediate community of the Western District, the University community and also the Water Supplies Department. Much of the research necessary on the physical structures on the site has already been undertaken. In addition, interested and committed staff members of WSD have carefully retained an archive of any remaining early drawings and photographs. Further collaboration with relevant officers in the Water Supplies Department will add to the information already collected on the development of the water supply for the Western District.

The interpretation of the site could and should be a cooperative exercise between the University of Hong Kong and the WSD.”

C2.3.2 A conservation report will be prepared recording all the works carried out to the historic buildings.

C2.4 In-situ preservation of the historic buildings –

The three historic buildings will be preserved in-situ, adopted and integrated

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into the Centennial Campus development, and become part of the campus.

C2.5 No rescue programme –
No rescue programme is necessary.

C2.6 Conservation management plan –

C2.6.1 Conservation Management Plan for the three historic buildings have been prepared by the Conservation and Heritage consultants, McDougall & Vines.

C2.6.2 Condition survey for the three historic buildings have been carried out by registered professional surveyor (building surveying) with experience in heritage building, Mr. Robin Howes, and the reports – “*Inspection Report Staff Quarters*” and “*Inspection Report Pumping Station*” and have been submitted under separate cover.

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C.3 The Impact Assessment Report

C3.1 Plan and section of the Centennial Campus Project –
Plan and section of the Centennial Campus Project are shown below.

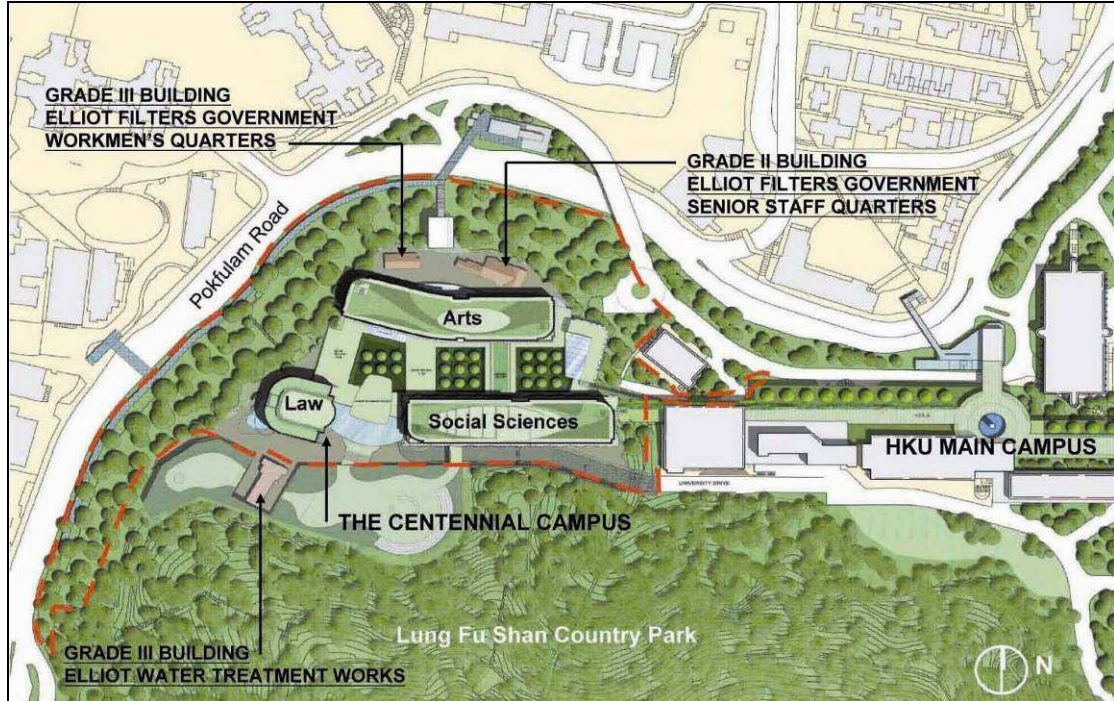


Plate 8 – Location plan

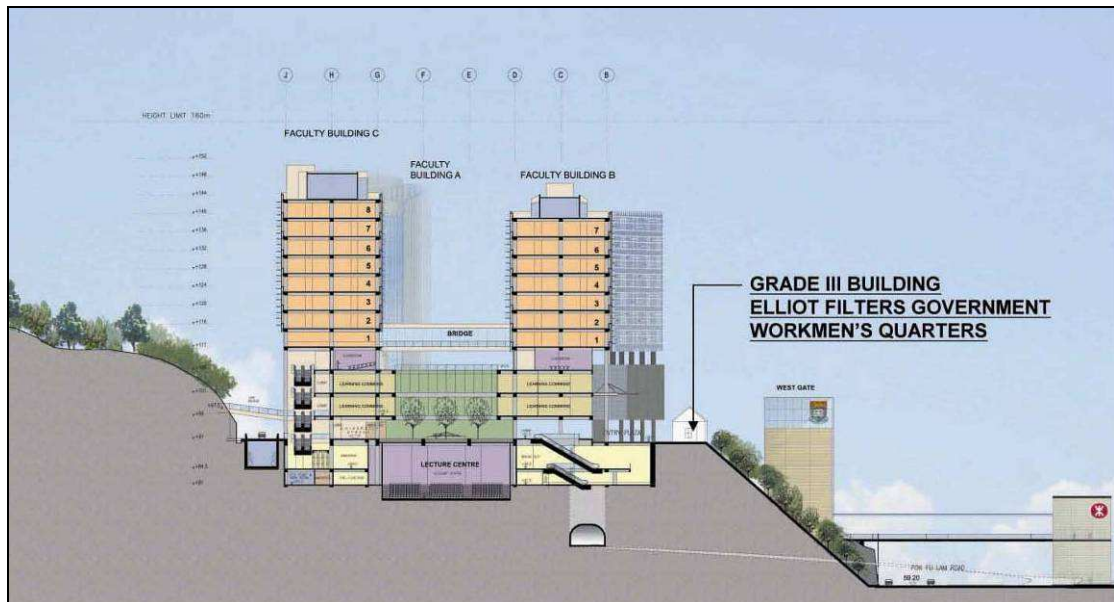


Plate 9 – Section

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C3.2 Photo of the model of Centennial Campus Project –
Aerial photos of the model and view of the entry plaza of the Centennial
Campus are shown below.



Plate 10 – Aerial view of the model of the Centennial Campus model

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Plate 11 – Aerial view of the model of the Centennial Campus model



Plate 12 – Entry plaza

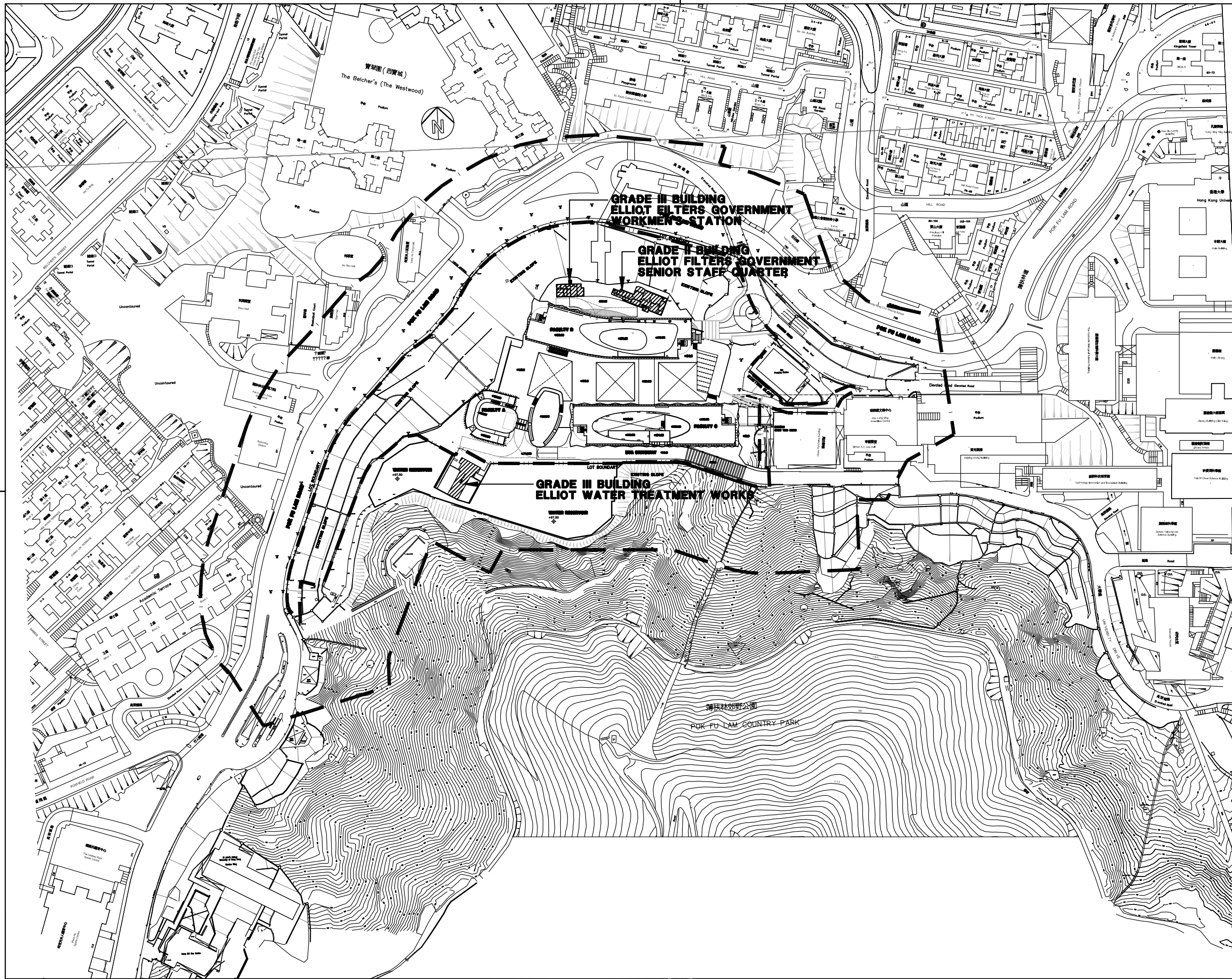
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- C3.3 Programme of the Centennial Campus Project –
The project programme is enclosed as Appendix 6.
- C3.4 Mitigation programme –
No mitigation programme is necessary.
- C3.5 Supplementary programme –
Supplementary information, if any, will be submitted.

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Appendix 1

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B.L.D. REF		
F.S.D. REF		
REVISIONS		
NUMBER	DESCRIPTION	DATE
LEGEND :		
	50 METERS ZONE FROM B.L.	
	SITE BOUNDARY	
WONG & OUYANG (HK) LTD ARCHITECTS AND ENGINEERS HONG KONG		
PROJECT		
THE UNIVERSITY OF HONG KONG CENTENNIAL CAMPUS		
DRAWING TITLE		
LOCATION PLAN FOR 50 METERS ZONE FROM SITE BOUNDARY		
SIGNATURE FOR SUBMISSION/CONSTRUCTION		
DATE		
DRAWN BY	CYW	DATE JUN 08
ENTERED BY	CYW	PLOT DATE JUN 08
CHECKED BY	BLO/ROL	DATE JUN 08
SCALE	1:2000-A3	PRINT DATE JUN 08
JOB NUMBER	DRAWING NUMBER	REVISION
2131	SK-288	
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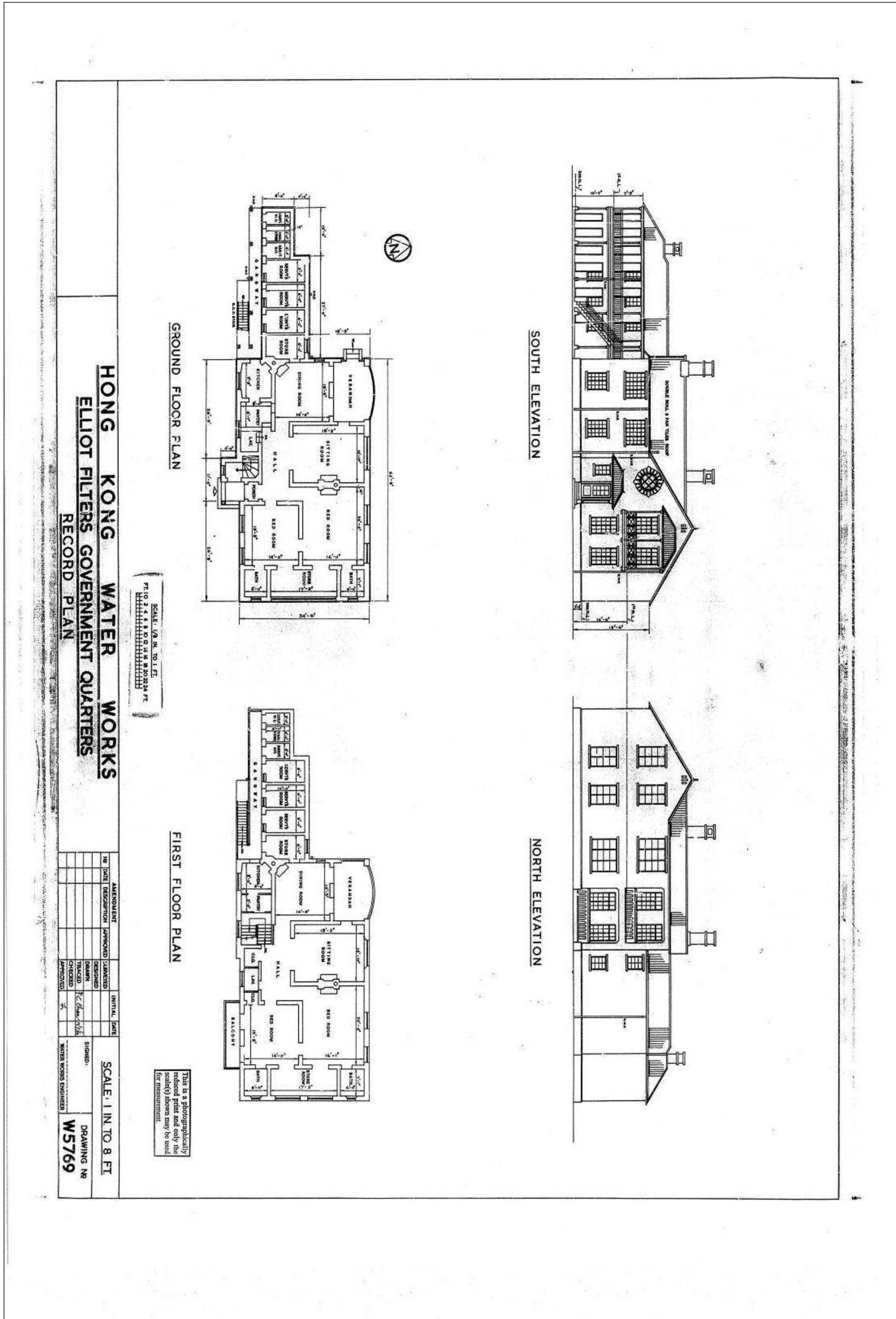
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Appendix 2

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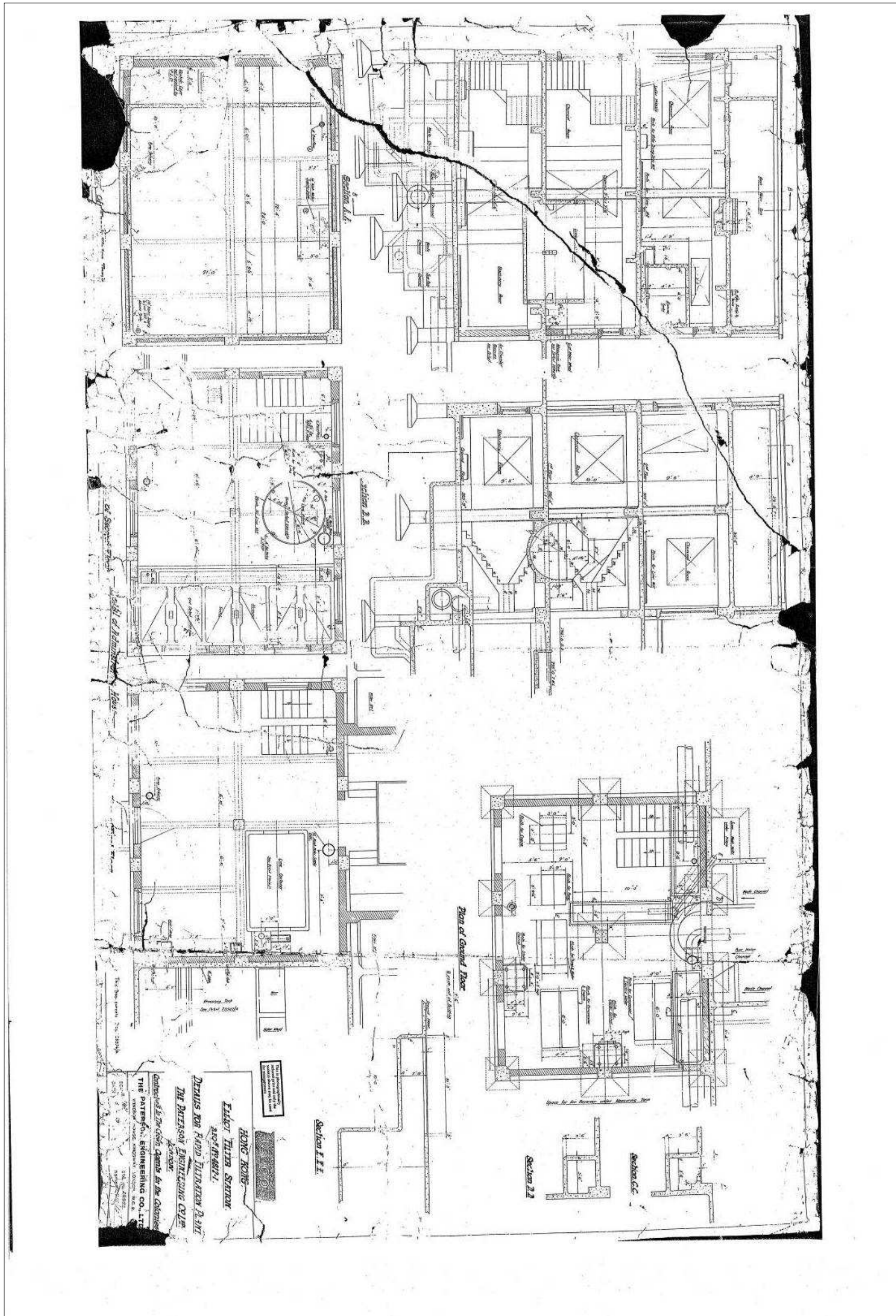
Appendix 2 – Archive Drawings from WSD

Senior Staff Quarters



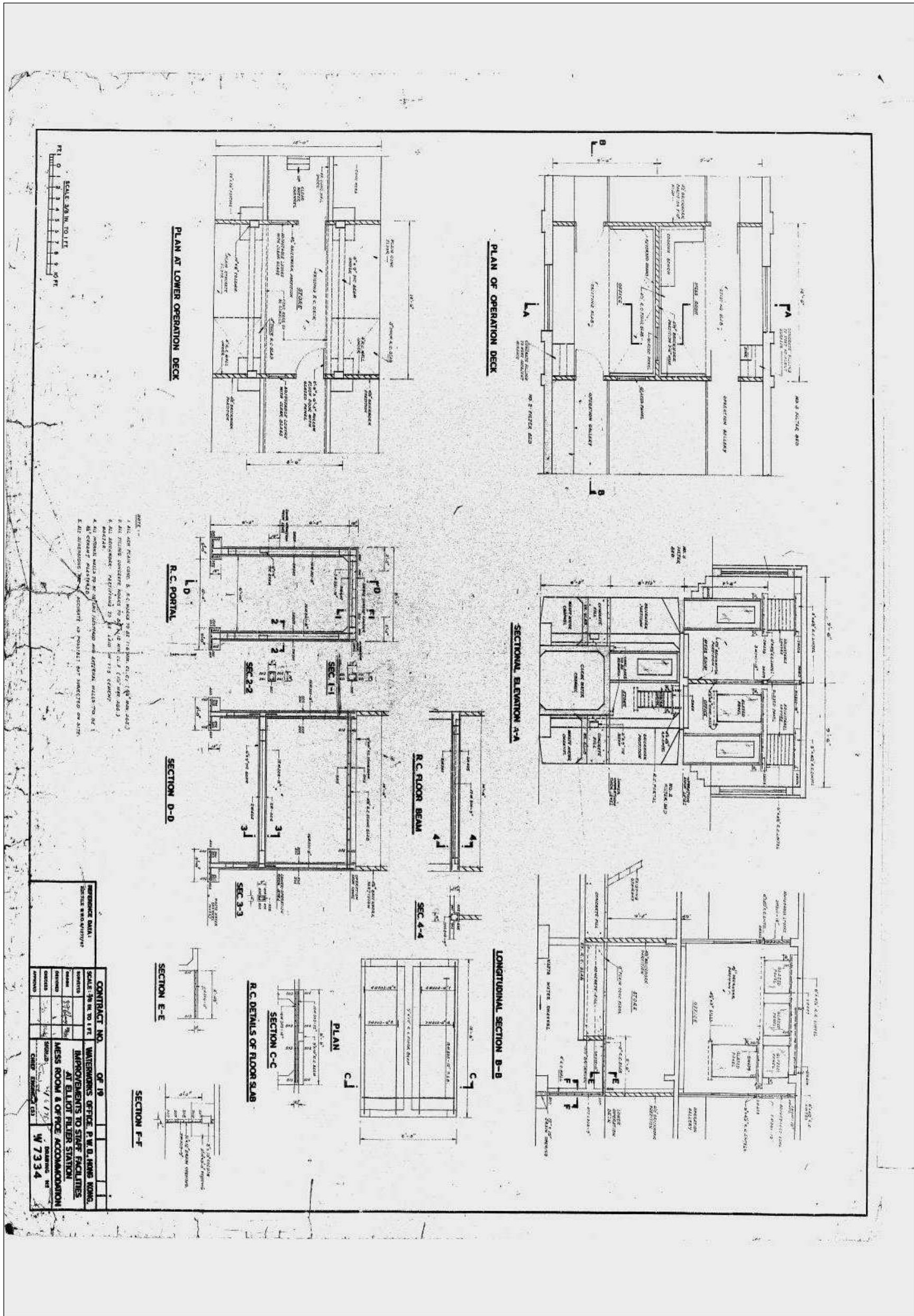
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Centennial Campus, The University of Hong Kong

Treatment Works Building



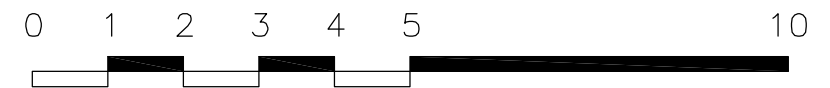
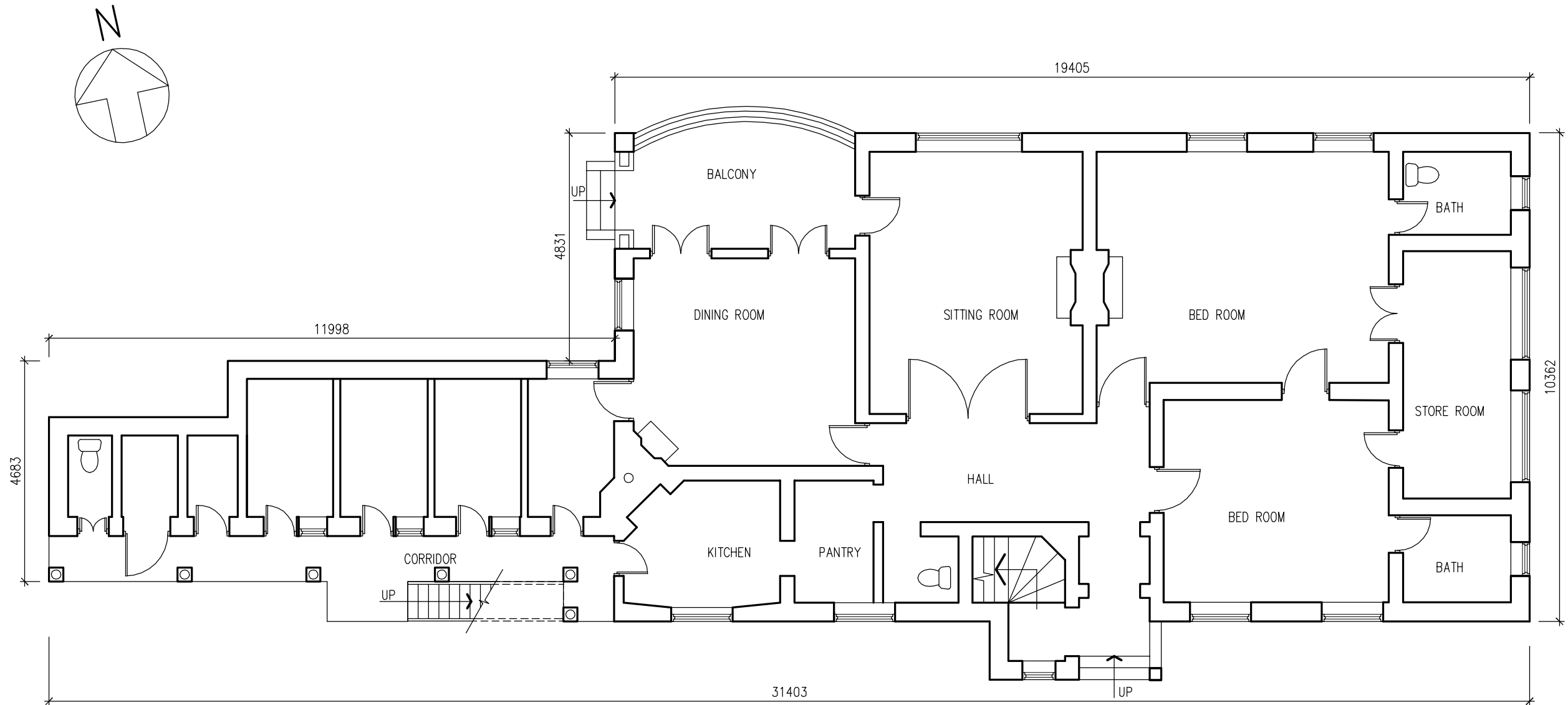
Heritage Impact Assessment for Centennial Campus, The University of Hong Kong

Treatment Works Building



**Heritage Impact Assessment for
Centennial Campus, The University of Hong Kong**

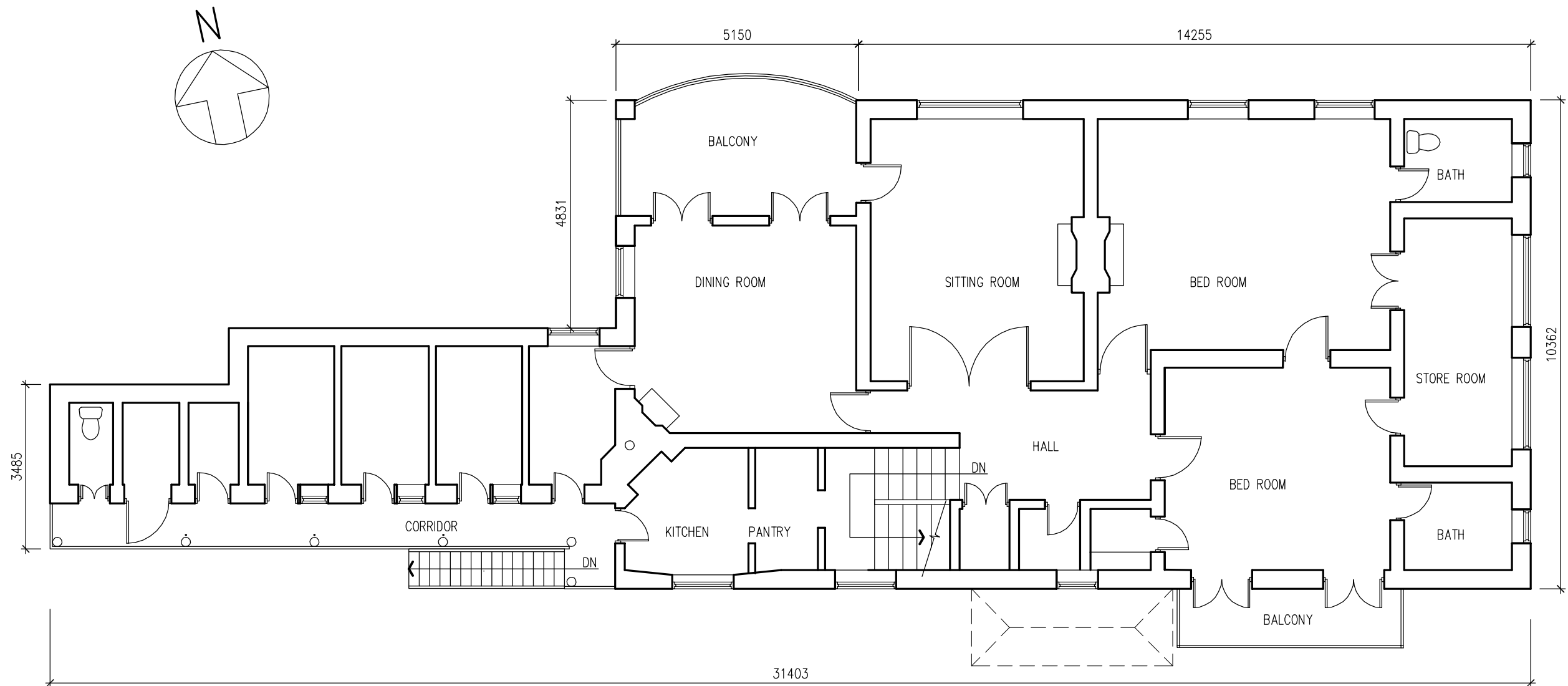
Appendix 3



**Centennial Campus,
The University Of Hong Kong**

**Elliot Pumping Station and Filters
Senior Staff Quarters
Ground Floor Plan**

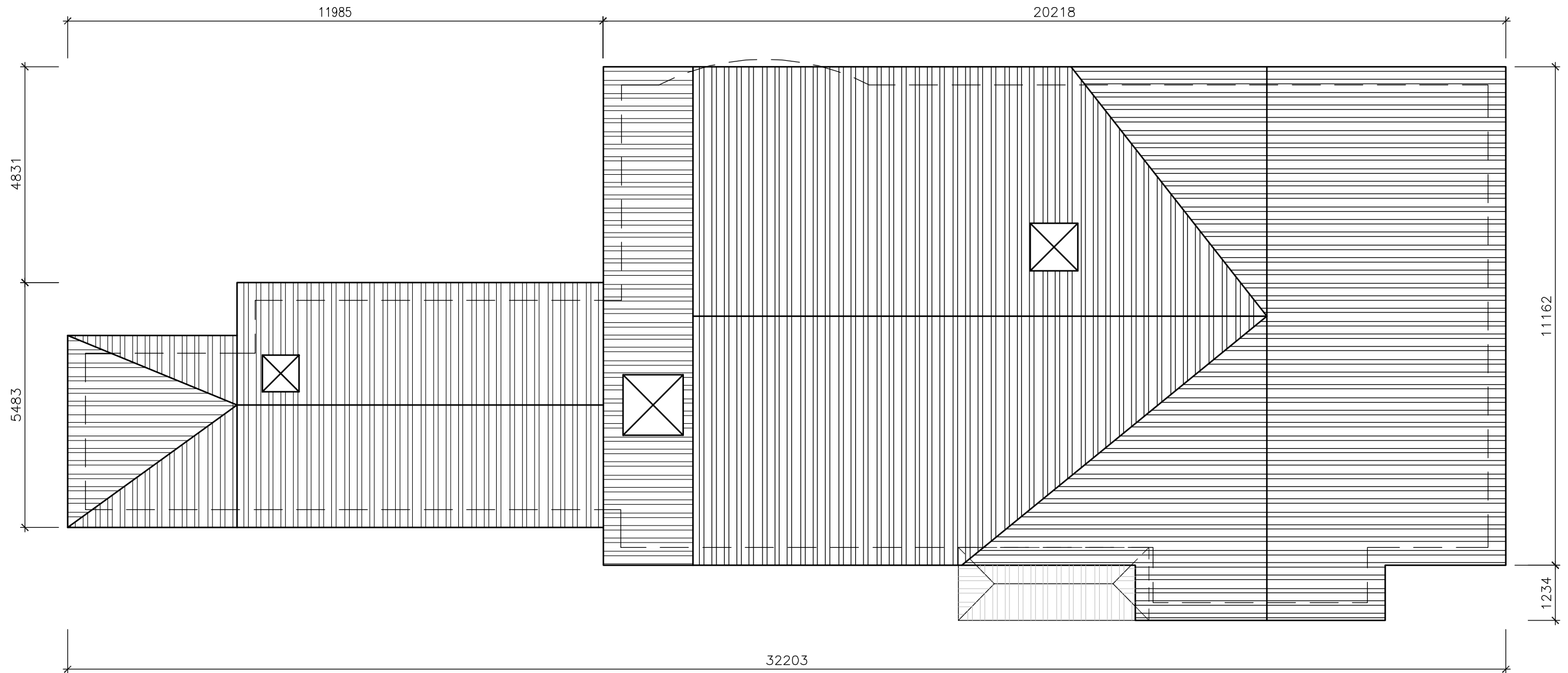
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Date	21 September,2008



**Centennial Campus,
The University Of Hong Kong**

**Elliot Pumping Station and Filters
Senior Staff Quarters
First Floor Plan**

Scale	1 : 100 (A3 size drawing)
Drawing No.	SSQ-02
Date	21 September,2008



**Centennial Campus,
The University Of Hong Kong**

**Elliot Pumping Station and Filters
Senior Staff Quarters
Roof Plan**

Scale	1 : 100 (A3 size drawing)
Drawing No.	SSQ-03
Date	21 September,2008



Centennial Campus,
The University Of Hong Kong

Elliot Pumping Station and Filters
Senior Staff Quarters
North (front) Elevation

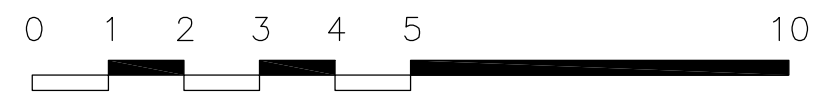
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Drawing No.	SSQ-04
Date	21 September, 2008



**Centennial Campus,
The University Of Hong Kong**

**Elliot Pumping Station and Filters
Senior Staff Quarters
South (raer) Elevation**

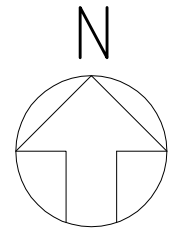
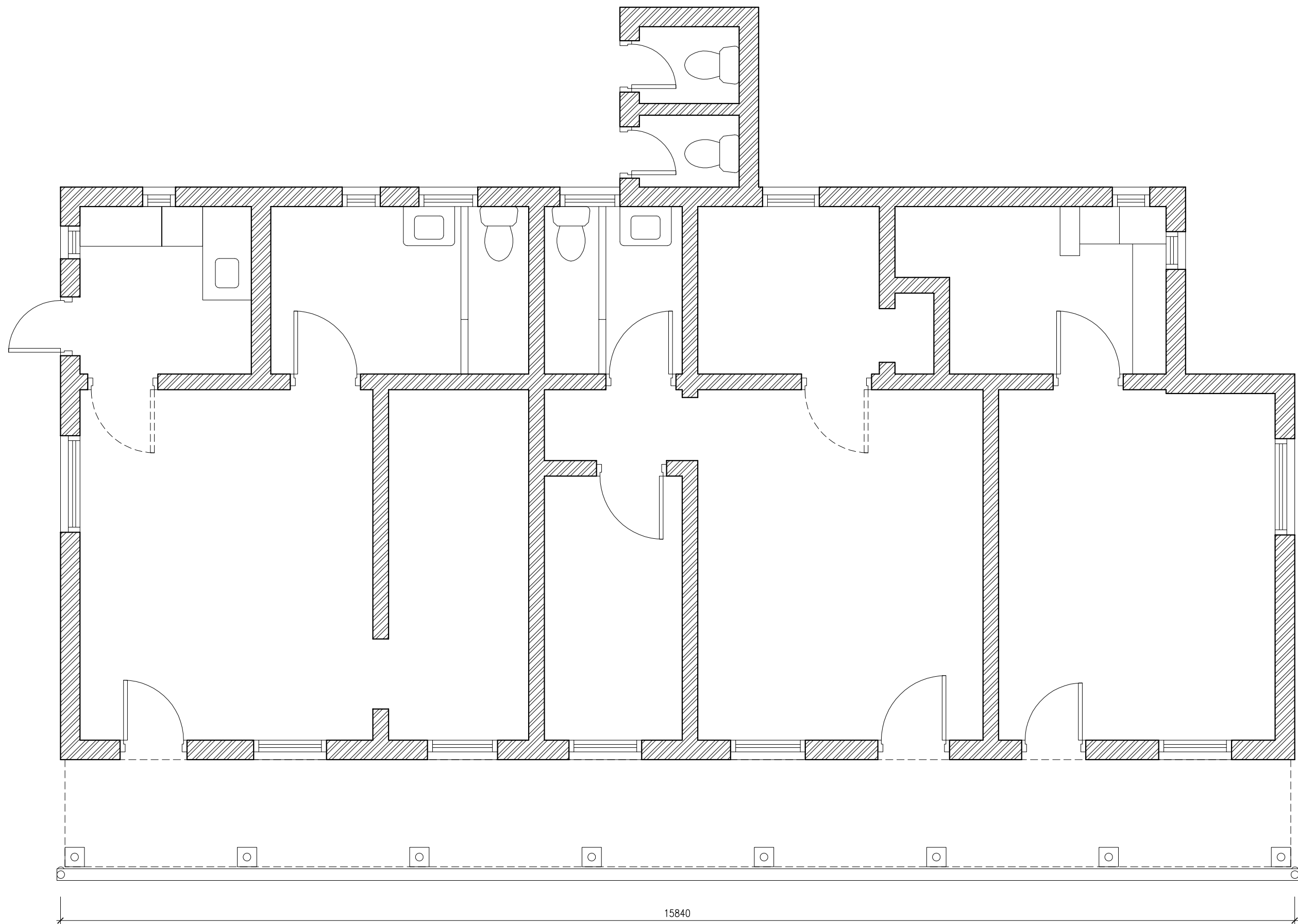
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Drawing No.	SSQ-05
Date	21 September,2008



**Centennial Campus,
The University Of Hong Kong**

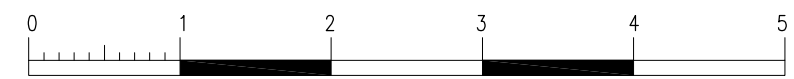
**Elliot Pumping Station and Filters
Senior Staff Quarters
East And West Elevations**

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Date	21 September,2008

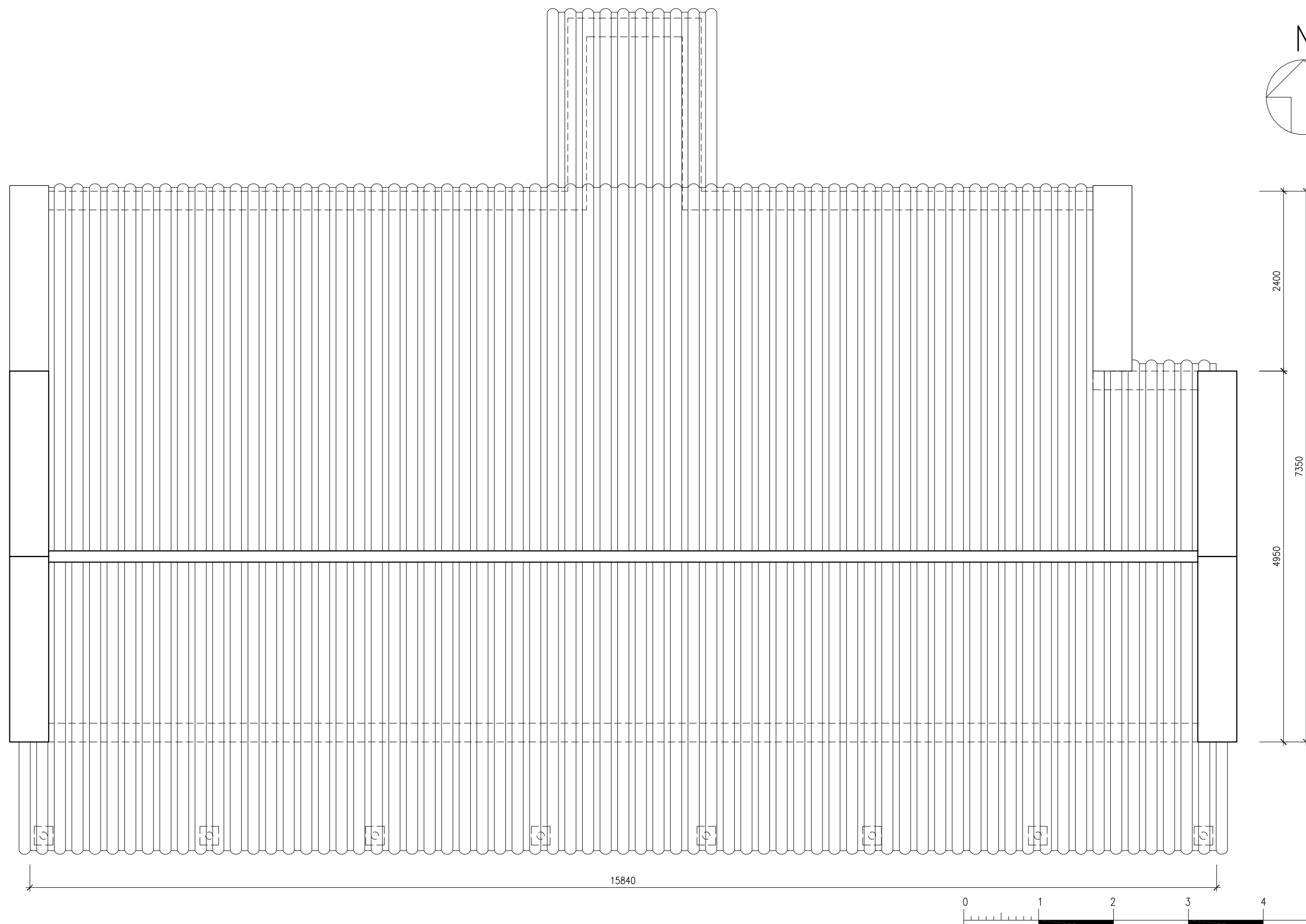
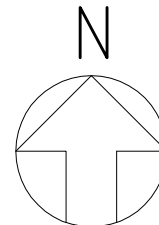


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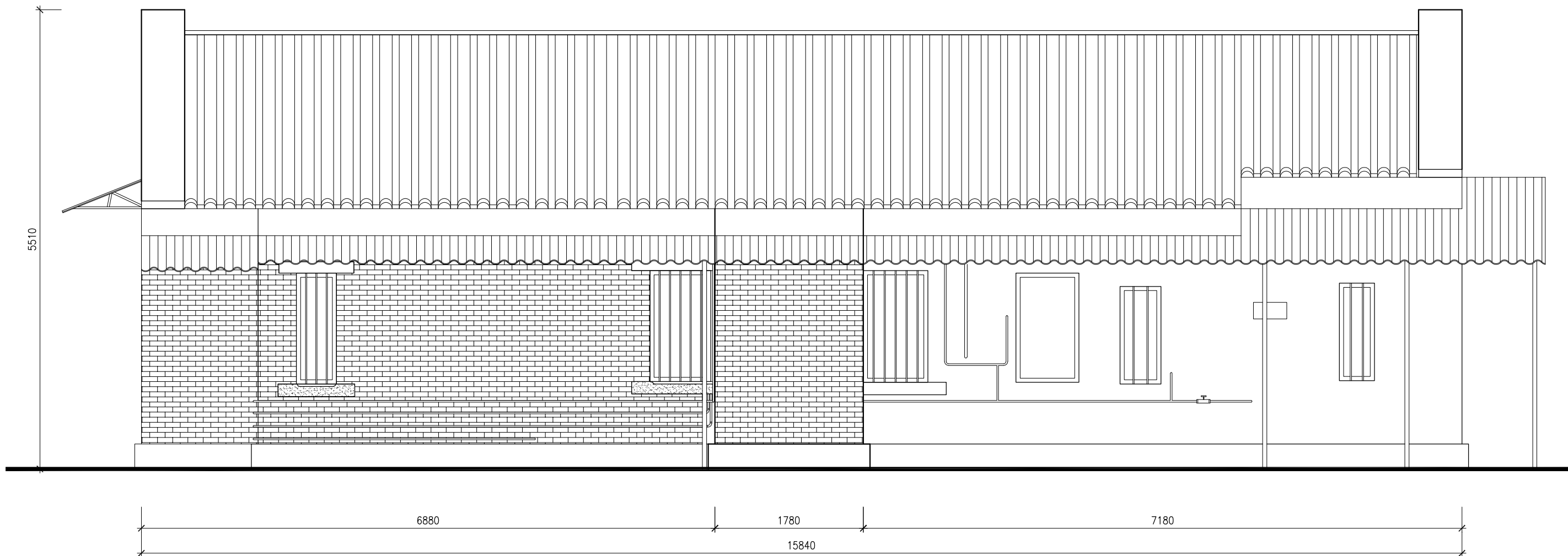
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<p>Centennial Campus, The University Of Hong Kong</p>	<p>Elliot Pumping Station and Filters Workmen's Quarters Ground Floor Plan</p>	Scale	1 : 50 (A3 size drawing)
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		Date	21 September,2008



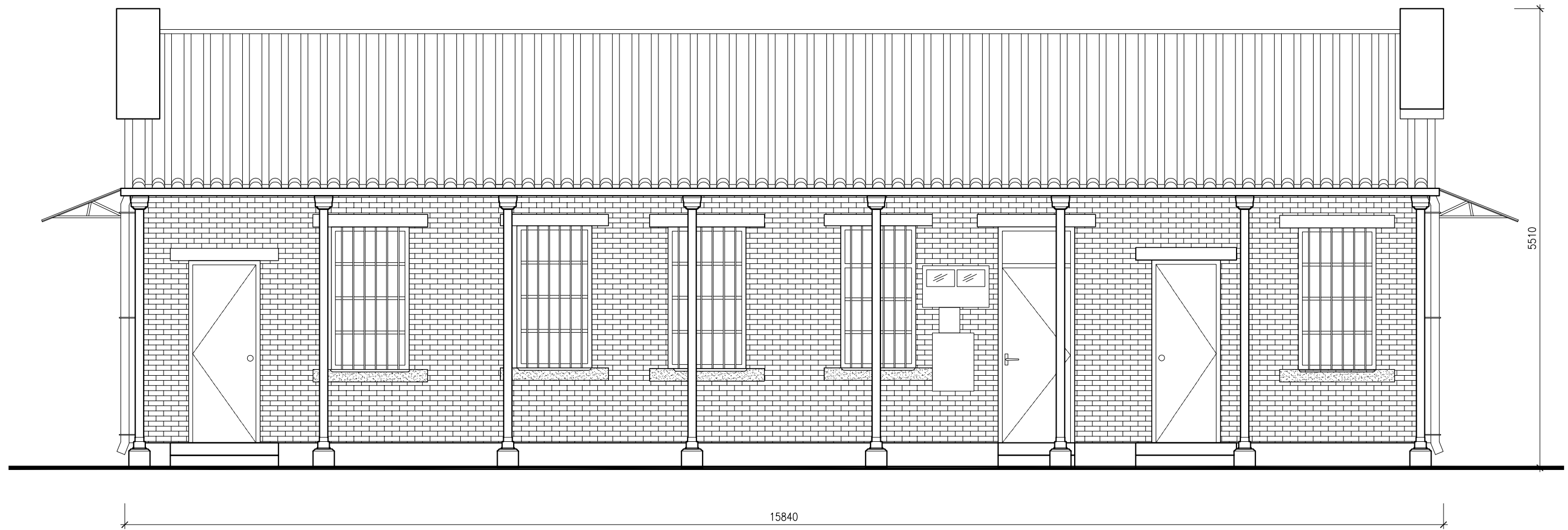
Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Workmen's Quarters Roof Plan	Scale	1 : 50 (A3 size drawing)
		Drawing No.	WQ-02
		Date	21 September,2008



Centennial Campus,
The University Of Hong Kong

Elliot Pumping Station and Filters
Workmen's Quarters
North (front) Elevation

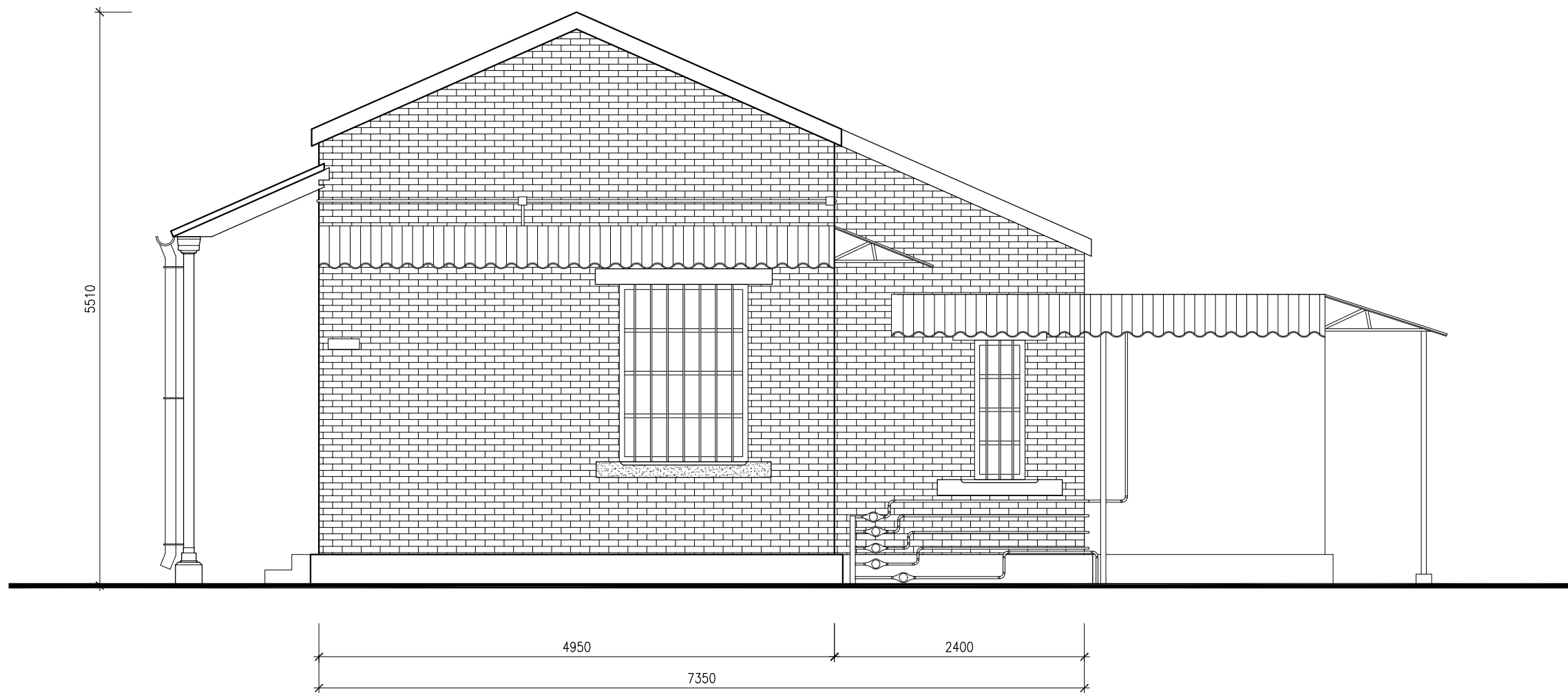
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Drawing No.	WQ-03
Date	21 September,2008



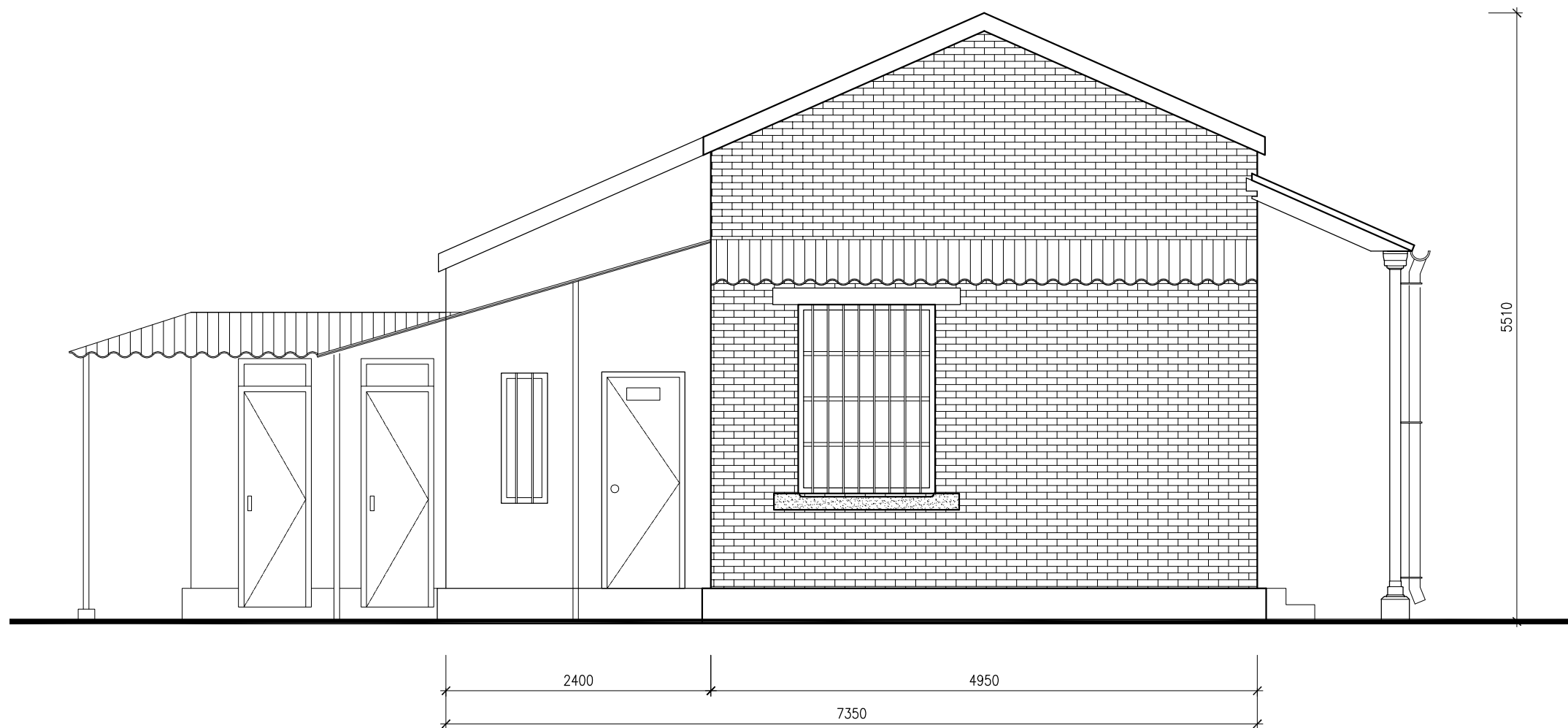
Centennial Campus,
The University Of Hong Kong

Elliot Pumping Station and Filters
Workmen's Quarters
South (rear) Elevation

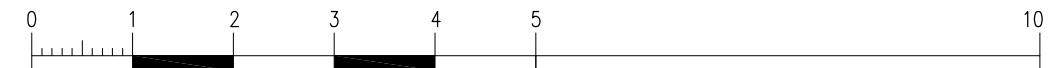
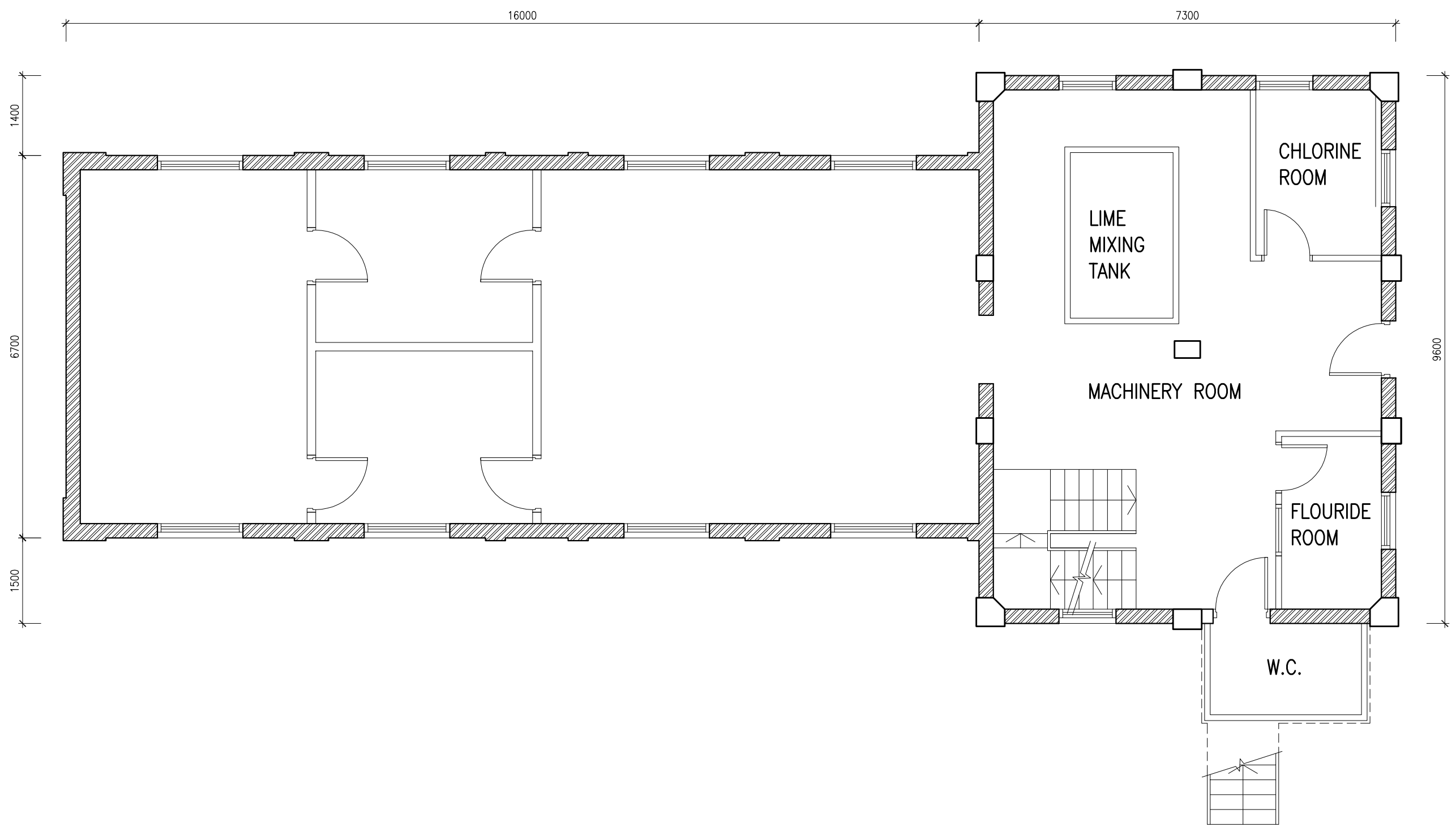
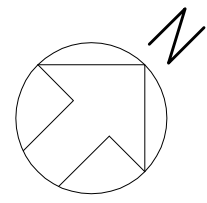
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Date	21 September,2008



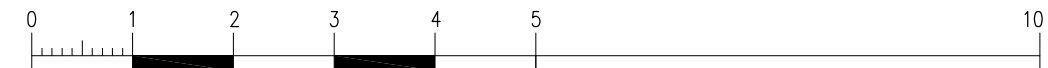
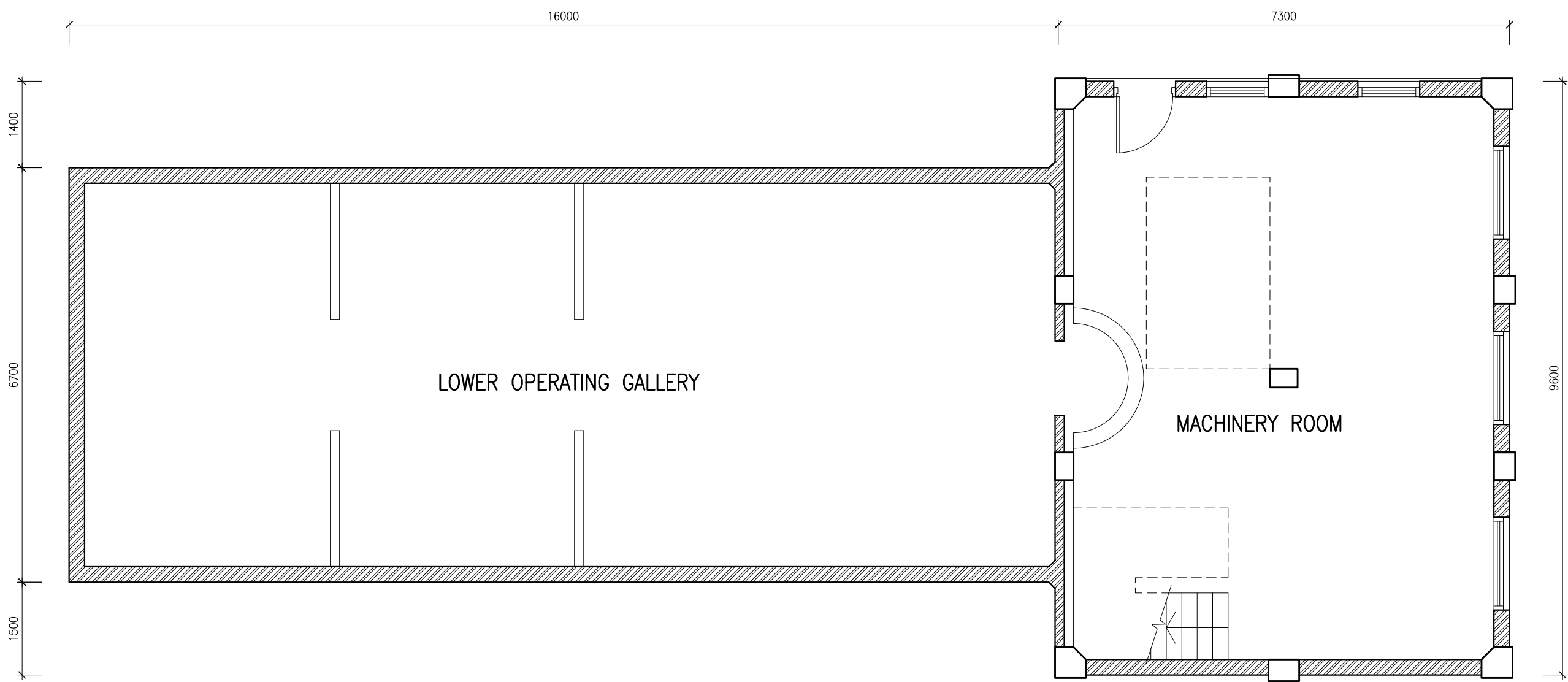
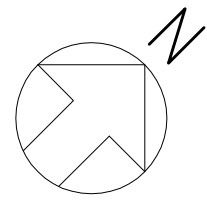
Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Workmen's Quarters East Elevation	Scale	1 : 50 (A3 size drawing)
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		Date	21 September,2008



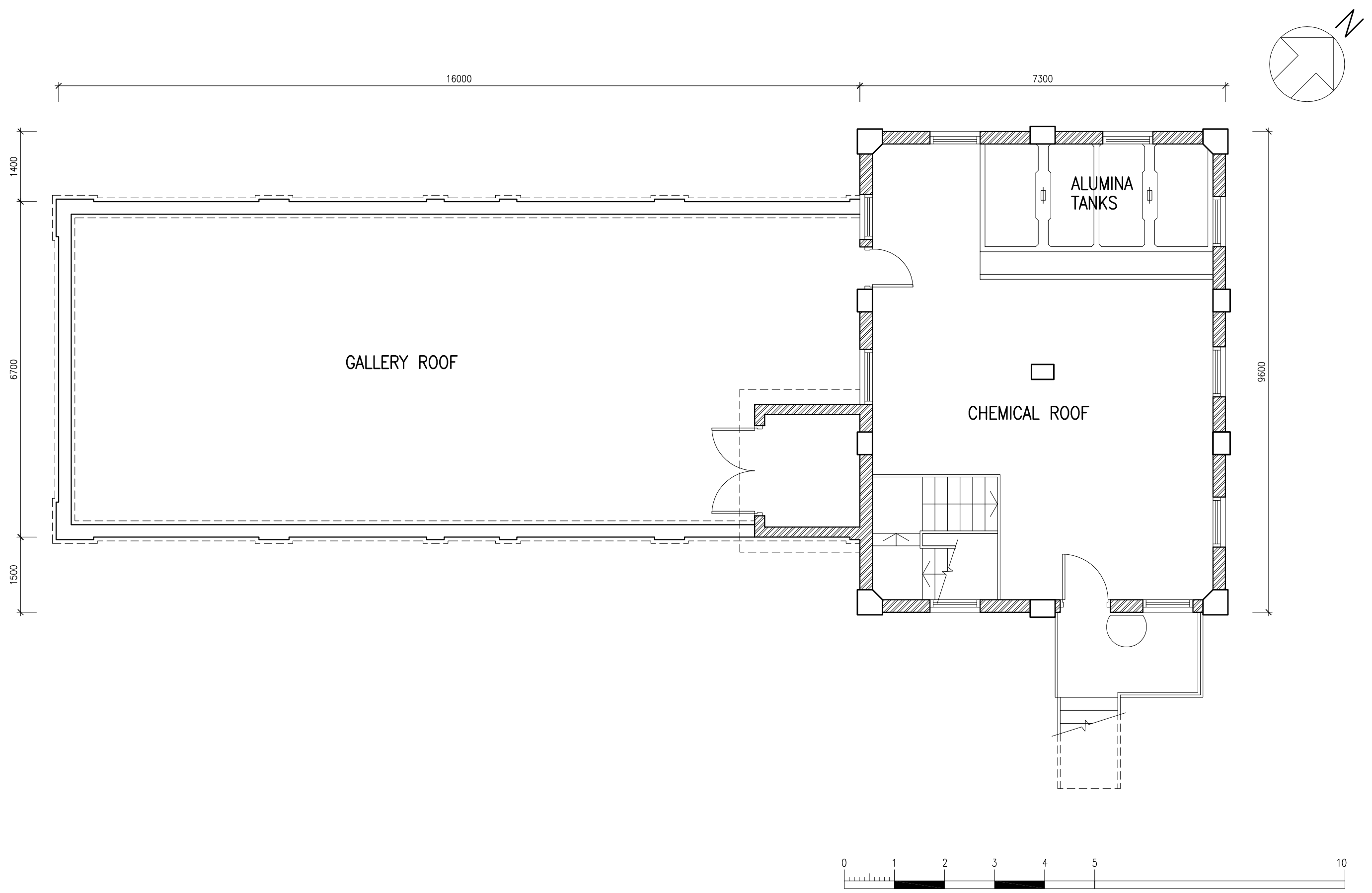
Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Workmen's Quarters West Elevation	Scale	1 : 50 (A3 size drawing)
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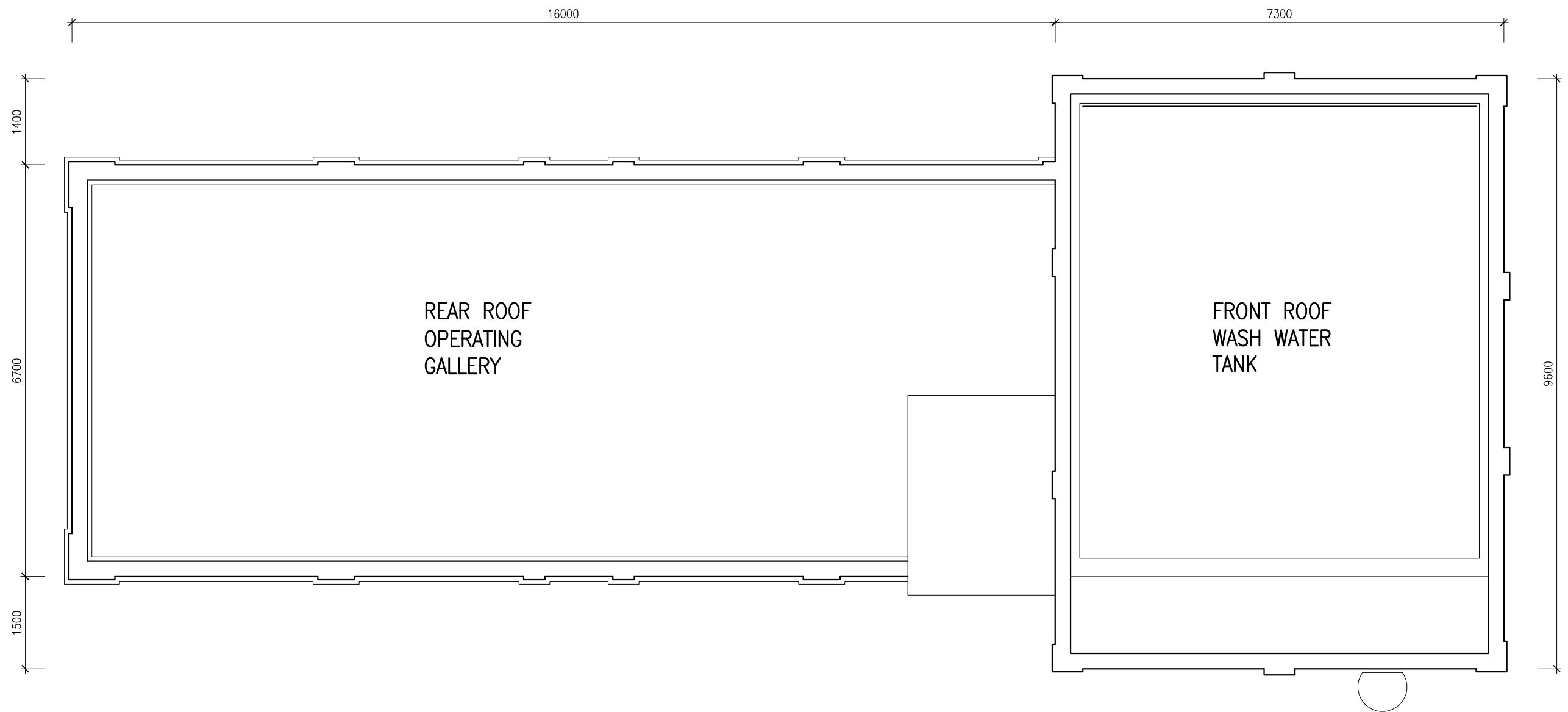
Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Treatment Works Building Entrance Level Plan	Scale	1 : 75 (A3 size drawing)
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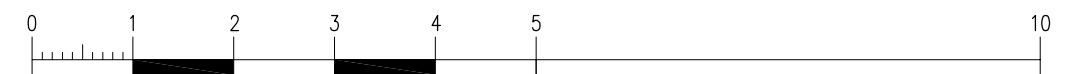
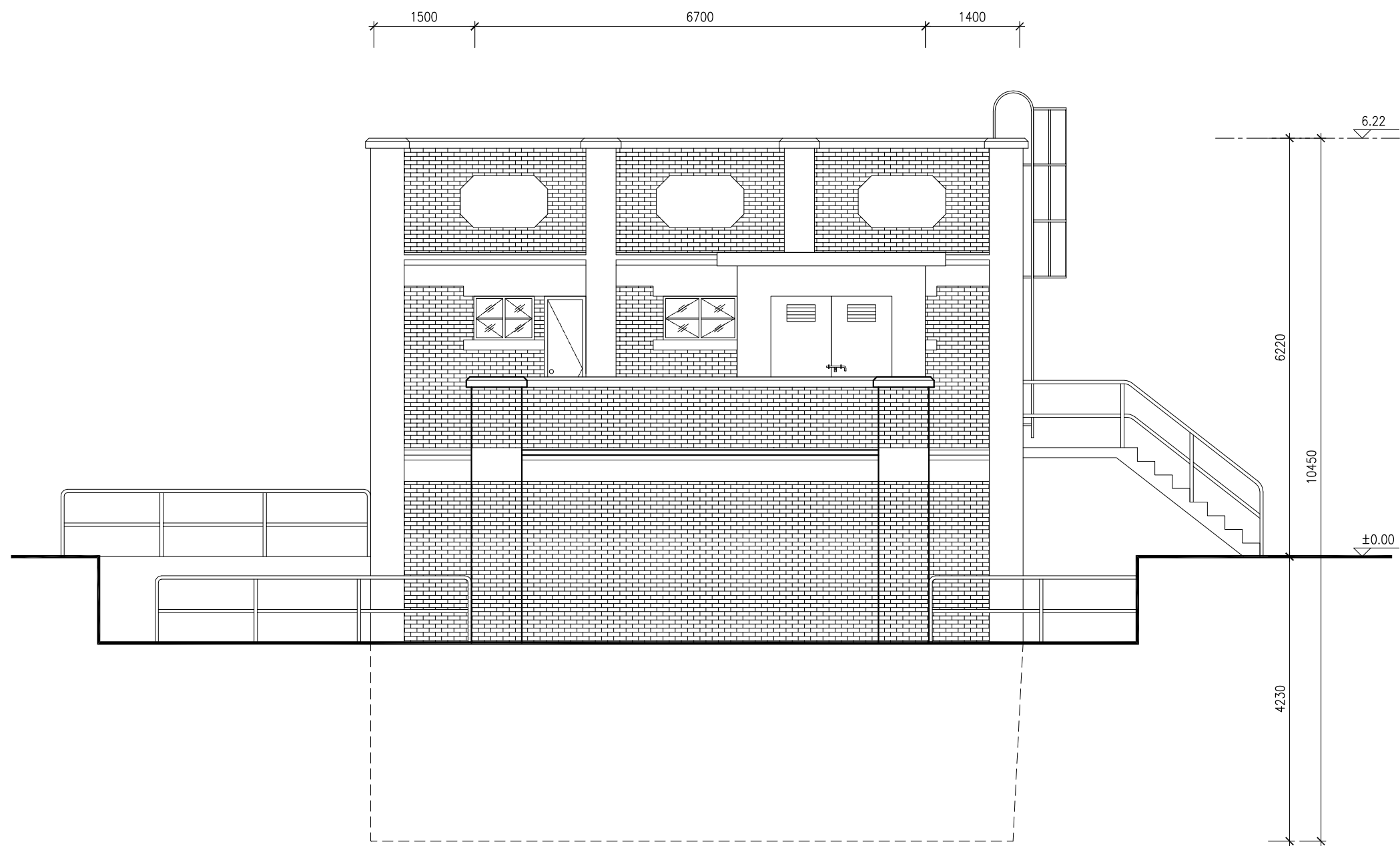
Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Treatment Works Building Lower Level Plan	Scale	1 : 75 (A3 size drawing)
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		Date	21 September,2008



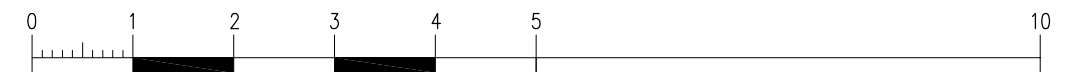
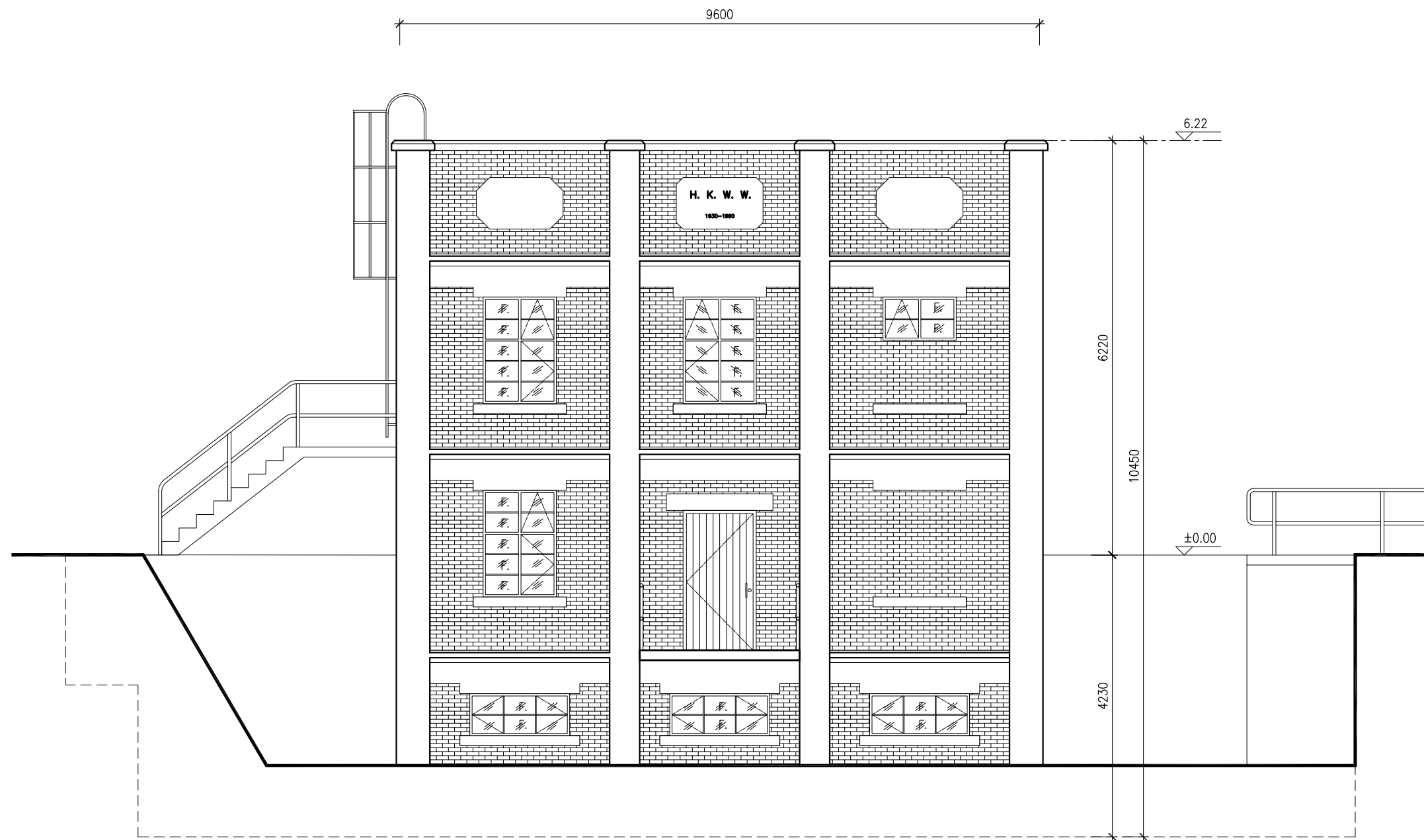
<p>Centennial Campus, The University Of Hong Kong</p>	<p>Elliot Pumping Station and Filters Treatment Works Building Upper Level Plan</p>	Scale	1 : 75 (A3 size drawing)
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		Date	21 September,2008



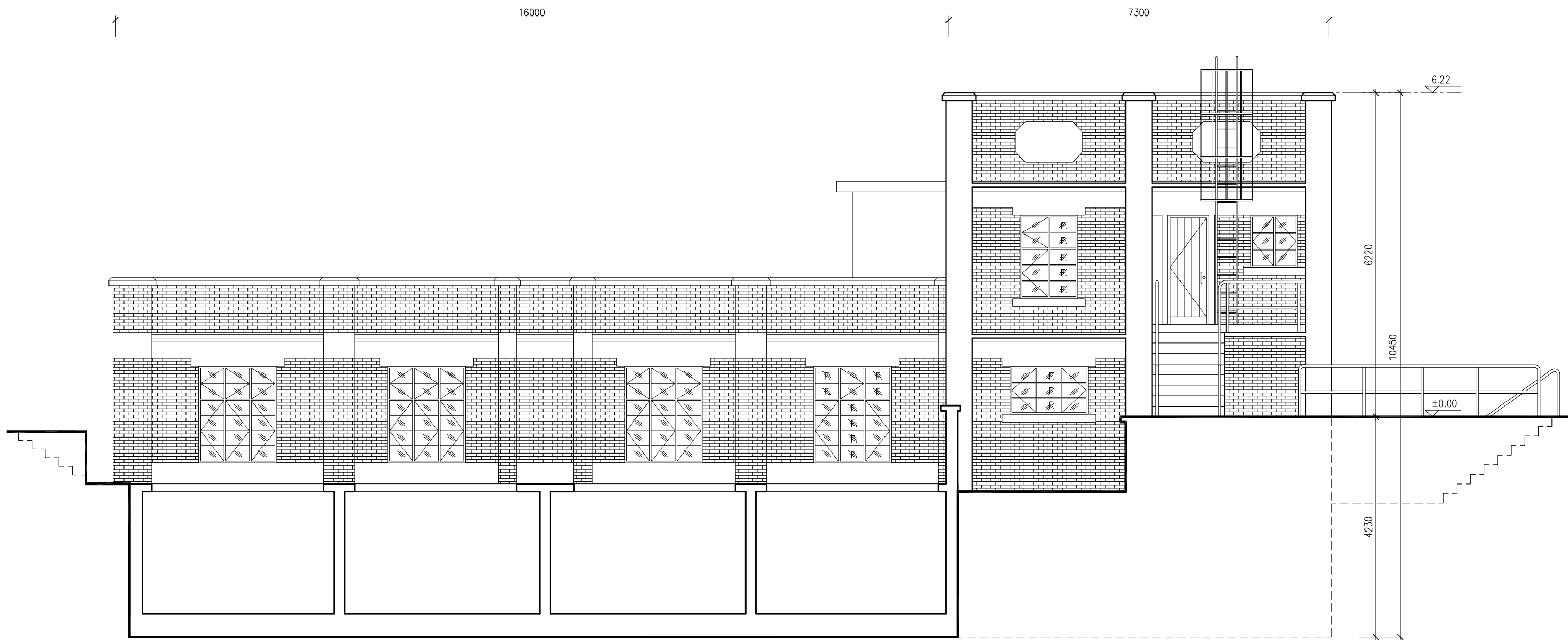
<p>Centennial Campus, The University Of Hong Kong</p>	<p>Elliot Pumping Station and Filters Treatment Works Building Roof Plan</p>	Scale	1 : 75 (A3 size drawing)
		Drawing No.	TWB-04
		Date	21 September,2008



Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Treatment Works Building South(front) Elevation	Scale	1 : 75 (A3 size drawing)
		Drawing No.	TWB-05
		Date	21 September,2008



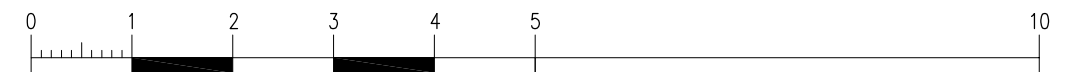
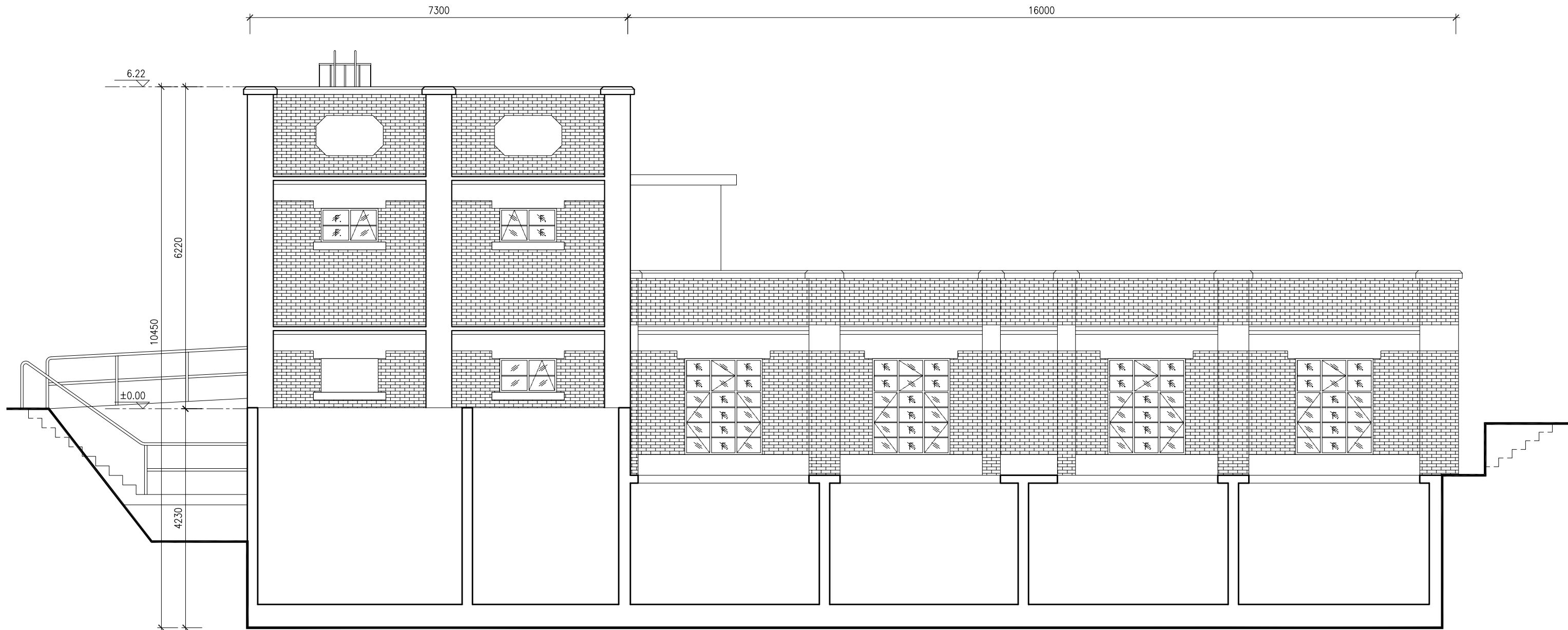
Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Treatment Works Building North (rear) Elevation	Scale	1 : 75 (A3 size drawing)
		Drawing No.	TWB-06
		Date	21 September, 2008



Centennial Campus,
The University Of Hong Kong

Elliot Pumping Station and Filters
Treatment Works Building
East Elevation

Scale	1 : 75 (A3 size drawing)
Drawing No.	TWB-07
Date	21 September,2008



Centennial Campus, The University Of Hong Kong	Elliot Pumping Station and Filters Treatment Works Building West Elevation	Scale	1 : 75 (A3 size drawing)
		Drawing No.	TWB-08
		Date	21 September,2008

Heritage Impact Assessment for Centennial Campus, The University of Hong Kong

Appendix 4

**Heritage Impact Assessment for
Centennial Campus, The University of Hong Kong**

**Appendix 4 – History of the Three Historic Buildings
given by a Retired Senior Office of WSD**

Information from Mr. Damien Ku, retired senior officer from WSD

1. When did you join WSD?
I joined WSD in 1968.
2. Was the Elliot Treatment Plant still in use when you join WSD?
Yes.
3. Who occupied the Senior Staff Quarters at that time?
Senior staff in the ranks of Chief Engineer, Senior Engineer and later Senior Inspector.
4. Who occupied the Workmen's Quarters at that time?
Operation staff in the ranks of Works Supervisor and Workman.
5. When did the plant ceased to operate?
Please see earlier my paper on the subject.
6. After the plant ceases to operate, what happened to the Senior Staff Quarters?
The Quarters were left vacant after some maintenance problems were encountered, but I am not sure of the exact timing.
7. Any interested events happened associated with any the three buildings or the site that you know?
One could see the beautiful harbour view from the site. The reservoir roof was covered by properly maintained grass area. The residents grew their own fruit trees and tomato plants.
8. Do you know any person who is knowledgeable of the history of the three buildings and the site?
Yes but I have to contact them first to see if they want their names be mentioned.

**Heritage Impact Assessment for
Centennial Campus, The University of Hong Kong**

Appendix 5

Heritage Impact Assessment for Centennial Campus, The University of Hong Kong

Appendix 5 – Bibliography

Part 6.1 – Senior Staff Quarters

“extracted from “Appendix 1: Sources of Information” of “*Senior Staff Quarters Conservation Management Plan*”, July, 2006”

APPENDIX ONE: SOURCES OF INFORMATION

Hong Kong Administrative Reports, Public Works reports – 1911 – 1935
[available on line through The University of Hong Kong Library]

Research Files

AMO Research File AM940573, Elliot Pumping Station and Filters
AMO Research Note: Introduction to Public Water Supply in Hong Kong (1841 – 1941)

Public Record Office, CO129/403
Public Record Office, CO129/392

Water Supplies Department

Historical information (*Hong Kong Water*) and a chronology, website:
www.info.gov.hk/water150/mbook

Planning Department

Planning Standards and Guidelines, website: www.pland.gov.hk/tech_doc/hkpsg

Published Sources

Empson, Hal, *Mapping Hong Kong, A Historical Atlas*, HK Government Printer, 1992
Endacott, G B, *A History of Hong Kong*, Oxford University Press, 1964
Fermor-Hesketh, Robert (ed.) *Architecture of the British Empire*, London, 1986

Part 6.2 – Senior Staff Quarters

“extracted from “Appendix 1: Sources of Information” of “*Workmen’s Quarters Conservation Management Plan and Preliminary Interpretation Strategy*”, January, 2007”

APPENDIX ONE: HISTORICAL SOURCES

The most useful source of information on the development of this site has been the *Hong Kong Government Administrative Reports*. These are an annual set of prepared by The Team Consultant

Heritage Impact Assessment for Centennial Campus, The University of Hong Kong

documents, logically organised on true British Public Service principles, chronicling the business of governing the colony and containing detailed appendices, one of which lists and describes all public works, including water works. There are similar records, similarly arranged, for all British colonies in the nineteenth and early twentieth centuries.

Each year the Public Works Reports appendix contains a section for Hong Kong (island) headed *Maintenance of City and Hill District Water Works*. This covers the amount of water available and used, the upkeep of sites and equipment, general costs and other information such as annual rainfall figures at each reservoir site. **Specific works** are separately itemised in the annual Public Works Appendix, which is divided into ‘types’ of works for budget purposes, covering recurrent works, building ordinance works and extraordinary public works. The notes are in the form of numbered paragraphs in the Appendix. The references in square brackets above give the year, appendix letter and paragraph number for any useful historic information – viz. [AR1925, App Q, para 97].

Maps and plans of the area are held at the Public Record Office, and the evolution of land use and settlement can be followed graphically through analysis of these.

WSD also hold a range of early drawings, plans and photographs of water supply sites and their establishment.

General information on the development of public water supplies for the whole of Hong Kong, Kowloon and the New Territories was obtained from the Water Supplies Department website and accompanying publications.

Part 6.3 – Treatment Works Building

“extracted from “Appendix 1: Sources of Information” of “*Treatment Works Conservation Management Plan*”, August, 2007”

APPENDIX ONE: SOURCES OF INFORMATION

The most useful source of information on the development of this site has been the *Hong Kong Government Administrative Reports*. These are an annual set of documents, logically organised on true British Public Service principles, chronicling the business of governing the colony and containing detailed appendices, one of which lists and describes all public works, including water works. There are similar records, similarly arranged, for all British colonies in the nineteenth and early twentieth centuries.

Each year the Public Works Reports appendix contains a section for Hong Kong (island) headed *Maintenance of City and Hill District Water Works*. This covers the amount of water available and used, the upkeep of sites and equipment, general costs and other information such as annual rainfall figures at each reservoir site. **Specific works** are separately itemised in the annual Public Works Appendix, which prepared by The Team Consultant

Heritage Impact Assessment for Centennial Campus, The University of Hong Kong

is divided into ‘types’ of works for budget purposes, covering recurrent works, building ordinance works and extraordinary public works. The notes are in the form of numbered paragraphs in the Appendix. The references in square brackets above give the year, appendix letter and paragraph number for any useful historic information – viz. [AR1925, App Q, para 97].

Maps and plans of the area are held at the Public Record Office, and the evolution of land use and settlement can be followed graphically through analysis of these.

WSD also hold a range of early drawings, plans and photographs of water supply sites and their establishment.

General information on the development of public water supplies for the whole of Hong Kong, Kowloon and the New Territories was obtained from the Water Supplies Department website and accompanying publications.

Hong Kong Administrative Reports, Public Works reports – 1911 – 1935
[available on line through The University of Hong Kong Library]

Research Files

AMO Research File AM940573, Elliot Pumping Station and Filters

AMO Research Note: Introduction to Public Water Supply in Hong Kong (1841 – 1941)

Public Record Office, CO129/403

Public Record Office, CO129/392

Water Supplies Department

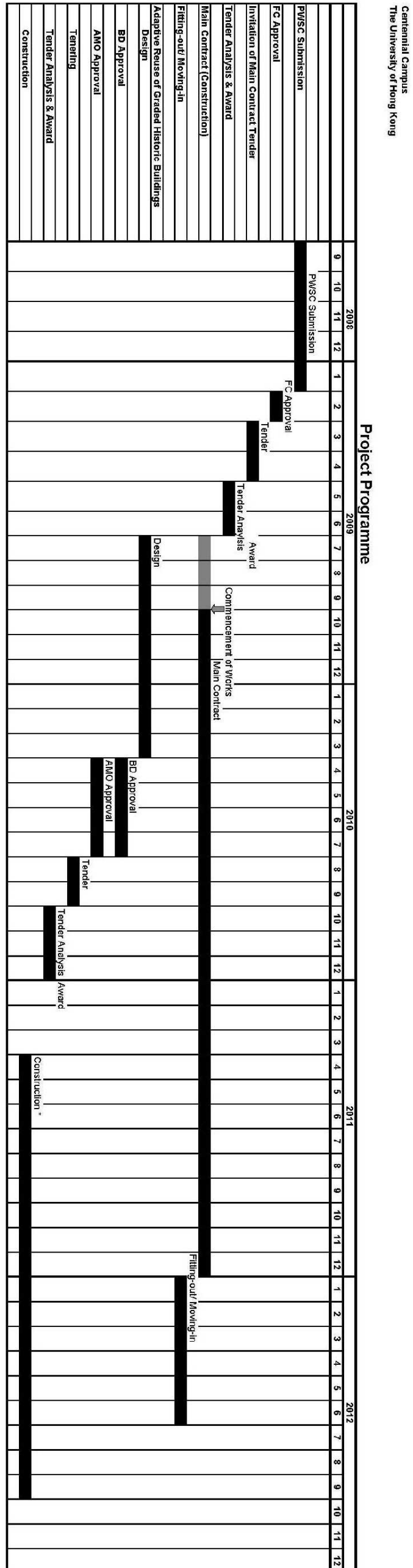
Historical information (*Hong Kong Water*) and a chronology, website:
www.info.gov.hk/water150/mbook

**Heritage Impact Assessment for
Centennial Campus, The University of Hong Kong**

Appendix 6

Heritage Impact Assessment for Centennial Campus, The University of Hong Kong

Appendix 6 – Project Programme of the Centennial Campus Project



* Includes procurement & sourcing of materials from overseas, samples, mock-ups, etc.