MEBS6020 Sustainable Building Design

http://ibse.hk/MEBS6020/

Assignment 01: Planning a Sustainable Building Project (2022-2023)

The University of Hong Kong (HKU) is considering the redevelopment of the following old building and would like to include sustainability in the project brief and development strategy. As the specialist green building consultant of this project, you are asked to prepare a technical proposal to explore the planning and design process of a sustainable building project for this building. The basic information of the current building is given below.

Robert Black College 栢立基學院 (University Drive, Hong Kong)

Robert Black College of the University of Hong Kong is situated in the university main campus, in Mid-Levels on the western side of Hong Kong Island (See Figure 1). It was established in 1967 primarily as a guest house of the university for visiting scholars from overseas and the mainland China. Sir Robert Black was governor of Hong Kong from 1958 to 1964. Guest rooms of the Robinson Wing provide beautiful sea views. May Wing, an annex to the College accommodating graduate students, is a red-brown monument built in European style on a hillside. The most remarkable feature of the College is its traditional Chinese row-house design with blue pitched roofs and white walls like a house of a wealthy Chinese nobleman. Two elegant black gates at the entrances of the Swire Wing add colour to the structure. In addition, there are attractive front garden of subtle foliage colour with a Chinese sculpture and a fountain and a thickly planted backyard with beautiful paths of bricks and stones.

Figure 1. Location map of the building (source: http://hk.centamap.com/)

It is proposed that the site will be redeveloped into a new building complex with a total usable floor area of 12,000 m^2. The new University Guest House will provide room and board facilities in a pleasant and convenient environment for guests and visitors on short periods of stay in the University. After the construction, the building will provide space for the functions as described in Table 1. The project planning and design should consider sustainability, surrounding physical environment, demolition and construction process.

Table 1. Proposed space requirements (total usable floor area = 12,000 m^2)

Space	Area (m^2)	Description
Guest rooms	8,000	For 200 guest rooms
Functional & recreation areas	2,000	Banquet and meeting rooms, swimming pool, gym
Food and beverages	800	Coffee shop, restaurants, kitchens and lobby bar
Administration & house keeping	500	Front office, catering, accounting, employee areas
Lobby and public space	200	For lobby, entrance, seating and retail
Plant rooms & storage	500	Building services systems, workshops and stores

Major Tasks

You are required to evaluate the potential, limitations and opportunities of the project for achieving high sustainability and green building performance in a holistic way. You should identify the critical issues and possible planning/design strategies for the project in order to give professional guidance and advice to the client on further development of the project brief and performance targets. You are recommended to carry out preliminary site analysis and evaluation of the important project planning issues for setting effective strategies on redevelopment of the site and sustainable design of the new building. The outcomes at this stage will form the basis for the client to formulate the project brief and development strategy.

Submission Requirements

You should prepare a technical proposal report of not more than 20 nos. of A4 pages to explain the key findings of the investigation in a systematic and logical manner. The contents of the report shall address the following aspects. Other important issues may also be included.

(a) Benefits, limitations and development potential of the sustainable building project.
(b) Site analysis and evaluation of the important project planning issues.
(c) Sustainable building design process and key considerations.
(d) Sustainability performance targets for the project and important design strategies.
(e) Recommendations on project brief and development strategy.

The report shall be submitted in electronic PDF format to the Moodle of MEBS6020. The assessment criteria of the report include quality of the content, organization, clarity of thought, and report writing skills. The report will be evaluated on synthesis of information during the course and from your own reading/study, and evidence that you have thought about the subject and the lecture topics in some depth. A clear structure and a logical argument is important and you should provide evidence of critical thinking, originality and effective writing.

Report submission (via Moodle): **on or before 14 July 2023 (Fri)**

Useful References

ASHRAE 2023. *ASHRAE GreenGuide: Design, Construction, and Operation of Sustainable Buildings*, 6th ed., American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, GA.

Keeler M. & Burke B., 2016. *Fundamentals of Integrated Design for Sustainable Building*, 2nd edition, John Wiley & Sons, Hoboken, N.J.

Keeping M. and Shiers D., 2017. *Sustainable Building Design: Principles and Practice*, Wiley-Blackwell, New York.

Kibert C. J., 2016. *Sustainable Construction: Green Building Design and Delivery*, 4th ed., John Wiley & Sons, Hoboken, N.J.

PTI, 1996. *Sustainable Building Technical Manual: Green Building Design, Construction and Operations*, Public Technology, Inc. (PTI), Washington, D.C.