

MEBS6020 Sustainable Building Design

<http://ibse.hk/MEBS6020/>

Assignment 01: Planning a Sustainable Building Project (2021-2022)

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.

Yam Pak Building 任白樓 (79C Pok Fu Lam Road)

The building opened in 1970 and was originally called Redmond Building after Emeritus Professor F. A. Redmond. Professor Redmond joined the University in 1919 as a lecturer in the Faculty of Engineering and acted as its head from September 1925 to December 1926 and then again from 1928-1951. The building was renamed in 1996 as a token of appreciation for a benefaction from the Yam Pak Foundation. “Yam” and “Pak” refer to Yam Kim Fai and Pak Suet Sin, two prominent local Cantonese opera singers. The building is now being used by the Faculty of Engineering as laboratories, offices and computer rooms. It is proposed that the site will be redeveloped into a new building complex with a total usable floor area of 4,000 m². The schedule of accommodation is shown in Table 1. The project planning and design should consider sustainability, surrounding physical environment, demolition and construction process.



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

Table 1. Schedule of accommodation

Facilities	Useable floor area (m ²)
Laboratories	2,500
Offices	800
Computer rooms	200
Supporting facilities	500
Total	4,000

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 15 July 2022 (Fri)**

Useful References

- ASHRAE 2018. *ASHRAE GreenGuide : Design, Construction, and Operation of Sustainable Buildings*, 5th ed., American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, GA.
- Brophy V. & Lewis J. O., 2011. *A Green Vitruvius: Principles and Practice of Sustainable Architectural Design*, Second Edition, Earthscan, London.
- Green building design strategies http://ibse.hk/GB_design_strategies.pdf
- 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.