ENGG105
ENGINEERING DESIGN AND SUSTAINABILITY

Client Brief

Sustainable seaside resort in developing economy

Autumn 2023

Background

Due to general availability of constituents, commonly accessible cement production and concrete placement technology, as well as concrete long life cycle concrete based on Portland cement is probably the most widely used material made by man worldwide. However, the main concern regarding the use of cement is environmental damage as its production is responsible for over 5% of global CO_2 emissions, which are known to cause the greenhouse effect[1]. Moreover, construction industry undergoes a continuous modifications and improvements in order to successfully comply with the requirements of sustainable development. It is expected to develop more durable, less labour and service intensive materials at a competitive price. To meet these expectations numerous new composite materials have been developed.

About the client

Currently average villa sale price at Palm Jumeirah in Dubai equals approximately 15,000,000AED (~4,000,000USD) [2]. The client is in a position of the budget for such investment, however considers alternative innovative project in a developing country. The client is seeking a bigger project in cheaper location for investment that will be profitable and will follow the sustainability trends on all levels of the investment, referring to the UN SDs and the outcomes from UNFCCC

Client needs

Expecting to receive the concept proposal that will provide sustainable and innovative solutions for profitable development of seaside resort in developing country within the budget of 4 million USD, allowing start of operation, including land purchase. The concept proposal should be specific and reasonable enough to confirm feasibility of the project.

It is expected, inter alia, to address:

	Notes supporting successful project development (check marking criteria for detailed requirements):
- **Client needs linked with the location** - **Site and location analysis**	*Fully Addressed in Millstone 1,2 and fully in Millstone 4,5*
- **Communication to the site during construction and operation** - **Architecture** - **Materials** - **Structural and construction solutions** - **Building Services** - **Waste management**	*Partially Addressed in Millstone 1,2 and fully in Millstone 4,5*
- **Safety and ethical considerations** - **Costing and Sustainability**	*Fully Addressed in Millstone 4,5*

[1] Peters, G. P., Marland, G., Le Quéré, C., Boden, T., Canadell, J. G., & Raupach, M. R. (2012). Rapid growth in CO2 emissions after the 2008-2009 global financial crisis. Nature Climate Change, 2(1), 2-4

[2] https://www.propertymonitor.ae/dubai-real-estate-market-statistics.html