

Analysis and Design of Green Residential Housing in Al Ain UAE (Civil Engineering Role)

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Abstract

Three guidelines are adapted in the United Arab Emirates to address the sustainability of a given development throughout its lifecycle from design through construction to operation. Estidama in Abu Dhabi and Al Ain, Green Building Regulations & Specifications in Dubai, and UAE Green Building Guidelines in the Northern Emirates. New design is proposed for an existing villa in Al Ain to satisfy the optimal use of material in construction and wastewater recycle to address the above sustainability guidelines.

Two conceptual designs are proposed for structural and wastewater recycles in the villa. The structural system uses a minimum number of structural elements to reduce the amount of steel and concrete in construction. The proposed wastewater system is either a combined system for the gray water and the air conditioning water or separate system for each component of the system is proposed. A base cost is estimated for both system using current UAE market prices.