

Infrastructure Master Planning

Middle East

Atkins was responsible for developing the transmission and distribution aspects of the initial 'master plan' into a concept design capable of meeting the challenging energy objectives detailed within this plan (low carbon design and extensive use of embedded renewable generation sources) and then further developing this concept design into a functional basis of design that could subsequently be taken to construction design.

At the concept design stage, a high level design for the new transmission and distribution network for the development was completed. This high level design had to consider the implications associated with the extensive use of photovoltaic generation embedded within the low voltage part of the distribution network, and the necessity to incorporate energy saving technology in all aspects of the design.

Issues to be considered included the appropriate use of Smart Grid technologies including smart meters, the application of DC Microgrids, energy storage technologies and demand side management techniques amongst others. This in turn required a careful assessment of existing marketplace technologies as well as likely future technological developments.

The high level concept design was subsequently developed in the basis of design which formed part of a functional design for the transmission and distribution network, including detailed layouts for all transmission substations, cable routing drawings, protection and earthing philosophies and load flow and fault level modelling of the power system.

The project initiated in 2006 with a staged eight year build programme. The first stage completed in 2009 with the whole project due for completion by 2015.