Atkins designed the Next Generation Communications Infrastructure for the new 10,000 homes in the township of Ahmadi in Kuwait.

Next Generation Communications and Security Infrastructure

The business challenge
As part of their long term strategic plan, the Kuwait Oil Company (KOC) decided that the township of Ahmadi would be transformed into an environment that reflects the modern oil industry image, whilst retaining its historical and cultural heritage and contribution to the Kuwait oil industry.

The township will provide 10,000 new homes and an advanced recreational environment for key KOC employees and their families. Recreational facilities planned include a golf course, two health clubs, a cinema and a shopping mall.

The Atkins solution
Key to the transformation was the provision of a state-of-the-art Next Generation Broadband communications infrastructure and metropolitan security system using the latest CCTV and access control capabilities with the capacity to support current and new IT applications and services as they develop over the next 30 years.

A Gigabit Passive Optical Network (GPON) was designed using the latest Fibre-To-The-Premise (FTTP) technology. The fibre network offers the most cost-effective solution supporting symmetrical bandwidths in the order of 40Mbps un-contended to every residence. This bandwidth is essential to support new “Quadruple-Play” (Voice, Video, fixed and mobile Data) services. The infrastructure was designed to easily deliver Internet and Community Intranet services, telephony and multi-channel High Definition (HD) TV and Video-on-Demand (VoD) services to each building.

A Community Intranet allowed the exchange of current information, resident views and social events, transport times and cinema tickets, amongst a wide range of other information and services.

The telephony system uses Voice over Internet Protocol (VoIP) to provide free phone calls for residents and local businesses with an itemised billing system for “external” calls also included in the design.

Dedicated fibre pairs are provided to larger buildings around Ahmadi for business office blocks, the shopping mall, and so-on, allowing VPN services to be easily provided.

A self-healing Wi-Fi mesh network was designed to enable Broadband ‘roaming’ across the entire township with each residence also having its own internal Wi-Fi LAN. Secure access, channel frequency allocation and transmit power levels are automatically controlled from the network core. The infrastructure could also easily accommodate new wireless standards such as WiMax, as they become more generally available.

Advanced Security System
- Strategically positioned Pan-Tilt-Zoom (PTZ) and Automatic Number Plate Recognition (ANPR) cameras add to the security of the town in this sensitive region with an interconnected network of Building Management Systems (BMS) located in each property allowing central monitoring of alarms and the remote control of domestic CCTV cameras, access control mechanisms and home entertainment systems as required.

Passive Optical Network concept
- All of these systems were designed to integrate seamlessly and to be able to accommodate the commercialisation of IT service delivery to non-residential clients wishing to use the network.
- Atkins provided the Technical consultancy for requirements capture and generated cost comparisons to assist tender evaluation and
negotiation. The active and passive converged network design included evaluation of the integration issues. We prepared the tender documents and evaluation criteria together with processes for system integration, network support and management.

- Knowledge of converged network design is crucial to maximise the benefits of this network. System specification, design, integration and effective network management are key capabilities of the Atkins team.

Outcomes and key benefits
The Next Generation Network design provides advanced services allowing residents and businesses to meet their communications, entertainment needs in a secure environment.

The all-fibre network provides the residents with “quadruple play” of fixed and mobile high speed Internet, voice and extensive video entertainment choice, plus an Intranet for community use and Wi-Fi coverage for outdoor areas.

The network also supports the extensive security requirements including CCTV cameras suitable for desert conditions, access control and vehicle number plate recognition systems.