



Defence Construction in the Built Environment – Project Allenby/Connaught

OGC Case Study

A major innovative Public Finance Initiative (PFI) project to deliver army accommodation fit for the 21st century to time and budget

Project Allenby/Connaught is the Ministry of Defence's (MoD's) redevelopment project for the army barracks in Aldershot and around Salisbury Plain. The project delivers the accommodation necessary to enable organisational changes in the army and addresses problems created by an outdated army estate. It will provide a modern living and working environment, with associated support services for some 18,000 personnel. The 35-year PFI contract has a capital value of more than £1 billion and a through life value of more than £7 billion.

Achievements and benefits

- A strategic approach to Defence estate planning, together with community and stakeholder involvement, has been adopted. **Benefits:** There is about 30 per cent more land available for disposal, leading to financial benefits and extra land for local housing needs
- The PFI contract allows an emphasis to be placed on through life costs associated with constructing and maintaining the new facilities. **Benefits:** The preferred bidder Aspire Defence takes the risk on through life costs for 35 years. This, in turn, provides Aspire with a powerful incentive to deliver a robust, fit for purpose estate
- A strong emphasis has been placed on the delivery of a sustainable development. **Benefits:** Demonstrator accommodation gained 26 out of a maximum 29 credits under the Green Guide for EcoHomes and an excellent BREEAM* rating. (*Building Research Establishment's Environmental Assessment Method)
- Innovative solutions such as a campus style layout and "pairing and sharing" concepts have been used. **Benefits:** Improved demarcation between soldiers at work and off-duty activities. Better land use and a more flexible garrison layout that is able to cope with future changes to the army
- Modular construction methods have been used to provide living accommodation. **Benefits:** Reduced

overall construction time on site by about nine weeks, compared to traditional techniques (30 per cent faster)

- A combination of latest construction methods and basic incentives in a PFI contract has saved the project time and money. **Benefits:** Barracks completely rebuilt in 13 months, instead of 24 months, reducing disruption for the garrison and construction overheads.

Introduction

As a major client, the MoD understands the complex inter-related principles for construction excellence. This has occurred through consultation with key stakeholders, such as the Office of Government Commerce (OGC), the Commission for Architecture and the Built Environment (CABE) and Constructing Excellence (CE). Project Allenby/Connaught is an excellent example of how all these elements are being applied to major Defence projects.

Background

The project originated in the Strategic Defence Review (SDR) carried out in 1998. The key requirements of the SDR included:

- Providing accommodation for army units returning from Germany
- Reorganising and relocating of army units to improve operational effectiveness





■ on-site construction of modular building

- Improving the living and working environment for military personnel (a major factor influencing morale and effectiveness of the military services).

The project provides accommodation and associated support services for units based in Aldershot Garrison and around Salisbury Plain in Wiltshire. The Salisbury Plain Garrisons are: Tidworth/Netheravon/Bulford, Larkhill and Warminster.

Project objectives

The project has seven main objectives:

- To construct barrack accommodation as strategically identified by the SDR
- To improve living and working quarters for all personnel, with special emphasis on Single Living Accommodation (SLA)
- To deliver high quality support services

- To achieve whole life performance and value for money
- To ensure a smooth transition
- To develop a collaborative and trusting relationship with the contractor
- To encourage developments that benefit the Army and the wider community.

Strategic Development Planning (SDP)

The key to achieving these objectives was to adopt an innovative approach to land use within the garrisons. A series of detailed studies were carried out by the MoD. These examined land capacity, infrastructure, efficient land use, potential land alienation and sustainability.

Consideration was also given to how best the estate could be developed to meet the MoD's modern needs. A SDP was created that laid out the development principles for the garrisons over the next 40 years.

Single Living Accommodation (SLA)

Particular attention was paid to SLA – one of seven main objectives. The existing SLA consisted of a mixture of obsolete Victorian and Edwardian dormitory style quarters, and old-fashioned 1970s concrete system buildings, all offering little privacy or comfort for the soldiers.

The project needed to identify and provide new SLA by pioneering 'Z standard' SLA for all trained soldiers. The project will deliver 10,700 Z standard SLA rooms.

Sustainability

The MoD estate covers about one per cent of the UK land mass. It is committed to maintaining and developing the estate in a sustainable manner. Factors such as the environment, public access, heritage, planning and social factors are all taken into account.

Sustainability is an important feature for the Allenby/Connaught project. As part of the PFI competition process, bidders were invited to present their proposals for a range of innovatory client requirements, including:

- Combined heat and power plants
- Rainwater collection
- Solar heating
- Sustainable urban drainage solutions
- Building management systems
- Waste disposal.

The competition documents also set out a contractual requirement – new buildings should achieve an "excellent" rating against the BREEAM criteria, and refurbished buildings should achieve a "very good" rating.

Selecting a suitable PFI partner

The project ran its competition to select a PFI partner under EU procurement regulations. Before selecting the preferred bidder, an OGC Gateway™ 3 review was carried out. This review was part of a pilot programme within the MoD, aimed at confirming the value of such reviews for Defence procurements. (Gateway™ reviews were originally designed for civil procurements only).

The review highlighted many areas of good practice, with some recommendations for improving the robustness of the selection process further. It provided valuable independent evidence, which the project team cited when it sought central approvals for its business case.

In June 2003, the MoD named Aspire Defence as its preferred bidder for the project.

The construction challenge

The project will provide 360 new buildings, 155 refurbished buildings and 418 demolitions, spread over a nine-year construction period. When completed, the garrison facilities will have an internal area exceeding 1.1 million square metres, together with the legacy estate. The scale of this task is complicated by the following factors:



- The garrisons are to operate on a live basis throughout the project
- Most of the accommodation needs to be built inside the 'wire'
- Opportunities for moving soldiers to alternative accommodation during the construction period are extremely limited
- All building works must take account of security and counter-terrorism requirements, as well as building regulations.

Part of the solution

To solve the construction challenge, Aspire adopted some practical solutions, such as off-site modular concepts – completed in a factory under a controlled environment. Full modular units were preferred over prefabricated walls because they improve consistency, build quality and safety on site. The key advantages in applying a modular system are:

- Less energy is required to achieve the same output
- Most of the prefabrication is completed in a factory, under a controlled environment



■ A typical z-standard SLA unit

- Reduced construction timescale (after foundations are laid)
- Less site traffic makes it logistically easier to manage site operations
- Less labour involved in construction, reducing risk of health and safety incidents
- Increased confidence in meeting project deadlines – the production of modules is a systematic repetitive process
- Ability to stockpile modules to ensure a smooth flow to site.

Risk reduction

With a proposed production run of more than 100 junior soldiers' blocks, the MoD and Aspire agreed it would be prudent to undertake risk reduction activities for the modular concept. It was decided, before signing the main PFI contract, to construct a demonstrator block as a test-bed to make sure the facilities were robust and fit for purpose.

Corus Living Solutions was selected by Aspire to build the demonstrator block, which is now home for 36 soldiers in Perham Down. Corus used an advanced automated assembly process to ensure standardisation of replication. This is important for long term, large-scale projects, and helps to reduce risk and programme slippage by making events more predictable.

Demonstrator block

The Perham Down demonstrator block was handed over in January 2005 and has since been occupied by soldiers. The soldiers are providing regular feedback to both the MoD team and Aspire on issues, such as furnishings, layout, security, function, privacy and comfort.

The demonstrator block was subjected to the same sustainability requirements as the main contract buildings will be. The building gained an excellent rating from BREEAM, as well as significant credits under the Green Guide for EcoHomes. The credits were for:

- Reducing CO2 emissions to 14.2kg/m² per year, with less than or equal to 60 kg/m² per annum as the bottom limit (8/10 credits)
- Improving building performance across the site by 39 per cent, compared with relevant building regulations Part L (5/5 credits)

- Reducing water consumption to 21.5 cubic metres per year, with less than 30m³ per annum as best baseline (5/5 credits)
- Providing public transport is available within 1200 metres (1/2 credits)
- Providing local amenities are positioned within 500 metres (3/3 credits)
- Waste segregation and recycling materials – maximum credits for providing internal and external bins or storage to separate cans, glass, paper and card (6/6 credits).

Lessons learnt

- Emphasis was placed on strategic development planning over a 40-year timescale. This has provided opportunities to create more efficient, flexible and sustainable estate solutions, compared to traditional single site planning over shorter timescales
- Focus was placed on outputs rather than inputs. This maximises the private sector's ability to introduce innovation into projects. In so doing, it has been essential to clarify requirements such as MoD counter-terrorism measures for buildings and structures
- An open approach to communication both within the MoD and with external stakeholders was adopted, resulting in better projects and smoother implementation. For example, Allenby/Connaught has further developed its SLA concept by exchanging lessons learned with MoD's other major initiative, Defence Estates' (DE) Project SLAM (Single Living Accommodation Modernisation).



■ *Obsolete 1970s concrete barracks*



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