

Further information
Skanska AB
www.skanska.com

Contact

Noel Morrin,
Senior Vice President
Sustainability
noel.morrin@skanska.se

HMP Dovegate, UK

Case Study 39

Her Majesty's Prison (HMP) Dovegate category-B prison was constructed in Staffordshire, UK, with prefabricated sections and excavated material from the site to reduce environmental impacts. The project has significantly enhanced local biodiversity and flood alleviation.

Aspects of Sustainability

This project highlights the following:

Social Aspects

- Human Resources
- Corporate Community Involvement
- Business Ethics
- Health and Safety

Environmental Aspects

- Energy and Climate
- Materials
- Ecosystems
- Local Impacts

Economic Aspects

- Project Selection
- Supply Chain
- Value Added



Project Introduction

HMP Dovegate is an 800-place training prison in Staffordshire, UK, that is currently being expanded. The prison is located on the edge of Marchington village and is designated for category-B offenders who are not considered to be a threat to the public.

Skanska designed and constructed the existing prison between 1999 and 2001, and is expanding the project between 2008 and early 2010, as part of PFI (Private Finance Initiative) contract with the service company Serco who operate the facility on behalf of the Home Office. The original project included the construction of a 600-bed training prison and a Therapeutic Community Rehabilitation Unit for 200 inmates. The training prison provides opportunities for the rehabilitation of sentenced prisoners and the Therapeutic Unit works with serious offenders, often with a history of disruptive behaviour. The US\$ 105 million

expansion project includes a 260-cell houseblock, a two-storey activity building, two five-a-side football pitches and the expansion and refurbishment of existing buildings to provide additional facilities.

The original project set new construction and design benchmarks for PFI prisons in the UK and has received excellent feedback from the Home Office. The project has also made significant contributions toward the environmental quality of the area and has promoted regional economic development.

Contributing Toward Sustainable Development

The Dovegate prison was designed to be a modern and functional prison, which promotes a healthy and safe environment for inmates and staff. The prison reused a brownfield site and contributes

toward the regional economy by providing permanent jobs and by utilising local services and materials. During the construction of the projects, Skanska implemented a good neighbour policy and the project built on long-term relationships with project partners. Local workers, materials and services were prioritised for the construction projects and a comprehensive health and safety programme was implemented. Contaminated substances on the site were removed prior to construction, and recycled and prefabricated construction materials were used where possible to reduce the environmental impacts of the project. Hard-core material for the original construction project was excavated from the site, and eliminated the need to import such materials. The excavations were used to create artificial lakes to enhance biodiversity, and trees and shrubs have been planted around the site. The lakes were also intended to form flood storage as part of a Flood Management Plan, which included the enhancement of drainage ditch capacity.

Social Aspects

Stakeholder communication

Skanska operated a good neighbour policy throughout the original construction and expansion project. The policy involved regularly informing and updating the local community so as to inconvenience them as little as possible, regular meetings with local residents and parish council members to meet local concerns and membership of the Considerate Constructors Scheme. The local community were initially not in favour of the prison, but the land management scheme and the local biodiversity work proved popular among local people.

Project partner collaboration

Prior to Dovegate, the Skanska team had previously designed and constructed four other prisons for Serco as another company, which Skanska took over in 2000. The Dovegate projects were therefore built on the long partnerships that have developed between the Skanska team, Serco, the architect, sub contractors and supply chains. Skanska also worked closely with the client to ensure that the prison met all their design specifications and construction requirements.

Occupational health and safety during construction

There was one lost time accident on the original Dovegate project, resulting in 3 months off work, and no lost time accidents on the expansion

project as of August 2008. The original Dovegate project was the first Skanska project in the UK to have a full-time safety manager and ensured that all site visitors were provided with a safety induction. Weekly Tool Box Talks involving contractors and Skanska site staff were held to raise the awareness of topical safety issues such as the potential dangers associated with specific tasks and substances. Other safety activities included the promotion of Skanska's near miss procedure, workforce safety consultation, encouraging the use of protective equipment and safety incentives. A health programme was established to help raise awareness of health issues and provide the entire workforce with information and advice to help improve their health and quality of life. The programme included cholesterol checks, routine medical assessments, regular health promotion campaigns such as National Men's Health Week, and advice on work and non-work related health issues. A Phased Return to Work scheme was also implemented to ease site staff back into work following illness or injury by developing a plan with the individual, their manager and Occupational Health staff, and monitoring their progress. The Scheme enabled employees to return to work earlier and without complications.

Healthy and safe prison design

The buildings use fresh air ventilation and windows can be opened to allow natural ventilation. Atria are lit with natural light from skylights and calming pastel colours have been used throughout Dovegate, rather than the magnolia decor typical of British prisons. The prison was designed to reduce self-harm and vandalism, with features such as concealed radiator pipes.

More functional prison

The prison was designed to be more functional than a typical British prison by allowing quicker prisoner transfer between blocks and enabling easy access to facilities such as workshops and offices. The Home Office has praised the layout of the prison wings, which were designed in consideration of the needs and activities of the inmates. Dovegate also has more open spaces than a conventional prison to allow greater visibility and better lines of sight.

Sustainable urban planning

Dovegate was constructed on a brownfield site, previously used by the Ministry of Defence, and included part of the derelict Marchington military camp, which had been disused since the 1960s. Bus services link the prison with the nearby towns of

Uttoxeter and Burton-Upon-Trent, and the Uttoxeter and Hatton train stations are approximately 5 km away.

Reducing re-offending rates

A study by Surrey University between 2003 and 2008 calculated that 25 percent of Dovegate's repeat offenders do not re-offend once released, compared to a national average of 15 percent, including offenders serving their first sentence. Rehabilitation has been proven to be more successful when prisoners are detained closer to home, and the expanded prison may help to further reduce re-offending rates by accommodating locally more prisoners from Staffordshire and the West Midlands.

Economic Aspects

Local construction employment

The original project employed approximately 250 workers at the height of construction and the expansion project around 150. A local employment agency was used to supply construction workers and around 70 percent of the workforce from both projects was from the local area. Skanska encouraged sub contractors to take on apprentices where possible, in order to involve young people in the construction industry.

Local construction materials and services

Materials and services from the local area were prioritised for both the initial construction and the expansion project. Local materials included brickwork, prefabricated concrete panelling and all stone sourced off-site. Local services included steel erection, mechanical services, waste management contracting and a management company that was used to oversee work within the secure area during the expansion project.

Regional economic development

439 permanent positions were originally created by the construction of the prison including positions for custody officers, clerks, cleaners, teachers and nurses. The expansion of the prison created additional positions equivalent to 112 full-time jobs, with annual salaries totalling US\$ 5 million. A recruitment strategy was used to target the employment of local people by employing and training staff that had no previous experience of working in a prison. The vast majority of prison staff originate from and live in the Stoke-on-Trent area and 95 percent had never worked in a prison before. The purchase of local goods and services is



prioritised and approximately 70 percent of Dovegate's annual budget is paid to local companies in Staffordshire and the West Midlands. The expansion project increased the annual spend of the prison by approximately US\$ 1.8 million.

Government savings due to the PFI

Privately constructed prisons have been shown to provide better value for money compared to the performance of the public sector, and are more likely to be delivered on time and on budget. Skanska completed the original project without defects and two months ahead of schedule. The project would have incurred financial penalties if it were not opened on schedule as the Home Office pays per number of operational cells. The early completion enabled the prison staff to train on-site prior to opening rather than at a local school as planned.

Environmental Aspects

Minimising environmental impacts during construction

An environmental risk assessment was carried out and environmental protection areas were established on-site. Protective measures, such as filter bunds, were used to prevent the pollution of watercourses. Dust was controlled by regularly damping down construction roads and site equipment was regularly maintained to minimise air pollution. The widespread use of prefabricated wall and floor panels allowed a considerable amount of work to be done off-site, which reduced the intensity and period of noise and vibration disturbance during construction.



Contaminated land remediation

Prior to the construction of the prison, the site included contaminated land, which could have caused significant environmental damage if left untreated. The site had been used as an illegal tipping ground and contained derelict buildings with asbestos containing materials. High methane levels were also detected where the old military base had been constructed on raised ground directly on top of vegetation. All contaminated substances and materials, potentially hazardous to the environment and human health, were removed from the site prior to construction.

Sourcing of on-site construction materials

119,000 m³ of hard-core granular materials for the foundations and 180,000 m³ of clay for form moulding were extracted from the site. Sourcing materials on-site ensured that no fill material had to be sourced off-site and reduced the number of lorry journeys.

Recycled construction materials

2,000 m³ of concrete from the airfield was crushed and reused on the project for sub base material. Many of the construction materials sourced off-site contained recycled content, such as the prefabricated concrete bricks, and all floor coverings contained recycled material from factory off-cuts.

Prefabricated construction materials

Both the original and expansion projects used prefabricated materials for repetitive sections of the project, which reduced the amount deliveries and the quantity of waste produced on-site. The 800 cells in the original project, for example, were made with 11,000 prefabricated sections, and only

the sports hall, industrial unit and the chapel were not constructed with prefabricated materials, due to their more complex nature.

Enhancing biodiversity

Skanska worked to protect the flora and fauna present on and around the site, and enhanced local biodiversity by planting trees and creating new wetland habitats in consultation with the Environment Agency and the Staffordshire Wildlife Trust. Prior to the development, much of the site was of limited ecological value. However, the northwest area of the site was fenced off and protected from construction activities to maintain natural meadow habitats, populated by small mammals and owls. Three new lakes were created in the excavations where construction materials were extracted to encourage amphibians, insects and birds. An island was constructed in one of the lakes to create a safe ground nesting site for birds that is protected from predators. 150,000 trees and shrubs were planted and 250,000 m² of wild flower seed was sown on the site to promote biodiversity.

Flood Management Plan

A flood management plan was implemented during the original construction to reduce the risk of flooding, which regularly occurred prior to the project. The three lakes created from the extraction of construction materials are part of the plan and help reduce the rate of runoff and provide flood storage. Skanska worked with the Environmental Agency to restore the capacity of the existing drainage ditches between the site and the River Dove to reduce the likelihood of future flooding in the area. The 90,000 m² prison footprint was also raised by 1m with excavated material to reduce the risk of the prison being flooded.

Water efficiency

Low flush toilets and timed showers have been installed throughout the building along with an electric tap system in the cells that automatically switches off after a few seconds.

Learning From Good Practice

The Dovegate project team developed the innovative solution of excavating hard-core material on-site and creating lakes from the excavations, which provided inexpensive and local fill material, wetland environments and flood storage. The use of prefabricated construction materials was also a significant project feature that facilitated the rapid construction of the repetitive design and helped reduce the environmental impacts of the project.

