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## Anglian Water, UK

### Case Study 70

The Anglian Water Asset Management Plan (AMP) involves the upgrade of existing sewage and water treatment infrastructure throughout the Anglian region in accordance with water industry requirements and high standards of sustainability.

### 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

The water industry is required by Ofwat (the UK water regulator) to follow 5-year AMP periods, which are designed to improve water quality and meet future water demands in the UK through a combination of repair, maintenance, renewal and new infrastructure projects. Anglian Water provides water and wastewater services over an area of 27,500 km<sup>2</sup> in the East of England, from the River Humber in the north to the River Thames in the south. The company supplies around 1,200 million liters of water each day to approximately 6 million industrial, domestic and commercial customers through a 36,000 km network of water mains and 142 wastewater treatment plants.

Skanska UK, in partnership with Aker Solutions (Joint Venture), form one of the seven members of the @One Alliance, which is responsible for

delivering a large part of the Anglian Water AMP investment programs. Skanska has been involved in the project since 2000 with AMP3 and AMP4 and is now involved in AMP5, which covers the period between 2010 and 2015. Skanska works on multiple sites across the Anglian region and predominantly delivers design services, and civil and structural engineering expertise. Projects vary in size from US\$ 30,000 to US\$ 30 million and cover a range of activities, including minor civil works, such as pipelines, tanks, pump stations and small structures to the installation of primary, secondary and tertiary treatment equipment. Skanska has also conducted non-infrastructure design studies and developed a carbon calculator for Anglian Water. The Alliance is responsible for delivering over half of Anglian Water's AMP5 capital program, which is worth in excess of US\$ 1.5 billion in total and around US\$ 150 million to Skanska between 2010 and 2015.

Anglian Water has an ambitious sustainability policy aimed at reducing carbon emissions, energy, waste and negative community impacts. Skanska is committed to meeting and exceeding these demands throughout the design and construction projects it is involved in. Skanska also has a dedicated Sustainability Manager that oversees its Anglian Water projects and coordinates sustainability work between the client and the Skanska project teams.

## Contributing Toward Sustainable Development

Through their work on the AMP projects, Skanska is contributing toward the enhancement of Anglian Water's business and the reduction of Anglian Water's long-term environmental impacts. Skanska has also supported the adoption of innovative green solutions, such as a high efficiency aeration and biogas equipment, and has developed a carbon calculation tool. During the AMP projects, Skanska has developed close cooperation with the client and other Alliance partners. Public impact is minimized for each project by the use of dedicated Community Liaison Managers and Skanska seeks to strengthen local communities by making charitable donations and by encouraging members of the team to volunteer on local projects. High standards of health and safety are implemented and Skanska consistently scores highly on Anglian Water's health and safety assessments. Skanska seeks to benefit the regional economy by prioritizing local employment, subcontractors and suppliers.



Environmental impacts are reduced during each project by working to preserve biodiversity and natural habitats, and by promoting site energy efficiency.

## Social Aspects

### Project partner collaboration

Skanska has developed a long-term working relationship with Anglian Water, which has allowed the establishment of good working practices and common sustainability strategies. A multi-disciplinary project office was opened in Peterborough to facilitate close co-operation between the Alliance partners and Anglian Water, and to improve communication to the various site offices. Key Skanska and Alliance partner staff are based at the office, together with Anglian Water employees.

### Reducing public disturbance

Assessments are conducted prior to the commencement of each project in order to minimize excessive public impact. Key considerations to reduce public impact include scheduling deliveries, managing vehicle parking, diverting traffic, and interacting with local schools and local residents. Community Liaison Managers coordinate efforts to reduce public disturbance, such as by sending letters to local residents to provide advanced notification of project activities that may cause them disruption or disturbance. Every Skanska project also follows the principles of the Considerate Constructors Scheme and develops a Considerate Constructors Log and Action Plan.

An improvement project at the Alconbury Sewage treatment Works was awarded the Performance Beyond Compliance Certificate from the Considerate Constructors Scheme for scoring four or more points in each of the eight assessment sections. The project team was praised for thoroughly communicating with local residents throughout the project and for implementing a comprehensive traffic management plan that considered the narrow village streets.

### Occupational health and safety

There have been no major accidents on the Anglian Water AMP projects Skanska has been involved in and the LTAR was 2.69 per million hours worked between January 2009 and March 2010. Safety is one of the Alliance's Key Performance Indicators assessed by Anglian Water, and Skanska has maintained a consistently high score throughout their involvement. Notable



Skanska-initiated safety procedures include the weekly inspection and tagging of lifting accessories to clearly identify equipment that is fit for use. The procedure won an Innovate 2009 Award and has since been adopted on all Alliance sites.

### **Enhancing water and wastewater treatment services**

The AMP projects enhance Anglian Water's treatment facilities and mains network, which further improves their capacity to provide reliable and high quality water to its customers. The projects also help to ensure that the future demands for water and wastewater services are met in the Anglian region.

### **Archeological study**

Skanska worked closely with archeologists to excavate a well-preserved Iron Age settlement on a site in Little Melton. Skanska minimized damage to the site during the project by not using heavy construction equipment and by carefully following instructions from the supervising archaeologist.



### **Charitable donations and volunteering**

Charitable events include the annual Anglian Water Rutland regatta, which involves employees and raises money for the charity WaterAid. Anglian Water also encourages employees to volunteer in local engagement projects through the Give Me 5 scheme, which allows employees to volunteer up to 30 hours a year on community based projects. Examples of projects that Skanska employees have supported include the River Cam Clean in Cambridge and the Civil Engineering Challenge, which involves conducting interactive workshops such as rebuilding the infrastructure of a hurricane-devastated country.

### **Economic Aspects**

#### **Local construction employment**

An average of 66 Skanska workers each month were involved on the AMP Anglian Water projects between April 2009 and March 2010. Most of whom were from the Anglian region.

#### **Local subcontractors and suppliers**

Skanska supports the regional economy by prioritizing subcontractors and suppliers from the Anglian region. Skanska has used innovative mapping techniques to plot supply chain outlets in order to ascertain which suppliers are most local to particular projects. Selecting local suppliers based on their proximity can also reduce the carbon footprint of a project in line with the client's sustainability objectives. Skanska is planning to further develop its commitment to

employing local subcontractors and suppliers during AMP5 in accordance with its Sustainable Procurement document.

## Environmental Aspects

### Reducing environmental impacts during the project

Skanska has a dedicated Environmental Manager that works closely with the design, engineering and site teams to ensure the appropriate mitigation measures are established and to minimize environmental impacts on biodiversity and natural habitats. Each site works in accordance with the Skanska ISO 14001:2004 Environmental Management System.

### Biodiversity preservation

Eight settlement lagoons at the Chalton Sewage Treatment Works were drained and desludged to restore them to their original capacity without damaging aquatic wildlife or two adjacent Sites of Special Scientific Interest. Fish were present in all eight lagoons, and other local wildlife included damselfly, 17 species of dragonfly, kingfishers and many species of wildflower meadow plants including the bee orchid. The lagoons are also popular bird watching locations that are home to nesting birds in spring. Over 400 fish in total were relocated unharmed by electrofishing, which involves passing a mild electric current through the water to temporarily stun the fish so they can be caught in nets and transferred to other lagoons on site. To access the lagoons, some of the surrounding reeds had to be removed, which was carefully monitored to keep the amount removed to an absolute minimum. Most of the required machinery and generators was located on a narrow grass strip to minimize impacts on local wildlife. Double-skinned fuel tanks were used, which were placed on large mobile bunds or drip trays to minimize the risk of leakage. All subcontractors were informed of the sensitive nature of the environment, and additional practical training how to use spill kits was provided. The work was completed during the winter to allow the wildflowers and reeds to regenerate in time for the spring nesting season.

### Water vole habitat preservation

Initial biodiversity surveys at the Rayleigh East Sewage Treatment Works identified water vole habitats in concrete effluent channels that were earmarked to be sealed due to safety risks and water quality reasons. However, Skanska worked closely with an ecologist to find an alternative



solution that avoided the disruptive relocation of the water vole habitats. The solution involved the installation of a safety fence and a commitment to cut back the vegetation twice a year to avoid the contamination of nearby water quality monitoring locations. The solution also reduced environmental impacts by avoiding the need to cover the effluent channels with concrete.

### Carbon calculation tool

Skanska worked with Anglian Water to develop an intranet based carbon-modeling tool, which enables designers and engineers to calculate the embodied carbon of proposed project solutions. The projects can consequently be modified and developed at the design stage to reduce their carbon footprint. Skanska is also working with Anglian Water to review and develop their strategy for adapting to climate change. The review includes an analysis of the susceptibility of Anglian Water's assets and supply chain to the challenges presented by climatic change.

### High efficiency aeration solution

Skanska worked with suppliers in the UK and Austria to develop and introduce a high efficiency aeration solution to the UK market. Skanska initially installed technology at the Basildon Sewage Treatment Works, which realized a 13 percent reduction in power demand and a 20 percent increase in throughput. High efficiency aeration uses the same principle as traditional aeration but incorporates efficient blowers that release smaller air bubbles into the treatment tanks to enhance the transfer of oxygen by around 30 percent, which improves the treatment rate, discharge quality and energy efficiency. The technique has since been adopted as a standard solution by Anglian water and the Alliance.

### Biogas capacity installation

Skanska has supported the upgrade of existing treatment plants with anaerobic digesters and CHP



(Combined Heat and Power) units, which release and combust methane gas to generate energy. The energy can be sufficient to meet a plant's heating and electricity requirements. Cotton Valley Sludge Treatment Centre (STC) in Milton Keynes, for example, was equipped with advanced digestion technology, which enhanced digester loading and biogas production.

### **Enhancing energy efficiency**

Smart energy meters, which monitor and display energy consumption, have been installed at various sites to raise awareness of energy consumption and to encourage project teams to use less energy. An eco-cabin was built at a site in Norwich, which reduced energy consumption by one third compared with a conventional site cabin.

### **Learning From Good Practice**

Skanska's long-term involvement with Anglian Water has provided opportunities to develop common sustainability strategies and innovative tools, such as the carbon calculator. Skanska also consistently exceeds regulations and client expectations regarding environmental protection, innovative green solutions and health and safety, which has helped to establish it as a key Alliance partner.