

# Wrexham Industrial Estate Access Road

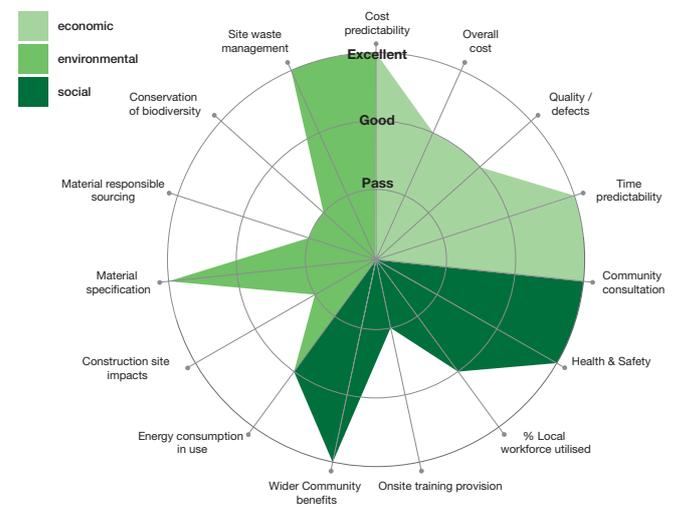


The Wrexham Industrial Estate Access Road is a Welsh Government-funded highway scheme providing improved access to one of the largest industrial estates in Europe. The scheme involves the construction of 4.4km of new highway with two reinforced concrete overbridges and a number of culverts, as well as dealing with a high concentration of existing services that require diverting.

The project aims to demonstrate how strong client leadership combined with an integrated delivery team working together from the early stages has developed a positive 'can do' team culture, underpinned by a very open approach to communication. This is leading to the delivery of a high-quality piece of infrastructure to a tight timescale and budget, minimising environmental impacts and gaining the support of the community.

Particularly noteworthy is the route taken to establish and develop the delivery team. The original aim of the procurement strategy was to seek early contractor involvement through a 2-stage price/quality tender based on outline designs prepared by the client's design team. However, the funding body's specific requirements meant that a traditional single stage tender process was pursued albeit considering price and quality. A robust selection process led to Birse Civils Ltd being appointed.

This case study sets out to demonstrate the value gained from the early development of the delivery team and how it is addressing issues of team culture, buildability, sustainability and budgetary and time constraints.



## project details

client:	Wrexham County Borough Council
design engineer:	Wrexham CBC / Ramboll
contractor:	Birse Civils
value:	£13.4 million
project size:	4.4 km highway – 2 major structures
procurement strategy:	Single Stage Price: Quality
contract strategy:	NEC3 Design and Build Target Cost

## what is an exemplar project?

An Exemplar is defined as 'something worthy of being copied'. The Exemplar programme has been developed to help identify the reasons why certain projects are successful in a standardised, quantifiable way, and to share with the industry what enabled these successes. An Exemplar considers all aspects of sustainability, including economic, social and environmental factors. Projects must demonstrate that they have been innovative in one or more of these aspects in a way that exceeds normal industry practices, while achieving at least minimum standards in all other areas of the project. This is to demonstrate that the scheme is well rounded and has not sacrificed one aspect to be successful in another, while also incorporating best practice measures that can advance the state of the industry. An Exemplar project therefore reflects the ideal industry goal of achieving a scheme's primary aims in a sustainable way, at acceptable costs. Case studies are prepared at 3 key stages: post-design, post-construction, post-occupation. This ensures that lessons learnt can be demonstrated throughout the development of the project.

## what will make the project successful

- Although the contractor was eventually appointed through a single stage price :quality competitive tender, the project benefited from a robust supplier selection process involving extensive engagement and a 60% focus through the tendering process
- The client, designer and contractor worked together from an early stage to develop an integrated and co-located team with a positive 'can do' culture
- Team culture was underpinned by a very open approach to communication and sharing of knowledge and information
- Shared systems to facilitate joint value engineering and risk management processes will ensure cost and time certainty
- A high level of interaction with the local community, both residential and businesses, will ensure timely engagement and resolution of issues

## notable achievements

- Close management of value and risks will help to ensure cost and time certainty
- The way in which the supply chain has been integrated is already helping to bring about efficiencies
- Innovative actions, such as the use of GPS technology for earthworks operations, will help reduce costs and time
- Considerable design emphasis was placed on minimising project waste, avoiding the need to send 60,000 tonnes of material to landfill
- A CEEQUAL Excellent rating is anticipated for the scheme
- In use, lighting energy will be reduced through the incorporation of modern high-efficiency lighting systems
- The team's open communication with stakeholders and commitment to integrating them into the scheme will result in significant benefits to the local community
- Implementation of new initiatives and communication mechanisms such as using mobile text alerts will help to ensure a 'safe site'

## strategic vision

The client's vision for this project was to:

- Complete the project within programme and budget utilising value engineering solutions and risk management processes to ensure value for money
- Minimise disruption to the community, proactively liaise with stakeholders and deliver community benefits
- Facilitate quick and easy resolution of issues through collaboration and sharing of resources and knowledge

Underpinning this vision was the client's strong belief that this could only be achieved by creating:

- A team culture with values based on honesty, openness, integrity and a 'can do' attitude
- An enjoyable working environment offering opportunities for staff and supply chain development

The key objectives for the client in establishing a strong team culture were to:

- Demonstrate committed leadership to delivering an exemplar project
- Establish a 'one team' ethos, recognising that the scheme is more important than its individual contributors
- Open communication between all parties, including stakeholders and the public

## economic considerations

Close management of value and risks will help to ensure cost and time certainty

A 'one team' approach across the project will help to ensure that time and cost certainty are maintained. This is being achieved by:

- Sharing workload across the design partners
- Sharing knowledge, current or historical, through joint weekly progress meetings with all partners to ensure everyone understands the challenges, and to encourage a team approach to developing solutions

- Holding joint design update meetings with all partners to ensure design input is delivered on time to meet construction requirements
- Emphasis on reducing whole life costing - use of hard central reserves and concrete barriers to reduce future maintenance cost and disruption
- Holding joint risk, programme and commercial meetings to share workload and identify improvements. Risk meetings are held to identify all the potential issues that could affect the project. Partners work collaboratively to reduce and remove the risks and manage the scheme budget
- Holding early and regular meetings with the local planning and highways authority to integrate them into the team

**Innovative actions will help reduce costs and time**

A number of innovative practices are being introduced to reduce costs and construction times:

- Use of GPS technology for the earthworks operations on site will improve efficiency of plant use by 30%, reduce materials wastage and costs, and reduce setting out errors, which should also save time and money. It will also improve safety as there are fewer people interfacing with heavy plant
- The project team is based in an existing vacant office facility on the industrial estate, saving costs associated with setting up site cabins
- Cement stabilised site-won earthworks materials were used as capping in pavements to reduce the need for imported quarried sub-base materials
- Using pre-cast, pre-cut manholes allows quicker, higher-quality installation.

**The way in which the supply chain has been integrated is already helping to bring about efficiencies**

Successfully blurring the interfaces between subcontractor trades and building a fully integrated team will improve efficiency. For example, the collaboration between the earthworks and surfacing subcontractors has resulted in site-won earthworks materials being lime/cement stabilised for use as capping in pavements. This will reduce both the amount of material to be disposed off site and the import of quarried sub-base, both of which will reduce costs.

## environmental considerations

### A CEEQUAL Excellent rating is anticipated for the scheme

The project has been registered with the Civil Engineering Environmental Quality Assessment and Award (CEEQUAL) scheme. The target is to achieve 'Excellent' status.

To manage the process and ensure the project attains the highest possible standards, two CEEQUAL champions have been appointed within the integrated team. The champions, a member of Wrexham council's team and a Birse Civils employee, have both been trained as CEEQUAL assessors.

Early on in the project, a CEEQUAL verifier presented to the team on the scheme's requirements, as a result of which the team is now undertaking a scoping exercise on site. The CEEQUAL submission will demonstrate the significant measures that have been adopted to reduce the environmental impact of the project.

### Considerable design emphasis was placed on minimising project waste

During the detailed design stage there was significant development of the scheme to achieve an earthworks balance. The contractor, client and designer have worked collaboratively to avoid 60,000 tonnes of material being sent to landfill. This was achieved by refining the highway alignment and introducing new landscape features to absorb the surplus material. Use of GPS technology for earthworks activities will help reduce material wastage and setting out errors.

Site-won earthwork materials have been lime/cement stabilised for use as capping in pavements. This will further reduce off-site disposal of material and also the need to import quarried sub-base, reducing the volume of tipper wagons on site and improving the scheme's carbon footprint.

### In use, lighting energy will be reduced through the incorporation of modern high-efficiency lighting systems

Use of new higher-powered luminaires in the street lighting will minimise the overall number of columns required. Programmable timers will be fitted to allow each column to be set at two different illumination levels, enabling greater control of lighting intensities to avoid wasted energy.

## social considerations

### The team's open communication with stakeholders and commitment to integrating them into the scheme will result in significant benefits to the local community

The team has already initiated the following actions:

- Site visits and work experience placements in discussion with Glyndwr University and Yale College
- Appointment of a full-time public liaison officer to engage regularly and build relationships with local residents, businesses and schools
- Design of a flood prevention scheme for a nearby property owner
- Charity breakfast cooked weekly by the office housekeeper, with money raised donated to a local charity
- Letter drops to 250 properties informing residents about the works
- Weekly drop-in clinics for the local community.

To minimise disruption to the public, the team:

- Increased off peak / night working to reduce disruption at peak times
- Relocated the Tarmac quarry access to divert it away from residential properties
- Reduced utility diversions through early consultation with statutory undertakers.

### Implementation of new initiatives and communication mechanisms will help to ensure a 'safe site'

A new method of involving the workforce in the main contractor's behavioural safety initiative, TakeCARE, will be piloted on the scheme. TakeCARE encourages the workforce to intervene when unsafe acts are observed on site and record these observations to enable trends to be identified and rectified. Observations of good practice are also encouraged and recorded.

To improve this process, a system has been developed to enable TakeCARE observations to be sent by text message from the workforce on site to a central computer. This was developed in consultation with the workforce to increase the number of observations, and therefore improve health and safety standards.

Technology is also being used to improve communication with the workforce, by using text messages to inform about toolbox talks, briefings and other key messages.