



After: Artists impression - an improved quality of life

## Leicester City Council utilises innovative procurement method

<b>Contractor:</b>	Edmund Nuttall
<b>Project Manager:</b>	Jacobs Babtie
<b>Client:</b>	Leicester City Council
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<b>Region:</b>	East Midlands
<b>Sector:</b>	Local Government, Infrastructure
<b>Contract value:</b>	£19.1m
<b>Start date:</b>	May 2006
<b>Themes:</b>	Collaborative working, early involvement, sustainability

Leicester City Council is working with consultant Jacobs Babtie and contractor Edmund Nuttall to deliver a £19.1m scheme to demolish and replace Upperton Road Viaduct. Located in an urban environment, 2km south of the city centre, the viaduct is on a major arterial route carrying some 20,000 vehicles per day. Built over a century ago, it is in a poor state of repair.

The replacement of Upperton Road Viaduct was identified as a major scheme within the bridge maintenance and strengthening section of Leicester City's Local Transport Plan (2001-2006). Upperton Road is a key East West link in the City of Leicester and of strategic importance to the transport network. It provides the shortest and quickest route into the city from M1 Junction 21. To the South, a new Waterside development is under construction and in the West, Victorian residential properties and a shopping district are located. To the East, are football and rugby stadia as well as Leicester Royal Infirmary, making it a key route for emergency services. It is also designated an Abnormal Load Route. No other routes have been identified which can offer the same benefits. Its significance to the Network has dictated that only options that enable 2-way traffic to be maintained on the route during construction have been considered to resolve the problem of the viaduct's poor condition, the viaduct has been assessed as necessitating a 7.5t Gross Vehicle Weight (GVW) restriction.

### Background

Built in 1897 to span the Great Central Railway (Nottingham to London mainline) the viaduct is over 100 years old and has been identified by the council as a key focus for improvement plans. This is due to its poor state of repair, inability to carry the vehicle weights pursuant to EC Directives, and ultimate lack of purpose. A poorly lit National Cycle Route also runs below the viaduct with areas underneath the viaduct being subject to anti-social activity, crime and disorder. The viaduct will be replaced by a new low-level highway, a bridge over the Old River Soar and a pedestrian/cycle crossing.

### The proposal

A major scheme bid was submitted to the Department for Transport (DfT) in July 2003. The bid identified the preferred option as the replacement of the old viaduct with a new road on the same line incorporating a new bridge over the Old River Soar. The bid received provisional approval from the DfT in December 2003 to the sum of £19.1m. This was the largest maintenance scheme awarded in England by the DfT for the financial year 2004/2005. The scheme was procured within an ethos of partnership and collaborative working. Both Consultant and Early Contractor Involvement (ECI) Contractor were appointed on a high quality versus price basis (70:30 and 80:20 respectively).

Leicester City Council sought to retain a large degree of project and design control for the maintenance works. The Council chose to develop a design and build contract, as advocated by OGC's *Achieving Excellence in Construction*, based on the Highways Agency's Early Contractor Involvement (ECI) procurement model. This resulted in the Council engaging the design consultant and contractor separately (both at pre-planning stage) to work with the client on an integrated partnership basis. The project, currently 60% complete, has benefited from this procurement route and overall best practice approach, in that there is potential to achieve a £1.5m saving on the whole life cost of the project.

Planning was approved in June 2005 and the Compulsory Purchase and Side Roads Orders were confirmed by the Secretary of State for Transport in December 2006. Project delivery is now 60% complete. The construction phase of work scheduled to commence in spring 2007 will provide a gateway into Leicester and act as a catalyst for regeneration, promoting alternative modes of transport within an urban environment.

## Principles and Objectives

The council made the issue of quality a key priority for the delivery of the project. It was also important to deliver within budget, making team-working and clear communication essential. This is reflected in their overall Local Transport Plan objectives:

- To create an economically successful county
- To develop safe, inclusive, healthy and sustainable communities
- To improve the quality of life
- To avoid congestion and reduce damage to the environment.

These high level objectives were governed throughout the project, with significant emphasis placed on best value and quality. This was reflected in the project specific objectives:

- To improve transport networks across the city, improving access, amenity and circulation through the area
- To provide a high quality landscape and provide nature conservation
- To take into account the opinion of all those with vested interest in the project
- To collaborate and work effectively as a team
- To deliver time and cost efficiencies
- To build within budget and ensure maximum value for money.

## Major Issues

Routing of utility services on the site is complex and has the potential to cause significant delay. The viaduct is on the main transport network and therefore any delays on the road causes disruption to business, and resulting damage to the economy.

The road carries 20,000 vehicles a day, and is a key route for emergency services therefore it is impractical to close it during the construction period. Work had to be phased accordingly, with temporary roads and footpaths set up to ensure minimal delays.

Budget adherence was extremely important. For support, the council looked at the HM Treasury document *Value For Money Assessment Guidance*, the principles of which are detailed in *OGC's Achieving Excellence in Construction*. The guidance helped the council develop a design and build contract, based on the ECI procurement model with a separately engaged design consultant to work with the preliminary plans and assist with contractor selection. Once the contractor was selected, a three-way integrated partnership approach was developed.

## Success to date

### There have already been measurable successes in the areas of:

- Early liaison
- Sustainability
- Integration of design and construction
- Team building and integrated management
- Value engineering
- Risk management
- Corporate Social Responsibility

### Early liaison

Early involvement of the contractor has established strong working relationships and an improved programme response has been negotiated. This has resulted in a time saving of 8-10 weeks. Whilst upfront costs were initially higher due to the early involvement of the contractor, the overall saving for the whole project life cost is predicted to be £1.5m.

### Sustainability

Sustainability is a major consideration on this project. The team worked together to produce targets for waste management and produce a 'waste matrix' to reduce the amount of waste going to landfill. A construction waste specialist undertook a pre-demolition audit pursuant to the 'Institution of Civil Engineers Demolition Protocol' and then ran a participatory workshop with the project team to investigate the best ways of re-using and recycling materials. As part of the environmental management system, targets were developed for the reduction of construction, demolition and excavation waste going to landfill. This pro-active approach is expected to deliver a 2-3 week time saving, as well as a predicted cost saving of £20,000 – £25,000 as a result of reducing the purchase, transport and storage of materials. The team are also actively investigating the re-use of the existing bridge foundations and wing walls for the new river crossing with a view to achieving further potential cost and waste savings.

*"Sustainability issues have been fully embraced by implementing the ICE Demolition Protocol and setting challenging targets for the recycling of materials."*

**Ivan Causer, Technical Director, Jacobs**



Upperton Road Viaduct: Existing Infrastructure

## Corporate Social Responsibility

The number of people with a vested interest in the project is significant. The team introduced various measures – such as public consultations using a 3D computer simulation model depicting the construction sequence – to ensure all views were heard and opportunities for nature conservation were included in the demolition of the viaduct.

## Temporary Road Alignment

By introducing early reviews of the alignment and phasing of the temporary road diversion:

- The team has succeeded in reducing the demolition period by two weeks
- Has allowed the programme to be more flexible when considering pedestrian and traffic closures
- Enabled demolition and night-time working to be reduced to a 24-hour period
- Delivered savings of £60,000
- Has enabled a more integrated approach, ensuring a smooth and aligned construction process.

*“The success achieved to date is clear recognition that the novel ECI partnership approach to this project is delivering creative and innovation solutions. Leicester City Council is now embedding this ethos into framework contracts for the delivery of smaller value engineering schemes.”*

**Aman Mehra, Procurement and Programme Manager,  
Leicester City Council**

## Integration of design and construction

The contractor and design consultant worked together from the outset to ensure that construction knowledge was brought into the design process. This has ensured early resolution of buildability issues, and a reduction in the need for changes during the construction phase. A resulting four week time saving on-site and a predicted cost saving of £50,000 – £60,000 will be achieved, due to a reduction in risk. As a result, quality has been significantly improved, with structured planning reducing the need for last minute decisions.

## Team building and integrated management

The team developed a Partnering Charter in the early stages of the project, which ensured that they worked together early on to understand the needs and requirements of every part of the supply chain. This has



Before: Occupied arches below the viaduct

reduced the potential for misunderstandings and costly disputes, and the ability to resolve issues quickly and more effectively has reduced overall project time by 2-3 weeks. It is expected that this will result in an overall saving of £20,000.

## Value engineering

The team introduced a process of value engineering, reviewing the project at an early stage with all parties and employing their knowledge and experience to deliver project benefits.

The alternative methods implemented in the design and construction phases are expected to reduce overall project time by 6-8 weeks and achieve cost savings of up to £200,000. Currently the team have achieved a third of these savings (£66,000). The modern processes implemented will result in more durable materials and higher quality construction methods, ultimately delivering better value for money.

*“The collaborative approach taken in agreeing common goals and objectives, in a open and honest environment, is delivering real benefits to all stakeholders involved in this project.”*

**Aman Mehra, Procurement and Programme Manager,  
Leicester City Council**

## Risk management

In order to manage the project to successful completion, the team introduced a well-managed risk profile. This approach will reduce predicted time on site by 4 weeks. The money invested early on in risk management is expected to produce a saving of as much as £50,000 – £60,000. A higher quality project will be achieved because the team has an improved understanding of their roles and responsibilities and issues are dealt with by those best placed to handle them.

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Permanent Scheme: Artists impression



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