

CASE STUDY:

> Collaboration

Project:
**A421 Pinch Point
Improvements**

Client:
Milton Keynes Council

Design consultant: **AECOM**

Cost consultant: **Corderoy**

Contractor: **Balfour Beatty**

Contract value: **£16m**

Length of project: **75 weeks**

Completion date:
September 2015

> Background

A section of the A421 was identified as being a pinch point on a strategic part of the Milton Keynes network. This pinch point caused congestion and had the potential to impact future economic growth and development. A bid to secure funding through the Department for Transport's 'pinch point fund' was successful and enabled the project to develop.

The project comprised of the improvement and signalisation of Kingston Roundabout, the extension of the A421 dual carriageway from Fen Farm Roundabout for approximately 870m and the provision of a new four arm Eagle Farm Roundabout intended to provide access for future development

to the north and south of the A421. Works involved creating four underpasses, two of which were constructed on-line. The project involved complex traffic management involving numerous phases to minimise disruption to the public and maintain access for local businesses.



Aerial view of the completed scheme



Objectives

The initial objective and challenge was for the project team to agree a target price within budget prior to the deadline for award under the MSF1 framework.

The ultimate objective of the Early Contractor Involvement (ECI) period was the integration of the customer team and contractor staff into a single project team focused on the successful delivery of the project through innovation and planning to ensure delivery on time and value for money.

Key achievements

The first objective was achieved through a combination of collaborative working and hard work by the entire project team. During an intense three week period a complete take off and pricing exercise was done and a target price agreed. This required the project team to take a pragmatic view on risk value and risk allocation and also to be open minded about specifications and project constraints. This approach enabled over £0.5m to be stripped out and ensured a target was agreed within budget and the award was made under the MSF1 framework. This period of collaborative working set the scene and the team



continued this approach throughout the remaining ECI period and delivery phase. It helped to overcome the many obstacles and challenges that developed during the course of the project.

Another key achievement was the integration of the developer into the project team. Their regular attendance at project board and site meetings ensured the scheme delivered, was fit for purpose and ensured timely transfer of land ownership.

Overall savings of £2,011,775 (12.5% of scheme cost) were implemented by the team as a result of constantly challenging constraints, reacting to issues and using formal value engineer workshops.

OVERALL
SAVINGS 
£2,011,775

Specialist input during the ECI period

Two key risks were identified during the initial risk workshop; statutory undertaker diversions and the management of traffic. To address this, a mini competition was held and a traffic management contractor was appointed early so that they could support the team throughout the ECI phase and support the development of the contract programme. A specialist utility management contractor was also appointed to assist the team with early engagement and mobilisation of the statutory contractors.

"This scheme has demonstrated that excellent results can be achieved through good use of ECI and a team working together in a collaborative manner."

John Weaver, Business Manager, Balfour Beatty



Installation of units under the pipe bridge



Value Engineering (VE)

One key programme risk was the construction of the underpass which had been designed as a traditional reinforced concrete structure. By early engagement with the structures team and sharing knowledge from other schemes the underpasses were redesigned as pre-cast units. The benefits to the scheme were:

- » Improved quality with construction in a factory controlled environment
- » The removal of risks (cost and safety) associated with winter working

The initial programme saving realised was 12 weeks and £150k.

During the project an uncharted BT fibre optic cable was discovered. The team were advised that a diversion could have a nine month impact on completion. The use of pre-cast units combined with a site designed pipe bridge enabled the work to progress without

disruption. This solution allowed the pre-cast units to be slid into position beneath the suspended cables.

Taking into account other impacts on the programme the use of the pre-cast units ultimately saved 20 weeks and over £0.5m in cost. The use of the pipe bridge saved an estimated £0.73m.

A second key project requirement was to ensure the scheme was delivered before the commencement of the Rugby World Cup. A workshop to challenge the completion date/critical path and generate a time risk allowance was undertaken. This exercise flagged up an opportunity to implement a road

closure on one section of the scheme which enabled one of the new underpasses to be built in one phase and negated the need to widen the carriageway and build the structure in two halves. The closure reduced the overall programme by six weeks, reduced the impact on the public and significantly improved safety in design.

The success of these and all the other VE delivered were only possible through a combination of collaborative working and early identification of the opportunity. It allowed each idea to be developed and implemented without impacting on the programme and maximised the benefit.

Community Engagement and Employment Skills

Another key deliverable was the implementation of an Employment and Skills Plan (ESP). The early appointment of Balfour Beatty enabled our

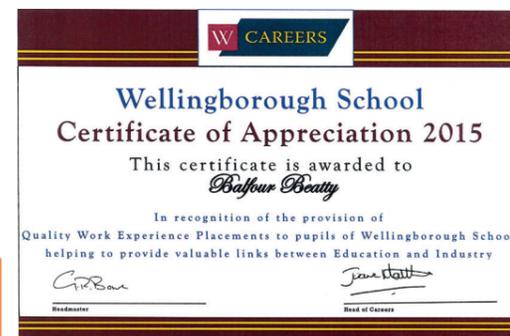
team to develop relationships with CITB, local colleges and local organisations prior to commencing on site and put measures in place aligned to the academic calendar. Some key highlights include:

- | | |
|---|---|
| <ul style="list-style-type: none"> » Six work experience placements for 14-16 year olds » One graduate employed » Two existing apprenticeships » Two new jobs created | <ul style="list-style-type: none"> » One work experience placement for 16+ year olds » Two new apprenticeships » One apprenticeship completion » Six NVQ's started and/or completed |
|---|---|

The project team embraced the skills training challenge and forged a relationship with the nearby Oakhill Secure Centre for young offenders. Several of the young people were given the

opportunity to visit the site to gain an insight into construction. Balfour Beatty's Construction Ambassadors also provided support with CV writing and interview training at the centre.

The site team also donated materials to assist the centre in providing skills training in their new construction centre.



"I found it most useful to have a timetable showing what had been planned for me and the range of subjects I covered was staggering in such a short time. Being able to go on site (A421) was the highlight of my week."

Isobel Bowie, student at Wellingborough School

Looking to the future:

- » Clear objectives and the involvement of all parties ensured a collaborative approach to the delivery of the project. Significant programme and budget challenges were tackled and solved together.
- » Further benefits could have been realised had a contractor been appointed earlier in the process. This would have allowed time to develop a more robust target cost and arrange mitigation measures to identify some of the key project risks.
- » Some excellent cost saving ideas were generated in the limited time available which ultimately ensured the successful delivery of this scheme.