



demonstration project



Station Street, Porth

Porth Relief Road

Contractor:	Costain
Project Manager:	Under NEC contract – Glamorgan Engineering Consultancy (GEC)
Client:	Rhondda Cynon Taf County Borough Council
Case Study Ref:	292
Project Number:	1332
Publication Date:	June 2007
Region:	Wales
Sector:	Local Government, Infrastructure
Contract value:	£59m
Project timescales:	September 2004 to July 2007
Themes:	Sustainability, integrated teams

The Porth Relief Road provides 7km of new road through a long established urban area with severe topographical and environmental constraints. Sponsored by Rhondda Cynon Taf County Borough Council, and with funding from the Welsh Assembly Government, it was the largest Local Authority highways scheme in the UK in 2005.

The majority of the road runs along the line of a disused railway beside the river Rhondda Fach and saw the creation of 11 new bridges, including a landmark structure, the Rheola 'bowstring' Bridge, in Porth itself.

Construction commenced on the 1st June 2005 and the Porth Relief Road was open to traffic on the 22nd December 2006. This date had been promised, not only at the start of construction, but during Costain's tender presentation in the summer of 2004. Although works were carried out from January 2007 to July 2007, these were in accordance with the accepted programme.

The collaborative approach of the integrated team has limited the change to the target cost to £10m. Principal reasons for additions have been utilities, unforeseen ground conditions and the effects of weather. Total 'savings' attributed to the benefits of integrated working are in excess of £25m.

The collaborative approach employed by the whole supply chain, involving Early Contractor Involvement (ECI) and the use of the New Engineering Contract, was at the heart of procurement and vital to the success of the project. The ECI process was adopted due to the desire of the client team, and following advice from Arup, to find a better way of working. It also required the appointment of a contractor sufficiently mature to deliver it.

"It is a matter of both pride and pleasure that this consultancy is part of the integrated project team for the Porth Relief Road."

Ian Germain, Director, Glamorgan Engineering Consultancy

Summary of benefits to the local community

Economic

- Employment for locals (£15m in additional salaries and wages)
- Leading to increased value to the local economy of £20m
- 80% of sub-contractor expenditure was local
- Budgetary savings

Social

- Improved road safety
- Reduced noise and dust pollution
- Improved reliability for public transport
- Community footpath and cycleway
- Reduced congestion/commuter time
- Support for regeneration of the area

Environmental

- Minimised transport movements
- Habitat creation
- River diversions avoided to preserve trees and habitat
- Cleaning of the river Rhondda Fach
- Relocation of impacted species
- Minimised tree-felling
- Avoidance of landfill
- Creation of Porth Cenotaph Square
- Surplus earthworks used for development plateaus for school and business.

Key Drivers

The main aims of the project were to improve the day-to-day lives of the residents of 2500 homes, blighted by large traffic densities and to improve accessibility into the Rhondda valleys. Porth stands at the junction of the two valleys and, as such, has acted as a funnel for traffic resulting in severe bottlenecks. A further related motivation for the scheme was the economic regeneration of the area by improving access into the Rhondda valleys.

Integrated working

"I have never been involved with a team that has given so much to achieve our collective aims, to open the Porth Relief Road – Safe and on time!"

Darren James, Highways Director, Costain

Early Contractor Involvement ensured the establishment of an integrated team from the start involving the client, designer (Glamorgan Engineering Consultancy), main contractor and cost management team (Chandlers KBS). The team was established as a relationship of equals with a philosophy of 'everything on the table' and 'no surprises' with team leaders emphasising collaboration, group problem solving, accountability, openness and honesty. Priorities were conveyed through the simple mission statement, "Safe and on time!" and difficult issues were addressed through facilitated workshops. The willingness was there and the collaborative culture was set by strong leadership from all sides. The only real barriers to success were that this was a new approach for some involved and there was some scepticism that there would simply be lip-service paid to the concept of integrated working. The only way to counter this was through consistency and delivery on promises. The stage was set by true co-location during value engineering – adjacent desks and tasks being carried out by the "best man for the job" regardless of his or her employer.

To manage traffic congestion during the project, a Traffic Management Plan was produced in partnership with the contractor's traffic management team, and with input from bus companies, emergency services and the local Chamber of Trade. This was maintained and updated throughout the life of the project and ensured work which would affect road traffic was carried out with full agreement of all concerned parties.



Train passing under completed Rheola



Eirw Junction

The 'value engineering' approach adopted by this integrated team was a constant feature throughout the life of the project and it did not simply concentrate on cutting costs but also improving quality. One particular result was the avoidance of the diversion of the local river, which contributed to a reduction of the initial budget by £18m. Through collaboration with Halcrow, Glamorgan Engineering Consultancy and Rhondda Cynon Taf Council, the roundabout was relocated into the side of the valley, away from the river. This solution required the excavation of over 60,000m³ of rock that was reused within the roadwork construction. Although the cut solution came across problems with unstable rock, the team worked together to ensure delays were minimised and the programme date was met.

The team agreed financial pain/gain share targets at the start of the project which were reviewed at each meeting and action plans agreed for sub-standard performance.

Stakeholder engagement

The client recognised the need to engage with stakeholders throughout the programme of work. The integrated team established a communication strategy nine months before construction began including input from all stakeholders. Communication with the Porth residents and road users was identified as a major challenge due to the local population density and the fact that the area had suffered such congestion in recent years. Keeping people informed and involved in decision-making led to easier progress and better decisions and Steve Evans, Operations Manager at Stagecoach in South Wales, commented that, "the information flow could only be described as excellent".

Issues with utility companies early in the project prompted the formation of the 'Utilities Alliance' under which workshops were held to get their views on the proposed programme and to minimise risk. The project team also employed dedicated utility co-ordinators to manage relations with the utility companies and to minimise delays from diversions. This approach increased buy-in from the utility contractors and, on the whole, performance was improved significantly bringing much more flexibility into their terms of engagement. Specialist sub-contractors were also engaged to work alongside major utilities to avoid utility strikes.

Costain employed a full-time Community Relations Officer who developed an excellent rapport with people in the local area and provided a primary means of contact for enquiries. The integrated team worked with the Education Business Partnership, Community Safety Partnership, the Institution of Civil Engineers and Institute for Highways & Transportation as well as students and staff from schools, universities and colleges. Residents in the project's vicinity were kept informed through exhibitions and presentations, with 1500 people visiting the Visitors' Centre.

There was a permanent exhibition which was open each Wednesday and provided a constant stream of up-to-date information. A process was set up to produce regular leaflets and newspaper articles to inform people about upcoming project phases. This included the production of quarterly issues of a project newsletter which was distributed to 7000 homes. Other useful communication tools were a project website, www.porthreliefroad.com which received at least 20,000 hits and a 24 hour helpline with a KPI that all queries would be answered within seven days which was achieved with 100% success.

In addition, the project was able to sponsor 50 local organisations including disabled and disadvantaged groups, sports teams including AFC Porth and Tylorstown Ladies RFC, historical societies and schools. The team also re-landscaped a mining disaster memorial, sponsored local concerts (classical and pop) and provided new sheds for allotments. Traffic management considerations had a major influence on the programming of the works and the decision to open the road early before all the works were complete was made in collaboration with all stakeholders. The project team also looked to engage with local schools to inform them about the project and to raise the profile of construction. This was achieved by making certain members of the team 'Construction Ambassadors' through the scheme run by ConstructionSkills, and running a programme of visits to schools in the area. A sports camp was also set up to engage children during the school holidays and deter them from going onto construction sites.

Sustainability

A close working relationship was established with the Environment Agency in order to address concerns regarding potential raised levels and pollution of the river. The Rhondda Fach river rises very quickly after rainfall, so the flood risk is significant. Salmon and otters live in the river so the risks to biodiversity from pollution were also important. The risks were avoided through good housekeeping and close management of construction activities. Very rigid programming and strict working methods approved by the Environment Agency allowed the relationship to flourish and certain restrictions were relaxed. The Environment Agency only allowed this to happen because they were confident in the team's approach. Following the clearing of the river by the project team, the Agency declared it, "cleaner since construction started than it has ever been".

Potential problems arising from off-site disposal of surplus material were alleviated by the creation of a 'plateau' on which it was proposed that a new construction would take place. Planning permission for the creation of the plateau was received in early 2007 with construction due to start in



Cymer Link

June of that year. This was made possible by collaborative working with the client and voluntary organisations and meant the avoidance of 250,000 cubic metres waste to off-site tips and 25,000 truck movements which would have resulted. An early initiative in the construction has led to 10,000m³ of surplus material being used to create a platform for a new primary school alongside the road, therefore avoiding the need to import material. In total, around 96% of waste by volume was reused or recycled.

Other achievements included minimising other transport movements and soil disposal during construction, made possible by design changes relating to road alignment and landscaping. Extensive traffic management schemes involved representatives from the Highways Agency, bus companies, Chamber of Trade and the emergency services.

In addition, tree-felling was minimised, with those trees that were removed being replaced ten-for-one. Imported topsoil was also avoided in favour of soil-forming materials to prevent the invasion of foreign species and to promote local plant growth. Both of these initiatives led to the creation of habitats for species including otters, bats and a variety of birds.

Training and local labour

As a consequence of the client procurement criteria, Costain also set itself local labour targets for recruitment and the provision of training for long-term economically inactive. In total, 46 local people were recruited to the project team, far out-performing the project's initial target of 30. Trainees were able to work towards a number of relevant qualifications, such as an HNC in civil engineering, a QS conversion course and an NVQ level 3 technical site support course. Everyone sat the CSCS health and safety test and obtained a card. The training was organised through a number of local training providers plus the Universities of Glamorgan and Bristol. City of Bath College was engaged for specialist subjects, with all staff achieving at least NVQ level 2.

The success of this approach to training on the project has seen Costain review its processes for future implementation of training programmes, with the Porth Relief Road project acting as a model for future activity. Furthermore, 80% of subcontractor expenditure, amounting to £26.4m, was placed with local businesses and led to the creation of at least three new companies. Four of the six largest sub-contractors on the project were based within the Rhondda Cynon Taf County boundaries.

Two Welsh SMEs, Walters UK (which carried out earthworks) and Fairfield Mabey (structural steelwork), were engaged as suppliers on the project and have grown as a result of the work they were awarded.



Porth Cenotaph Square

Lessons learned

- 1) Consult early: the success of community engagement will allow others to demand similar performance from other contractors
- 2) The project has confirmed that partnership works
- 3) Realisation of broad economic impacts should encourage other clients and funding bodies to adopt similar measures
- 4) Economic multiplier impacts are being communicated to other clients and partners
- 5) Training on the project has acted as a model for future activity
- 6) Sustainable options can lead to economic advantages.



Rheola

"We are delighted to announce the opening of the road on schedule despite some dreadful weather in recent weeks. I would like to congratulate Costain and our entire partnership team for a wonderful achievement. We now look forward to the road acting as a catalyst in the regeneration of the Rhondda valleys."

Councillor Eudine Hanagan, Cabinet Member for Better Public Services and Transport, Rhondda Cynon Taf County Borough Council

"The Council is proud to be part of a very successful partnership which has produced results that would not otherwise have been possible...this will become a benchmark against which future projects will be measured."

Mark Adams, Head of Construction Projects, Rhondda Cynon Taf County Borough Council

"...the information flow could only be described as excellent."

Stephen Evans, Operations Manager, Stagecoach in South Wales

"We have never before worked on a project where partnering feels so natural...the viewpoints of all team members are aired and acted upon, potential problems are shared and resolved by the parties best equipped to do so."

Nick Richards, Operations Director, Walters

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