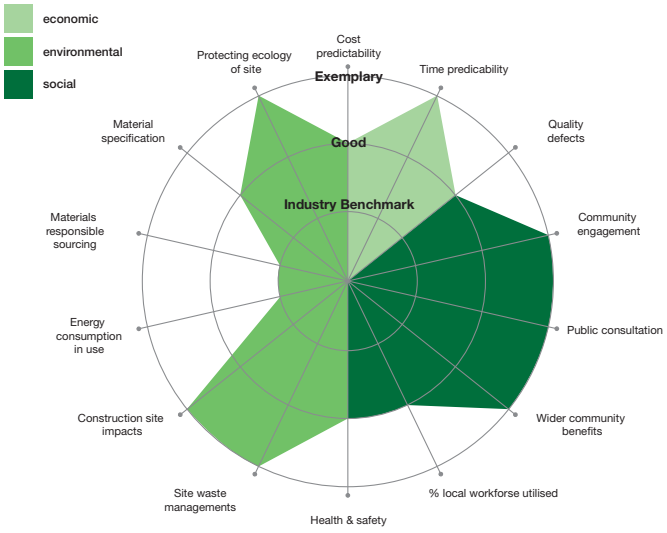
A477 Improvement: St Clears to Red Roses

The A477 from St Clears to Pembroke Dock is one of the main links from the M4 motorway into Pembrokeshire and on to Ireland. It forms an important part of the Welsh Government's strategic road network. This 9.3km scheme will bypass the villages of Llanddowror and Red Roses, cross the River Hydfron and pass through several environmentally sensitive areas including the Taf Valley. It will greatly improve the alignment of the road, raise safety standards and improve journey times and journey time reliability.

The existing trunk follows a sub-standard alignment for most of its length with very few overtaking opportunities and many features well below current design standards. Initial feasibility studies indicated that upgrading the existing route would not be economically viable or practical, as it would disrupt surrounding communities and permanently sever certain landholdings. These issues were avoided by the proposed new road alignment to the north of the current route.

A key benefit to the local community is that the new road will divert significant volumes of traffic away from small villages whose roads were not designed to sustain such traffic, particularly haulage vehicles coming in from the ferry via Pembroke. It will also help relieve congestion during busy holiday periods.

This case study aims to demonstrate how early contractor involvement (ECI) can benefit the delivery of key aspects of a project, including addressing sensitive environmental objectives, engaging with the local community and supporting cost and time certainty. The study also sets out the procurement strategy to engage the contractor earlier into the delivery process, how risks are managed and how costs are controlled from such an early contractor procurement stage.



project details

employer:	Welsh Government
designer:	Ramboll UK Ltd
contractor:	SRB Civil Engineering UK Ltd
value:	£47m Construction Cost (including land)
contract:	NEC Option C Target cost with Activity Schedule
procurement:	Early Contractor Involvement

what is an Exemplar project?

An Exemplar is defined as 'something worthy of being copied'. The purpose of the Exemplar programme is to identify what actions have taken place at key stages of a project that has led to a successful outcome, so that this learning can be adopted on other projects. 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.

what will make the project successful

Early involvement of the Contractor has been a key feature of this project. This approach has provided far more time to build an integrated delivery team including the client, manage risks, consider design issues, engage with local communities and stakeholders, plan to add value through local employment, training and business opportunities and reduce waste. This approach has already brought a range of benefits, including:

- Direct community interaction from the earliest possible stages, allowing the most appropriate design solution to go forward for Public Enquiry with the knowledge that the majority of stakeholders supported the proposals
- Additional time to better target and consider sustainability objectives from the outset, including minimisation of land take, balancing cut and fill activities, conservation of biodiversity and protection of local watercourses
- Advanced consideration and management of risks leading to greater cost and time certainty

notable achievements

- The initial tender process placed a significant focus on the quality of delivery and proposals to engage with the public, with full costs derived only after the contract was awarded
- The scheme commenced on site within a month of the project being approved following Public Enquiry
- The project has been awarded a CEEQUAL 'Excellent' rating during the interim award stage
- Significant effort has been made to balance cut and fill operations so that no import or export of material is necessary from the site
- Innovative water purification techniques have been specified on site to protect nearby water sources during construction
- The project team have worked to retain ecological features beyond what was initially required of them by the Statutory Authorities
- Detailed consultation and ongoing communication initiatives have helped create acceptance of the scheme with the local community
- The project team aim to deliver additional benefits to the community throughout the scheme wherever possible and to leave a positive legacy after the new road is completed

economic considerations

The initial tender process placed a significant focus on the quality of delivery and proposals to engage with the public, with full costs derived only after the contract was awarded

A key objective for the client was to gain acceptance of the scheme from the community to enable a smooth delivery process. How quality and community engagement were to be addressed were therefore fundamental aspects of the contractor selection process. The project is based on open book costing, with regular auditing, which helps to build trust between the client and the delivery team and keeps accurate track of ongoing costs. There is also a 50/50 shared risk between the client and the contractor if the scheme runs over budget, so there is motivation to continually strive to keep costs on target.

The project was separately priced for each of the key delivery stages based on certain assumptions, with the detailed price then worked up alongside the client once the contract was awarded. The client is continually kept up to date with costs and given early warning of any issues that may cause costs to change so that the team can discuss options going forward.

The scheme commenced on site within a month of the project being approved following Public Enquiry

The client's procurement strategy clearly identified ECI as a key driver to project success. Contractor input during the development of the proposed scheme and retention of the project team into the construction phase meant that no time was lost after the scheme went through Public Enquiry and targeted delivery dates could be maintained. Traditionally the client would have lost time at this stage appointing a contractor who would have then had a steep learning curve in "picking up" the project. Typically 9-12 months could have been lost. Also, due to the initial investigative, consultation and design works that had taken place with the same project delivery team in advance of the Public Enquiry, there was significant confidence in the deliverability of the scheme.

During construction, the project programme will be continually reviewed and revised as necessary to ensure works are progressing so that the planned scheme completion date will be achieved.

environmental considerations

The project has been awarded a CEEQUAL 'Excellent' rating during the interim award stage

The project has been registered with the Civil Engineering Environmental Quality Assessment Award scheme (CEEQUAL). The target is to achieve an 'Excellent' rating on the scheme overall, which it appears set to deliver based on performance during the initial interim award stage.

To manage the process and ensure the project attains the highest possible standards, the project team has a number of CEEQUAL Assessors within both the design and construction teams who act as sustainability champions for the scheme. The CEEQUAL award will demonstrate the significant measures that have been adopted to reduce the overall environmental impact of the project.

Significant effort has been made to balance cut and fill operations so that no import or export of material is necessary from the site

As well as managing the volume of site won materials on a cut and fill basis (a key benefit from having such early contractor involvement to influence route alignment) the delivery team has been able to minimise haulage distances between points of excavation and points of placement, thus reducing the energy and emissions associated with vehicle movements. The use of site won materials for the pavement construction has also been maximised to avoid importing material for cement bound layers and drainage stone.

Innovative water purification techniques have been specified on site to protect nearby water sources during construction

Strict targets have been set regarding the protection of nearby watercourses during the development. The project is therefore trialling an innovative method of dealing with surface water runoff from the site's clay ground. The technology has been carried across from hydro industries and is similar to waste water treatment plant technology allowing sediment to drop out of the runoff water, leaving good quality, clean water that can be utilised on the site or allowed back into the water table after attenuation.

Daily inspections and photographs will be taken at each discharge location to record water quality. Sampling of the watercourses both upstream and downstream of the works will be undertaken weekly to ensure the measures in place are working well.

The project team have worked to retain ecological features beyond what was initially required of them by the Statutory Authorities

Comprehensive pre-construction surveys were carried out on the proposed site with a Construction Environmental Management Plan drawn up to determine how various environmental aspects will be managed. The upfront time afforded for detailed planning through ECI has allowed the project team to build up good relations with statutory bodies, eg Countryside Council for Wales (CCW), which has led to the retention and relocation of additional ecological features such as hedgerows. Additional planning time has allowed the team to achieve a greater impact within the budgetary constraints.

social considerations

Detailed consultation and ongoing communication initiatives have helped create acceptance of the scheme with the local community

Involving the contractor and designer in the earliest stages of the project helped steer and manage the acceptance of the scheme by the local community.

A preferred route was initially put forward to the contractor by the client. The design team then developed this further and met with local land owners and community representatives to help shape the design and develop the programme from the outset rather than potentially dealing with lots of revisions at a later stage once wider public consultation had taken place.

The community have been given many outlets (see below) by which to raise any views or concerns they may have. Once advised of a particular stakeholder concern or requirement, the team log this in a Stakeholder Register and prepare potential solutions for review and discussion :

- A dedicated Public Liaison Officer has been employed for the scheme to manage engagement activities and provide a constant feedback link with the community. This continuous dialogue with the various stakeholders and in particular the agricultural based community will help generate support for the project by managing aspects comprehensively so as to avoid issues in the delivery of construction works
- Regular Local Authority Liaison Committee meetings are held to provide a platform for local issues to be identified and addressed. Members of the Local Community Councils, Local Authority and Welsh Government attend the meetings
- A newsletter is provided to local people and a specific project website has been set up. A text service has also been introduced for local people who may be affected by the works, explaining how upcoming traffic management activities may affect their journeys. People can subscribe via the project website and fliers informing about the service are put up in local garages, etc.
- A 3-dimensional 'fly through' model was developed to better illustrate the development to stakeholders during consultation. A consultation room has been set up on the site to provide this and further information. The project team have found this to be invaluable as this visualisation improves the understanding of stakeholders and allows them to contribute more constructively to the process.

The project team aim to deliver additional benefits to the community throughout the scheme wherever possible and to leave a positive legacy after the new road is completed

While the new road itself will ultimately divert significant volumes of traffic away from small villages and benefit local households and landowners in particular, the project team are keen to make a positive impact on the local community during the construction period. Early involvement of the contractor means that they have had more time up front and more cost flexibility to establish meaningful initiatives that will have a real benefit to locals. The contractor has also enrolled the project in the Considerate Constructors Scheme (CCS) and is aiming for high scores across all issues that it assesses.

A community benefit programme has been developed and actions are taken to support local organisations where activity will leave a legacy after the close of the project. Support is targeted primarily at organisations whose members or participants live locally and are affected by construction activity.

Actions will be taken where possible to allow material that may be a by-product of the construction activity to be donated or made available to local residents or organisations that would be able to make use of material in a sustainable way. For example, woodchip, firewood and some excess topsoil will be provided to local residents where it can be delivered or taken safely and sustainably.

The project team will work with local schools to inform and educate pupils about the project and actively promote examples of best practice in understandable terms, e.g. measures taken to protect and enhance the environment. They will also raise awareness of potential careers in the construction industry and about the importance of safety around construction sites, using the CCS mascot Ivor Goodsite.

Although no formal targets have been set in the contract, the project team will also identify opportunities for providing a legacy for the local community through training and employment initiatives, in line with the i2i toolkit. There is also an ambition to use as much local labour and sub-contractors on the project as possible, focussing particularly on the South West Wales region from Pembrokeshire to Swansea and Neath.

Community Benefits will be measured using the Value Wales Community Benefits Measurement Tool.