

Statws/Status:

Cyfrinachol / Confidential



Adroddiad Adolygu Dylunio: Design Review Report:	23 April 2008
Dyddiad Cyfarfod / Meeting Date:	15 April 2008
Lleoliad/Location:	Magor to Castleton
Disgrifiad o'r Cynllun Scheme Description:	New M4 motorway
Cleient/Asiant: Client/Agent:	WAG [Matthew Enoch, Timothy Dorken]
Developer/Datblygwr:	n/a
Pensaer/Architect:	n/a
Ymgynghorwyr Cynllunio: Planning Consultants:	Arup [Richard Sanders, Simon Lawrence, Andrew Armstrong, Andrew Huckson, Chris Madigan, Simon Power, Amanda Murdock] Safle [Wiard Sterk]
Awdurdod Cynllunio: Planning Authority:	Newport CC MonmouthshireCC
Statws Cynllunio: Planning Status:	Statutory Orders not yet published
Y Panel Adolygu Dylunio/ Design Review Panel: Alan Francis (cadeirydd/chair)	Mark Hallett

**Cindy Harris (swyddog/officer)
Wendy Richards**

**Ed Colgan
Kieren Morgan**

Lead Panellist:

Mark Hallett

Declarations of Interest:

Wendy Richards stated that she is a Board member of Safle

Ed Colgan stated that as an ex-employee of Arup he has worked on earlier versions of this project.

Cyflwyniad/Presentation

This scheme was previously reviewed by DCFW in November 2007 and it was agreed then to hold a series of dedicated reviews following different stages of the design development. The project team anticipates that Draft Orders will be published by the end of 2008 and that a public inquiry would be held mid 2009, with a start on site some time towards the end of 2010, or early 2011.

The Panel was informed that the procurement method was still to be decided. It was most likely to be a form of PPP, but there was the possibility of directly financed procurement. The Outline Business Case, which is due to be completed in the near future, will consider these issues further.

Ymateb y Panel/Panel's Response

The agenda for this meeting was structured around five main headings:

The Project Team's response to the previous Design Review

At the last review the Panel raised the following issues which we thought needed to be addressed:

- Insufficient 3D analysis and photomontages. The team stated that these were being produced.
- The setting up of distinct reviews. This process has begun with this meeting
- The need to embed public art into the design and landscape strategy. A strategy document has been commissioned from Safle
- The appropriateness of a 'family of structures'. The project team intended this to refer particularly to the overbridges in the Levels. They would like to concentrate on the River Usk crossing at this meeting.

- The Panel's comment that the bridge examples shown appeared heavy and utilitarian. The Project team accepted this as fair comment and stated that they were under review.
- The importance of a lighting strategy was acknowledged. The team are looking at options, and considering the overlap with public art and landscape strategies.
- We urged that the CEEQUAL method of environmental assessment be used to benchmark the project. This suggestion has been taken up by the team and Arup are now training in-house CEEQUAL assessors.

Design Champion

In response to our recommendation to appoint a Design Champion for this project, the team have decided to set up a Design Champion Board, because of the multiple areas and specialisms involved. This will be led by Chris Jofeh of Arup and will include experts in bridges, highways and landscape. The function of the Board will be to ensure and protect exemplary standards of sustainable design and construction, to advocate quality and value, and to challenge the team to justify decisions. Their role will be maintained through the detailed design and construction stages.

The Panel welcomed the setting up of this Board, but we felt strongly that it needed some external independent input, to pose the really difficult questions. Whilst we appreciated the aspirations for sustainability and high quality construction, we were concerned about the lack of ambition for design excellence. We thought that the Board should have specific architectural or design input from an internationally acknowledged bridge architect, especially in respect of the Usk crossing. The team acknowledged that this could be procured as a separate commission, and also pointed out that the Board could co-opt members. It was confirmed that minutes and/or notes from Board meetings would be presented at future reviews.

River Usk Crossing

The team reported that the following options have been investigated and compared at a 250 metre span. All are feasible in steel or concrete:

- Option 1 – variable depth girder [base case]. This is near to the practical limit for 250m, but could span a greater distance in steel or possibly in lightweight concrete. Indicative costs for this option are £200m. The height would be 27 metres to the underside plus a maximum of 14 metres depth of girder. However, it may have to rise to 47 metres overall for clearance of shipping, not counting the balustrade.
- Option 2 – extradosed viaduct. Indicative costs £225m
- Option 3 - cable stayed viaduct. Indicative costs £273m.

It was accepted by the team that longer spans than 250m would be possible for the extradosed and cable-stayed options, but that no comparative costs had been estimated for these. The Panel suggested that the 250m span was in any case somewhat short for a cable-stayed solution and that a longer span might also benefit by

removing piers from the river. We also discussed the possibility of using a pair of single masts for the cable-stayed option (whilst acknowledging that this would entail a greater deck width), a single asymmetric mast, and an asymmetric bowstring arch construction. All the above should be considered in a review of the crossing options, in conjunction with the Design Champion Board. The Panel stated that in our view, the height of the bridge was not an issue and indeed could be an asset.

The design and elegance of the bridge needed to be considered in detail and should refer to schemes illustrated within the CV of Angus Low, on the Design Champion Board. The Panel felt that it was important that the 'bridge' was identified separately from the approach ramps and that the pillars were elegant and contemporary. Newport has a variety of bridges crossing the River Usk, from very contemporary to historic, and the aspiration should be a clear vision to design and contribute another award winning contemporary structure to the City, as a new gateway to the region.

The Panel pointed out the danger of eroding quality through the procurement process, especially if a base case was available as the least cost option. This might be avoided by making the base case as prescriptive as possible. We advised the team to avoid assessing a 'worst case' solution. We thought that it would be crucially important to structure the process so that design quality is protected. As a key gateway into Wales the importance of this project for attracting inward investment should not be underestimated. The Panel believe this could be a real chance to create a very special structure and felt the team should embrace that design opportunity openly.

Landscape Proposals and Public Art Strategy

The landscape strategy is based around five character areas along the length of the route. Through the Levels [areas no 2 and 4] the road will mostly run on a two metre high embankment, with drainage ditches, reens and berms incorporated, as part of a sustainable drainage system. Planting will be at carriageway level or down the embankment, as appropriate. There will be substantial cuttings at each end of the route [areas 1 and 5] and encroachment into old slag tip areas close to the Llanwern site. The appropriate mitigation will be provided to give protection to the existing communities and those residential receptors identified as having adverse visual impact from the new road. Mitigation will be provided through planting and acoustic mitigation will be incorporated using acoustic barriers or screens.

The draft public art strategy demonstrated the opportunity to integrate art into structures and landscape [existing and newly formed]. There would be a major impact on existing communities and public art would provide an opportunity to engage with those communities and stimulate a response. The possibility of landmark works [Gateway to Wales] and of temporary commissions, was discussed. It was pointed out that artworks could act as a catalyst for other developments, such as steelworks and dockland regeneration. We thought that there was a case here for making a bold

statement and that the artwork should reflect the scale of the existing landscape and the extent of the intervention.

The Panel was informed that there was no separate public art budget and that any expenditure in this area would have to come from within the existing budget. We considered this to be a fundamental flaw and thought that a ring fenced percentage was absolutely necessary to ensure the delivery of an integrated public art strategy, or else a prescriptive art proposal should be developed at this stage. This needs to be enmeshed with the developing landscape and engineering strategy now, so that it cannot be unpicked. It will be important to identify and distinguish between the aspects which are integral to the engineering solution, and those which are desirable.

The Panel asked about the interface with the current M4 widening works between junctions 29 and 32, and we were informed that two kilometres of the newly widened road will need modifying eventually. It was clarified that the team were intending to retain mature vegetation at the Castleton junction

Environmental Masterplan Issues

The team stated that they were liaising with stakeholder groups, and had set up an Environmental Liaison Group including CCW; the EA; CWIDB; Cadw; and Newport, Cardiff and Monmouthshire Councils.

The sustainable disposal of stormwater drainage runoff is an important part of the design strategy. The proposal is to discharge highway drainage to channels with the greatest flow and therefore ability to dispel contaminants. The 11 treatment areas comprise settlement ponds and constructed wetlands, and will involve considerable land take. Access would need to be controlled and fencing may be necessary. However, the Panel would like to see them integrated into the landscape, and made at least partly publicly accessible, using the opportunity to educate the public on the purpose and function of these areas. Vehicular access would be necessary for maintenance. The team pointed out that this was to date the only example in the UK of a major new road crossing an SSSI, and these were therefore unique challenges.

It was confirmed that the team's aspiration was to achieve a CEEQUAL Excellent rating. The Panel would like to see a minimum percentage of recycled materials specified, and a clause to provide training opportunities included in the tender documents. Locally sourced materials should be used for plant material, and seed collection where possible would be an important part of this. Solar power would be used for remote signs and wind turbines are envisaged for water treatment areas. The detailed design, extent and form of the acoustic screens is still to be determined. The team recognised that this was an opportunity to provide innovative, contemporary structures within the road corridor.

The existing M4 motorway will remain in use and is likely to remain heavily trafficked, having the advantage of connections to the valleys. However, large sections are currently sub-standard, and major renovations which have been deferred, are now becoming urgent.

For the scheme as a whole, the team raised the issue of striking the optimum balance between a necessary degree of flexibility in the design development and an appropriate level of prescription, in order to achieve the highest standards of design.

Crynodeb/Summary

The Panel was very pleased to contribute to the ongoing review of this important project. We appreciate the efforts made by the team to respond to our previous recommendations. In summary:

- We strongly recommend that an independent, internationally acknowledged bridge architect is sought for inclusion on the Design Champion Board.
- With regard to the River Usk crossing, the base case needs to be enhanced to maximise design quality. A high degree of prescription will be necessary to meet the client's aspiration for this structure and the team need to embrace the idea that this could be a world-class structure.
- The landscape proposals, public art and environmental strategies need to be integrated, and an adequate budget identified. The essential components should be identified along with a strategy for delivery, and again we think some prescription will be necessary. We would like to see further development of the character areas.

Diwedd/End

NB A Welsh language copy of this report is available upon request.