

A465 Heads of the Valleys Dualling Abergavenny to Hirwaun
Section 2 – Gilwern to Brynmawr
Public Accounts Committee session 28 September 2020
Welsh Government Written Evidence Paper

Context

1. The scheme to upgrade the A465 between Gilwern and Brynmawr (Section 2) is part of a wider project to dual the A465 between Abergavenny to Hirwaun. The project was split into six sections to enable a phased delivery which has been ongoing since 2000. To date three sections have been built, while delivery of this scheme will complete a continuous dual carriageway to Dowlais Top.
2. The Section 2 scheme has been on site since the start of 2015 and has been the subject of significant programme delays and cost increases. Wales Audit Office prepared a report in February 2020 with the interim findings into the problems faced by the scheme.

Procurement Philosophy – Early Contractor Involvement

3. Industry-standard best-practice for large highway infrastructure projects over the last 15+ years has included the use of the Early Contractor Involvement (ECI), Target Cost, design and build form of procurement. This form of contract is used extensively in the UK and has been Welsh Government Transport Division's preferred procurement route for large, complex infrastructure projects. It has been implemented successfully on a number of major trunk road projects delivered in Wales in recent years.
4. In the Public Accounts Committee's June 2015 inquiry report on the *Value for Money of Motorway and Trunk Road Investment* the benefits of the ECI contract were acknowledged and a recommendation made that expansion of the ECI model should also be considered for lower value schemes.
5. A complicated scheme such as Section 2 is, in theory, well suited to an ECI contract provided the contractor makes best use of the design development stage to undertake the necessary investigations to understand the site constraints, the methods required to build the project and the level and nature of the risks to delivery.
6. The ECI approach for this scheme required the appointment of a contractor to undertake:
 - Part 1: Key Stage 3 (Outline Design & Environmental Impact Assessment) and Key Stage 4 (Statutory Process), and on satisfactory completion of this work
 - Part 2: Key Stage 6 (Construction & aftercare).
7. The procurement process for this scheme encompassed both parts 1 and 2 (design and construction) of the ECI process simultaneously.
8. The Section 2 contract with Costain is a Target Cost contract. The Target Cost represents what Costain expect it to cost to provide the agreed goods or services as

defined by the project scope. Under the contract Costain are paid their actual costs (out-turn) with a contractual adjustment, known as pain/gain mechanism, apportioning over-spends/ cost savings with both Welsh Government and Costain taking a portion of the difference between the contractor's actual out-turn costs and the Target Cost. The allocation of cost is set out in the contract.

9. The intent behind the pain/gain mechanism is to incentivise both parties to work together to mitigate delays or overspends where possible. As a result of a revision to our contracts, Section 2 allows Welsh Government to apply these financial penalties as construction progresses rather than seek to cover them at the end.

Increase in costs from the approved budget

Section 2 Tender Evaluation and Contract Award

10. As part of their tender, Costain proposed some significant changes in their tender design which included features which have since formed a significant part of the disputes between Welsh Government and Costain. These included:
 - re-configuration of Brynmawr junction to encroach into the site of the old Anacomp factory. When the design was developed in the 1990s, the Anacomp Factory at Brynmawr was operational. By 2011 the factory had closed and the building demolished. Costain design proposed a change in the configuration of the Brynmawr junction such that it almost fully occupied the Anacomp site.
 - replacing the Coed Ffyddlwyn Viaduct with a retaining wall. The specimen design included a viaduct carrying the A465 along the valley. Costain proposed a retaining wall 200m long and 19m in height, known as RW14.
11. Costain's tender price was based on their tender design which included these changes.
12. The Welsh Government appointed Costain as the ECI contractor in June 2011 following a competitive procurement in accordance with the Public Procurement Regulations. The contract took into account a range of value considerations and was not awarded to the lowest price tenderer. Costain are supported in the delivery of this scheme by Atkins and Jacobs (was Halcrow at the time of award) to provide engineering design services and RPS to provide Environmental support. The appointment of Costain in 2011 covered the Part 1 contract with a clear intention that appointment for the Part 2 contract would follow.
13. The tendered sum (Initial Target Cost) formed the basis of the KS6 (construction) Adjusted Target Cost which was developed and refined as the scheme progressed through the design and Statutory Process taking into account design development changes constituted as evaluation events (see below).
14. There was a hold point in the contract between Parts 1 & 2 which enabled either the Welsh Government or the contractor to terminate the contract without penalty.
15. This hold point allowed Welsh Government for instance not to proceed with the project in the event that the construction Adjusted Target Cost did not demonstrate Value for Money, or that the scheme no longer met Ministerial priorities.

16. It also enabled Costain not to enter into the construction contract, without penalty, should they have felt that, based on all the information they had gathered, their projected out-turn cost would not be realistic.
17. Costain and Welsh Government were content to proceed on the basis of the agreed Construction Adjusted Target Cost and the construction contract to deliver this project was awarded to Costain in December 2014.

Target Cost, Scheme Budget and Contract Management Framework

18. Corderoy were commissioned by Welsh Government in 2010 to develop a budget construction cost estimate for the scheme at £139m (excl VAT) at 2010 prices based on specimen design. £139m at 2010 prices would be £207m at 2020 prices.
19. Also in 2009, Arcadis (then EC Harris) were appointed as Welsh Government's Employer's Agent for the scheme. Arcadis used the construction cost estimate prepared by Corderoy to form the basis of the Original Budget of £193m (KSA3) at 2011 prices, which inflates to circa £220 at Q4 2014 prices, and £287m at 2020 prices.
20. While Costain's tender sum in 2011, based on their tender design, was lower than the construction cost estimate, the overall scheme budget was retained with the difference between the two costs kept as risk contingency and used to absorb the majority of the changes in the scope of the scheme without an increase in the overall budget.
21. Additional scope or changes included within Part 1 contract were largely absorbed in the final scheme budget at construction contract award, which saw the budget increase in real terms from the original budget of £220.6m (£193m inflated to 2014 prices) to £223.2m when the contract was awarded.
22. Changes in scope during the Part 1 contract (design development, environmental impact assessment and Statutory Process) included the following:
 - an increase in the cost of Statutory Undertaker diversions required for the scheme. This was primarily as a result of Costain's proposed tender design change at Brynmawr where a number of key SU apparatus was present.
 - the provision of slip road at Gilwern. This was added to the scope of the scheme following feedback from stakeholders and traffic modelling work.
 - amendments to the design at Brynmawr and Saleyard as a result of elevated status to a European designation of the Tilio Acerion habitat at Brynmawr and to avoid a new bat roost respectively. Both these were unforeseen at tender stage.
 - an additional footbridge at Gilwern following a recommendation from the report from the independent inspector as a result of the Public Local Inquiry.
 - the construction programme extension as a result of these increases in scope.
 - a VAT increase from 17.5% to 20% introduced in 2011.

23. In accordance with the contract the impact of these changes were deemed by Arcadis to be evaluation events and where appropriate added to Costain's Target Cost and programme. Not all change during this period amounts to an evaluation event. Only areas where the Welsh Government gives an instruction to change the scope (known as the Works Information or Specification), changes one of the mandatory assumptions Costain were asked to make at tender stage or Costain taking on a risk that was deemed to sit with Welsh Government at tender stage.
24. Arcadis's role as Employer's Agent has been to provide commercial and technical advice to Welsh Government in the delivery of both Part 1 and Part 2 of the contract.
25. Arcadis held regular meetings with Costain during the pre-construction period to review and challenge the development of the Target Cost and the construction programme and recommended to Welsh Government that it was realistic.
26. The Project Manager (PM) is managing the construction contract on Welsh Government's behalf. This included accepting Costain's original construction programme which was based on the outline design. The PM manages the commercial aspects of the contract administration including:
- review of work done to date, Costain's costs and certification of payments.
 - Risk Management in accordance with the Value for Money Manual
 - managing and administering change under the contract including recommending to Welsh Government on Compensation Events
 - reviewing, challenging and accepting Costain's programme.
27. Under the terms of the contract Costain are responsible for the design. Arcadis's technical role in this process is limited to design assurance recommending to Welsh Government that the design proposals prepared by Costain met the Welsh Government's requirements, and are designed in accordance with the correct Standards. Their role was not to check Costain's self-certified designs.

The disputes between WG and the contractor

28. In line with best practice of actively managing risks and attempting to establish clarity on the actual project position, Welsh Government took the unusual step for a client and began formal dispute proceedings in early 2018 to ensure Costain are only paid what they are entitled to under the contract.
29. The Welsh Government's contract with Costain is based on the industry-standard NEC3 suite of contracts which adopts a two-staged approach to dispute resolution which is set out in the contract. The first of these is adjudication, and if the dispute is not finally resolved at this stage, the dispute can be elevated to either arbitration or litigation as the second step.
30. To date there have been nine disputed matters referred through adjudication with two of those then being progressed to arbitration. These have generally been around the interpretation of the contract. Welsh Government has been successful in four of these adjudications, with Costain successful in two and with two others to some extent split.

Both arbitrations have primarily gone the way of Welsh Government, the most recent one likely to have a significant impact on moving the contract interpretation towards the position that Welsh Government has adopted throughout.

31. The table below provides details of the issues that have been in dispute and the decisions received to date. It is an update on the table in the WAO Report including decisions since the report in February 2020.

Dispute	Summary and outcome
Anacomp (one adjudication)	The project required excavation within the site of the former Anacomp factory in Brynmawr, which was demolished in 2008. When Costain started working on the site in early 2015, it discovered asbestos. Costain claimed a compensation event ¹ under the contract to increase the target price and extend the date for completion in relation to this issue. The Welsh Government commenced the adjudication regarding Anacomp and the adjudicator decided in favour of Costain .
Ben Ward's Fields (one adjudication)	Costain acquired by private agreement an old open cast site to the south of the A465 known as Ben Ward's Fields. This important site is the location where large quantities of earth and rock taken from the construction site are brought for disposal or, where possible, processed before being reused in the project. Costain had submitted a precautionary notice of a compensation event under the contract in relation to this matter. The Welsh Government commenced the adjudication regarding Ben Ward's Fields, which Costain did not defend. In the circumstances, the adjudicator decided in favour of Welsh Government .
Retaining walls (four adjudications and two arbitrations)	The project involves the construction of 89 retaining walls. For a large number of these walls, Costain has encountered various issues that either inform the design and/or impact during construction (including more difficult ground conditions and topography than expected). Consequently, elements of the design developed by Costain in the Part 1 (KS3/4 professional services) contract and contained in the Works Information within the Part 2 (KS6 design and build) contract are considered by Costain to be impossible and/or illegal to construct in compliance with relevant standards/regulations or have been changed for other reasons. The changed designs are costing significantly more to construct. The issues are complex and the Welsh Government and Costain have taken different positions about what has caused the increase in cost. However, key to both parties' position is the allocation of risk under the Part 2 (KS6 design and build) contract. To date, the Welsh Government has commenced adjudications regarding two retaining walls (firstly RW08 and then RW02).

¹ Compensation events are events defined in the Part 2 detailed design and construction contract, which if they occur and do not arise from the contractor being at fault, entitle the contractor to be compensated for any effect the event has on the prices and project timeline.

Costain has commenced two adjudications regarding another retaining wall (RW14). The adjudication decisions provided some clarification on how the contract should be interpreted. However, dispute still remained on both the contractual principle and the cost and programme impacts of design changes.

In 2019 The Welsh Government commenced an arbitration as the final dispute resolution process set out in the contract, which was associated with a RW08 retaining wall adjudication point previously found in Costain's favour.

The arbitration award split responsibility for the Works Information between the Welsh Government and Costain and was a partial (but in WG view substantive) reversal of the earlier adjudication decision.

The award resulted in Costain issuing a regulatory notice / trading update to the markets revising their anticipated 2019 full year trading performance (https://otp.investis.com/clients/uk/costain_group/rns/regulatory-story.aspx?cid=1001&newsid=1352233)

However in subsequent discussion, WG could not reach agreement with the Contractor on the wider application of the RW08 award for the remaining retaining walls on the scheme. As a consequence, in April 2020 WG referred the earlier RW14 adjudication decision (decided in favour of Costain around contract principle) to arbitration.

The award was received on 2nd September 2020 confirming that Welsh Government's interpretation of the contract prevailed on all substantive matters.

This decision resulted in Costain again issuing a regulatory notice (https://otp.investis.com/clients/uk/costain_group/rns/regulatory-story.aspx?cid=1001&newsid=1411416) confirming the arbitrator's decision;

- (i) *"...found that responsibility for the design information rests with Costain and, consequently, the additional costs associated with the building of the retaining wall is not a compensation event under the Contract."*
- (ii) *"...has implications for the responsibility for design information under the whole contract and therefore Costain's ability to recover these costs."* and
- (iii) *"...the Group's half year results for the period to 30 June 2020 will include a charge to the income statement of c.£45 million to adjust the revenue recognised based on*

	<p><i>the level of cash received to date under the Contract.”</i> and (iv) <i>“Costain will continue to fulfil the Company's obligations under the Contract, with completion scheduled in 2021.”</i></p> <p>Concurrently with the RW14 arbitration, Costain began their own adjudication in June 2020 on the Project Manager’s assessment of the quantum (cost and programme) implications of the original RW14 adjudication. Costain claimed that the Project Manager’s assessment was significantly lower than their assessment. Welsh Government instructed independent programme and cost experts to support us in the process. As a consequence Costain were awarded only a marginal increase to the Project Manager’s implemented sum meaning Welsh Government’s defence of the referral was largely successful. The subsequent RW14 arbitration award (September 2020 see above) has however reversed the earlier adjudication decision and this revised quantum is now nil.</p>
<p>Statutory undertaker (utility supply) works (one adjudication)</p>	<p>Costain claimed that the scope and duration of statutory undertaker diversions changed and that this led to other associated delays and additional costs. Costain commenced an adjudication against the Welsh Government. The adjudicator decided in favour of the Welsh Government.</p>

32. The discovery of Asbestos at the former Anacomp Factory, Costain’s inability to secure Ben Ward’s Fields or a suitable alternative for earthworks processing, and the changes to the scope of the Statutory Undertaker works have all been critical factors affecting the programme and costs. However, the main area of dispute on this scheme has been around the principle of who owns the design, scope and specification for the works (known as the Works Information) and as a result who should be liable for the cost increase and programme delays associated with any changes to it.
33. It has always been Welsh Government’s position that as design and build contractor Costain prepared and provided the design during the Part 1 contract they were then responsible for developing their design during Part 2 and building it. The arbitrator in his decision on 2nd September 2020 agreed with that position.

Cost Increases

34. It was Arcadis who identified in early 2017 that costs appeared to be rising and that the scheme was behind programme and raised it with Welsh Government. As a result Welsh Government requested that Costain undertake a detailed bottom-up re-evaluation of the projected costs and timescale to complete the project. Welsh Government also demanded a change in on site personnel
35. The completion of that review identified that there was an issue with the scheme budget which has continued to rise as the scheme has progressed. While there are changes to other elements within the project budget, in particular Statutory Undertaker diversion costs and also Employer’s Agents costs which are a direct result of the commercial performance of this scheme, it is the cost increases to the construction

contract with Costain where the vast majority of the increase arises. Welsh Government have implemented small elements of de-scoping and granted Costain a significant number of road closures in an effort to reduce costs and programme delay. However in a design and build contract Welsh Government is heavily reliant on the performance of the contractor to control and manage costs and programme. Welsh Government also considered terminating Costain's contract and appointing a new contractor to finish the scheme but concluded that such action would result in further significant delays and a further increase in costs.

36. The table below sets out the development of each of the elements of the scheme budget since the construction contract was awarded. The table is based on that included in the WAO report with an additional column to reflect the current position. The full implications of the arbitration into RW14 is currently being evaluated although the figures in the right hand column of the table give an early view on the impact of the decision on the scheme costs and in particular Welsh Government's liability under the contract.

	£ millions				
	June 2011 (appointment of ECI contractor via Part 1 contract) ²	Dec-14 (award of Part 2 detailed design and construction contract)	Jan-18	Nov-19	Sep-20
Historic expenditure – including outline design and development	4.4	19.7	19.7	19.7	19.7
Detailed design and construction contract target cost	110.2 (initial target cost)	159.5	159.5	159.5	159.5
Instructed change			14.8	16.7	21.7
Estimate of Welsh Government portion of pain and expected liabilities for			40.6	80.5	63.5

adjudications in favour of Costain					
Statutory undertaker costs	3.9	15.2	23.2	18.2	18.4
Risk (including legal fees)	16.5	14	5.3	4.7	2.7
Optimism bias ³	45.1				
Employer's agent costs ⁴	3	2	4.8	8.5	9.1
Lands	7.3	11	11	11	11
Other costs	3.3	1.8	2.4	2.4	2.8
Sub-total (costs to the public purse)	193.7	223.2	281.3	321.1	308.4
Estimate of Costain's portion of the pain	0	0	[redacted] ⁵	[redacted] ⁵	[redacted]
Total project cost	193.7	223.2	[redacted] ⁵	[redacted] ⁵	[redacted]

37. These figures are calculated by the independent Project Manager appointed by Welsh Government to administer the contract and represents his assessment of Welsh Government's liabilities. Costain do not agree with these figures and feel they are understated. It will be for them to challenge through whatever dispute avenues remain available to them to change these costs.

38. Full clarity on Welsh Government's final liabilities under the contract will not be achieved until after scheme construction has finished, the final out-turn cost is known and any further disputes have been finished. However the scope for any significant change for the current position is narrowing.

39. The changes in how the costs in the main construction contract can be adjusted is made up of four components. Until the final account is settled the quantum within each of these elements will change. The four components are as follows:

- an increase in the Target Cost as a result of agreed instructed change. This includes any future impact of COVID-19 on construction.
- a change in the Target Cost as a result of increased or decreased liabilities to Welsh Government resulting from dispute decisions either in favour or against Welsh Government.
- a change, either increase or decrease in their projected out-turn (ie Costain's projections of their final costs to complete the scheme). This is Costain's cost to manage but can be scrutinised via the Project Manager on an open book basis.
- a change in the pain share distribution. The pain share is a direct function of the difference between the Target Cost and the projected out-turn. Welsh Government and Costain each pay a portion of the total gain share based on the pain-gain mechanism set out in the contract.

40. An increase in the target cost will reduce the level of 'pain-share' to Welsh Government but increase Welsh Government's overall liability under the contract (as Welsh Government pays for all of the increase to the Target Cost compared to a proportion of it as part of the pain-share). The reverse is true for any reduction in the Target Cost. The pain-share will continue to change as greater certainty of Costain's out-turn cost is established and the implications of further dispute decisions has on the Target Cost.

41. While a number of factors have contributed to the cost increases and programme delays it is the changes to the Works Information that has by far the biggest impact on the cost to build the scheme and the time taken to do it.

42. The Part 1 contract required Costain to prepare and provide an outline design for the scheme on which they based their pre-construction Target Cost (including risk). In the Part 2 contract Costain were required to develop their outline design and build it. It is the difference in the extent of the outline and detailed design which has resulted in the cost increase, and in particular differences arising during the detail design of the structures.

The issues, the site topography, traffic management requirements and complex ground conditions, which meant the contractors found the project far more difficult to deliver than they originally envisaged

43. Early programme delays can be directly linked to Costain's inability to secure Ben Ward's Fields or a suitable alternative for earthworks processing and the discovery of Asbestos at Anacomp both of which affected the ability to construct the Brynmawr junction and the early diversions of key Statutory Undertaker diversions.

44. However the most significant programme are based on Costain having to deal with the site conditions encountered. ECI contracts work well when the design and build contractor makes best use of the time available pre-construction to understand the site. The scope of the Part 1 contract required Costain to identify and undertake whatever surveys were required to gain an understanding of the site, including topographical and environmental surveys and in particular ground investigations.

Ground conditions

45. Following the award of Part 1 of the contract there was a 28 months period during which Costain developed their design to progress through the Statutory Process followed by a further 14 months to plan how the proposed to execute the work . During the design development phase Costain undertook a single Ground Investigation contract in late 2011 and early 2012 to inform their outline design. From early 2012 until the end of the outline design stage in October 2013 Costain did not request or undertake any further Ground Investigations to support their developing design. Costain's Ground Investigation supplemented the substantial data supplied to all tenderers, as part of the tender process, of the boreholes and trial pits collected via a series of historical investigations carried out by Welsh Government since the 1990s for the specimen design.
46. After construction commenced Costain found that the ground conditions in a large number of areas along the site were not what they expected. As a result Costain concluded that their outline designs would be impractical and uneconomical to build and/or required additional design elements i.e. they could not safely carry the loads there were expected to in order to meet engineering standards in their original envisaged form and/or the outline design needed to be changed. This meant that Costain had to revisit a large number of structures, during the construction phase, with the associated delay to the construction programme to meet the required design standards and stakeholder consultation requirements such that the new structures were bigger and, more expensive and took longer to build.

Traffic management requirements & site topography

47. The scheme is an online widening of the existing A465 which for over half of its length is cut into the steep-sided, Clydach Gorge. The gorge is particularly environmentally sensitive and the subject of a number of local, national and European designations. The nature of the scheme is such that the majority of construction activities are undertaken alongside live traffic. Due to the nature of the site there are very few suitable local alternative routes to the A465.
48. The most significant programme delay is primarily linked to a number of issues associated to the change in designs required for structures. Re-designs have resulted in design of some structures not being available on time further exacerbated by longer construction periods. This has been compounded by the environmental sensitivity of the site where seasonal constraints have resulted in a disproportionate impact where a delay has resulted in seasonal windows being missed.
49. In addition to design changes, revised and reconsidered methodologies have resulted in it being impracticable to build a number of the structures alongside live traffic without closures or substantial temporary arrangements to protect road users. At the evidence Costain presented at the Public Local Inquiry for the scheme in 2014 they proposed a small number of weekend road closures to install footbridges and undertake tie-in works. As it has become apparent that a large portion of the construction needs to be undertaken under road closure, Welsh Government has reluctantly agree to a significant programme of weekend and overnight road closures to facilitate safe construction and try to recover some programme delay. To date Welsh Government has reluctantly granted Costain 58 no weekend closures and over 100 overnight closures with a small number still required before construction finishes. While far from ideal,

Welsh Government has worked with Costain to ensure the construction activities undertaken under each closure is maximised.

50. The scheme is progressing towards completion and a major traffic management switch was achieved in mid-August 2020 to facilitate the completion of the final phase of the works.
51. The critical path for the project programme, and key to its completion, is a stretch of engineering running through a 400m length towards the middle of the Clydach Gorge, where retaining wall (RW14) is being built. Costain identified what they considered to be a geotechnical fault very early in 2015 which although not a risk to the travelling public, caused them to fundamentally change the design of the retaining wall and a small bridge. It should be noted that this area was one that Costain identified in their tender design for a Value Engineering change having been a viaduct in the specimen design.
52. While construction of the wall is well underway the complexity of the design and construction drives the critical path to programme completion.
53. There are financial penalties, where Costain are penalised for being late in their programme delivery but these are relatively small when compared to the financial constraints from the dispute process.

Timeline to complete

54. Welsh Government are in the process of considering the full implications of the arbitration award and preparing for further substantive discussion with Costain regarding the completion of the works and the final account.
55. Costain regulatory statement to the market at the end of 2019, and pre COVID identified a scheduled completion in the first half of 2021. COVID resulted in a 2 week lockdown of the site in March/ April while Costain modified their working practices and brought in additional welfare facilities and safety protocols. Other than that, to date COVID has had only a limited impact on progress on site.
56. Following the recent arbitration decision on RW14, Welsh Government will be seeking programme clarity from Costain. In their statement to the city on 2nd September 2020 Costain confirmed they “...will continue to fulfil the Company's obligations under the Contract, with completion scheduled in 2021.”
57. Any programme to finish will necessarily be COVID-19 dependent and could be affected by further lockdowns and isolations or quarantines of major suppliers.