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Archwilydd Cyffredinol Cymru
Auditor General for Wales

A465 Section 2 – Interim Findings



WALES AUDIT OFFICE
SWYDDFA ARCHWILIO CYMRU



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Mae'r ddogfen hon hefyd ar gael yn Gymraeg.

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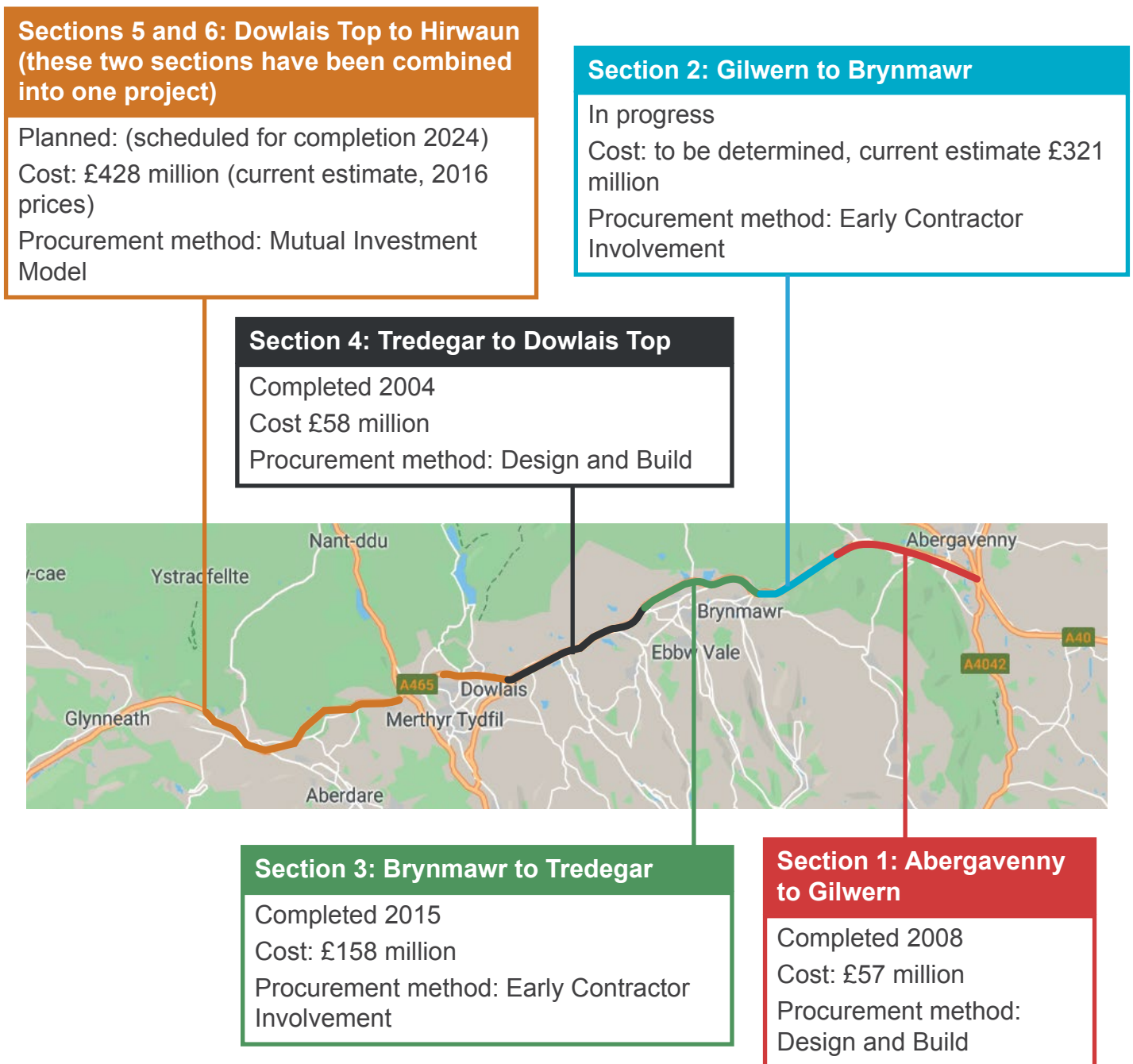
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1. Background

- 1.1 The Welsh Government is converting 40 kilometres of the existing A465 'Heads of the Valleys' road between Abergavenny and Hirwaun into a dual carriageway. The road improvement is intended to have a significant impact on investment and economic activity along the Heads of the Valleys corridor. In 1994¹, the Welsh Office presented route options for the A465 scheme for public consultation and, in 1995, the then Secretary of State for Wales announced the preferred route. In 1998, a public local inquiry was held on the scheme which led to confirmation of the route for the dualling.
- 1.2 In 2000, to enable a phased delivery, the Welsh Government divided the A465 scheme into six sections ([Figure 1](#)). The Welsh Government has adopted different procurement methods for the individual sections, reflecting developments in common industry practices over time. [Appendix 1](#) explains these methods.

¹ [Appendix 2](#) sets out a timeline of major events relating to the A465 Section 2.

Figure 1: The six sections of the A465 scheme



Source: Welsh Government and Wales Audit Office

- 1.3 In 2000, the Welsh Government anticipated that all six sections could potentially be completed by 2009, for an estimated cost of £268 million². At the time of the previous Auditor General's January 2011 report on **Major Transport Projects**³, the Welsh Government expected the entire A465 scheme to be completed by 2020 at a cost of around £763 million⁴. However, the timetable has slipped and the Welsh Government is now planning on the basis that the programme will be completed by 2025. The anticipated total cost of the entire scheme is now around £1 billion.
- 1.4 Having completed three sections of the A465, the Welsh Government is now upgrading Section 2 – around eight kilometres from Gilwern to Brynmawr (the project). There is a range of information about the project on the [Welsh Government's website](#). In 2010, the Welsh Government chose Early Contractor Involvement (ECI) as the procurement method for the design and construction of this project. At that time, the Welsh Government had adopted ECI as its preferred method for projects costing over £18 million and it has continued to be their preferred model since then⁵.
- 1.5 ECI is an approach that aims to lead to greater cost and time certainty by involving a construction contractor in the early development of a project. Early engagement of a construction contractor allows them to be involved in the early outline design work, planning, cost estimation and statutory processes such as the public inquiry. This aims to secure – for the contracting authority and the contractor – a more detailed understanding of the project specification and to reduce the level of uncertainty before the detailed design and construction starts.
- 1.6 Under the ECI model, two contracts are procured through a single procurement process (referred to in this report as the Part 1 contract and the Part 2 contract). The Part 1 contract relates to the outline design and early development of the project described above. Part 1 also includes development of a target cost (see [paragraph 4.8](#)) for the detailed design and construction of the project under the Part 2 contract. Either party has the option not to proceed to the Part 2 contract.

2 November 2000 prices.

3 Auditor General for Wales, **Major Transport Projects**, January 2011. The report focused on ten transport projects including A465 sections 1 and 4. It included a short case study on the overall A465 scheme.

4 The report on Major Transport Projects noted that the increasing costs and extended timeframe for the planned completion of the A465 were having an impact on plans for progressing other projects. The cost of £763 million reported at that time included cash out-turn figures for sections already completed and November 2009 prices for sections not yet completed.

5 Following the Public Accounts Committee's June 2015 inquiry report on the **Value for Money of Motorway and Trunk Road Investment**, the Welsh Government undertook a review of the application of ECI. In September 2015, the Welsh Government informed the Committee that the review concluded that lower value contracts could also benefit from early engagement with contractors. As a result, guidance was being amended such that ECI should be considered for construction contracts independent of value.

- 1.7 In June 2011, the Welsh Government confirmed that it was appointing Costain Ltd as the ECI contractor on the Part 1 contract. In December 2014, the Welsh Government issued a 'Notice to Proceed' to Costain relating to the Part 2 contract. This is one of several Welsh Government funded major road projects delivered by Costain over the last 15 years, including examples of other ECI contracts. Costain was also a member of the joint venture that the Welsh Government contracted with in taking the plans to build a new section of motorway south of Newport (the M4 Corridor around Newport) through the relevant statutory consent process. In a statement issued on 4 June 2019, the Welsh Government announced that it would not proceed with the M4 Corridor project due to budgetary and environmental concerns.
- 1.8 Section 2 of the A465 presents significant engineering and environmental challenges. The project involves widening eight kilometres of the existing road, in a very constrained site, alongside live traffic. The section of road passes through the Clydach Gorge, which is a steep-sided valley and therefore a difficult location for construction. The project involves the construction of new structures including seven bridges, 12.5 kilometres of retaining walls⁶, as well as the excavation of over 1.3 million cubic metres of earthworks, which is almost enough to fill the Principality Stadium. The project is also environmentally sensitive as the road passes through the Brecon Beacons National Park⁷. Welsh Government officials have suggested to us that these circumstances make the project an ideal candidate for the ECI procurement method.

6 Some stretches of the road will have walls on two sides and/or the middle of the road.

7 During the design process an Assessment of Implication on European Sites (AIES) was undertaken to inform Ministers of the potential for adverse effects of the project on the Usk Bat Sites Special Area of Conservation (SAC), the Cwm Clydach Woodland SAC and the River Usk SAC.

2. About our work

- 2.1 Construction of Section 2 began in December 2014 when the project had a forecast total cost of £223.2 million⁸ and a planned contract completion date of September 2018. In November 2017, the Cabinet Secretary for Economy and Infrastructure published a written statement, following a commercial review of the project by Welsh Government officials. The review revealed that at the time, Section 2 was projected to be delivered 23% over the approved budget. The statement indicated that: ‘The site topography, traffic management requirements and complex ground conditions has meant that Costain have found the project far more difficult to deliver than they originally envisaged.’ The Cabinet Secretary confirmed that the Welsh Government was in dispute with Costain on ‘a number of matters around the allocation of risk in the contract to ensure they are only paid what they are contractually entitled to’.
- 2.2 In November 2017, the Welsh Conservatives issued a press release, urging the Auditor General to investigate the project. Mr Russell George AM, who is also the Chair of the Economy, Infrastructure and Skills Committee, wrote to the Auditor General in December 2017 to request a review of the Welsh Government’s handling of this scheme.
- 2.3 In a letter to the Public Accounts Committee on 4 May 2018, the then Auditor General confirmed that following some preliminary audit enquiries, he had decided that there was merit in some further audit work leading to the preparation of a report/memorandum on the history of the project. He also emphasised that the audit work would take account of the work being done by the Welsh Government to resolve the issues in dispute.
- 2.4 In April 2019, the Minister for Economy and Transport announced a further increase in the anticipated cost of the project to the public purse. The revised budget increased by £54.9 million, to £336.2 million. The Minister’s statement indicated that ‘the project has experienced delays and cost increases due to difficulties experienced on site. Costain has highlighted that the primary reason for this is due to a complex construction solution required to address the geological feature that they have discovered in one particular location along the scheme’.
- 2.5 The statement extended the full completion date into 2020, but the exact completion date is still uncertain and is now expected to extend into 2021 ([paragraph 5.8](#)). The statement also recognised that the dispute resolution process had highlighted areas for improvement within the Welsh Government’s model contract and within the New Engineering Contract (NEC) suite of documents used as templates within the project. The statement said a lessons-learned process would feed back into current and future procurements.

⁸ 2014 prices.

- 2.6 While the dispute resolution process continues between the Welsh Government and Costain, we have prepared this report to set out, in factual terms, interim findings from our work. In carrying out our work to date, we have:
- a reviewed key documents, meeting minutes, cost data and Ministerial submissions relating to the procurement of the ECI contractor and the project's development and delivery;
 - b carried out site visits to gain an understanding of the complexity of the project; and
 - c met with the Welsh Government, Transport for Wales, Costain and the Employer's Agent, Arcadis⁹.
- 2.7 The project has a long history as part of the wider scheme, but we have focused our attention on the period since the start of procurement for the ECI contractor. We have not looked at any issues concerning the procurement of other contractors and sub-contractors or the management of those contracts¹⁰. We expect to produce a further report on the project and the lessons that can be learned from it once the dispute resolution process is completed and there is greater certainty about the final cost to the public purse.

⁹ The Employer's Agent is typically a private sector consultancy acting on behalf of the public sector client/employer to oversee the administration of an ECI contract. The Welsh Government awarded the Employer's Agent contract to EC Harris. EC Harris merged with Arcadis NV in November 2011. The merged organisation became known as Arcadis and is referred to as such elsewhere in this report.

¹⁰ Appendix 4 sets out the key parties involved in the project, although Costain has sub-contracted with a wider range of companies in its supply chain.

3. The business case for the project

- 3.1 In accordance with its internal procedures, the project progressed through the Welsh Government's business case process. This process follows a five-case model, which set out the strategic, economic, commercial, financial and management cases to support the development of the project. The project also followed the Welsh Government Transport Division's Key Stage Approval process ([Appendix 3](#)).
- 3.2 The business case set out three overarching objectives:
- a to strengthen resilience on the A465 between Brynmawr and Gilwern by improving standards and enhancing road safety;
 - b to contribute towards similar upgrading of the whole route to provide a facility for strategic management of traffic within South East Wales; and
 - c to facilitate economic regeneration of the Heads of the Valleys area by improving accessibility, reducing journey time and improving journey time reliability between Brynmawr and Gilwern by a minimum of 5% by 2030.
- 3.3 The three over-arching objectives were split into project-specific objectives:
- a reduce journey times for private and commercial road users;
 - b facilitate economic regeneration;
 - c enhance road safety and reduce casualties;
 - d deliver a project that is sustainable;
 - e promote cycling and walking and provide opportunities for healthy lifestyles;
 - f deliver a project which minimises future maintenance requirements and disruption to the network;
 - g reduce journey time variability and improve resilience on the A465;
 - h use the A465 to manage traffic effectively and improve resilience on the strategic road network in South East Wales;
 - i ensure all of these objectives are met with due consideration given to the impact on the environment; and
 - j to deliver a project that integrates public transport and the local transport network.

- 3.4 As part of the business case, the Welsh Government undertook an economic assessment using the UK Department for Transport's (DfT) assessment tool TUBA¹¹. The assessment gave a benefit cost ratio of 1.46 (Box 1). The DfT considers a benefit cost ratio between 1 and 1.5 to be 'low value for money'¹². However, when the Welsh Government included wider economic benefits in its calculations, the benefit cost ratio rose to 1.65, which the DfT defines as 'medium value for money'. The business case described other benefits from the project that were not considered in the benefit cost ratio but contribute to the overall value for money case, such as employment and training opportunities and access to key settlements and services.

Box 1: Benefit cost ratio

The benefit cost ratio (BCR) is an important part of the decision-making process about whether to proceed with a proposed project.

The BCR provides an assessment of the local economic benefits from a project and is part of a wider consideration of value for money.

The BCR calculated for Section 2 of the A465 focused on improved safety and improved reliability of journeys. It did not include social benefits such as improved access to public services, improved provision of active travel and improved connections between communities. It also did not include consideration of environmental benefits, such as reductions in pollution levels or habitat creation.

A 'wider BCR' can be calculated by including wider economic benefits, such as improved accessibility to jobs and markets.

¹¹ TUBA is software developed for the DfT to undertake economic appraisals for transport schemes. It uses information on journeys, distances and travel times to calculate the economic benefits of proposed schemes.

¹² Department for Transport, **Value for Money Assessment: Advice Note for Local Transport Decision Makers**, December 2013.

4. The procurement process

- 4.1 Prior to the procurement process to select the ECI contractor, the Welsh Government carried out a separate procurement process to select an Employer's Agent . This resulted in, what is now, Arcadis being selected as the Employer's Agent for the project in March 2009.
- 4.2 The procurement process for the ECI contractor started in March 2010 with the publication of an OJEU Contract Notice. We reviewed the procurement process for the ECI contractor and found that the Welsh Government carried out the procurement in line with its usual policies and procedures for major road projects.
- 4.3 The Welsh Government received nine expressions of interest for the design and construction of the project, with Costain achieving the highest overall score in that initial assessment. The five highest scoring candidates were then invited to tender for the contract and all five submitted a bid.
- 4.4 The Welsh Government evaluated the tenders based on 70% of marks being awarded for quality and 30% for price (Figure 2). The Welsh Government intended that this approach would avoid a situation where a focus on price might have encouraged low and potentially unrealistic bids, with the risk of costs escalating during construction.

Figure 2: The Welsh Government's evaluation of tenders for the A465 Section 2 ECI contract

The figure shows how Costain's marks compared with the range of marks obtained by the other four bidders for the ECI contract.

	Financial bid, excluding VAT (£ million)	Financial mark (out of 30)	Quality mark (out of 70)	Overall mark (out of 100)
Costain	102.0	28	56	84
Range	94.4-129.1	25-30	44-56	72-84

Note: The financial aspect of the bid considered design costs, contractor fees, sub-contractor fees and an estimated target cost (referred to internally within the Welsh Government and in the tender documents as the 'initial target cost') for the detailed design and construction contract stage of the project.

Source: Welsh Government

- 4.5 There were 12 marks between the highest and lowest overall marks. There was greater disparity between the financial bids, which ranged from £94.4 million to £129.1 million excluding VAT¹³.
- 4.6 Although Costain did not achieve the highest mark in the financial evaluation as it was not the lowest price bidder, its high mark in the quality evaluation meant that it achieved the highest overall mark.
- 4.7 In its role as Employer's Agent, Arcadis undertook a routine financial assessment of the tender submissions. The assessment concluded that:
- a there was no evidence of collusion between bidders;
 - b there were no concerns over the level of the fee element of any of the bids;
 - c all estimates fell within the then estimated £149.7 million cost of construction; and
 - d there were no major issues in any of the bids that needed clarification.
- 4.8 The Welsh Government appointed Costain as the ECI contractor for the Part 1 contract in June 2011. As noted in [paragraph 1.6](#), a key aim of the Part 1 contract was to develop a 'target cost' ([Box 2](#)) for the detailed design and construction of the project under the Part 2 contract. The agreed 'target cost' was developed from the 'initial target cost' submitted at the tender stage to take account of design development changes constituted as evaluation events¹⁴.

¹³ The bid of £94.4 million raised Welsh Government concerns in that it was 'abnormally low' as set out in Part 5 Clause 30(6) of the Public Contracts Regulations 2006. However, the Welsh Government considered it was not necessary to clarify the bid because it did not come from the winning bidder.

¹⁴ Not every change amounts to an evaluation event. Only the following are set out as legitimate evaluation events in the Welsh Government's standard model: the Welsh Government gives an instruction changing an assumption in the scheme's budget assumptions; the Welsh Government gives an instruction changing the Works Information, which is the specification for delivering the work; the Welsh Government notifies a correction to an assumption; or an event classed as a Welsh Government risk under the contract happens.

Box 2: Target cost contracts

Target cost contracts introduce a mechanism enabling the employer and the contractor to share in the benefits of any cost savings and, conversely, the dis-benefit of any cost overruns. These mechanisms are usually known as 'gain share' and 'pain share' respectively. Any cost savings (gain) or overruns (pain) are shared based on a contractually agreed formula. The Part 2 contract 'target cost' figure is usually based on an agreed activity schedule of works or services, or bill of quantities. The overall intention is to encourage all parties to work together to deliver savings and mitigate any overruns.

The target cost would ideally remain static through the life of the works or services specified in the contract. However, there are factors that can cause the target cost to increase. Key examples include the inclusion of additional or varying scope to that originally envisaged, and if particular risks materialise that are carried by the client/employer.

These changes are usually implemented (and the target therefore shifted) through the change management/variation provisions of the contract. The aim of a target cost contract is to ensure good collaboration and provide a financial incentive encouraging cost control, rather than to penalise.

- 4.9 At the end of the outline design phase and before the award of the detailed design and construction phase of the project under the Part 2 contract, the Welsh Government had the option – without penalty – to procure a different contractor. Alternatively, the Welsh Government could have terminated the project. Similarly, Costain had the opportunity to refuse to proceed to enter into the Part 2 contract without penalty, for any reason. However, neither the Welsh Government nor Costain found any reason not to enter into the construction contract.
- 4.10 During the preparation of this report, Costain has raised observations in respect of issues that occurred during the Part 1 contract that it considers had an impact on the extent of outline design work undertaken and the identification and consideration of the technical and commercial risks that have since been exposed and realised. The Welsh Government has a different view on the issues raised and circumstances involved. These matters are potentially relevant to the ongoing dispute resolution process. We have not therefore sought to form our own view on them at this stage, or to expand on them in this report. As noted above, neither the Welsh Government nor Costain found any reason not to enter into the construction contract.

5. The dispute over liability for increased costs

- 5.1 By December 2014, when the Minister agreed to award the Part 2 detailed design and construction contract to Costain, the agreed 'target cost' had risen to £159.5 million including non-recoverable VAT (£151.9 million excluding VAT). This increase was due to a variety of factors including the effect of construction inflation, changes resulting from the public inquiry and the need for some fundamental changes to comply with requirements under the 'Assessment of Implications on European Sites' and planning law. Following the recommendation of the Inspector at the public local inquiry, some additional work items were included. These included an additional junction and an additional footbridge along the route.
- 5.2 At the same point in time, the estimated total project cost, including all changes, inflation, inquiry-related commitments and VAT, was £223.2 million.
- 5.3 By early 2017, rising construction costs were causing the Welsh Government considerable concern. In April 2017, the Welsh Government suggested to Costain that an adjudicator¹⁵ be used to resolve disputes between the Welsh Government and Costain about who was liable for certain cost increases under the contract. Costain rejected this request. In June 2017, the Welsh Government wrote formally to Costain to reconsider the request for adjudication. Costain's preference remained to resolve any dispute through discussion and agreement.
- 5.4 In November 2017, the Cabinet Secretary for Economy and Infrastructure's written statement, following a commercial review of the project, said that the project was 'currently projected to be delivered 23% over the approved budget'. In January 2018, the Welsh Government calculated that the budget was likely to be exceeded by 26%. The Cabinet Secretary therefore agreed to increase the budget by £58 million to £281 million.

¹⁵ Adjudication is the first stage of the dispute resolution procedure within the NEC form of contract, which usually involves the unilateral decision by one party to refer a dispute to an adjudicator for decision. Adjudication is provided by a third-party adjudicator selected by the parties in dispute, or in accordance with the agreed terms of the contract. Adjudication decisions are binding unless and until they are revised by an arbitration (or litigation).

5.5 Also in January 2018, and with no progress made on settling the issues under dispute, the Welsh Government decided to progress three separate issues through the dispute process set out in the contract, initially through adjudication. The Welsh Government proceeded to adjudication without Costain's agreement, as it was entitled to do under the contract. Then in July 2018, Costain started its own particular adjudication. In January 2019, the Welsh Government commenced a further adjudication against Costain. In July 2019, Costain commenced an adjudication against the Welsh Government relating to work on utility supplies. **Figure 3** describes the issues at the centre of the dispute. However, these are in practice complex contractual matters that are not easily summarised.

Figure 3: Issues that have been at the centre of the dispute between the Welsh Government and Costain, as at January 2020

Anacomp 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 event¹⁶ 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 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 the Welsh Government.

¹⁶ 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.

Retaining walls

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 contract and contained in the Works Information within the Part 2 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 contract.

To date, the Welsh Government has commenced adjudications regarding two retaining walls. Costain has commenced an adjudication regarding another retaining wall. The adjudication decisions provided some clarification on how the contract should be interpreted. However, dispute still remains on both the contractual principle and the cost and programme impacts of design changes.

The Welsh Government recently commenced an arbitration ([paragraph 5.7](#)) as the final dispute resolution process set out in the contract, which was associated with a retaining wall adjudication point previously found in Costain's favour.

The arbitration award has split responsibility for the Works Information between the Welsh Government and Costain and is a partial reversal of the earlier adjudication decision.

Statutory undertaker (utility supply) works

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.

Source: Welsh Government

- 5.6 Adjudication decisions are binding. However, should either party be dissatisfied with an adjudication, there is the option to refer the dispute to arbitration as the ultimate dispute resolution process set out in the contract. The arbitration process is typically intense and lengthy, unless the parties agree otherwise.
- 5.7 Despite the adjudication decisions made to date, the Welsh Government and Costain remain in dispute over who is liable for a significant portion of the cost increases. In June 2019, the Welsh Government commenced arbitration proceedings against Costain on an issue decided in Costain's favour in adjudication. The arbitration award, received in early December 2019, has split responsibility for the Works Information between the Welsh Government and Costain and is a partial reversal of the earlier adjudication decision. The exact costs in respect of the matters under dispute are yet to be fully determined. It is impossible to say how long it will take to resolve the confidential dispute process. There are likely to be significant additional legal costs arising from the dispute resolution process, with both parties engaging barristers and technical experts. As at November 2019, the Welsh Government's budget for legal fees related to the project was £2.07 million and the amount spent on legal fees was £1.49 million.
- 5.8 The issues at the centre of the dispute have contributed to significant time delays in the project. At the start of construction, the original estimated contract completion date was September 2018. In April 2019, the Minister's statement confirmed that the completion date would extend into 2020 ([paragraph 2.5](#)), but with the eastern half of the scheme being completed towards the end of 2019 (although a split completion of the project is not anticipated by the Part 2 contract). Due to the ongoing contractual issues, Costain has re-prioritised the activities most critical to delivering the overall project programme (within the gorge). This re-prioritisation means that the 2019 timetable completion of the eastern half of the scheme has not been met. The exact completion date for the overall scheme is still uncertain but is now expected to extend to spring 2021, although both parties are looking at whether completion in 2020 can be achieved together with options to complete the eastern section before the end date.
- 5.9 With continued uncertainty about the liability for, and extent of, the cost increases, it is difficult for the Welsh Government to predict the final cost to the public purse. With the planned completion of the project extended, further cost increases may also arise. Even when the dispute is resolved and if the target cost is adjusted accordingly, any further cost increases within the project would increase the costs to the public purse through the pain-gain mechanism ([Box 2](#)).

- 5.10 As shown in **Figure 4**, the Welsh Government's November 2019 forecast of the total cost of the project to the public purse is £321.1 million. The estimate of the total project cost, including the Welsh Government's assumptions about Costain's portion of the pain, is substantially higher. We have redacted that higher figure from the report on the grounds of commercial sensitivity. When the Welsh Government has reported previously on the costs of the project, it has also done so based on the estimated costs to the public purse. The costs shown in **Figure 4** do not include an assessment of the potential cost impacts of the recent arbitration decision which, at the time of writing this report is still being fully assessed by the Welsh Government and Costain. Costain considers that the latest estimates of Welsh Government liabilities are understated. The Welsh Government considers that the figures represent a reasonable allowance for its liabilities based on the adjudication decisions to date.
- 5.11 The £321.1 million figure is £127.4 million (66%) more than in June 2011, at the point of the award of the Part 1 contract. It is £97.9 million (44%) more than at December 2014, at the point of the award of the Part 2 contract. However, it is lower than the £336.2 million estimated at the time of the Minister's statement in April 2019.
- 5.12 **Figure 4** shows that the Welsh Government has presently accepted liability for certain costs as their portion of the cost increase between the target cost and Costain's estimate of their final out-turn costs to complete the scheme. This is referred to as the Welsh Government's portion of the 'pain'. The Welsh Government's current forecast also includes a sum to cover expected liabilities for adjudications decided to date in favour of Costain. In total, these two elements comprise £80.5 million. The Welsh Government has accepted liability for another £16.7 million of increased costs, which relate to activities deemed outside the original scope of Costain's contract and classed as compensation events. Those issues include further adjustments to the design and environmental mitigation measures.
- 5.13 **Figure 4** also shows that the Welsh Government will be meeting higher statutory undertaker costs than anticipated. The main reasons for this have been issues relating to a complex series of water main and high-pressure gas diversions resulting in additional payments to each statutory undertaker. However, these estimated costs fell between January 2018 and April 2019. Some diversions have cost less to construct than first thought, some planned diversions are no longer necessary, and some of the work has been undertaken by Costain rather than the statutory undertakers. As noted in **Figure 3**, the risks associated with the time and costs arising from the associated delays remain a point of contention between Costain and the Welsh Government.

Figure 4: Increases in the projected costs to the public purse since June 2011

These figures reflect the costs that the Welsh Government is currently accepting liability for. The outcome of ongoing dispute resolution processes could see the cost to the public purse increase or decrease, and other costs could arise to the point of project completion. The costs shown do not include an assessment of the cost impacts of the recent arbitration decision which, at the time of writing this report, is still being fully assessed by the Welsh Government and Costain.

Costain considers that the latest estimates of Welsh Government liabilities are understated. The Welsh Government considers that the figures represent a reasonable allowance for its liabilities based on the adjudication decisions to date.

	£ millions¹			
	June 2011 (appointment of ECI contractor via Part 1 contract) ²	December 2014 (award of Part 2 detailed design and construction contract)	January 2018	November 2019
Historic expenditure – including outline design and development	4.4	19.7	19.7	19.7
Detailed design and construction contract target cost	110.2 (initial target cost)	159.5	159.5	159.5
Instructed change			14.8	16.7
Estimate of Welsh Government portion of pain and expected liabilities for adjudications in favour of Costain			40.6	80.5
Statutory undertaker costs	3.9	15.2	23.2	18.2

	£ millions ¹			
	June 2011 (appointment of ECI contractor via Part 1 contract) ²	December 2014 (award of Part 2 detailed design and construction contract)	January 2018	November 2019
Risk (including legal fees)	16.5	14	5.3	4.7
Optimism bias ³	45.1			
Employer's Agent costs ⁴	3.0	2	4.8	8.5
Lands	7.3	11	11	11.0
Other costs	3.3	1.8	2.4	2.4
Sub-total (costs to the public purse)	193.7	223.2	281.3	321.1
Estimate of Costain's portion of the pain	0	0	[redacted] ⁵	[redacted] ⁵
Total project cost	193.7	223.2	[redacted] ⁵	[redacted] ⁵

1. Non-recoverable VAT is included in all sums.
2. The 2011 costs include an assumption that 8% VAT would be paid on construction costs, therefore Costain's tendered initial target cost of £102 million is recorded here as £110.2 million. After 2011, the figures assume VAT at 5% on construction costs.
3. Optimism bias involves increasing cost estimates by a set percentage to reflect evidence of under-estimation from previous similar interventions.
4. The increases in Employer's Agent costs are as a result of change instructed by the Welsh Government and are covered by compensation events under its contract with Arcadis. The significant increase in the cost reflects the challenges encountered throughout the project.
5. Costain's portion of the pain reflects the Welsh Government's assumptions about its liability for certain costs based on the adjudication decisions to date. We have redacted these figures from the report on the grounds of commercial sensitivity, although Costain has disclosed certain information to the market about potential implications. When the Welsh Government has reported previously on the costs of the project, it has also done so based on the estimated costs to the public purse.

Source: Welsh Government

- 5.14 The Welsh Government could have opted to abandon construction of the project, or parts of the project to avoid the additional expenditure. However, the project was already more than two years into construction when the scale of the likely cost increases emerged. To have abandoned it would have left the road and the surrounding environment in an unsafe condition requiring long-term traffic management and with the overriding objective of dualling the whole route not being met. It would also have exposed the Welsh Government to further liabilities to Costain for the lost profit associated with the uncompleted works. The Welsh Government also has the option to terminate Costain's contract and appoint a new contractor to finish the project. The Welsh Government has also been mindful that such action would result in further significant delays and likely further costs, including liability for compensation to Costain, and after concluding that it would be unlikely to demonstrate value for money.
- 5.15 The Welsh Government told us it has considered and implemented a range of other actions to try and improve the delivery and costs of the project and in the context of managing the wider dispute resolution processes. These include increasing the technical and commercial resource on site to review outputs, challenge assumptions and identify opportunities for efficiencies. The Welsh Government also told us it continues to undertake a detailed technical challenge of Costain's design and construction methodology in certain areas along the route.

6. The overall performance and wider benefits

- 6.1 Although the project is facing significant delays and cost increases, it has already delivered wider benefits and has gained wider recognition. For example:
- a construction training academy has been funded by the Welsh Government and managed by Costain. The centre is used as the base for the National Skills Academy for Construction and was developed with the Construction Industry Training Board (CITB). Section 2 is currently the only major infrastructure project in Wales with CITB 'National Skills Academy' status and the project has employed 70 apprentices.
 - b the project won the 2017 Constructing Excellence in Wales People Development Award for expanding training and development opportunities for its own staff, its supply chain and the local community. There was an emphasis on encouraging women into construction. The project also received Constructing Excellence in Wales awards for innovation and health, safety and wellbeing in 2018 and for sustainability in 2019. Work in the community and with stakeholders on the project has also been recognised by Business in the Community and the project has received five Royal Society for the Prevention of Accidents' awards for safety.
 - c around £140 million worth of orders have been placed with Welsh companies (67% of the contract spend) while 66% of the workforce is Welsh.
 - d the project won a 2017 Gold International Green Award for protecting habitat and diversity¹⁷.
 - e thirty-six hectares of land has been acquired for planting trees. By the end of the project, Costain plans to have planted more than 72,000 trees. The project also included the relocation of a very rare (100 in existence) Welsh whitebeam tree. The tree was transported away from the site to locally acquired land where it is being nurtured and monitored.

¹⁷ The award was given by The Green Organisation. The Green Organisation is an international, independent, non-profit, non-political, environmental group dedicated to recognising, rewarding and promoting environmental best practice around the world.

- 6.2 The project includes the use of 50 key performance indicators (KPIs) on various aspects of how Costain is delivering the work under the contract. The marks against the KPIs are determined by the Welsh Government and the Employer's Agent and agreed with Costain. The KPIs cover service (for example supply chain management and innovation), quality, stakeholder and community engagement, time, cost, health and safety and environment. Costain's scores have been consistently high on nearly all KPIs except for time and cost. The highest scores attained relate to health and safety and environment. The Welsh Government is now reviewing the KPIs used in its transport schemes as it recognises that there may be insufficient focus in its current indicators on programme and financial performance.
- 6.3 At the start of construction in December 2014, the Welsh Government and Costain agreed that the entire length of Section 2 would need to be closed for six weekends to allow construction to progress without the associated dangers and restrictions of traffic flowing nearby. This was based on the evidence presented by Costain at the public inquiry, to allow the installation of the footbridges over the A465. As at the end of November 2019, the section of the road has been closed for 57 weekends and a further 75 weekday overnight closures. Closures have been agreed with the Welsh Government to enable Costain to complete works that they consider unsafe to undertake alongside live traffic and in an effort to optimise the cost and programme for delivery. The number of closures has raised complaints from drivers diverted from their usual route along the A465 and from local residents who are seeing increased traffic on local roads as a result of drivers not following the official diversion route. A number of local businesses have also raised concern about the impact of the project.
- 6.4 While we have not considered these matters in detail, Costain and the Welsh Government have been working together to address the closure issues. That work has included improved road signing, notification periods and developments to digital communications which collectively cover 16,000 individuals and businesses. The project has a dedicated visitor centre and in addition to normal opening hours there have been two week-long exhibitions, attracting over 200 members of the public to the most recent exhibition. Overall, Costain estimates that over 6,000 members of the public have taken part in project presentations.

6.5 Wider community outreach work has included engagement with local schools through science, technology, engineering and mathematics (STEM) activities which Costain estimates have reached well over 8,000 learners. Following encouragement from the Welsh Government in the context of its wider emphasis on community benefits, Costain also co-ordinated over 40 local companies to assist in the £400,000 project to refurbish and improve the memorial garden at Ty Hafan Children's Hospice. The company also reports having raised £130,000 for local charities during the project.

Appendix 1 – Procurement methods used on the entire A465 scheme

	Explanation
Design and build – used on sections 1 and 4 ¹⁸	<p>The project owner starts by procuring a consulting organisation/ designer to develop an outline design and take the project through the statutory consent process. Once the organisation/ designer has finished the design phase, the project is put out to tender to general contracting companies. The contractor with the highest scoring bid is awarded the construction contract. That contractor is responsible for developing a detailed design and constructing the project according to the outline plans created by the organisation/designer and taken through the consent process.</p>
Early Contractor Involvement (ECI) – used on sections 2 and 3	<p>ECI is an approach which aims to lead to greater cost and time certainty by involving the construction contractor in the early development of a project. The project owner nominally awards the entire project to a single company to design and build. Once appointed, there is an expectation that the contractor is responsible for all design and construction work required to complete the project. However, in reality there are two contracts, split between design development (Part 1) and construction (Part 2).</p> <p>Engaging the construction contractor at an early stage allows them to be involved in the early design work, planning, cost estimation and statutory processes such as public inquiries. This aims to give the contractor more familiarity with the project design, the site conditions and the key stakeholder issues. This helps in taking the project through the various statutory processes as well as planning the construction before work starts on site.</p> <p>This approach also allows the project owner to deal with a single source throughout the duration of the project, rather than co-ordinating between various parties. There remains the option for either side to terminate the contract without penalty before construction starts, should the owner or the contractor not wish to proceed with the contract.</p>

¹⁸ In cost terms, the first two completed sections of the A465 Heads of the Valleys improvement could have been candidates for ECI (Section 1 – Abergavenny to Gilwern; Section 4 – Tredegar to Dowlais Top). The Welsh Government did not adopt this approach because the statutory procedures had not been finalised when the whole Heads of the Valleys scheme was initially being planned for delivery as a Private Finance Initiative project.

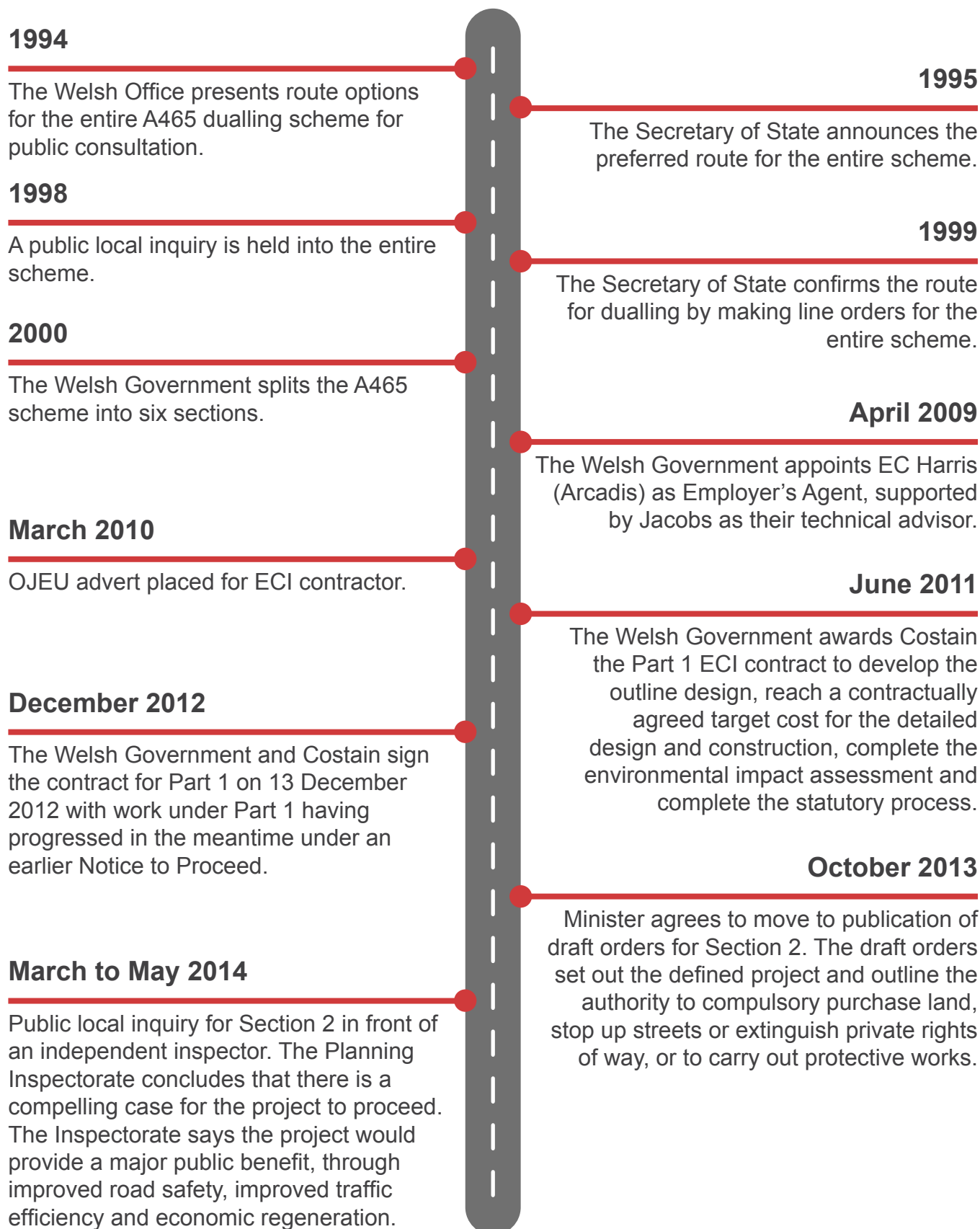
Explanation

Mutual Investment Model (MIM)¹⁹ – to be used on sections 5 and 6

The MIM was developed by the Welsh Government to finance major capital projects due to a scarcity of capital funding. MIM schemes involve private partners building and maintaining public assets for a period of time once operational. In return, the Welsh Government pays a fee to the private partner, which covers the cost of construction, operation, maintenance and financing the project. At the end of the contract the asset is transferred into public ownership.

¹⁹ In November 2019, the National Assembly's Finance Committee published a report on its **Inquiry into the Welsh Government's capital funding sources**. The report included commentary on the MIM.

Appendix 2 – Timeline of major events for the A465 Section 2



September 2014

The Minister for Economy, Science and Transport agrees that the project can progress and agrees to make the orders for Section 2.

27 November 2014

The Welsh Government receives no challenges to project proposals, thus allowing orders to come into force. This allows the Welsh Government to acquire approximately 122 hectares of land, the majority of which is agricultural land, derelict industrial land and woodland.

End December 2014

Construction commences.

August 2015

The Welsh Government and Costain sign the contract for Part 2 on 11 August 2015 with work under Part 2 having progressed in the meantime under the Notice to Proceed issued in December 2014.

April 2017

The Welsh Government suggests to Costain that an adjudicator be used to resolve dispute over liability of costs. Costain rejects the request.

16 October 2014

Six-week challenge period comes into effect.

December 2014

The Minister for Economy, Science and Transport agrees that Costain should be awarded the detailed works contract and proceed to the detailed design and construction phase – Part 2 of the two stage ECI process. A Notice to Proceed is issued to allow construction to commence without a signed contract.

January 2015

The Welsh Government formally awards the contract for Part 2 to Costain.

Early 2017

Rising construction costs are causing the Welsh Government considerable concern.

June 2017

The Welsh Government formally writes to Costain to reconsider its suggestion of seeking adjudication to resolve dispute over liability of costs. Costain's preference remained to resolve any dispute through discussion and agreement.

November 2017

The Cabinet Secretary for Economy and Infrastructure publishes a written statement following a commercial review by Welsh Government officials and indicates that Welsh Government costs are likely to exceed the £223 million budget by 23%.

January 2018

The Welsh Government commences adjudications against Costain on three separate issues without Costain's agreement (as it was entitled to do under the contract).

January 2019

The Welsh Government commences an adjudication against Costain regarding another retaining wall.

June 2019

The Welsh Government commences arbitration proceedings against Costain on an issue decided previously in Costain's favour in adjudication.

December 2019

Arbitration decision is a partial reversal of the earlier adjudication decision.

January 2018

The Cabinet Secretary for Economy and Infrastructure approves an increase of £58 million to the overall budget (26%).

July 2018

Costain commences its own adjudication regarding a particular retaining wall.

April 2019

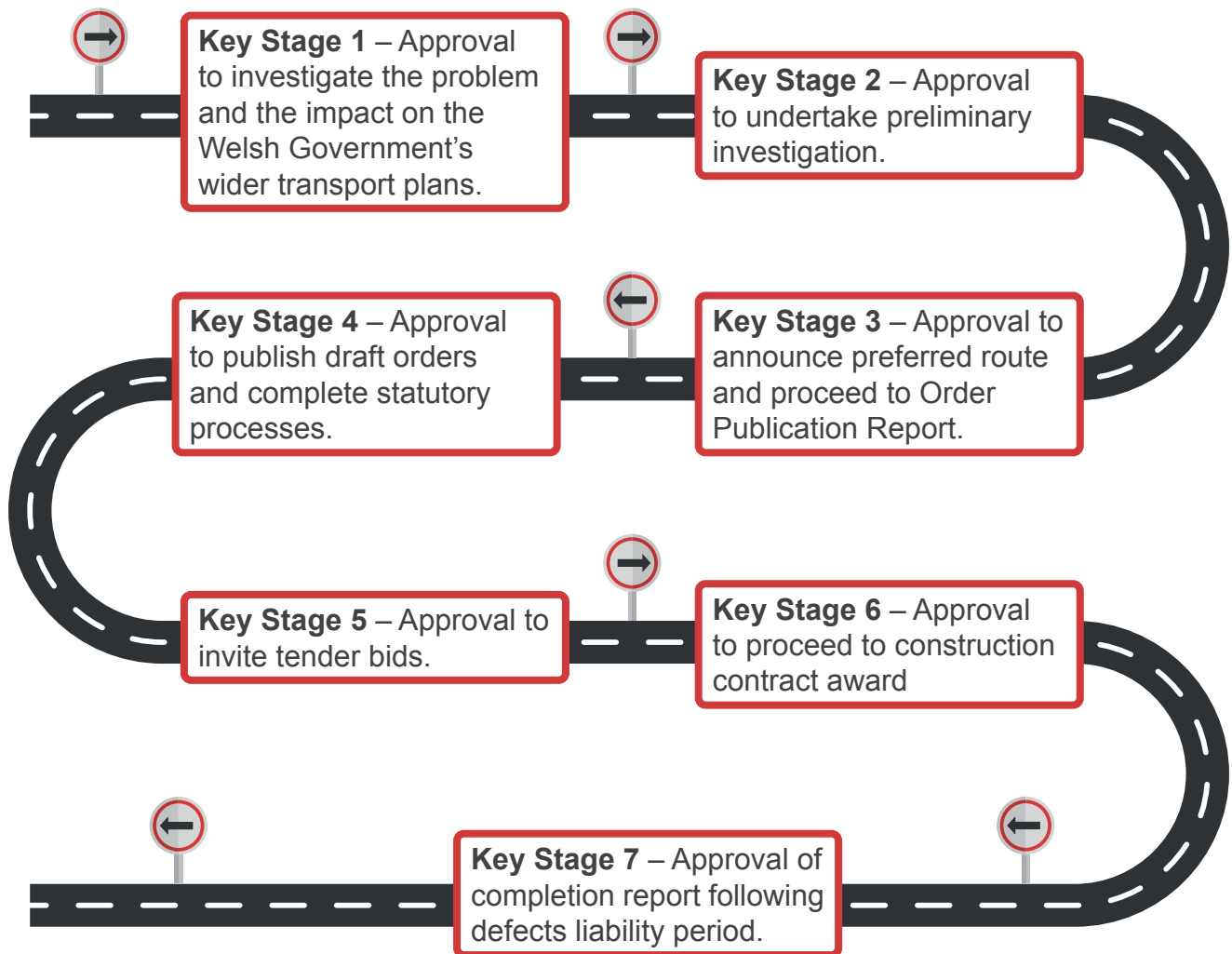
The Minister for Economy and Transport announces a further increase of £54.9 million to the overall budget.

July 2019

Costain commences a further adjudication on issues relating to work on utility supplies.

Appendix 3 – The Welsh Government’s Key Stage Approval process

The figure below summarises the Key Stage Approval process for Welsh Government transport projects.



The Order Publication Report details the orders and related statutory procedures that provide the necessary legal authority to deliver a project. They include line orders (to establish the route of a new road), side road orders (connecting local roads associated with a new road scheme) and compulsory purchase orders (purchase of land). Notice of draft orders is published in the local press and objections are dealt with through Public Inquiry.

Where the Welsh Government adopts an ECI approach, the tender process would take place early in Key Stage 3, rather than during Key Stage 5.

Source: Welsh Government

Appendix 4 – Key parties involved in the A465 Section 2

Organisation	Role
Welsh Government	Project owner.
Costain	ECI outline design in the Part 1 contract and construction contractor in the Part 2 contract.
Arcadis	Appointed as Employer's Agent and services included: <ul style="list-style-type: none">• Procurement of ECI contractor• During key stages 3 and 4 (Appendix 3), assisting the Welsh Government in administering the contract for professional services and providing advice and assistance to the Welsh Government in relation to the preliminary (outline) design and statutory process• During key stage 6, acting as Employer's Agent and providing advice and assistance to the Welsh Government• Also during key stage 6, undertaking the separate and independent contractual roles of Project Manager and Supervisor with responsibility for administering the Part 2 design and construction contract
Halcrow/Atkins	Joint venture sub-contracted to Costain as designer of the project.
RPS	Environmental consultant sub-contracted to Costain.
Jacobs	Technical advisor to Arcadis as part of the Employer's Agent. Jacobs' direct involvement in this role came to an end in early 2018 following their acquisition of Halcrow (part of CH2M Hill) which generated a potential conflict of interest.

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