

CROSS TAY LINK ROAD

REVISED COST ANALYSIS REPORT

1. PURPOSE

2.

- 2.1 This Report has been prepared to provide an update on the costs associated with the Cross Tay Link Road project, highlighting that the forecasted costs exceed the current budget. This analysis indicates a worst case scenario cost increase of £32.5 million above the overall budget of £118 million.

3. STRUCTURE OF REPORT

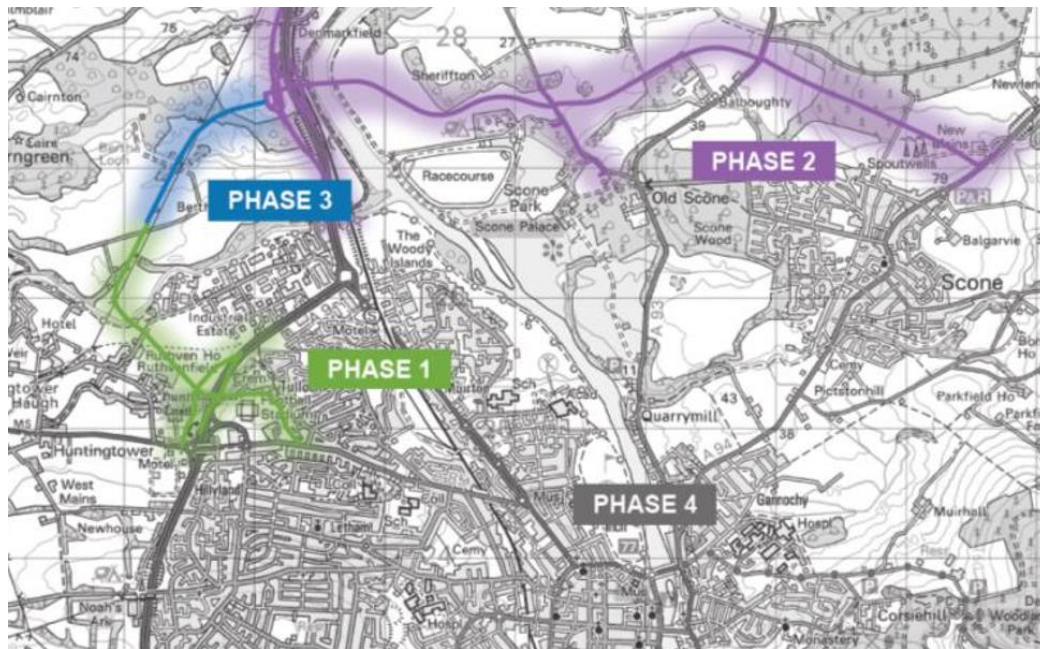
- 2.1 This report is structured over the following sections:

- Section 3: Background
- Section 4: Revised Costing Analysis
- Section 5: Risk Analysis
- Section 6: Conclusions
- Appendices:
 - Appendix A: Revised Costing Analysis
 - Appendix B: Principal Project Commodities (Inflation comparisons)
 - Appendix C: QRA Model Summary

3. BACKGROUND

CROSS TAY LINK ROAD

- 3.1 The Cross Tay Link Road (CTLR) has been a strategic priority of the Council since 2008 and is a vital component of Shaping Perth's Transport Future Strategy which was approved by the Council in January 2012. This Strategy forms four phases and is an integrated series of measures to support the sustainable economic growth of the Perth and Kinross area, whilst also addressing the major congestion and air quality issues in and around Perth.
- 3.2 The four phases are:
1. A9/A85 Junction Improvement and Link Road to Bertha Park
 2. Cross Tay Link Road (connecting the A9, A93 and A94);
 3. Bertha Park connection road (will be taken forward by the developer); and
 4. Associated Perth city centre improvements.



- 3.3 Phase 1 was completed in 2019 and Phase 2, the CTLR, is underway. The third phase is the link road from Bertha Park to the CTLR and the fourth phase an ambitious programme of active travel initiatives in Perth (including the rail/bus interchange).
- 3.4 The CTLR is a key element of the Council's statutory Development Plan comprising the TAYplan Strategic Development Plan 2016-2036 and the Perth and Kinross Local Development Plan 2 (2019). The adoption of the Local Development Plan (LDP2) by the Council on 29 November 2019 was the culmination of 4 years' work, and was the result of an extensive consultation process, an examination and Council resolutions. Delivery of the CTLR is therefore central to the housing, employment and transport strategies for the plan area and for the Perth Core Area.
- 3.5 The infrastructure which is included in the CTLR project is listed below:
- realignment of the A9 dual carriageway between Perth and Luncarty
 - a grade separated junction on the A9
 - a bridge spanning the Perth-Inverness railway line and River Tay
 - a link road connecting the A9 to the North of Scone
 - a green bridge at Highfield
 - a wetland area at the Caravan Park
 - new footways and cycle paths including links to existing routes, and crossings
 - a Park & Cycle facility.
- 3.6 The preferred route for the CTLR was agreed by the Council in December 2016 ([Report No. 16/560](#)) and reaffirmed in respect of the eastern end in [June 2019](#). As with any major roads infrastructure project, the route has been subject to many years of detailed technical assessment and professional and independent scrutiny. It follows the multi-stage process directed by both legislation and Transport Scotland guidance and can be summarised as follows:

- Scottish Transport Appraisals Guidance (STAG) (2008);
- Strategic Environmental Assessment (2010/2011);
- Design Manual for Roads and Bridges (DMRB) Stage 1 Assessment (2011);
- DMRB Stage 2 assessment and associated environmental assessment (2012 – 2016);
- Planning Application and Environmental Impact Assessment Report (Nov 2019); and
- DMRB Stage 3 assessment (April 2020).

3.7 Planning consent ([Ref: 19/01837/FLM](#)) for the CTRLR scheme was granted in October 2020.

3.8 All land required for the scheme has been acquired by the Council through compulsory purchase.

BUDGET

3.9 The approved budget for the project, including for services, works, fees and land, is £118 million. The Council approved a Capital Budget of £78 million for the Cross Tay Link Road in June 2016 ([Report No. 16/277](#)). The project was included in the updated the Capital Budget 2020/21 - 2028/29 and funding re-approved alongside a decision to proceed with the project ([Report 20/175](#)).

3.10 The Scottish Government is contributing £40 million to the project as part of a side deal negotiated as part of the Tay Cities Deal. The Grant Offer has been finalised and the first payment of £5 million was received in early August 2022. It should also be noted that over time there will be developer contributions towards the CTRLR in excess of £17 million.

CONTRACT

3.11 The Procurement Strategy for the contract was approved by the Project Board and signed off by Procurement and the Executive Sponsor in October 2019. In accordance with that Strategy, the contract has been procured through a staged tender process under Competitive Procedure with Negotiation in accordance with The Public Contracts (Scotland) Regulations 2015.

3.12 Following the decision to proceed with the project, tenders were returned on 19 April 2021 and following evaluation a Contract Award Report was prepared and approved by the Project Board on 26 May 2021.

3.13 In accordance with the approved Procurement Strategy (October 2019) the contract for the Detailed Design and Construction of the CTRLR is made up of three stages:

Stage One	Early Contractor Involvement	Preparation of the detailed design including carrying out advance works that are necessary to de-risk the main construction works
Stage Two	Construction	Main construction works including completion of any outstanding detailed design.
Stage Three	Landscaping Management and Maintenance (5 years)	After completion of Stage Two the Contractor automatically enters into a separate term services contract for the management and maintenance of the scheme landscaping.

- 3.14 Following a robust procurement process through Public Contracts Scotland the [contract for Stage One](#) was awarded to BAM Nuttall Ltd (BAM) and commenced in August 2021. Stage Two is due to commence upon the successful completion of Stage One. The current programme estimates completion in Spring 2025. The total value of the contract is £94.5million.
- 3.15 Due to the uncertainty surrounding COVID-19 and EU Exit at the time of tender, the contract includes a clause to cover for the price to be adjusted for inflation and uses the BCIS General Civil Engineering Cost Index to ensure this is done fairly. A clause to allow the price to be adjusted due to a change in the law is also included. These clauses were included to ensure that the contractors invited to tender did not inflate prices significantly to protect themselves from risks associated with COVID-19 and EU Exit. Details of these were contained in the Contract Award Report prior to contract award.
- 3.16 The contract is a NEC 4 (Engineering and Construction Contract) Option C Target Price where the Council only pays the actual cost of the work carried out (known as Defined Cost under the contract) plus an agreed percentage fee. Regular audits and assessments are carried out to ensure that the costs paid are transparent and the percentage fee covers all the Contractor's overheads and profit. At the end of the contract, the final cost is measured against the Target Price which was agreed at contract award stage. The Council and the Contractor share the difference between the End Defined Cost and Target Price. In the event, that the costs exceed the Target Price there is a capped limit on what the Council would need to share.
- 3.17 Stage One of the contract is nearing completion with over 80% of the deliverables successfully achieved. To avoid delay Stage Two will need to commence immediately after the additional budget provision is confirmed.

4. REVISED COSTING ANALYSIS

- 4.1 As Stage Two of the contract approaches, a detailed costing analysis of the full project has been undertaken with the costs and variances shown in the table at Appendix A. The supporting narrative of this analysis has been broken down into three sections:

- Design and Build Works (BAM Contract)
- Contractors All Risk Insurance
- Quantitative Risk Assessment (Contingency)
-

DESIGN AND BUILD WORKS (BAM CONTRACT)

4.2 Changes in Law (National Insurance and Fuel Duty)

- 4.2.1 At the time of contract award, it was known that the UK Government proposed in April 2022 to abolish the tax exemption on red diesel. Under the contract BAM are entitled to this cost adjustment which equates to £3.3 million.
- 4.2.2 In April 2022 National Insurance contributions increased when the Health and Social Care Levy came into effect in the UK. Similarly, under the contract BAM are entitled to this cost adjustment of £0.3 million.

4.3 Compensation Events (Change)

- 4.3.1 Many construction contracts over the duration will be subject to changes for various reasons. For example, changes to the design or specification and unforeseen ground conditions. In this contract changes are called Compensation Events (CEs). To date, only a small number of changes have been implemented with an expected cost of around £1 million. Over half of this is attributed to the additional archaeological investigations required under the project's Written Scheme of Archaeology Investigation and overseen by Perth & Kinross Heritage Trust.
- 4.3.2 It should be noted that there will be changes throughout the duration of the Stage Two contract and an analysis has been undertaken to provide a level of cost contingency. The output from this analysis (Quantitative Risk Analysis), is detailed later in this report.

4.4 Inflation and Current Market Conditions

- 4.4.1 BAM and the construction industry generally are continuing to experience an adverse impact on prices and availability of construction materials and the resulting steep rise in inflation. During the latter months of 2021, the principal drivers affecting inflation were materials (cement, timber, steel and oil), but in the first quarter of 2022 this impact has been exacerbated by significant price rises in gas and the conflict in Ukraine. Market conditions are exceptional, and the impact is global.
- 4.4.2 The initial drivers of rising inflation, in the last half of 2021, were the increased activity on projects as COVID-19 restrictions start easing and a shortfall in the availability of materials because production had been reduced, to match reduced demand, during the lockdown periods. The short-term view had been that price rises and shortages would remain until Q4/21, but forecasts suggested that supply would catch up with demand by Q3/22 and that ongoing price/shortage impacts would ease. However, these forecasts have been compromised by ever increasing gas and oil prices, the ongoing reduced

availability of materials and the global impact of the conflict in Ukraine. Inflation forecasts for Q4/22 are currently +25% for some commodities such as sheet piles, oil, fabricated steel, cement and copper which will have knock on effects on the price of ready-mixed concrete, drainage products, steel reinforcement, transport and plant. In addition to the global impact of supply and demand on inflation, it is unlikely that the supply chain will be able to offer fixed prices for goods and/or services for any meaningful length of time and it is also evident that delivery periods have extended.

- 4.4.3 During the Stage One contract, BAM has worked diligently to identify and secure sub-contractors and suppliers through early procurement, with several key sub-contracts in place for Stage Two providing a price fix. However, this is not possible for all for all suppliers and materials with some unwilling to fix price due to market volatility.
- 4.4.4 In accordance with the contract there is a clause (X1) to cover for the overall price to be adjusted for inflation and the BCIS General Civil Engineering Cost Index is used to ensure this is done fairly. This has been calculated as a forecast in BAM's End Defined Cost as shown below.
- 4.4.5 Under normal circumstances these indices would provide a reasonable approach to inflation assessments. However, these are currently disproportionately low when compared with actual market conditions. An analysis of the principal project commodities has been undertaken to show how these are influencing the Defined Cost. The graphs show the comparison between the BCIS data, the general indices and actual market conditions and are included at Appendix B.

4.5 Value Engineering

- 4.5.1 During the early stages of the Stage One contract BAM undertook a substantial value engineering exercise to develop proposals to benefit the project, principally in terms of costs savings and carbon reduction. Eighteen proposals were accepted providing a total cost saving of just over £5 million. These are now being incorporated into the final detailed design. Unfortunately, due to the steep rise in inflation, the cost benefit of this exercise anticipated at tender will not be realised.

4.6 Stage Two Earthworks

- 4.6.1 Under the contract for BAM were able to submit a proposal to undertake works identified in Stage Two during Stage One if it is beneficial to the contract outcomes. A proposal to commence bulk earthworks in Stage One to capture time in the 2022 earthworks season was subsequently put forward by BAM and accepted.
- 4.6.2 Bringing the earthworks forward to start in May 2022 has provided greater programme and cost certainty.

4.7 BAM's End Defined Cost Forecast

4.7.1 In accordance with the contract BAM are required to submit forecasts of their End Defined Cost. This forecast takes account of the project cost, value engineering, changes in law, CEs, sub-contractor and supplies secured, contractor risks, inflation indices and assessment. This forecast has been expressed as a range:

- Minimum £108.9 million
- Expected £109.8 million
- Maximum £111.7 million

4.7.2. Due to inflation and the current volatile market conditions as outlined in this report, the Maximum End Forecast Defined Cost has been used in this Revised Costing Analysis.

CONTRACTORS ALL RISK INSURANCE

4.8 At the time of tender BAM submitted a price of £2.217 million for this contract insurance requirement. This was higher than the other tender submissions and BAM were subsequently asked to obtain an alternative quotation. A revised quotation is currently being reviewed by the Council's insurance broker.

QUANTITATIVE RISK ASSESSMENT (CONTINGENCY)

4.9 Turner & Townsend have been engaged to provide the Council with commercial management support on the Stage One and Two contracts. This has included working with the Council's Project Team to undertake a complete cost risk assessment, utilising Quantitative Risk Analysis (QRA) techniques. This methodology incorporates assessments of the key sources of risk and uncertainty associated with the project, with the purpose of ascertaining a level of confidence in setting a contingency.

4.10 The model output gives a contingency value of £16.9 million at industry standard level (P80). This includes values for unknown events/risks (£3.6 million) and the cost of delay (£4.3 million). See table at Appendix C.

4.11 Examples of the events and risks included in this model are unchartered services, delays in securing consents (e.g. Network Rail and Transport Scotland approvals), inflation, health and safety incidents, construction defects, delays/insufficient resourcing by utility companies (e.g. Scottish Water), adverse weather, major works interfaces and delays to design approvals.

4.12 The Project Risk Register is reviewed on a monthly basis, and it is the intention to re-evaluate the QRA on a quarterly basis moving forward.

5. RISK ANALYSIS

- 5.1 The following analysis outlines the potential risks of not making an additional provision of up to £32.5 million is made in the capital budget to provide cover for the worse case scenario, resulting in the CTLR not proceeding.

Strategic

- 5.2 The strategic rationale for the project remains unchanged both in respect of enabling the delivery of LDP2 in respect of enabling housing and employment land; and mitigating long term road traffic congestion and poor air quality in Perth City Centre.

Legal

- 5.3 The main risks at this stage of the project should the Council choose not to proceed will primarily relate to a) the expenditure incurred to date and breaching the Council's statutory duty to secure best value; and b) the risk of legal actions.
- 5.4 An additional risk if the scheme does not go ahead is that the Council now owns land it would not need, costing some £5.570 million (including disturbance etc).
- 5.5 The strategic housing land allocations set out in LDP2, as adopted by the Council, cannot be delivered without the CTLR. During the examination leading to the adoption of LDP2 assurance required to be given to the reporter appointed by the Scottish Ministers that the Council was committed to funding the CTLR. The non-delivery of the proposal would impact on existing land deals and investment decisions. Some of these will have been made in the expectation the Council would deliver the infrastructure to which it had committed in LDP2, with the potential for claims to be raised against the Council.

Finance

- 5.6 Up to 31 March 2022 expenditure is £16.8million and the totally legally committed expenditure to 30 June 2022 totals £23.5 million.
- 5.7 There would be a loss of £40 million grant from the Scottish Government if project stopped. £5 million of this has been received by the Council and would therefore need to be returned.
- 5.8 A proportion of CTLR expenditure is also being used as match funding for the Sustrans cycle network project (the bridge will have a cycle lane).
- 5.9 Inflation has been estimated in BAM's End Defined Cost although this can only remain a forecast until realised.

- 5.10 There will be expenditure associated with reinstating the land which has now been significantly impacted by the advance works and earthworks. This would also include the replacement of woodland. The cost of this work is difficult to estimate but the works would be extensive and likely to be several £ millions.

Reputational

- 5.11 The risks are magnified in terms of stopping the project given the expenditure to date and the construction works already undertaken, particularly the bulk earthworks and tree removal.
- 5.12 The reputational risk of continuing with a more expensive scheme is mitigated in the sense that the inflationary pressure is not unique to the CTLR as it is now a widely recognised factor across the construction industry and beyond.
- 5.13 The reputational risk of adopting a local development plan, for the 10 year period to 2029, with a council commitment to delivering the CTLR as key infrastructure for the delivery of required allocations of housing and employment land based, but failing to deliver this infrastructure, is significant.

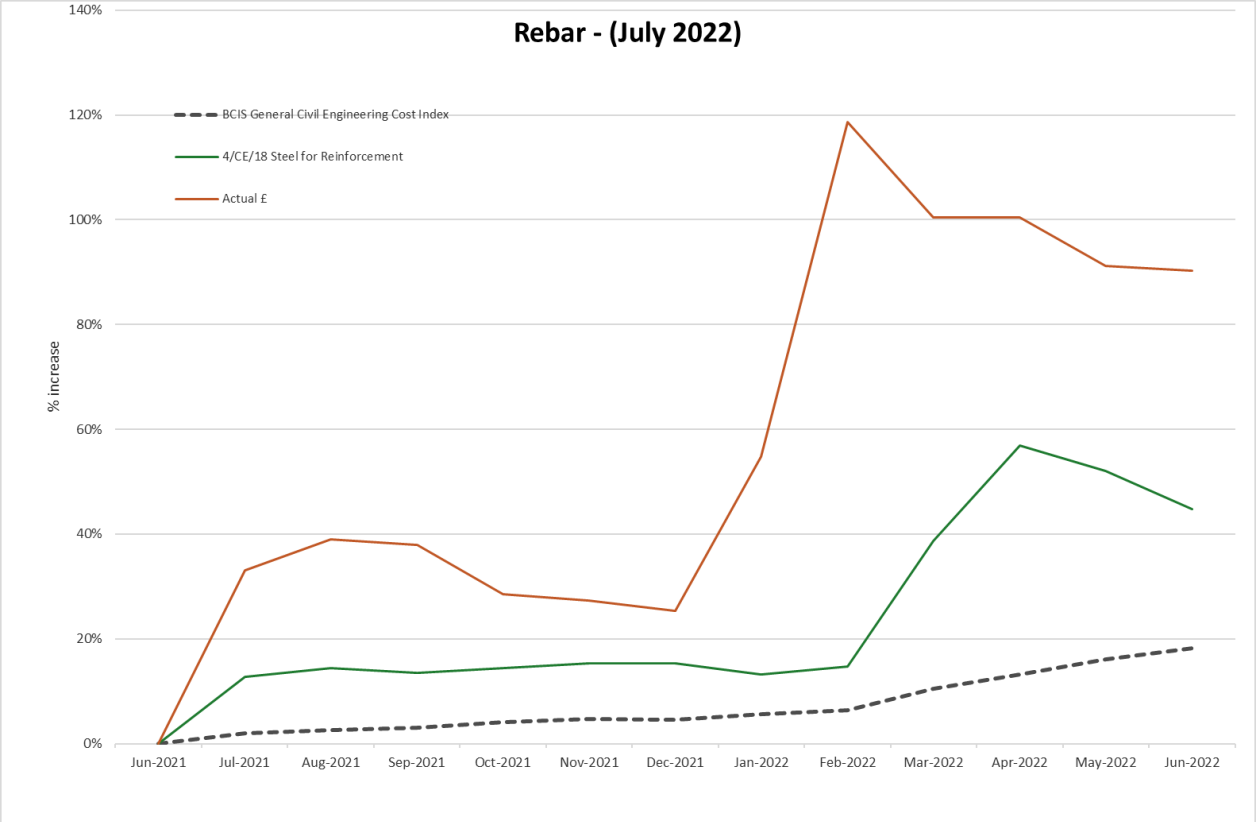
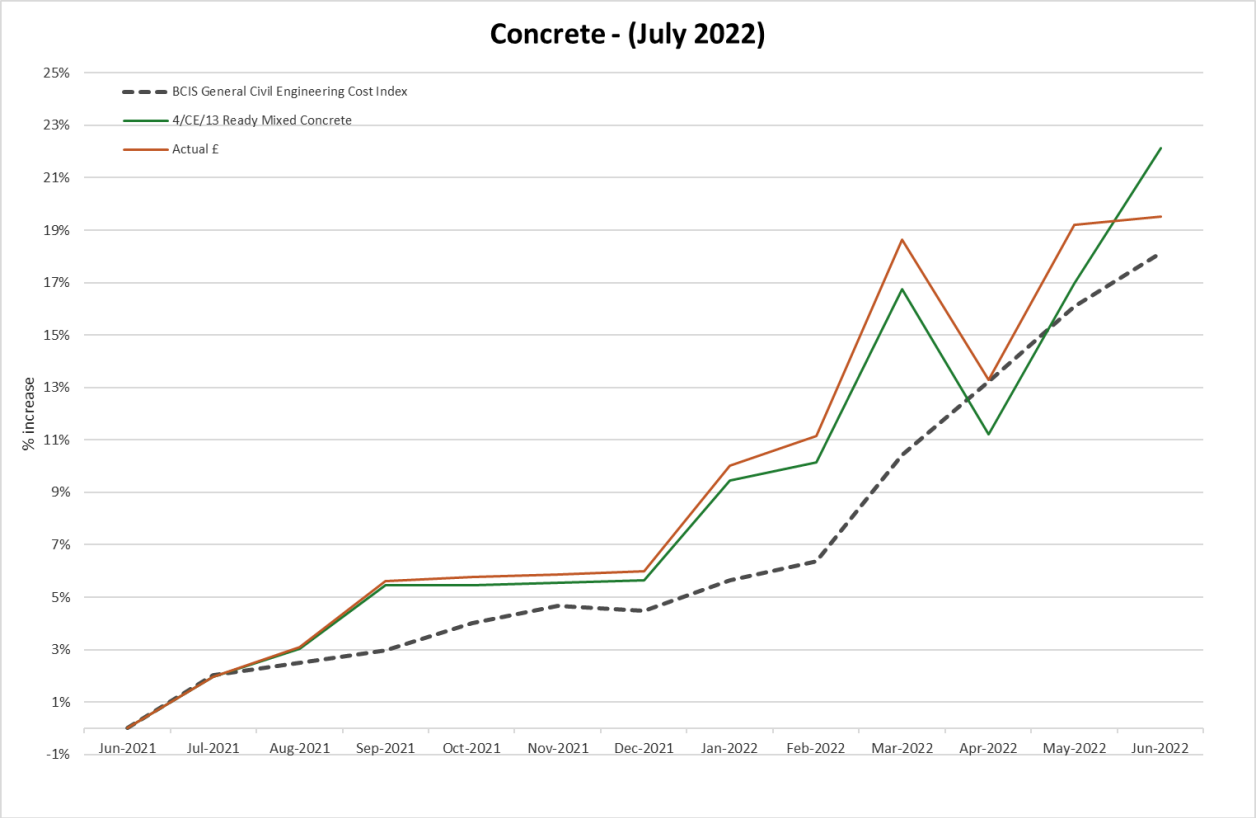
6. CONCLUSIONS

- 6.1 Expenditure to date on the project is £16.8million with a legally committed total of £23.5 million.
- 6.2 The current project costs as detailed in the table at Appendix A show that up to an additional £32.5 million may be required to complete the project. The reasons for the increased costs are outlined in this report. Primarily these are due to the steep increase in inflation, changes in law and the inclusion of Quantitative Risk Analysis contingency of £16.9 million. This QRA takes cognisance of the contract type and potential costs associated with all known risks.
- 6.3 In order to proceed to Stage Two it is recommended that an additional provision of up to £32.5 million is made in the capital budget to provide cover for the worst case scenario.
- 6.4 The contract for Stage Two is due to commence imminently and is needed to enable the bridge pier cofferdam and major piling works to take place in and adjacent to the River Tay. These are critical to the programme given the seasonal constraints placed upon river works. It should also be noted that the inflationary cost increase has no impact on BAM's fee (and therefore profit) which was fixed in their tender.
- 6.5 In line with current governance arrangements further cost updates will be reported regularly to the Finance and Resources Committee.

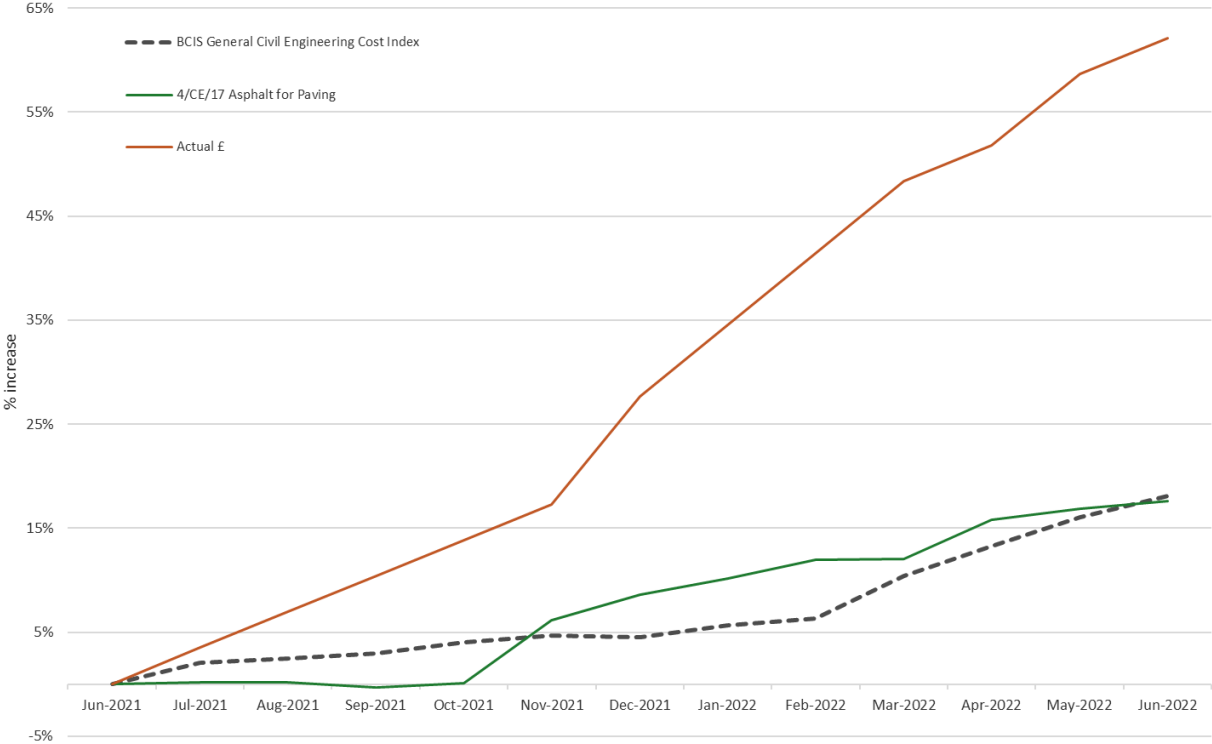
Report by:	Jillian Ferguson, Roads Infrastructure Manager
Date:	31 August 2022
Subject:	Cross Tay Link Road – Revised Costing Analysis
Responsible Officer:	David Littlejohn, Head of Planning and Development

APPENDIX A

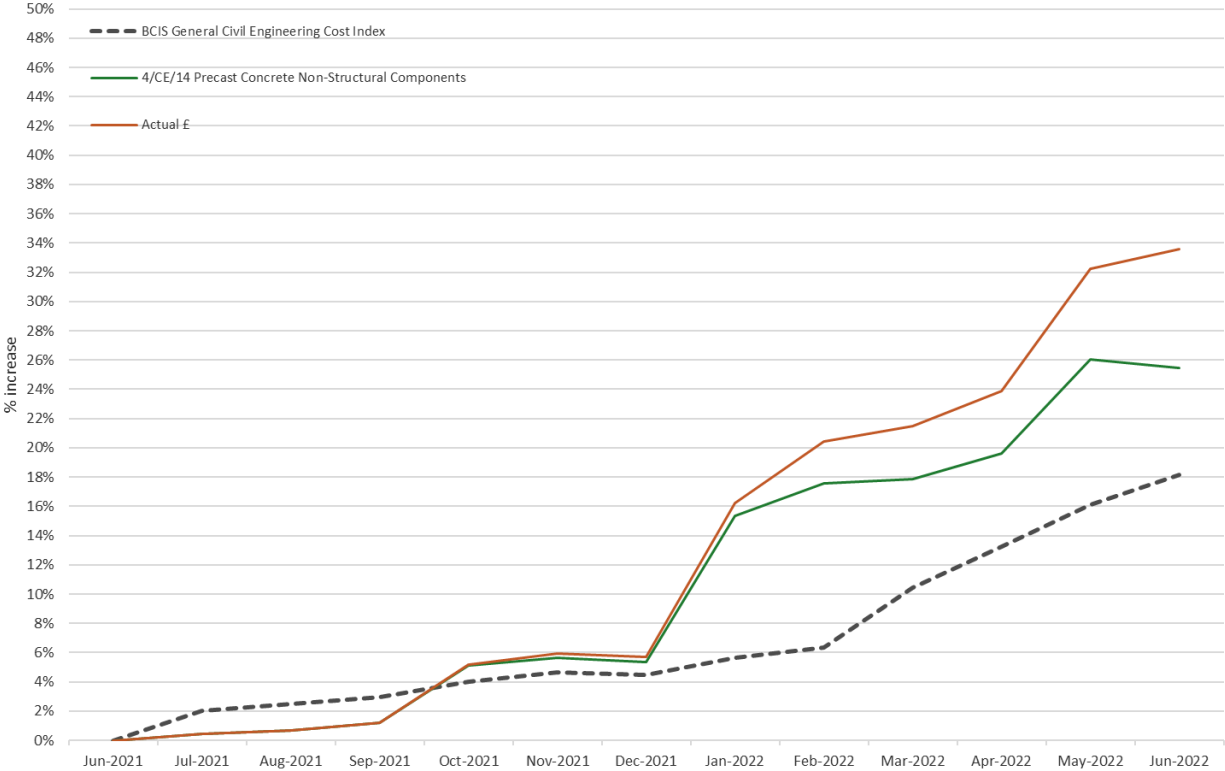
CTLR - REVISED COSTING ANALYSIS						Comments
	Overall	Previous	Revised	Total	Variance	
	Budget	Years	Estimates	Revised	to	
	SP&R 4	Expenditure	From	Estimate	Budget	
	Apr-22	to 31.03.22	2022/23	July 22	July 22	
	£'000	£'000	£'000	£'000	£'000	
BAM Nuttall Contract	94,512	4,814	106,877	111,691	17,179	Min £108,862,000 - Expected £109,822,000 - Max £111,691,000. Cost also includes the 5 year landscape management and maintenance contract
Land and Compensation	5,570	5,520	50	5,570	0	
Professional Fees	6,797	3,873	2,696	6,569	-228	
Licences and Public Utilities	3,622	29	3,960	3,989	367	Includes a £500k contingency
Quantative Risk Assessment	2,399	0	16,900	16,900	14,501	80% likelihood figure (Turner Townsend)
CAR Insurance	2,000	0	2,217	2,217	217	Instructed quotation currently being reviewed
Built Intelligence System (Fast Draft)	0	0	33	33	33	Stages One & Two
Consultant, Surveys and Investigations	1,890	1,845	45	1,890	0	
Engineering Administration	1,210	716	894	1,610	400	
TOTAL CTLR BUDGET	118,000	16,797	133,672	150,469	32,469	

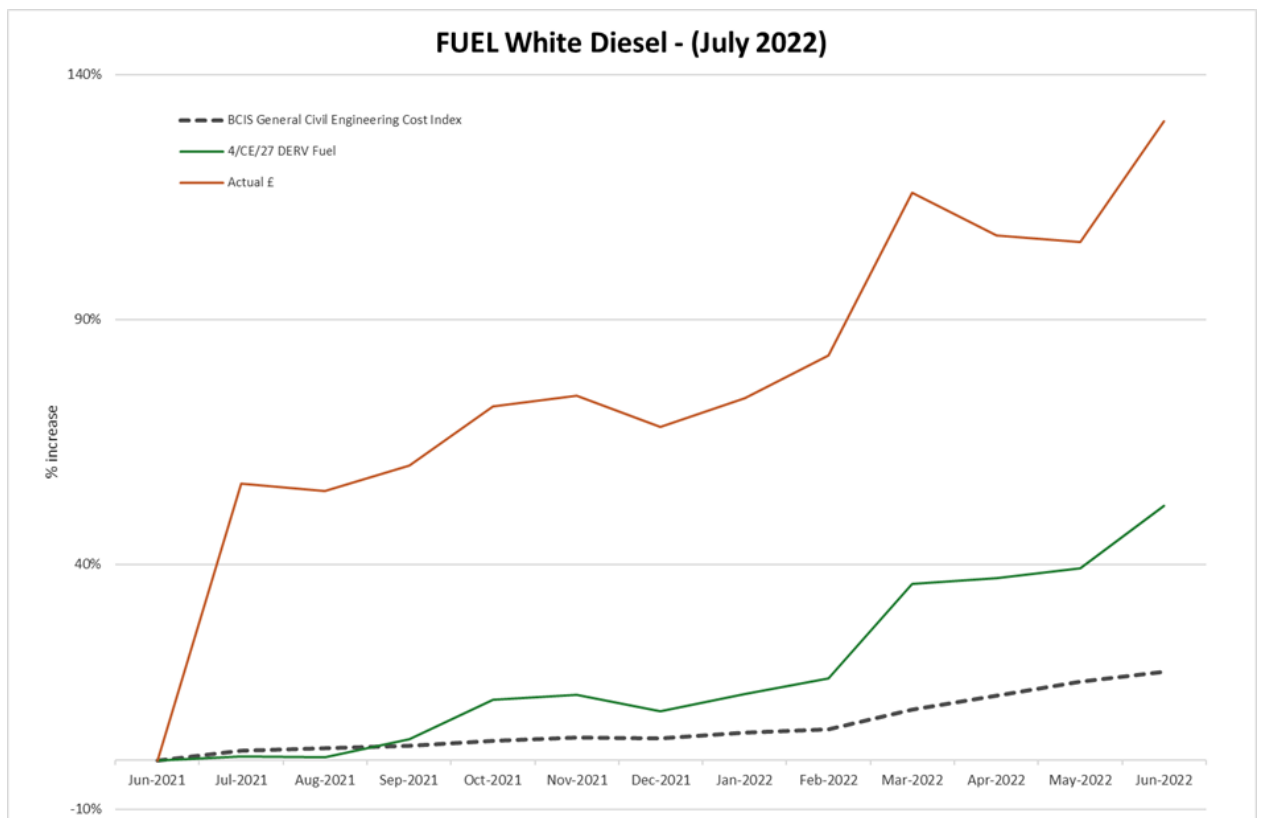
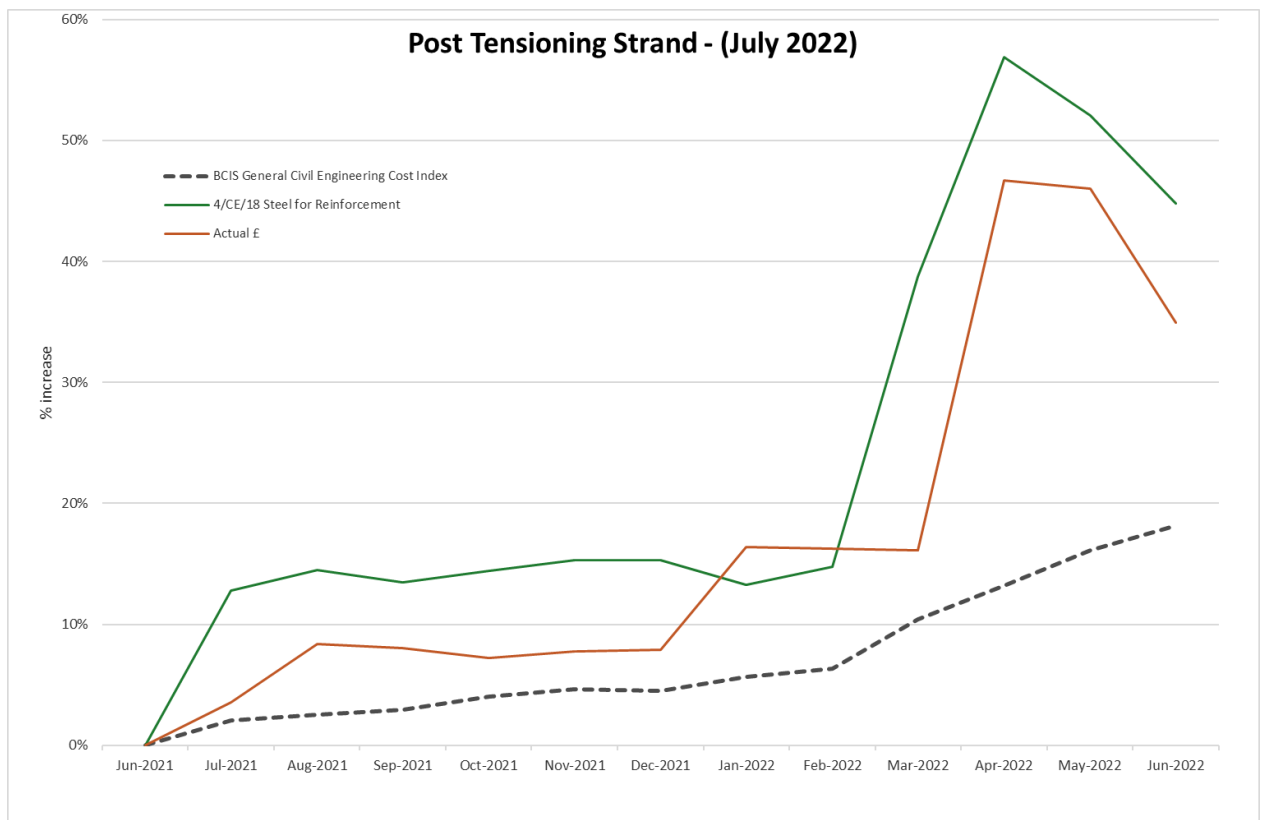


Asphalt - (July 2022)



Precast Non Structural Concrete - (July 2022)





APPENDIX C



Cross Tay Link Road QRA Model
July 2022

	Mean	P50	P60	P80	P90	P95
Risk Register: Discrete Costs	£ 5,768,000.00	£ 5,393,000	£ 6,430,000	£ 8,992,000	£ 10,606,000	£ 11,848,000
Estimating Uncertainty	£ 250,000.00	£ 242,000	£ 275,000	£ 356,000	£ 418,000	£ 471,000
Cost of Schedule Delay	£ 4,113,000.00	£ 4,106,000	£ 4,174,000	£ 4,344,000	£ 4,465,000	£ 4,548,000
Risk Assessments OUTPUT TOTAL						
QRA (Excl Unknown Unknowns)	£10,130,000.00	£ 9,750,000	£ 10,819,000	£ 13,350,000	£ 14,962,000	£ 16,244,000
Unknown Unknowns	£ 3,569,000.00	£3,569,000.00	£3,569,000.00	£3,569,000.00	£3,569,000.00	£3,569,000.00
Overall Total	£13,699,000.00	£ 13,319,000	£ 14,388,000	£ 16,919,000	£ 18,531,000	£ 19,813,000