

ELY SOUTHERN BYPASS- COSTS AND ADDITIONAL FUNDING REQUIREMENT

To: Economy and Environment Committee

Meeting Date: 12th April 2018

From: Graham Hughes - Executive Director, Place and Economy

Electoral division(s): Ely South

Forward Plan ref: 2018/047 **Key decision:** Yes

Purpose: To report changes to the cost and programme for delivering the Ely Southern Bypass and to consider the requirement for additional funding

Recommendation: The Committee is recommended to:

Note the increase in scheme costs and request General Purposes Committee (GPC) to allocate the additional funding required of £13m to complete the scheme

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1. BACKGROUND

- 1.1 Congestion and long delays caused by the layout of the level crossing and underpass on the A142 to the southeast of Ely have long been a concern to the local community and a major obstacle to economic growth in the area. In 2011 the County Council committed to deliver a solution to this long-standing problem and agreed to borrow, if necessary, the full cost of an appropriate scheme. Full option appraisals were undertaken, including stakeholder and public engagement. The appraisal proposed a bypass to the south of the city, crossing the river great Ouse, its floodplain and railway lines as the most viable solution. A plan of the bypass is attached at **Appendix 1**.
- 1.2 Whilst strong local support was received, there was also very significant opposition to the scheme, led by English Heritage, based on the impact on the local fenland landscape. Of particular concern was the visual effect of the height of the river bridge and embankments on the setting of Ely Cathedral. English Heritage, whilst reserving its right to object to any application, stated that low profile bridges over the railway, river and flood plain were required to mitigate the visual impact so far as possible, should the scheme proceed.
- 1.3 To seek to meet the concerns of English Heritage an architect was commissioned to lead the design of the bridges. A design was developed and submitted as part of the planning application, which was approved in September 2014.
- 1.4 At its meeting on 25th November 2014 the Economy and Environment Committee considered a report on the approval of the planning application and outlining a procurement strategy. The committee approved procurement of the design and construction through a New Engineering Contract 3 (NEC3), Target Cost, two-stage Design and Construct contract.
- 1.5 Following the long, iterative development and approval process, members on the Project Board discussed the risks in shortening the tender and design time but emphasised the importance of quick delivery of the scheme. The tender documents and contract were prepared to facilitate the earliest possible start on site and the contract was tendered on the basis of the indicative design developed for the planning application. Stage 1 would develop this into a more detailed engineering design, with Stage 2 being design completion and construction.
- 1.6 The Stage 1 contract (developed design) was awarded in August 2016. The developed design was used to derive a Target Price for the full engineering design and construction. A Target Price of £27,470,909 for the design completion and construction was agreed and work on site commenced in January 2017. It was reported at the time that this sum held no risk or contingency and that additional funding would need to be sought to meet any increase in cost.
- 1.7 During construction a number of significant challenges have arisen which have been resolved. This has resulted in significant cost escalation and an extension to the programme.

2. MAIN ISSUES

Contract and Procurement

- 2.1 The scheme was procured by a full competitive tendering process. Pre-qualification Questionnaires (PQQ) invites an interested provider to make a submission which is evaluated for financial and safety suitability, along with capacity and relevant experience. The highest scoring contractors were invited to submit full tenders. Six contractors were invited to tender and all submitted a bid.
- 2.2 The tender required a quality submission to demonstrate how the contractors proposed to build a high quality product to meet the requirements of the planning consent, along with separate target costs for the design and construction. The tenders were submitted and the cost and quality submissions were evaluated by independent teams. No cost information was shared with the quality evaluation team and vice versa until the evaluations had been completed. The scores for each component were then combined to give an overall score. The overall score was calculated on a ratio 60% quality to 40% price. The evaluation was undertaken by officers and consultants and independently moderated by LGSS Procurement Officers. The winning contractor achieved the highest quality score and was the second lowest price.
- 2.3 The potential risks of minimising time spent on various stages of the project were considered by the Project Board. It was considered that expedient delivery was the priority and that time allowed in the procurement process for tendering and the time allowed in the contract for stage 1 design should be kept to a minimum. A form of contract was therefore selected to deliver this early start on site.
- 2.4 The contract is based on a target price as is common for construction contracts, but includes a provision that all of the quantities used to develop that price are re-measurable, which means that if the quantities change then the target price changes. This option was specifically selected to shorten both the initial tendering period and the Stage 1 design period as it does not require all of the aspects of what is a complex project to be developed, measured and costed in complete detail before committing to construction.
- 2.5 This approach meant that many potential engineering and third party issues were not able to be fully considered in the Stage 1 contract. As a result, the information available on which to base the target cost was limited. Consequently it has become evident that the scope of work was underestimated and not fully reflected in the initial stage 2 target cost
- 2.6 At the end of the contract, any variance between the final target price and actual cost is apportioned between the contractor and the employer, allowing the contractor to share any savings made or to contribute towards overspend. This mechanism incentivises all parties to work collaboratively to deliver the project as economically as possible as underspends (gain) or overspends (pain) are shared in agreed proportion. Currently actual costs are in excess of the target price and this excess (pain) will be shared with the contractor.
- 2.7 The contract is being managed and supervised in accordance with the NEC requirements. All adjustments to the target price are thoroughly assessed in negotiation with the contractor to ensure that they are justified and evidenced. This ensures that all additional

work undertaken is necessary and is delivered in the most economical way. The price now identified is therefore the actual cost of the bypass. Had a longer period been allowed for procurement and design development, then a more realistic price would have been established before construction. However this would have delayed construction by another twelve to eighteen months, and may have jeopardised Department for Transport and Network Rail funding.

Construction Issues

- 2.8 As construction has progressed a number of issues have arisen and resulted in increases to the scope and quantity of work that the contractor has undertaken contributing to the cost increase. These principally relate to the combination of the complexity of the design of the structures necessary to mitigate the environmental impact and secure planning consent, ground conditions, third party requirements, site constraints, and the requirement for the quickest possible delivery. The most significant items of additional cost are in **Appendix 2**.
- 2.9 Legal advice throughout the process indicated that there was a significant risk of refusal of a planning application, the decision being called in by the Secretary of State or judicial review, if sufficient weighting was not given to address the environmental and visual concerns. A specialist bridge architect was commissioned to develop a design that would address the concerns of English Heritage and be sympathetic to the setting. The resulting river bridge design includes a number of features to mitigate its visual and environmental impact. These include low profile structures, shallow open v-shaped bridge piers and an amenity walkway with viewing area cantilevered off the north side of the river bridge and linking two previously unconnected public footpaths. These features, whilst providing attractive, innovative, unique designs and community access to the River Ouse area, are structurally highly complex and have presented significant challenges in design and buildability. The design also took into account the whole life cost of the project and minimises potential on-going maintenance costs.
- 2.10 As the design and work on site has progressed liaison with the third parties such as Network Rail, statutory undertakers (SUs) and land owners has continued. As the requirements of the third parties have become clearer estimates are now firmer, but overall SU costs have increased despite negotiations that have sought to minimise this impact. Network Rail requirements for safety critical staff has also increased. The actual costs of the statutory undertakers' and other third party work will not be fully known until final invoices are received, assessed and challenged, if appropriate.
- 2.11 The most significant statutory undertaker's cost arose from the diversion of the 33kv power supply under the railway line. Initial statutory notices were issued to UKPN on 1st June 2016, before the tender was awarded, in order to start the process of agreeing the work. UKPN did not fully engage with the Council or Network Rail until several months after initial notices were served despite regular and frequent contact from officers. UKPN indicated that their work might not be completed until June 2018, delaying the project by a year. However through further dialogue with UKPN and Network Rail the work was completed in August 2017 reducing the delay to three months. Contractually as this was a third party issue the costs of the delay fall to the County Council.

- 2.12 It was clear that ground conditions were poor from investigations undertaken during the preliminary design. Further detailed investigations were undertaken in Stage 1. Additional testing and analysis meant that some results were not available to be incorporated into the stage 1 design.
- 2.13 The most significant increases arising from the ground conditions have resulted in large amounts of additional material being brought into the site to construct temporary working areas and platforms for heavy plant and materials, removal and disposal of material unsuitable to build on, and increases in piling requirements.
- 2.14 The structural complexity of the v-piers for the river viaduct has added to the cost and further extended the programme. They required the use of larger quantities of steel and concrete to ensure structural integrity. The increase has also increased the temporary structural support required during placing the concrete. The size of the reinforcing bars has meant that much of it has been lifted individually into place by crane, slowing progress, although speed of construction has increased using experience gained in building each pier. The piers are now complete.

Programme

- 2.15 At the start of construction completion was expected at the end of May 2018. The issues with the power cable diversion at the railway bridge moved the completion date to August. Delays to the river viaduct foundations and piers have further extended the programme significantly beyond the delay to the railway bridge. The viaduct foundation and piers are now completed and erection of the superstructure has commenced. Progress in recent weeks has been good and has recovered some of the delay but completion is now expected to be in October.
- 2.16 Considerable work has been done with the contractor to identify and mitigate any further potential programme issues. While some risks remain, with completion of work below ground, the viaduct piers, and with the erection of the bridge and viaduct now underway, the potential programme risks are diminishing. We continue to work with the contractor to maintain the current good progress and seek to recover the delays as much as possible.

Cost and Funding

- 2.17 The funding package for the scheme in the Council's Business Plan is £36million. This was to cover the full delivery including option development and approval, procurement, detailed design, construction, land costs and accommodation works, statutory undertakers, costs and Network Rail costs. It is made up from Local Growth Fund- £22 million, Network Rail £5 million and East Cambridgeshire District Council Community Infrastructure Levy (CIL) £1 million. The remaining funding will be from the Council's prudential borrowing.
- 2.18 Taking into account the construction and third party issues outlined above it is expected that the outturn cost of the project is likely to be £49 million. Additional funding of £13 million will therefore need to be approved as prudential borrowing by GPC.
- 2.19 As issues have arisen they have been carefully evaluated to ensure that they have been addressed in the most economical way. A number of cost workshops have been held with the contractor and the client team, but owing to the complex nature of the scheme, only

small savings could be made, without compromising the high quality design developed to secure planning consent and increasing future maintenance liability. Simplifying the design of the V-piers or removing the walkway from the scheme would have realised the biggest savings. However, these features were fundamental in the design approved by the planning authority and would have resulted in significant redesign and a new planning application.

- 2.20 Third party costs when received will be reviewed and challenged as appropriate.
- 2.21 At this stage, the most uncertain and challenging elements of the project (ground improvements, piling, bridge construction) have progressed to a point where risks are more clearly understood and cost and programme are more certain. However, there are still risks and, although difficult to quantify, an assessment of the remaining risks is included in the potential outturn. A detailed cost summary is available as a background document.
- 2.22 The additional work to evaluate payment applications and extended programme will mean that the consultant's work will increase and additional costs will be incurred. These are included in the potential outturn in paragraph 2.18. However, this increase in consultant's costs should be off-set by enabling closer management of the contract, collaboration with the contractor in identifying the most economic solutions to issues, closer scrutiny of additional work requirements and agreeing reduced costs in CEs and remeasurable work.
- 2.23 Alternative sources of funding have been investigated and requested from the DfT, the Local Enterprise Partnership, East Cambridgeshire District Council and the Combined Authority. None of these sources has been able to provide additional funding. It is therefore necessary that the County Council makes provision in its business plan to meet the shortfall. However, alternative sources of additional funding will continue to be investigated.

3. ALIGNMENT WITH CORPORATE PRIORITIES

3.1 Developing the local economy for the benefit of all

The following bullet points set out details of implications identified by officers:

- The scheme remains vital to support the economy of the City of Ely by removing a significant obstacle to accessibility and growth
- The scheme will provide significant benefits to road users by reducing delays to road traffic, especially commercial vehicles.
- It will provide significant opportunity for improvement to the station area.
- It will facilitate increased use of the railway line, especially freight traffic.

3.2 Helping people live healthy and independent lives

The walkway on the river bridge will open up a new circular walk, encouraging access to the countryside.

3.3 Supporting and protecting vulnerable people

There are no significant implications for this priority.

4. SIGNIFICANT IMPLICATIONS

4.1 Resource Implications

The report above sets out details of significant resource implications in Section 2.18 onwards. Committee is asked to note the increased costs of £13.0m and ask GPC to approve the additional funding from Prudential Borrowing. The annual cost of the additional prudential borrowing required to fund the increased costs will start at £686k pa and decreasing each year thereafter over 40 years.

4.2 Procurement/Contractual/Council Contract Procedure Rules Implications

The report above sets out details of significant implications in Section 2.15.

4.3 Statutory, Legal and Risk Implications

The following bullet points set out details of significant implications identified by officers:

- Limited public understanding of the risk and management of civil engineering construction schemes may lead to adverse publicity over the County Council's management of this project.
- All project risks are included in the Project Risk Register which is regularly updated and costed by the combined Project Team (client and contractor) and are reported at each Project Board Meeting.

4.4 Equality and Diversity Implications

There are no significant implications for this priority.

4.5 Engagement and Communications Implications

The following bullet points set out details of implications identified by officers:

- The scheme retains a high level of support with the public along with the expectation that it will be delivered as quickly as possible.

4.6 Localism and Local Member Involvement

The following bullet points set out details of implications identified by officers:

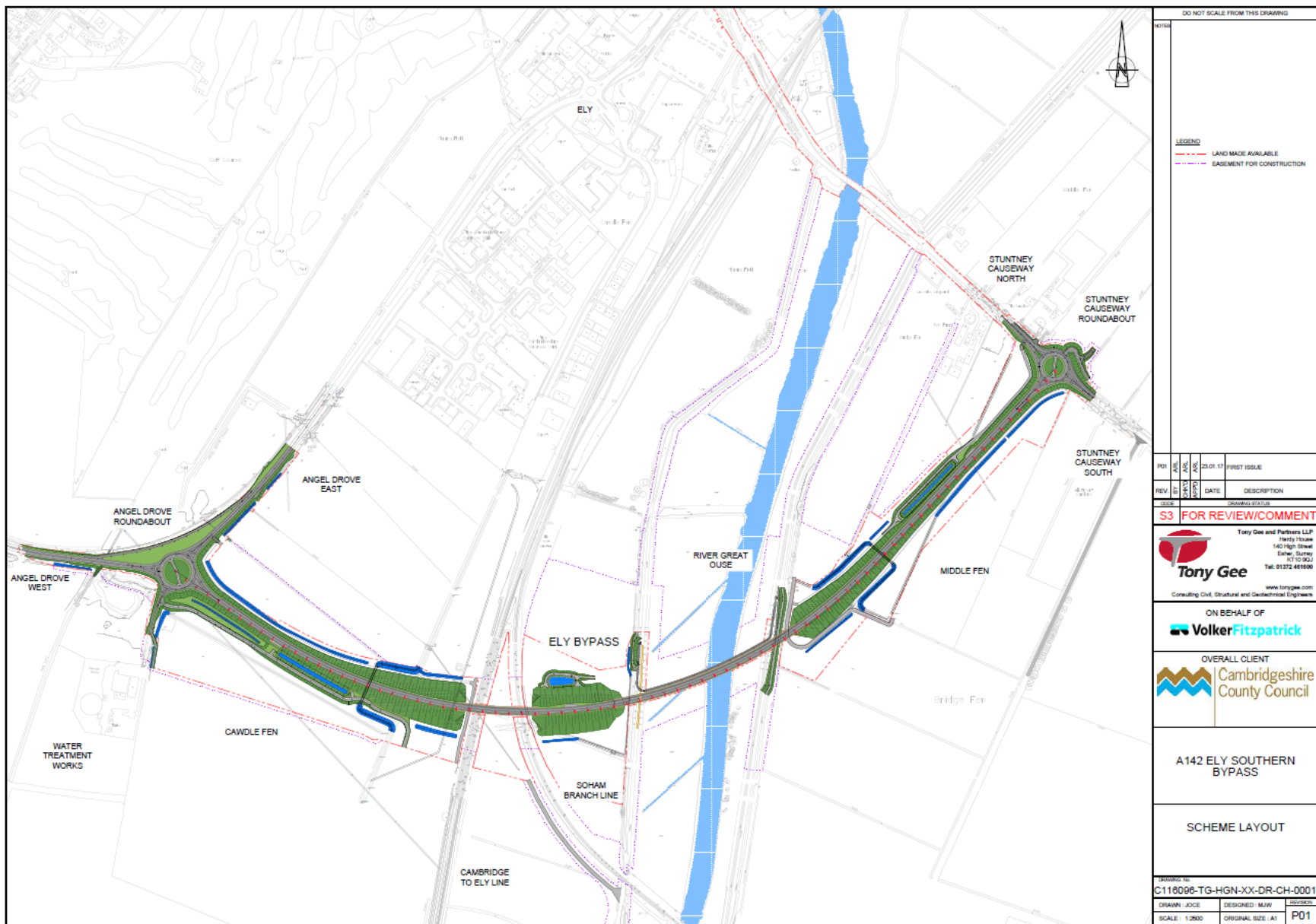
- Local members of the County Council and East Cambridgeshire District Council are informed of the scheme progress by their membership of the Project Board.

4.7 Public Health Implications

There are no significant implications for this priority.

Implications	Officer Clearance
Have the resource implications been cleared by Finance?	Yes Name of Financial Officer: Sarah Heywood
Have the procurement/contractual/ Council Contract Procedure Rules implications been cleared by the LGSS Head of Procurement?	Yes Name of Officer: Paul White
Has the impact on statutory, legal and risk implications been cleared by LGSS Law?	Yes Name of Legal Officer: Satinder Sahota
Have the equality and diversity implications been cleared by your Service Contact?	Yes Name of Officer: Tamar Oviatt-Hamm
Have any engagement and communication implications been cleared by Communications?	Yes Name of Officer: Sarah Silk
Have any localism and Local Member involvement issues been cleared by your Service Contact?	Yes Name of Officer: Tamar Oviatt-Hamm
Have any Public Health implications been cleared by Public Health	Yes Name of Officer: Tess Campbell

Source Documents	Location
Financial Summary Economy and Environment Committee Report and Minutes; July 2016, November 2014. Cambridgeshire Planning Committee, Report and minutes and Secretary of State approval; September 2014 County Council Cabinet; December 2013	Room 311, Shire Hall, Cambridge



Estimated Scheme Cost

Scheme Costs	December 2016 (£)	March 2018 (£)
Pre Stage 1 costs	2,840,000	2,840,000
Statutory undertakers diversion works	1,600,000	1,129,062
Land costs	1,932,738	2,338,000
Network Rail costs	450,000	767,162
Stage 1 Cost	1,226,353	1,226,353
Stage 2 Cost	27,470,909	38,294,533
Supervision & management costs	480,000	1,600,000
Risk & Contingency		715,270
Potential Scheme Cost	36,000,000	48,910,380

Note: Some of the work that was expected to be undertaken by the Statutory Undertakers and Network Rail has been carried out by the main contractor and is therefore included in the March 2018 Stage 2 Cost.

Estimated Stage 2 Cost Breakdown

Stage 2 Cost Breakdown	March 2018 (£)
Stage 2 Target Cost	27,470,909
Compensation Events	5,640,000
Re-measures	4,416,000
Pain	582,624
Opportunity	-715,000
Risk	1,120,000
Gain	-220,000
Total	38,294,533

Significant Items that have Contributed to Estimated Scheme Cost Increase

Significant Remeasure Items	£	Reasons for change
Sheet piling	88,215	Development of temporary works design - Thicker gauge piles and propping required. Additional Sheet piling to flood bunds for leaf pier construction and 3 rd land-based cofferdam.
Soft Spots	47,595	Site/ground conditions - Soft ground requiring removal & better quality material placed. Soft spots extent verified on site.
Temporary works aggregates	1,728,455	Development of temporary works design – Thicker working platforms using different material and over larger areas required compared to tender assumptions.
Earthworks increase	810,203	Development of permanent works design – Change from soil stabilisation technique to dig out and replace. Increase in drainage material.
Structural Steel	391,822	Development of permanent works design has led to an increase in structural steel requirements.
Drainage	198,368	Development of permanent works design – Change in size of mammal pipes and adjustment of invert levels. Correction of tender adjustments – assumptions that drainage could be rationalised were not realised.
Walkway piling	160,388	Development of detailed design – Type, size and number of piles required increased due to existing ground conditions and development of walkway design.
Formwork, Reinforcement & Concrete Remeasure	306,683	Development of detailed design
Testing remeasure	104,119	Tender allowances insufficient. Additional earthworks contributed to increase.

Walkway steelwork remeasure	237,350	Development of detailed design – incl. weight, complexity and waterproofing requirements.
Groundworks	87,673	Detailed design development – changes to accommodation works, kerbing & footways.

Significant Agreed Compensation Events	£	Comments
CE001 – Railway Overhead Line Equipment Lowering grip 3 to 4	44,081	Design works of lowering railway electrical line to allow bridge to be installed.
CE006 – UK Power Network 11kV contestable works	52,461	Works that were within scope to be undertaken by statutory undertakers that were undertaken by the contractor to obtain greater programme control (i.e. reduce risk to programme).
CE011 - Rail possession staff	248,392	It was anticipated that Network Rail would provide possession staff.
CE012 - Street lighting power supplies	104,044	Street lighting power supply requirements changed from information available at tender
CE019 – Anglian Water 500mm potable water main protection works	146,478	Works that were not envisaged as being required as statutory undertakers records showed the water main being far deeper than it proved to be.
CE026 - UK Power Network completion dates	1,612,312	Delay & disruption to construction works and programme due to later than anticipated diversion of 33kV UKPN overhead.
CE031 – British Telecom Openreach Contestable works	49,416	Works that were within scope to be undertaken by statutory undertakers that were undertaken by the contractor to obtain greater programme control (i.e. reduce risk to programme).
CE032 - Anglian Water Rising main - Duct installation	19,118	Works that were within scope to be undertaken by statutory undertakers that were undertaken by the contractor to obtain greater programme control (i.e. reduce risk to programme).

CE033 - Culvert Installation requirements	498,743.53	Third party requirement of landowner/developer of Octagon Park site. Requirement not known at tender.
CE035 - Railway Overhead Line Equipment Grips 5-8	201,050.29	Lowering of overhead railway line to allow railway bridge to be installed.
CE040 - Network Rail track monitoring for Railway Bridge works	94,310	Network Rail requirement that was not anticipated/expected.
CE046 - UK Power Network 33kVA Access requirements	12,512	Haul roads constructed to facilitate UKPN access for the 33kV diversion works. This minimised delay & CCC are seeking to recoup these costs from UKPN.
CE057 – Network Rail Change in Standard 19	114,620	Change in Network Rail standards that requires additional safety staff. Standard came into effect post tender.

Compensation Events Under Review

Value of compensation events that have been submitted and are under review is £1,660,521