**Chester Terrace Balustrade Working Group meeting.**

**26 February 2021 by video conference**

**Present:**

Loretta Balfour (Chair) *(CEPC Chair)*

Alex Bottomley *(CEPC Licencing and Administrative Assistant)*

Michael Chung *(HP+M structural engineers)*

Jack Harrold *(HP+M structural engineers)*

Richard Loftus *(resident of Chester Terrace)*

Andrew Maskell *(CEPC Landscape Manager)*

Allan Murray – Jones *(CEPC Gardens Committee Chair)*

Nick Packard *(CEPC Director)*

Ivy Henry *(CEPC Receptionist)*

*Before the meeting, the Director had circulated an agenda along with the Chester Terrace costings prepared by Buildt Quantity Surveyors and the HP+M Chester Terrace retaining wall – Scheme Proposals and Pricing summary document.*

1. The meeting began with Michael Chung reviewing the options in the Chester Terrace retaining wall scheme proposals and pricing summary document:
   * Exclusions to the costs include:
     1. No contingency allowed in any of the options.
     2. No VAT included.
     3. Due to the schemes not being designed yet, the QS has made many assumptions which could result in the variations to the cost once post design.
     4. No professional fees included.
     5. No planning permission costs.
     6. No Party Wall etc. Act costs including inspections of neighbouring property.
   * Review of options

* **Option 1** – this option would be a cosmetic repair not touching the foundation or retaining wall. It would include the ad hoc repairs to the balustrade. The cost is £993k over 20 years with an upfront cost of £434k to put the balustrade in repair plus ongoing repairs on the basis of 10% of the balustrade needing repair per year with a 2% inflation per year allowance.
  + The advantages/strengths of this option are:
    - Provides a low-cost option being the least expensive offered.
    - There is little effect on the trees.
  + The negatives/weaknesses of this option are:
    - The ongoing movement of the foundations below is not addressed.
    - The strength of the balustrade will not meet current standards, the best it could achieve is the original installed strength.
  + 60 weeks on site spread over the 20 years with 30 weeks upfront.
* **Option 1a** – this option is an improvement on option 1 in terms of the strength of the balustrade. The existing balustrade, retaining wall and foundations remain, however extra pins would be added to increase the strength of the balustrade. This option is based on the quotation from Bradford Watts. There would be movement joints put in along the length of the balustrade. The cost for this option is £1.07m with an upfront cost of £465k to put the balustrade in repair plus ongoing repairs on the basis of 10% of the balustrade needing repair per year with a 2% inflation per year allowance.
  + The advantages of this option are:
    - This is an improvement on option 1 enhancing the strength of the balustrade.
  + The negatives/weaknesses of this option are:
    - It is not guaranteed the balustrade will meet current strength requirements. Would need to conduct trials including load testing if this option were selected. It should be noted it could fail the first trial and there would then need to add further pins and re-test.
  + 80 weeks on site spread over 20 years with 40 weeks upfront.

It was questioned why we did not cost for a new balustrade to compare with options 1 and 1a. Michael Chung explained this was because it was not one of the options previously discussed. However, we know the cost of a new balustrade appeared to be £630k without doing anything to the wall from options 3 and 4. For a comparison, you would also then have to add the ongoing repairs on the basis of 10% of the balustrade needing repair per year with a 2% inflation per year allowance.

* **Option 2** – this option includes a new balustrade and ground anchors for the full length however under pinning is only done as a reactive remedial measure as and when movement is seen. The cost of this is £2.80m based on an upfront cost of £1.16m (being £619k for the foundations and £514k for the balustrade) plus ongoing repairs on the basis of 10% of the balustrade needing repair per year with a 2% inflation per year allowance and under-pinning works based on the assumption of doing 5% of the length works every year over 20 years.
  + The advantages of this option are:
    - The balustrade would meet current strength requirements as it is new.
    - The retaining wall would be strong enough horizontally eliminating any sideways movement.
  + The negatives/weaknesses of this option are:
    - the retaining wall would still suffer vertical movement.
    - Partial underpinning can lead to differential movement between underpinned sections and still moving adjacent sections, resulting in ongoing damage to the balustrade and higher costs.
    - There is a risk of ground anchors clashing with the presence of services and the vaults of the properties.
    - Damage to trees.
  + 80 weeks on site spread over 20 years with 40 weeks upfront.
* **Option 2a** – the only difference between this and option 2 is instead of inserting a new balustrade, we keep the remaining one and pin it as per option 1a. The cost of this is £2.89m based on an upfront cost of £1.22m (£676k foundations, £546k balustrade) plus ongoing repairs on the basis of 10% of the balustrade needing repair per year with a 2% inflation per year allowance and under-pinning works based on the assumption of doing 5% of the length works every year over 20 years.
  + The advantages and disadvantages for this are the same as option 2 however the pinned balustrade would not be as strong as a new one.
  + 95 weeks on site spread over 20 years with 45 weeks upfront.
* **Option 3** – This provides a new balustrade with ground anchors and all the under pinning up front. The cost of this is £1.67 upfront (£1.04m foundations, £630k balustrade). If this option were spread over two years, the cost would be £1.71m based on year 1 cost of £837k (£523k foundations, £314k balustrade) and a year 3 cost of £871k (£544k foundations, £327k balustrade).
  + The advantages of this option are:
    - The balustrade and retaining wall will be strong enough to resist lateral and vertical movement with the foundations under-pinned.
    - Less intervention on the roadside as opposed to option 4.
  + The negatives/weaknesses of this option are:
    - There is a risk of ground anchors clashing with the presence of services and the vaults of the properties.
    - Damage to trees and vegetation.
  + 30 weeks on site if completed in one visit.
* **Option 3a** – Similar to option 3, providing new grounding anchors and underpinning upfront, however the existing balustrade would be pinned rather than new. The cost for this is £1.63m upfront (£1.06m foundations, £573k balustrade).
  + The advantages of this option are:
    - The balustrade and retaining wall will be strong enough to resist lateral and vertical movement with the foundations under-pinned.
    - Less intervention on the roadside as opposed to option 4.
  + The negatives/weaknesses of this option are:
    - There is a risk of ground anchors clashing with the presence of services and the vaults of the properties.
    - Damage to trees and vegetation.
  + 35 weeks on site completed in one visit.
* **Option 4** – This would involve removing the existing retaining wall plus balustrade and replacing with a new reinforced concrete retaining wall with piled support and new balustrade. There could be some potential works in terms of trench sheeting on the road side. The cost of this is £1.79m (£1.16m foundations, £635k balustrade).
  + The advantages of this option are:
    - The foundations will be strong enough to resist lateral and vertical movement.
    - The balustrade will meet modern strength requirements.
    - Ongoing maintenance will be minimal.
  + The negatives/weaknesses of this option are:
    - Most intrusive option with most impact on the road and garden (including trees).
  + 40 weeks onsite completed in one visit.
* **Option 4a** – The same as option 4 except keeping the current balustrade and pinning it. The cost for this would be £1.73m (£1.16m foundations, £570k balustrade)
  + The advantages of this option are:
    - The foundations will be strong enough to resist lateral and vertical movement.
    - The strength of the balustrade should be improved from the existing position.
  + The negatives/weaknesses of this option are:
    - Most intrusive option with most impact on the road and garden (including trees).
    - Balustrade not likely to meet modern standards.
  + 45 weeks onsite completed in one visit.

Loretta Balfour thanked Michael Chung and Jack Harrold for the presentation. It was suggested that going forward, the summary would also need to display the upfront costs clearly (as well as the split between the foundations and balustrade).

Loretta Balfour highlighted a concern that having discovered there is a problem with the retaining wall/foundations, that it would not be sensible or appropriate for the CEPC to not take any action to rectify that aspect.

Loretta Balfour also noted if not for the intrusiveness, option 4 would be the preferred option, being that the CEPC have the funds in place for the foundations. However, because of the intrusiveness of option 4 in terms of the loss of trees along the wall, subject to what the arboriculturist reported, Loretta Balfour suggested that options 3/3a could be more appropriate if the issues regarding services and vaults did not mean they had to be ruled out.

The Group did not see the benefit in further pursing options 2/2a being the most expensive with few positives.

Richard Loftus highlighted that in options 1 and 1a the assessment of the on going repairs are based on assumptions and the reality could be quite different. It was accepted that assumptions had to be made in order to make comparisons between the options and that more or less of such work could be required in reality.

Richard Loftus also noted for option 4, apart from the tree loss there are also costs risks due to the amount of demolition and contaminated land, meaning the actual cost could raise higher than the current assessment. Because of this, he suggested if option 4 were pursued, attempting to use a fixed price contract with the risk put on to the contractor due to the risks.

Richard Loftus suggested a further variation on option 1, replacing the entire balustrade with a new one. This was termed option 1d. This would include designing a new balustrade. Instead of being pinned together, it would be screwed together (casting in a bolt with a nut in the plinth). This would provide a balustrade that could be dismantled and reassembled when needed. In this scenario Richard noted if future work was then needed on the foundations, the balustrade could be dismantled and works could take place on the foundations with the cost of any foundation works paid from the CEPC’s Paving fund as that fund would be saving by not undertaking full underpinning. Nick Packard suggested that he thought the cost of work to the balustrade would be for the Chester Terrace garden fund (rather than the Paving fund) in this scenario if the basis for not rectifying the foundations was for the convenience of Chester Terrace residents. There could also be an expensive and long term series of works attributed to the Paving fund if an option were taken that does not address the movement issues of the foundations.

Michael Chung commented that whilst it is not impossible, it is not one as an engineer he would recommend. He suggested he would need to investigate it further but expects it to change the design of the balustrade and cannot say whether the product would retain the same price and look when compared with the current options.

Richard Loftus suggested he does not believe option 3 should be considered because of the risks associated with the ground anchors. Loretta Balfour noted whilst it may not be the most likely, option 3 should be considered if it could save many trees.

Nick Packard suggested in his view the CEPC needed to decide whether it feels it has to address the ongoing movement of the foundations.

**The meeting questioned why the cost for a new balustrade is different in option 2 being £541k compared with £630k in option 3, when both appeared to be an upfront new balustrade. Michael Chung to ask the QS to clarify any difference.**

**It was agreed to rule out options 2 and 2a.**

**The meeting agreed, subject to the cost, to ask an arboriculturist to compare the effect on the trees of options 3 and 4. If there was potential for saving significantly more trees with option3, then it may be that the further surveys associated with investigating that option would need to be incurred to see if it was possible. If there was not much difference in the trees saved, option 3 should be ruled out.**

**The meeting agreed the costs of further investigating option 3 should not be incurred until the position on trees was clearer.**

* + The meeting discussed the explanation of the similarities and differences between Chester Terrace and Cumberland Terrace.

Michael Chung summarised on Cumberland Terrace the foundations were stable. The issue they found with the balustrade there was that it had a lack of movement joints, thus the expansion/contraction movement of the balustrade caused its failure. The difference between this and Chester Terrace is that at the latter, the foundations move causing the mortar to fall out, which caused the balustrade to last longer as it effectively created a series of movement joints all the way along the balustrade. This meant the balustrade at Chester Terrace had lasted longer than at Cumberland Terrace due to the moving foundations. This was understood by all present.

1. Funding of the works
   * The meeting noted the funds for the balustrade would come from the Chester Terrace garden fund (to which only Chester Terrace ratepayers contribute) with the retaining wall/foundation costs coming from the Paving Fund (to which all Regent’s Park paving ratepayers contribute).

**The meeting agreed that at the point of tender, the contractor should be required to split the costs of the works between the balustrade and wall/foundations so the costs can be accurately apportioned.**

* + The meeting considered if option 4 were selected and the garden needed work arising from the foundations, which fund would cover these costs. It was noted whilst the CEPC would need to consider the matter further, it is possible that some of these costs could be allocated to the Paving fund.

1. AOB

*(Michael Chung and Jack Harrold left the meeting. Agreed to speak with Richard Loftus on 2 or 3 March 2021 to discuss the dismantlable balustrade and how it could be made in theory and keep Nick Packard up to date with any discussion).*

* + Meeting with residents/ratepayers of Chester Terrace Wednesday 17 March 2021

The meeting discussed Allan Murray Jones will Chair the meeting. This would allow Loretta Balfour and Nick Packard to answer any questions from residents rather than the Chair of the meeting.

The meeting noted after the Board meeting on 4 March 2021, the need to put together the papers to be sent out to Chester Terrace residents/ratepayers including a cover sheet and the agenda. The meeting highlighted the need for the costs to be separated to show the up front cost of the balustrade for each option.

The meeting discussed the need to be aware of the length of time the garden may be out of use. A rough calculation was needed of the time post the main works that a landscape contractor may need in the garden.

**Nick Packard and Andy Maskell to work out a rough estimate of how long the garden might be closed after the main works.**

**The meeting agreed to provide the Chester Terrace residents with details of all the options, reports and costs.**