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| Committee(s): Residents' Consultation Committee Barbican Residential Committee | Dated: 06/06/2022 17/06/2022 |
| Subject: Update Report – Beech Gardens (North West Podium) Waterproofing Project | Public |
| Which outcomes in the City Corporation's Corporate Plan does this proposal aim to impact directly? | 1, 2, 12 |
| Does this proposal require extra revenue and/or capital spending? | N |
| If so, how much? | N/A |
| What is the source of Funding? | N/A |
| Has this Funding Source been agreed with the Chamberlain's Department? | N/A |
| Report of: Andrew Carter, Chief Officer/Executive Director Community and Children's Services | For Information |
| Report author: Paul Murtagh Assistant Director Barbican & Property Services | |

Summary

The purpose of this report is to update Members on the latest position with the City of London Corporation's (the Corporation) Beech Gardens (North West Podium) Waterproofing Project, the subsequent issues that have arisen and the outcome of the steps taken to facilitate completion of the project.

Recommendations

Members are asked to note the contents of this report.

Main Report

Background

1. The Beech Gardens (North West Podium) Waterproofing Project was undertaken to address on-going issues of water penetration through areas of the Barbican podium including, White Lyon Court, John Trundle Highwalk, Beech Gardens and Bryer Court pond, into the commercial premises below, car parks and the Beech Street tunnel.
2. The on-going water penetration had led to a saturation of the structure of the podium which, could cause corrosion of the reinforcement and subsequent deterioration of the concrete structure over the long term.

3. As part of the preparatory works for this project, all the drains in the vicinity of Beech Gardens were subject to a detailed drainage survey. All blockages were cleared and, the drains were subsequently jet washed. However, further investigations were carried out because of localised 'ponding' and, in one particular area, a burst drainage pipe indicated that the internal diameter of the drainage pipes had been significantly reduced.
4. It had been agreed that a separate proposal to remedy issues with the drainage across the whole of the Barbican Estate would be brought to the respective Committees/Sub Committee but, this did not happen.
5. The scope of this project was essentially the replacement of the waterproof membrane and the replacement of soft landscaping to an area of approximately 10,000m². There was no provision for the replacement of the associated drainage, which was specifically excluded from the project.
6. At the time of the commencement of this project in November 2013, there were some 43 separate leaks into units including Virgin Active (as it was at the time), the GSMD, BUPA and Parking Services. Practical Completion for the works was achieved in June 2015 however, a Gateway 6 (Outcomes Report) has still not been submitted for this project, due to subsequent defects outlined below.

Considerations

7. Shortly after Practical Completion was issued when, the works were substantially completed, isolated leaks developed, mainly around the running track and Studio A in Virgin Active. The contractor that carried out the waterproofing works returned to the site on several occasions to investigate the cause of the leaks and, where appropriate, carried out subsequent remedial works.
8. As a result of further leaks, further investigation works were undertaken to establish whether there were issues relating to the quality of the workmanship, failings in the original design and specification or, if there were any other related issues.
9. Concerns were raised that the Crossrail expansion works that took place across and under the Barbican Estate may have contributed to the problem. However, Crossrail undertook a detailed assessment of its works and, the impact on the Barbican podium and, concluded that this was not the cause of the apparent failure of the recent podium waterproofing works.
10. As the leaks continued, it was agreed with the original contractor to carry out further detailed 'movement' monitoring over a period of 12 months to establish whether there was any evidence to support concerns that there were issues with the design and specification, particularly in relation to the potential inadequate tolerance that had been allowed in the design of the detail of the structural expansion joints.
11. The outcome of the 'movement' monitoring over that 12-month period was that the likely problem was in the original design and specification for the project. Given the potential liability issues and subsequent costs, the Corporation took the decision to commission an independent review of the whole project to advise on whether

the post-contract defects could legitimately be attributed to the design of the project or, the workmanship.

12. The original commission for the independent review was awarded to the Building Research Establishment (BRE). However, with the agreement of the BRE, the commission was subsequently transferred to Sandberg Consulting Engineers to maintain continuity and consistency.
13. Whilst the independent review was thorough and detailed, to some extent, perhaps inevitably, it was somewhat 'inconclusive'. The review did conclude that the waterproofing works undertaken, in the main, are resisting the passage of water to the underside of the floor slab as intended. However, there is some doubt as to whether the decision to leave the existing asphalt coverings in place and 'overlay' with the new chosen waterproofing system was the right thing to do. For the current Phase 2 of this project, the removal of the existing asphalt coverings is recommended.
14. At the time the review was undertaken, there were very few leaks found in comparison to the overall area recovered as part of the original project. Based on the evidence found, Sandberg concluded that "there does not seem to be a widespread failure within the paving layers and this, in our opinion, would inhibit an investigation into potential design or installation liability issues".
15. The Sandberg report does, however, acknowledge that if the quantity of leaks does start to increase and develop into 'clusters', further investigation may be needed to help establish whether more fundamental failures are occurring.

Current Problems

16. At the time of writing this report, the Leisure Centre is suffering from leaks on to the running track, one in Studio A and, a more significant leak into the lobby/office below the running track. Other leaks have been reported but, these have been attributed to leaks from various service pipes that are the responsibility of the service provider.
17. As always, we are responding to these 'new' leaks by carrying out an intrusive investigation before determining what remedial action is required. The larger new leak is directly below an expansion joint but, two floors (more than six metres) down from podium level. Early indications are that we will need to open areas of the wall outside the men's changing room to help us determine the cause and 'route' of the leak.

Way Forward

18. Whilst we are currently awaiting the results of more recent investigation works that we have carried out on the current leaks particularly, relating to the tiling joints and expansion joints, it would seem that there is no merit in pursuing liability claims against either the contractor or, the design consultants. Although we do still retain some of the 'retention' from the original contract for the waterproofing works, we will likely need to release this to the contractor.

19. There are clearly issues with the condition and performance of the podium drainage on Phase 1 and, this needs to be addressed. We are currently carrying out detailed surveys of the drainage and, we will need to decide how and when we tackle the defects that are highlighted.

20. It is extremely important to note that the experiences that we have had with Phase 1 of the waterproofing works on the Barbican podium have been very useful and informative for the current and future phases of the project. With any project, even one as 'uncertain' as this one, it is crucial that the 'lessons learnt' are used to inform and guide future projects. Some key aspects of the lessons learnt have been set out previously in this report but, others include:

- ensuring that the waterproofing membrane is laid to a completely dry substrate and, to enable this, the timing and planning of the works should be given serious thought and consideration to avoid, wherever possible, particularly inclement weather.
- planning, timing and permissions for carrying out 'hot works' associated with the waterproofing works.
- building into the project the scope for the regular review of the existing design and, the scope for design change where necessary and appropriate.
- understanding and planning the works in relation to 'noisy works', the limitations of the Barbican Estate and permitted working hours. This needs to be built into the design and specification of the works to avoid delays and additional costs as a result on permitted working hours and 'noisy works'.
- further consideration of the decision taken at Phase 1 to leave the existing asphalt coverings in place and 'overlay' with the new chosen waterproofing system.
- ensuring that all associated drainage works are carried out as part of the overall waterproofing project to avoid the issues that arose from Phase 1.

21. It should be noted that this report is an update report only and, does not negate the need for a Gateway 6 – Outcomes Report. Following final completion of our outstanding investigations, it is intended that a Gateway 6 report will be submitted to the relevant Committees/Sub Committees including, the Barbican Residential Committee.

Appendices

None

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