	treatments of remnant roots will be undertaken to ensure all ivy and invasive plants have been destroyed, before re-planting to a Pulham type scheme. *Established trees in plant pockets will be removed, though their dead stumps will be left in the plant pockets to prevent damage that might be caused by extraction. There is also a large slab of what appears to be concrete over one tree root in a plant pocket. This will be removed.* *The lost area of PAR coating will be replaced once the brick burr background has been consolidated with appropriate mortar.*	 
Note the area between tree no 2974 and tree no 2972, i.e. between areas 4a and 4b: may require some gentle excavation to see if any PAR is buried and to define the limits of the two large outcrops (4a and 4b).		

There is some PAR adjacent to the path and there is a collection of bricks and rubble down at the water line.		

4b. This numbered area (Appendix 1) includes the next out crop up to the ravine/waterfall. This is a large outcrop of PAR with plant pockets, cantilevers, and extends from the concrete path to the pond. It is in fairly good condition though there is some cracking on the cantilevers and some possible evidence of localised rebuilding at low level on the north end. **NB**. A plant pocket at mid height, situated over the pond, is almost completely detached and needs urgent attention (because of tree root expansion in the pocket). There is a built-in geological fissure which needs some gentle excavation. At the south end there is a badly damaged plant pocket at mid height with a young sapling. Prodding with a metal rod indicates that there may be further significant PAR under the edge of the pond.	*Tree removal and excavations to determine limits of Pulhamite will be carried out, including emptying of plant pockets and herbicide treatments to invasive roots.* *The plant pocket with extensive cracking noted in the previous column needs urgent action, probably some careful propping to support it in situ until necessary repair works can be carried out.* *Excavation to plant pockets will be undertaken along the top edge so they can be examined more thoroughly, and the limits of the PAR determined.* *Note areas of cracking mainly due to root growth. Root growth will be controlled.* *There is evidence of ivy growing and this will be killed off, because it is invasive into wet masonry (i.e. Pulhamite).* *There is cracking and cracked plant pockets with major ivy growth under top plant pocket.* *All cracking will be attended to, to consolidate the Pulhamite.*	

		
4c. The ravine (waterfall/ cascade) tree number 2971. The “ravine” comprises a west facing wall, below the concrete path, formed in rubble brick work/burrs and what looks like PAR mortar in the joints along with some brick burrs on the upper surface near the modern concrete path. A central channel leads east/west across the path. To the east the Pulhamite scheme is poorly defined at this point because of the retaining wall and the earth overspill. This area will be uncovered to provide evidence of what might have been the original design. As the water in the channel emerges from the pathway and flows down the wall, there is a possible “table stone” below which may be original Pulhamite rocks. This “table stone” would potentially have caused the water fall water to	*The surviving wall beneath the path will be stabilised (at minimum) with the possible removal of the trees (or certainly root control of the trees). The wall will be consolidated by suitable mortar packing of the brick joints/voids.* *The possible cascade stone beneath the wall and path will also be conserved and the mud and pond debris at the water level carefully cleared for examination of further evidence.*	

splash forward onto lower rocks (or similar which are currently not visible), therefore creating a more effective water fall. Further investigation will be undertaken to try and define the original design. There are marble dolphin scrolls (decorative slabs) inserted into sides of the channel at the east end and the one which provides a water chute at the west end of the channel. These are not thought to be original. Below the chute at the west end there is a rubble shelf under the waterfall with possible remnant of PAR coating (the possible "table stone" described above). If this is an original feature most of the PAR coating is lost and some PAR is possibly buried in mud. The channel might have been cut into what was once a wide waterfall/cascade (to the west of the path) and there was water flowing over the path, with possible stepping stones or a small bridge); the water fall would have flowed down the visible brick burr wall (with traces of possible Pulhamite coating still) onto a lower stage (visible, possible "table stone") and this would have splashed further down into the pond. (Some items or evidence here may be buried in the pond debris). More evidence of this design may become evident when the Pulhamite to the east of the path is carefully cleared of excess soil and by removing the retaining wall (to the east) in this area. The "drystone" limestone rubble retaining wall appears to cover at least some small section of Pulhamite. Careful lifting of the concrete path may also provide additional evidence.	*It is possible a scheme similar to this could then be re-instated, if no further historic evidence is available. Numerous illustrations of cascades with bridges or stepping stone (or both, as at Swiss Garden) are available e.g. Claude Hitchin (2012) 'Rock landscapes, the Pulham legacy'. The new scheme should either match the geological integrity of the original Pulhamite or depart radically from it while enhancing the larger scheme. The worst option would be poor imitation of historic Pulhamite. Ideas for the design of geologically accurate rockwork can be found in Bennett et al , (1996) Geology on your doorstep. The role of urban geology in earth heritage conservation" appendix page 255.* *Consolidate walls of channel (subject to above) and front edge and excavate silt from channel.*	

		

		
4d. This area includes Pulhamite rockwork from the ravine/waterfall to the south end of the pond. Between tree no's.2970/2969/2967/2965. Pulhamite rock with projecting rockwork and plant pockets. There is very extensive established tree growth in the plant pockets, with at least six established trees. Some plant pockets are badly cracked and might possibly fall into the pond if no propping or care is taken. Some areas of PAR are very detached and will be consolidated and re-fixed. There is very established ivy growth, and extensive evidence of ivy roots in plant pockets, these will be treated	*This area clearly suffers from established tree and ivy growth. Trees will be cut back, and ivy growth killed. This process may require some careful temporary propping of plant pockets that are badly cracked and may collapse. Any item that does collapse will be stored for re-fixing.*	

with a suitable herbicide and plant pockets emptied. Access to survey the Pulhamite rockface was restricted due to not being able to get to the face of the rockwork (i.e. pond side) and because the PAR was very overgrown down to pond edge. PAR will be assessed more fully once the area is cleared, the pond dredged, and a scaffold will be provided to work on all the PAR rock faces and built off the pond base. The pond may require constant pumping out during these works. There are elements of PAR adjacent to and under the concrete path. There are some railings that appear to be set into the concrete path. The concrete path is disrupted due to tree growth and extensive root systems. Prodding investigation into earth indicates some possible evidence of further PAR to the south area of the pond. Further clearing and investigation will be undertaken.	*Plant pockets with tree stumps will be emptied for replanting and repairs.* *A re-assessment of the condition will be made after this and when a scaffold is fixed to allow the pond side of the Pulhamite to be examined and conserved.* *There are clearly cracks and structural damage to plant pockets which will be attended to. There are also detached sections of Pulhamite which will be consolidated.* *The area to the south of the visible outcrop will be investigated by further clearance to see what rockwork may be present, if any.*	 

		
Item 5. Pulhamite surface coating and colour	Restoration works	
Pulhamite surface coating and colour investigations were carried out largely on area 4a. Findings recorded below. N.B. There was a distinct difference in the intensity of the mortar colours between the wet and dry state of the colour. The upper rock stratum has a very pale salmon/pink coloured mortar. There is a soft recessed bed that runs below the upper level that shows a stronger salmon colour. The lower levels appear to be grey in coloured mortar. There are clear variations in the base mortar colour for different strata, further investigations or cleaning may be necessary to allow for accurate colour reproduction of the PAR coating.	*Sample taken for mortar analysis*.	   

There is some evidence of both slate and sandstone slabs being used as the basis for the cantilevered sections, but generally such areas are not exposed, and the PAR coating is not lost so it is hard to determine the exact nature of the construction of the cantilevers.

Surface texture is variable between strata and this is mainly a function of the quantity and size of aggregates in the mortar. This is an intentional design variation to emphasise the difference in the geological strata. As a rule, the finer softer recessed beds will have less aggregate and the more projecting strata heavier and larger aggregate content. This characteristic reflects the qualities of hard rock strata (with larger aggregates) and softer more eroded strata with finer aggregates.

The surface is generally characterised by the background mortar colour and the prominent, exposed and washed aggregate rich surface.
The aggregates appear to be quartz type aggregates with colour variations from black, yellow orange and white, and vary in size from about 1-2mm to 10-12mm diameter.

Another significant surface character is the visible brick burrs/molten brick, showing through the surface, providing darker patterning and variation in the Pulhamite surface.