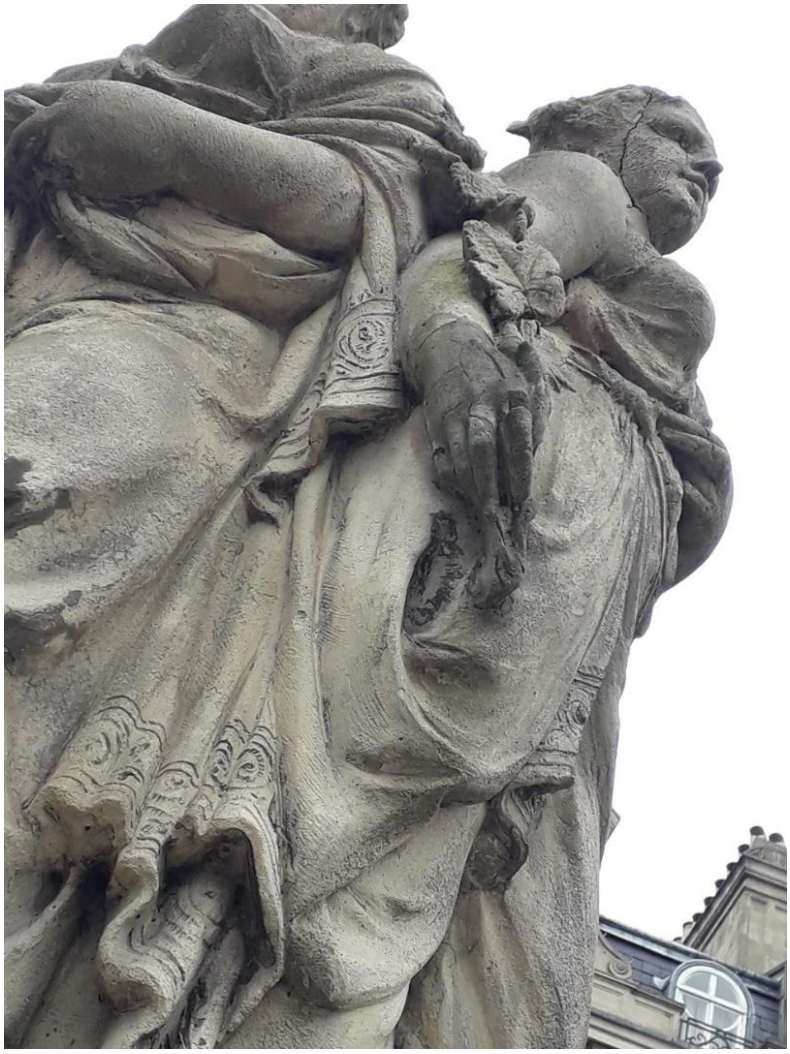
1-10 Cambridge Gate

Condition Report

June 2021



APPENDIX C

Karsten Tube Tests

Report prepared for:

Crown Estate Paving Commission

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CONDITION REPORT

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Job No.	Issue No.	Description	Issue Date
20240	1	Condition survey report	25.08.21

PROJECT SUMMARY

REGION: County: Greater London

Authority District: Camden (London Borough)

PROPERTY: 1-10 Cambridge Gate, Regents Park, London

LOCATION: Two sets of gate piers at either end of the sweep in front of the property.

National Grid Reference: TQ 28742 82468

OBJECTS: Four terracotta statues of the Three Graces standing on plinths bearing the words, CAMBRIDGE GATES.

MATERIALS: Statues: Terracotta, Coade stone type, unglazed stoneware, paint remains

Plinths: Limestone

SURVEYED BY: Amy Anderson, ACR and Jenna Burrell

WRITTEN BY: Amy Anderson

APPENDIX C KARSTEN TUBE TESTS

Karsten Tube Test for porosity of materials

Date: 15/03/2021

INTRODUCTION

The TQC Karsten Tube Penetration Test is a simple test for measuring the degree or water penetration into building materials such as concrete, stone and plaster. The test consists or a glass tube filled with water, bonded to the test material with clay. Water pressure is then exerted on the surface. A graduated scale indicates, over time, the amount or water penetrated into the surface.

METHOD

The glass dome was applied to the surface to be tested using a bead of clay to create a watertight seal between the two, leaving approximately 3cm squared of testing area. The dome was filled to the Zero marker with dionised water using a laboratory washing bottle to create around 10 cm head of water on the testing area (corresponding to the water pressure of a hurricane). The drop in the water level from zero was timed using a stopwatch. When the water level had gone down by 1mm it was quickly topped up to Zero again to ensure a constant water pressure head of 10 cm.

The mean value from one set of 15 measurements for each location was calculated and is specified in the results as "ml water per minute". A figure for "ml water per min and cm squared" was obtained by dividing the mean measured values by 3cm squared (test area).

RESULTS

Material tested: Terracotta

minutes duration		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	**Total ml water absorbed**	**Ml water per minute**
Location																		
MS1.1 Lower drapery below elbow	water ml	0	0	0	0	0	0	0	0	0	0	0	0	5	0.025	0	0.075	0.002
M1S.3 loss of fires-skin drapery below elbow	water ml	0.1	0.05	0.05	0	0.025	0	0.025	0	0	0.05	0	0.05	0	0	0.05	0.4	0.1
Ms1.3 Face, lost fire-skin	water ml	0.05	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.45	0.15

Material tested: Limestone	

minutes duration		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	**Total ml water absorbed**	**Ml water per minute**
Location																		
MP2 South East Elevation	water ml	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.1	0.1	0.1	1.45	0.1

Type of building material	Water penetration value	Type of building material	Water penetration value
1. Facade surfaces in clinker or red brick outside the joint area. Mean from 10 individual tests, half of which are detemined over fire cracks single values not above	0.5 ml/min 2.0 ml/min	5. Hydrophobed waterproofing or sealing concrete acc. to DIN 4117, Nov. 1960 edition on outside surface on fresh surfaces of fractures (Note: compliance with the maximum values is not a fully valid substitute for the test of the barrier effect, see also No.7)	 0.1 ml/min 0.1 ml/min
2. Mortar joints on facade surfaces from all building stones Mean from 10 individual tests Single values not above	0.5 ml/min 2.0 ml/min	6. Hydrophobed waterproofing or sealing mortar or plaster acc. to DIN 4117. Nov. 1960 edition, as above according to No.5	
3. Exterior rendering resistant to pelting rain as No.2		7. "Waterproof concrete" acc. to DIN 1048 (not hydrophobed) on outside surfaces on fresh surfaces of fractures (Note: compliance with the maximum values is an aid to assessment for the expert but not a substitute for the standard test acc. to DIN 1048	 0.3 ml/min 0.5 ml/min
4. Facade surfaces after hydophobic silicone or siloxane impregnation in stone and joint area (Precondition: cracks sealed beforehand with permanent plastic sealing materia)	0.0 ml/min		

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Chart against which to compare results

CONCLUSION

The nature of working in the field with the number of variables and inconsistences posed in that situation means that the results can only be a very general guide. The results appear to show that the limestone and the areas where the fire-skin has been lost show approximately the same values of absorption. The preserved fire skin by contrast, is significantly less porous. However, when compared to results provided by Karsten tube manufacturers of typical standard building material results, this would mean that the limestone and the eroded terracotta have as much resistance to water penetration as waterproofed concrete, and the Fire skin is less absorbent still.