ROOF CONDITION REPORT

PREPARED FOR

St Anns Quay Management Ltd

SITE ADDRESS

St Anns Quay
Quayside
Newcastle upon Tyne
NE1 3BB

PREPARED BY

Dave MacCallum
Roof Investigations Ltd
Albert House
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DATE

12th September 2018

Signed: ……..

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1. INTRODUCTION

This report has been prepared for St Anns Quay Management Ltd.

Its purpose is to identify by non-destructive electronic testing the locations where water can enter sections of the Sarnafil single-ply PVC waterproofing system installed to the flat roof areas of St Anns Quay, Quayside, Newcastle upon Tyne.

Roof Investigations attended site on the 12th September 2018 to undertake electronic leak detection testing and visual inspection to the roof area located above the East Core corridor, which has been experiencing water ingress.

2. ELECTRONIC LEAK DETECTION

The roof area surveyed was approximately 50m².

The ELD and visual survey identified a total of 23no. defects to the roof area.

Defect No.	Description of defect found at site
1-3,5,7,8 & 16-20	Upstand termination not sealed
4,9-14 & 21-23	Pinhole
6	Failed weld

In addition to the above-mentioned defects, it was also noted that the mastic seal around the redundant camera post fixed through the metal capping has failed.

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TEST CONCLUSIONS

The Electronic Leak Detection Survey identified TWENTY-THREE defects to the roof areas surveyed. It was also noted that mastic sealant has failed around a capping penetration which may cause water ingress into the building.

All defects have been marked to deck and their locations are indicated on the attached Roof Plan.

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APPENDIX A

PHOTOGRAPHS

AREAS TESTED

East Core



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Defects



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Failed seal around post penetration

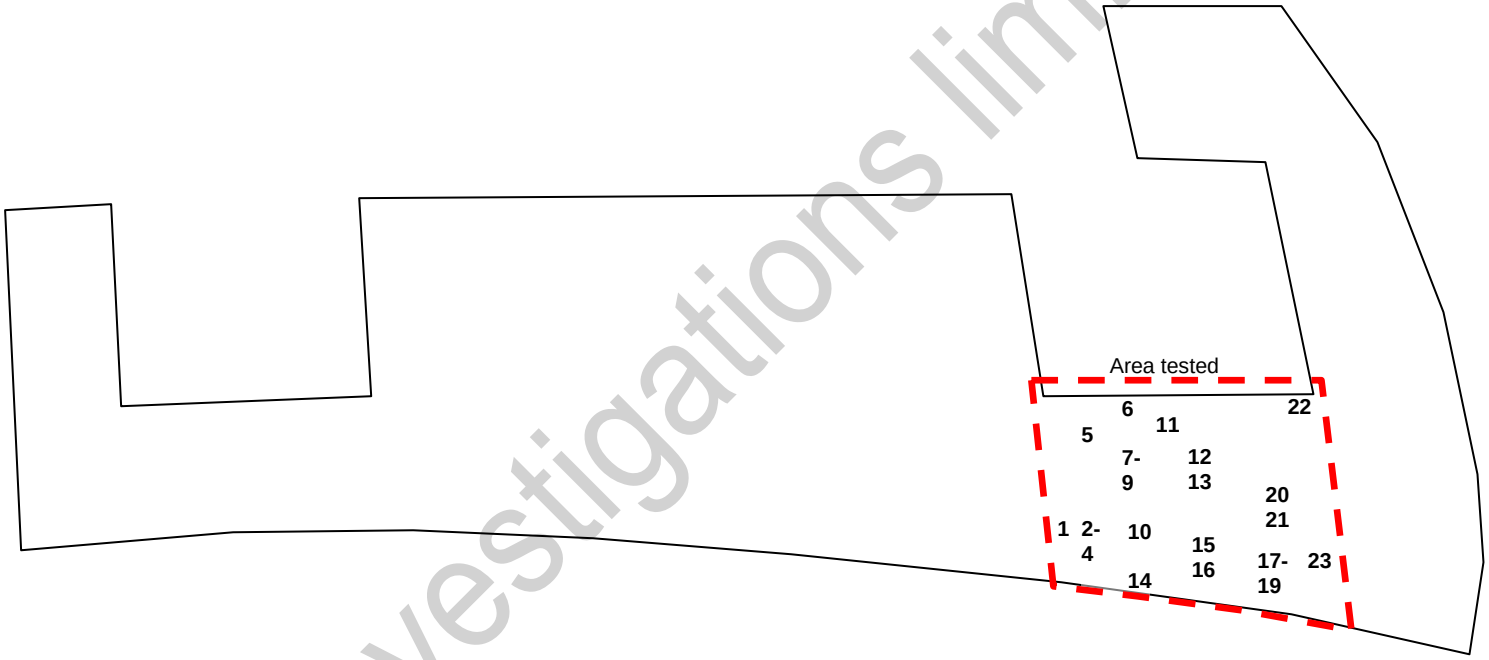
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APPENDIX B

ROOF DEFECT PLAN

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Client:	St Anns Quay Management Ltd	ROOF INVESTIGATIONS LTD Albert House, 42 Seymour Road, Bolton, BL1 8PT Tel: 01204 595467 Web: www.roofinvestigations.co.uk	Order No:		D
Project:	St Anns Quay, Newcastle-upon-Tyne		Job No:		C
Title:	Roof Integrity Test: East Roof		Checked:		B
			Date:	12.09.18	A
Drawn By:	D MacCallum		Scale:	NTS	REVISIONS

APPENDIX C

METHOD STATEMENT

Dry Method

The equipment used is a development of the pinhole detectors used for identifying tiny holes and porosity in protective coatings. The Roof Test Kit has been specifically developed for its purpose and it works with great accuracy on mineral and sand finished bitumen felt, polymeric single ply membranes, liquid applied waterproofing and mastic asphalt.

The PHD equipment comprises of a battery, which is capable of providing a stabilized direct current of between 2-40Kv D.C. a test probe handle (with HV lead and pressure safety switch), extension rods, 600mm phosphor bronze electrode and an earth lead. The test principals are as follows.

1. *The test can only be carried out on roof membranes with known faults. Water must have penetrated enough to make contact with the structure of the building which must be made of steel, brick or concrete, as these are conductive.*

2. *The earth lead from the PHD battery unit is connected to the structure at a convenient place. A high voltage (the level of which is determined by the membrane thickness) is applied (using a phosphor bronze brush electrode of suitable width) to the dry outside of the membrane. On an area free of faults, the membrane acts as an insulator, stopping the flow of current out of the PHD unit. When a fault is passed over with the brush electrode, the high voltage jumps the gap between the electrode and the water under the membrane. This causes a current to flow from the PHD unit, which is detected, and an alarm sounded to alert the operator.*

3. *A number of devises are built into the unit for operator safety and to prevent current flow into the building. As soon as the voltage jumps the gap between the electrode and the water beneath the membrane a bleep alarm sounds, and the current flow is automatically collapsed. The HV test probe handle is operated via a pressure sensitive switch, which immediately collapses the current flow as soon as the pressure is released.*

4. *In order to carry out this test method the roof must be dry. As water conducts electricity it would be impossible to find the faults if the roof was wet.*

5. *The leak points are marked on the roof and located on a sketch plan which is given to the Client in report form if required or repaired by the contractor and retested whilst we are on site.*

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Wet Method

1. *The absorbent wire screening ring is placed on the roof to form a ring circuit and the pulse generator is connected to the ring.*

2. *The pulse generator is turned on and adjusted to give out 40v-, 2 amps every 3 seconds.*

3. *The roof is then sprayed with water to form a carrier for the electric charge. (not necessary if it is raining at the time of the test or if the roof is already wet)*

4. *The operator then enters the field with the receiver probes and meters and tracks the leakage points.*

5. *The leak points are marked on the roof and located on a sketch plan which is given to the Client in report form if required or repaired by the contractor and re-tested whilst we are on site.*

General Test Information

The pulse generator emits pulses with a voltage of 40v which are conducted onto the roof structure. Since most roofs are connected to earth and the pulse generator is also earthed via the mains cable (earth plug) only the +terminal on the detector is connected to the earth jack, while the -terminal is connected up to a ring circuit laid out on the roofs surface. In this way the roof (concrete, corrugated metal etc.) becomes the +terminal and the ring circuit becomes the -terminal. Since all roof coverings are more or less non-conductive, the electrical pulse chooses a path across the moisture to where the leak is located and then flows over the damp roof in all directions to reach the ring circuit. Using the receiver probes and meters we can determine the current's direction of flow and trace it back to its source. This source is exactly the spot where moisture is penetrating the roof covering. For this operation the roof must always be damp, but it makes no difference whatsoever if the moisture in unevenly distributed. Gravel or earth coverings with paving stones or roof gardens present no obstacle to the detector, which will even operate through a layer of non-reinforced concrete above the damp proofing

A water supply is required at roof level within 30m of the test areas.

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