Antonia Mitchell
41, Arlington Road,
London.
NW1 7ES

Date report produced: 1 November 2019
Type of Survey: Domestic
Survey address: 41 Arlington Road, London NW1 7ES
Page 1 of 18

Dear Antonia,

Thank you for your instruction to carry out our detailed site survey and investigation. Enclosed is a list of my observations, scope of works, photographic summary and referenced CAD drawing giving you a full blueprint of the work required. We would be delighted if you permitted us to carry out the improvement work detailed in this report using quality branded building products with skilled Craftsman and qualified Technicians.

Universal Basement Waterproofing Ltd was founded in 2016 by Universal Home Build Ltd to solely manage all the thousands of Waterproofing contracts the business had undertook. Universal Home Build Ltd has over 50 years Trading history and is part of the same group so you can rest assured you are fully protected by a long-lasting company acting to continue the re-instatement works after Universal Basement Waterproofing Ltd has completed the waterproofing contract.

As members of the Federation of Master Builders; Institute of Specialist Surveyors and Engineers and Trustmark you can feel assured our competence, craftsmanship, expertise and quality will be second to none.

As a fully qualified Surveyor, holding both C.S.S.W. and C.S.R.T. Qualifications, I have a duty of care to ensure the advice and recommendations offered are honest and accurate enabling you to make an informed decision.

Our company is based on strong ethical values of honesty, quality, reliability, efficiency and open communication. Our entire team is committed to meeting these standards. As a result, most of our contracts are generated from repeat business or customer referrals.

Please call our Commercial Director, Stan Dernulc, on 0203 7954894 at your convenience to answer any questions you may have or to book in a start date for the commencement of work.

Please find our full survey report included below.

Yours sincerely,

Lee Hunter, Senior Surveyor
Certified Surveyor in Remedial Treatments (C.S.R.T.)
Certified Surveyor in Structural Waterproofing (C.S.S.W.)
Universal Basement Waterproofing Ltd

Contents

1.0 Instructions

Property Inspected:	41 Arlington Road, London NW1 7ES
Type of property:	This is a 4 storey mid-terraced property which is currently occupied and fully furnished
Weather conditions:	The weather was sunny and clear at the time of inspection
Restrictions:	Mains electrics, large water heater, boiler system and vast amount of pipework restricted access to all wall and floor areas
Client:	Antonia Mitchell. This report is for the sole benefit of the named; no third-party liability will be accepted
Date of survey:	29th October 2019
Scope of survey:	We have been requested to put forward a specification to successfully install a structural waterproofing system to the small basement vault beneath the pavement located at the front of the property. Because the property is Grade 2 listed a Type C drained protection system has been requested as opposed to a Type A cementitious system. We have been requested not to specify a waterproofing system to the lobby area adjacent to the vault.
Surveyed by:	Lee Hunter
Survey number:	343062/19/LH
Inspection references:	All references regarding left- and right-hand side are made facing the property from the front elevation

2.0 Internal Observations

The vault is located at lower ground floor level at the front of the property and is currently being used as storage along with the positioning of the mains electrics, gas boiler and a large water tank with associated pipework.

The electrical RCD board and other electrical components are all positioned on the left side external wall next to the vault entrance. These items restricted access to the wall area here.

Damp/Salt efflorescence was evident on areas of the brickwork where Calcium hydroxide has been brought to the surface by moisture, this combined with carbon dioxide in the air then forms calcium carbonate. This then appears as the whitish deposit we can now see on the face of the brickwork.

The original coal chute is located at the front entrance of the vault which at the time of survey had water droplets coming from the steel plate covering due to humidity levels and cold bridging. This has been ongoing for some time as evidence of rust staining was noted on the floor beneath. At the time of survey, condensation was present, however it is understood that during times of rainfall the vault is subject to an extreme influx of water, the effects of which are causing damage to the brickwork and mortar.

The natural stone soffit at the vault entrance had previously been painted black but over time has begun to deteriorate and is frail in places. The central heating pipework has been drilled and fixed through this area so carrying out waterproofing here would mean the removal of all pipework completely.

Wood moisture content readings were taken at the base of the rear door liner using the protimeter MMS2 conductivity meter and readings recorded were in excess of 20% moisture content. High moisture content of these timbers are due to the timber being in direct contact with the damp masonry.

Fungal decay always arises because the wood has become wet, usually timbers will be in excess of 20 per cent moisture content. Finding the source of dampness and eliminating the ingress of moisture and promoting drying is always necessary. Through prolonged wetting it can lead to a risk of decay by wood rotting fungi and insect attack. Two of the most common found are the Wood Boring Weevil (Euophryum confine) and attack by the Wet rot Fungus (Coniophora puteana).

3.0 Proposals

Considering that the property, including vault is grade 2 listed we have been requested to install a breathable membrane as opposed to a cementitious system.

To ensure that the basement vault has a structural waterproofing system installed which complies with the relevant regulations we will be proposing the installation of the Delta MS500 cavity drained membrane system. This product leaves a gap between the existing wall and the new surface which does not prevent the passage of moisture but allows the moisture to escape.

For us to comply with BS8102:2009 (Code of practice for protection of below ground structures against water from the ground) when installing this type of system, we must allow for any moisture that accumulates behind the system to be discharged by a sump pump station.

The Delta MS500 cavity drained membrane system is a reversible system which will minimise damage to this historical/heritage structure. Fixings through the membrane are minimal and only 10mm diameter holes are drilled during this process.

As this is a below ground structure a Type C drained cavity waterproofing system will be designed to manage any water ingress and dampness which may occur. The system designed will be in accordance with BS 8102:2009.

Cavity drainage systems or "Type C" waterproofing utilise pre-formed high-density drainage membranes and channels. These are designed to direct any water entering the structure back out in a controlled and managed way.

We need to be certain that the system we are specifying is going to be defect free and long lasting so for this reason a high-performance membrane system, in our opinion, must be used.

KEYFACTORS

Resistance to water and water vapour - The product is water resistant and has a high resistance to water vapour transmission

Resistance to salt transfer – The product provides an effective barrier to the transmission of salts or other contaminants from the substrate.

Durability – Under normal conditions of use the membrane will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which it is incorporated.

Allows for any movement which may occur in the structure to which it is applied to.

Taking all the information above on board allows us to design and prepare the most robust waterproofing details to provide the environmental grade that we are seeking to achieve.

3.1 Client Preparations/Recommendations

Client to carry out the following:

- Supply electric, water and welfare facilities for use by our technicians.
- Provide access to all areas requiring remedial work.
- Remove water tank and all associated pipework and electrics from vault area.
- Provide 1 no 13 amp non switched fused spurs. This is needed for the Delta pump and AlertMaxx 2 high level alarm system. These need to be installed into separate 16 amp RCBO'S and located next to the Delta V3 single sump pump location.
- The PowerMaxx battery backup unit has not been included at this stage but can be added later if required.
- Appoint PPS (packaged pump systems) to set up annual service plan.
- Ensure all drains around the building are checked and that they are working efficiently.
- Completed work will be signed off by Universal Basement Waterproofing Ltd as defect free. You must protect such areas until subsequent finishes are applied.
- Provide parking for one vehicle during course of works. If this cannot be arranged the cost of parking will be added to the final invoice

Should you wish us to carry out any of these items please contact us prior to commencement of work.

3.2 Schedule of Works

- Remove existing floor screed and dispose of all waste.

- Excavate ground ready for installation of the Delta V3 single sump pump station. As the client has requested that the head height of the vault is not to be reduced then the floor level will need to be lowered to allow for reinstatement work to be carried out.

  New floor build up consists of the following and will be carried out in this order.

  150mm MOT type 1 subbase and sand blinding.
  150mm Steel reinforced concrete slab.
  20mm Delta MS20 floor membrane.
  60mm fibre reinforced screed.

- Supply and install 1 no Delta V3 single sump pump with AlertMaxx high-level alarm finger float switch. Install concrete around chamber once installed. Route discharge pipework into manhole located in the adjacent lightwell.

- Supply only Alertmaxx 2 high level alarm. This will need to be hard wired in to the separate RCBO by client's electrician. Electrical wiring diagrams will be supplied by Universal Basement Waterproofing Ltd.

- Inspect and flood test the structural slab. If there are any areas which need attention (eg depressions in the slab causing water to pond) the client will be notified so these can be addressed prior to installation of the Delta MS20 floor membrane. Repairs to the slab have not been costed at this stage.

- Carry out initial site test of the Delta ground water pumping station once installed.

- Thoroughly clean and clear any debris that may have entered the sump chamber. Any debris may cause damage to the pumps themselves during the operating phase.

- Drill and fix Delta-MS500 to all walls full height. Lap joints to be minimum 100mm lap, including internal and external angles, and sealed using specially adapted Delta double sided tape.

- Delta quick seal plugs are to be set out ready for the internal dry lining system at 400mm centres.

- Install Delta MS20 Membrane to floor and seal to Delta MS500 wall membrane with specially adapted Delta corner tape.

- Install MS20 access ports in all locations noted on the attached drawing (these locations may be liable to change). This ensures all aspects of the system can be maintained. These are to be made accessible behind the the internal dry lining system.

- This system will be installed in accordance with BS 8102:2009.

- Arrange for PPS (Packaged Pump Systems) to fully commision the Delta ground water pumping station and set up service plan. This can only be carried out once the units and all ancillary equipment have been positioned in their final locations by clients electrician (client).

- Install industrial pressure treated timbers to delta plugs followed by 12.5mm moisture resistant plasterboard.

- Application of bonding/hardwall to the plasterboard on the vaulted soffit area to keep the original shape.

- Application of smooth plaster skim finish to plasterboard and vaulted soffit.

- Installation of termination detail at vault entrance. This will consist of a waterproofed upstand using Koster repair mortar plus incorporating Koster SB bonding emulsion.

- Application of Koster NB1 grey waterproofing slurry to the waterproofed upstand followed by Koster Bitumen primer. This waterproofed upstand will then be ready for sealing off of the Delta MS20 floor membrane using Delta corner tape.

- Installation of 60mm fibre reinforced screed. This will be installed level with the existing floor at the rear door entrance.

- Application of Koster NB1 grey waterproofing slurry incorporating SB bonding emulsion to the vault door reveals. This is to enable termination of the Delta MS500 wall membrane.

- Application of Koster bitumen primer to door reveals. Seal Delta MS500 wall membrane to the Koster bitumen primer using Delta corner tape.

  Once the Delta waterproofing system has been inspected and signed off by Universal Basement Waterproofing Ltd a maintenance plan needs to be set up by the client to ensure long lasting life of the pump and all ancillary equipment. The need to service and maintain the drainage elements of the Type C cavity drained waterproofing system is paramount for its long-term success and if the client, or other persons responsible for the building fails to instigate or implement a service plan which has been recommended then any failure of the waterproofing system that results from a blockage of the drainage elements or pumping system will be their responsibility.

DELTA®-MS500

DELTA®-MS500 is used as damp-proofing on walls, floors and vaulted ceilings, above and below ground, in new construction or in existing buildings over a contaminated or damp background.

It can support a dry lining, screed or flooring, in the following situations:

On damp walls and floors in underground situations subject to high groundwater levels, and perennial moisture
On vaulted ceilings of archways or cellars subject to water ingress
In conjunction with a remedial dpc system where the walls and floors have a high salt content, and/or it is necessary to complete the installation immediately without allowing a period for initial drying
Over walls and floors which have a friable or painted surface, are contaminated (eg with oil or mould), or have a high salt content
As a waterproofing membrane in areas subject to vibration.
Depending on the application required and the site conditions, the membrane may be used as:

An under floor damp-proof membrane
A dry lining for walls, ventilated into the room via aeration slots at the top and bottom of the wall or via passive air vents, where access through an external wall is available
A sealed system covering wall, floor and ceiling with provision made for disposing of water build-up behind the membrane via a sump and pump.

DELTA®-MS20

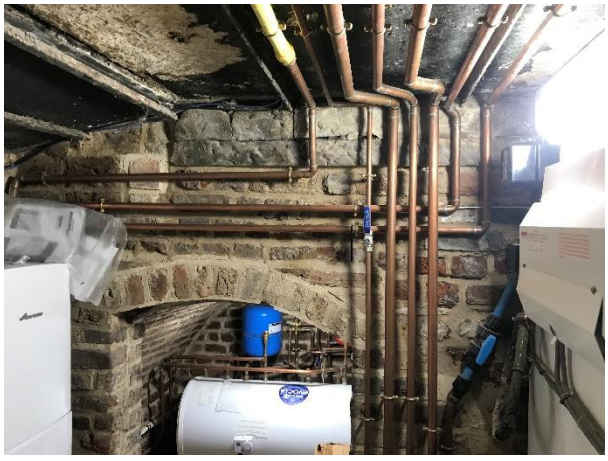
This is a heavy gauge version of DELTA®-MS with deep 20 mm studs. This is used where extra drainage capacity is required, for example on deeper structures, or where a larger flow rate is required. DELTA®-MS 20 can also be used as a “cavity former” for many types of new construction.

DELTA®-MS20 is used as damp-proofing on walls, floors and vaulted ceilings, above and below ground, in new construction or in existing buildings over a contaminated or damp background. It can support a dry lining, screed or flooring, in the following situations:

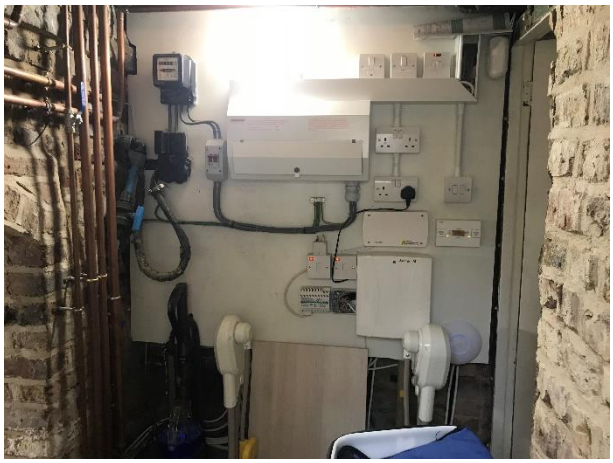
DELTA®-V3 Single Sump Pump

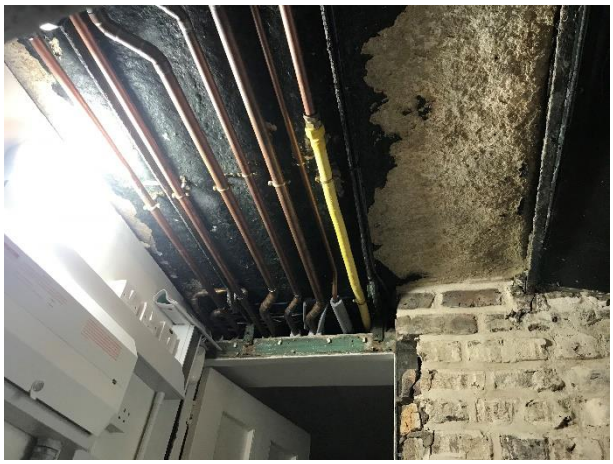
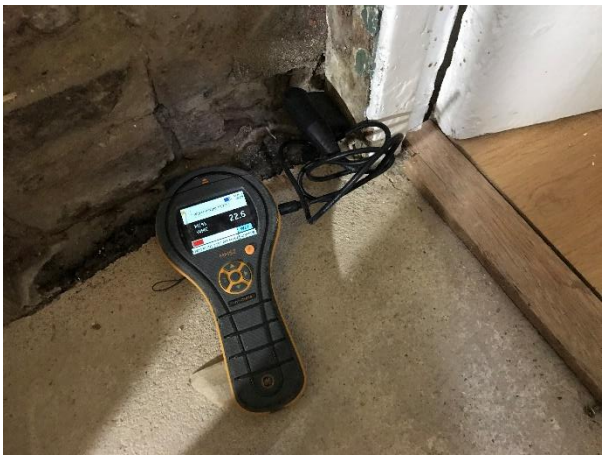
The Single V3 packaged pump station designed to collect ground water from a cavity membrane system through the clear opening to the top of the chamber. This pump station would be selected where no running water is present or expected and therefore is for protection only.

4.0 Photographic References

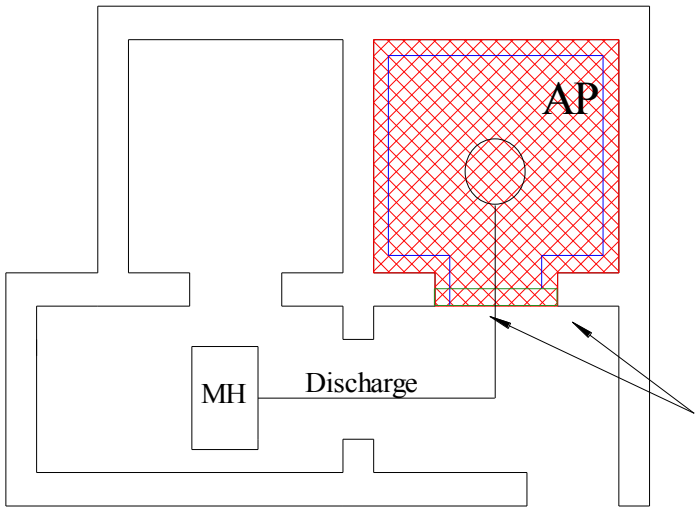
Item	Photo	Comment
01		Photograph showing the front of the property at 41 Arlington Road, London, NW1 7ES
02		The vault area is currently used for storage and location of water heater and associated pipework. The head height in this area at the highest point is approximately 1.4m. To install a successful Type C structural waterproofing system keeping the current floor level then the existing floor level will need to be reduced and a new slab installed.
03		We have been requested to terminate the type C cavity drained waterproofing system at the entrance of the vault. No waterproofing system is required in the adjacent lobby at client's request.

04		Original coal chute in the vaulted soffit. The Delta internal cavity drained membrane system can be installed over this section and held in place using pressure treated timbers. This way there is no need to fill in with concrete and ensuring compliance with the properties grade 2 listing.
05		Condensation noted to the underside of the coal chute due to humidity levels and cold bridging.
06		Client is to arrange removal and isolation of all electrical and plumbing items to enable successful installation of the internal Type C cavity drained membrane system.

07		High salt content noted to areas of the brick work at the entrance to the vault.
08		The discharge pipework from the Delta V3 single sump pump is to be routed into the main drain located in the lightwell area.
09		We have been requested not to specify any system to the lobby area where the electrical board is positioned at client's request.

10		The natural stone soffit is showing signs of deterioration, but we have been requested not to specify any waterproofing systems to this area at client's request.
11		The rear door liner of the property at basement level was tested for moisture content. Readings recorded were in excess of 23% wood moisture content. Fungal decay always arises because the wood has become wet, usually timbers will be in excess of 20 per cent moisture content.
12		Photograph highlighting the high wood moisture content levels recorded to the other side of the door liner at basement level.

5.0 Plans & Sections



Delta quick seal plugs are to be set out ready for the internal dry lining system at 400mm centres.

Care must be taken to prevent damage to listed brickwork, minimal fixings to be used.

Application of Koster NB1 grey waterproofing slurry incorporating SB bonding emulsion to the vault door reveals.
Application of Koster bitumen primer.
Seal Delta wall membrane to the door reveals using Delta corner tape.

Remove existing floor screed and dispose of all waste.
Excavate ground 400mm ready for installation of the Delta V3 single sump pump station and new floor construction.

New floor build up consists of the following although maybe liable to change.

150mm MOT type 1 subbase and sand blinding.
150mm Steel reinforced concrete slab.
20mm sand blinding.
20mm Delta MS20 floor membrane.
60mm fibre reinforced screed.

Inspect and flood test the structural slab.
Install Delta MS20 Membrane to floor and seal to Delta MS500 wall membrane with Delta corner tape.

AP Delta MS20 access port

Excavate, supply and install 1 no Delta V3 single sump pump with AlertMaxx high-level alarm finger float switch.
Install concrete around chamber once installed.
Route discharge pipework into manhole located in the adjacent lightwell.
Carry out initial site test of the Delta ground water pumping station once installed.
Thoroughly clean and clear sump chamber.
Supply only Alertmaxx 2 high level alarm. Client to arrange final wiring once waterproofing is complete.

Drill and fix Delta MS500 to walls and vaulted soffit.
Drill holes required are 10mm diameter.
Install industrial pressure treated timbers to delta plugs followed by 12.5mm moisture resistant plasterboard.
Application of bonding/hardwall to the plasterboard soffit to create archway.
Application of smooth plaster skim finish to entire area.

Installation of waterproofed upstand using Koster repair mortar plus followed by 2 coats of Koster NB1 grey waterproofing slurry.
Brush apply Koster bitumen primer.

General

Reports are submitted as a true statement of findings, expressed as our opinion, to the best of our knowledge. We cannot be held responsible for any omissions in reporting, where the areas are not accessible, nor visible at the time of inspection. Information stated in a report, from third parties, is included based on the facts/information being true and accurate and therefore, Universal Home Build Ltd cannot be held responsible for any such information included in this report. Reports submitted by Universal Home Build Ltd are copyright and cannot be used by third parties, unless by prior agreement, or as exchange of documents in matters of litigation or arbitration. This report is not a structural survey and must not be included as such, in part or whole. There may be circumstances that may require analysis or further testing procedures. Eradicure-Alliance Ltd will advise clients', professional bodies of the extent of testing/analysis required, which will be quoted as the current hourly rate.

Dampness

Reports are compiled using relative scale meter readings [WME wood moisture equivalent], taken using a digital moisture meter and hygrometer. Recorded readings are profiled in determining the source and remedial measures and actions that are deemed necessary. The recorded readings must be interpreted in conjunction with a visual external and internal inspection, as there are many sources of moisture that will result in higher than normal readings. All sources of the dampness, as far as practically possible, have been checked and reported on, to the areas instructed to investigate. Also, in this section references may be made regarding other sources of ingress other than rising dampness. If core analysis of the masonry is required, then an instruction must be issued, as this entails additional time and costs.

Structural Waterproofing

Any projects that have structures that are below ground level should be designed to comply with BS8102: 2009. The code of practice for the protection of structures against water from the ground. In some cases, it may be preferential to lower the ground level, but as this is not always possible, or desirable, the need for a waterproofing system must be considered. This report will consider the onsite and surrounding conditions, in line with the code, making recommendations for the most suitable system given the prevailing conditions.

Timbers

Inspection of the main structural roof and floors timbers for evidence of infestation by common wood boring beetles and wood destroying fungi, is dependent on means and extent of access at the time of survey. Generally, my initial inspections will highlight the areas "At risk" using visual and calibrated moisture meters. Photographs are taken to record and confirm locations of faults/defects. In most cases further inspections are recommended, due to limitations of inspection. Further inspections and reports are submitted, once these areas have been thoroughly inspected. It is the policy of Universal Home Build Ltd to consider only targeted remedial treatments and applied only when deemed necessary and appropriate. This is in line with current COSHH regulations. Universal Home Build Ltd is aware of the environmental impacts of the use of toxic chemicals and will only specify approved, solvent free treatment methods.

Party Wall Injection

When a chemical damp proof course is injected to a party wall, client should be aware that hygroscopic salts and residue moisture could become apparent on the opposite side after our treatment. Universal Home Build Ltd cannot accept responsibility for this phenomenon and the only remedy would be to remove the plaster and to re-apply in accordance with our damp-proof plaster specification. For Universal Home Build Ltd to implement this work, if it became necessary a charge at current prevailing rates would be made. It is essential that you refer to our General Notes regarding the Party Wall etc. Act of 1996.

Drying Out Times and Redecoration

The drying out process is dependent on several factors: heating, ventilation, humidity and the condition of the walls inside and out. One month per 25mm of wall thickness is an appropriate guide to allow for the process. The drying-out process is both natural and slow. Adjacent wall plaster that was not affected by the original damp problem can also show signs of damp from the treated areas for some considerable time after treatment. Any redecorations required to areas which have been re-plastered will be restricted to Trade Matt Emulsion paint and only after approximately six weeks. Allow at least five months in the case of wallpaper and other similar coverings.

Regards,

Lee Hunter, Senior Surveyor
Certified Surveyor in Remedial Treatments (C.S.R.T.)
Certified Surveyor in Structural Waterproofing (C.S.S.W.)
Universal Home Build Ltd

Report checked and ratified by:
Contracts Director, Justin Newbury, C.S.R.T.
Commercial Director, Stan Dernulc, B.A. Hons