

WING

WATERPROOFING

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Our Ref: 12882/JB

27th November 2023

Mr R Barratt
Rory Barratt Design Ltd

Dear Mr Barratt

Re: 18 Greville Place, 'Lower Ground Flat', LONDON NW6 5JH

Further to our recent visit to the above property on Thursday 23rd November 2023 we thank you for the opportunity to provide our report and quotation for our specialist waterproofing works to the accessible lower ground areas as indicated on the enclosed drawing & as specifically instructed.

Our findings and recommendations follow & should be read in conjunction with our enclosed specification sheets.

We understand you are overseeing extensive refurbishment works to the property that is experiencing dampness to the lower ground areas where to our knowledge there are no guarantees for any previous works that may have been carried out in the past.

Terms left, right, front and rear are used as if facing the front elevation of the building from the outside.

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- Trading as Wing Preservation Limited
 - Registered in England No. 3476648
 - VAT Registration No. GB 707 5272 38
 - Established 1998



INTRODUCTION TO OUR TYPE C CAVITY DRAIN MEMBRANE SYSTEM

Our report and quotation relates to the accessible lower ground areas indicated on the enclosed drawing & as specifically instructed.

Water can penetrate a structure below ground in two ways:

1. Where the ground is not saturated water will move through the capillaries of the ground and structure by capillary suction. When this water moisture comes to the internal surface of the building surface dampness is evident and there will be no free flow (flooding) of water. Capillary moisture can enter a structure laterally such as when a wall is earth retaining and/or it can rise up from the ground through floors or free standing walls appearing internally as rising damp.
2. Where the ground is saturated and hydrostatic pressure occurs water will be pushed through the capillaries of the ground and structure. Where the water comes to the surface the pressure behind it will force it into the property in the form of liquid water and flooding will occur.

Where a wall is earth retaining penetration will be lateral through the retained soil and if the water table is high (such as when water is trapped in a clay sump created when the foundations are excavated) or if rainwater is percolating down through the soil then this water will be under hydrostatic pressure & could flood the property internally. If there is no water pressure present then penetration will be through capillary action and the property will not flood internally.

Producing a Dry Lower Ground

Nothing is absolutely dry, water and water vapour will always exist in the building and in the air where a building will be perceived as being dry if the water present does not cause a problem for the inhabitants or contents of the building, or cause damage to decorations.

Producing a dry lower ground requires two distinct and separate steps.

1. Firstly penetration of water from the ground must be stopped in existing properties this is commonly done by applying waterproof membranes to the internal face of the structure, or by fitting a drainage membrane which directs the ingress of water to a suitable collection and disposal point.
2. Secondly the internal environment needs to be heated to the appropriate temperature and excess humidity created by the normal activities of the occupants must be removed. This is normally done by ensuring there is adequate ventilation (natural or forced) in the area although in extreme cases air conditioning or dehumidification may prove to be necessary.

Cavity Drain Membranes

Cavity drain membranes are polyethylene sheets with dimples moulded into them creating a cavity between the membrane and the substrate. Ingress water will enter the structure and run down the inside of the cavity to a convenient point for removal by drainage and/or pumping.

Cavity Drain Membranes do not stop water at the point of entry and so do not increase stresses in the substrates as can happen with cementitious systems & they are not as versatile as cementitious systems in that it is difficult to apply them to curved & intricate surfaces. Furthermore it is essential that hydrostatic pressure is not allowed to build up in the cavity if it does leakage is almost certain to occur so adequate drainage and water removal must be provided.

Code of Practice for Basements

BS 8102 2022 Code of Practice for the Protection of Structures Against Water from the Ground states that in basements we have to assume a hydrostatic head of the depth of the basement.

On existing structures where the design detail is not known great care needs to be exercised when applying certain waterproofing systems. If the water is stopped at the point of entry significant additional stresses are likely to be induced a result of increased hydrostatic pressure however short lived the pressure may be.

Cementitious systems stop water at the point of entry and hydrostatic pressure is likely to induce additional tensile & flexural stresses in the substrate. The existing structure must therefore be carefully evaluated to ensure it is capable of accepting those induced stresses.

This evaluation usually reveals that the substrate (in most cases the floor) would not be able to accept the additional stresses and significant remedial measures would need to be taken. However where basements have been in existence for many years and have never experienced flooding of any sort it is acknowledged that the risk of flooding in the future is small. In these circumstances the cost of undertaking additional work needs to be weighed against the potential cost of damage should flooding ever occur.

It is not a statutory requirement to design in accordance with BS 8102 2022 as long as the potential risks are considered the decision to ignore the threat of hydrostatic pressure is acceptable and it is perfectly acceptable to provide a damp-proofing solution only (as opposed to a structural waterproofing solution).

Even if the evidence available would suggest that the likelihood of water tables rising – and causing flooding internally in the basement is remote it should never be discarded entirely & some provision should be made for dealing with this event.

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OBSERVATIONS

Our inspection relates to the accessible lower ground areas as instructed where our survey was limited due to the current finishes, tiling and fitted units. It appears the walls are of original solid wall construction with a solid floor slab.

We understand the property is Grade II listed where the use of cement based renders are not permitted.

Visually there are signs of dampness affecting the accessible lower ground walls indicated on our enclosed drawing that when tested with the aid of a moisture pin meter revealed patterns normally associated with penetration dampness.

It appears the lateral dampness seen internally is caused by the high external ground levels that can lead to groundwater to bare against the property.

We made note of rising dampness affecting the central lower ground walls.

The lower ground level is at risk of flooding events with fluctuating water tables that affect the London area.

We recorded high levels of dampness to various locations to the lower ground solid floor area likely penetrating through due to the lack of effective damp proof membrane installed in the past.

Condensation was not noted during our inspection however can become more apparent during the colder climate.

We understand the garage and front wine cellar area is to be used as storage only where we have not allowed for specialist works at this stage.

Please note any exposed steelwork will need to be encased in concrete by your own contractors and a suitable cure period will be required before our waterproof tanking.

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RECOMMENDATIONS

We recommend your own contractor under a separate contract and cost rectify all sources of moisture ingress that should be carried out as soon as possible. All areas of moisture ingress should be fully exposed to both aid in the drying out process and our further inspection upon request.

We have provided a quotation for the installation of our specialist Type C cavity drain membrane system to the lower ground areas as indicated on the enclosed drawing and as specifically instructed.

BS 8102 2022 states that Type C drained protection type of construction is considered to be the most effective and trouble free form of waterproofing that is often permitted in heritage properties at the system can be removed.

We advise that as with all retrofit waterproofing systems this is a internal lining process with the conditions of the underlying walls and floor unaltered.

The cavity drain membrane system has been especially designed for below ground installation and is a high-density extruded membrane moulded in a stud formation. The studs serve to hold the product away from the areas that have been treated allowing an air gap behind the system in that water and water vapour can move unhindered in all directions thus achieving 'damp pressure equalisation'.

The Installation of cavity drainage membrane systems is considered to be the most effective and trouble free form of waterproofing in comparison to the more traditional methods of 'tanking', because it does not hold back water pressure. Water is allowed to seep through the substrate and as soon as it reaches the air gap provided by the studs of the cavity drain membrane it depressurises.

The membrane creates a dry liner skin separating the wet substrate and dry interior with the studs acting as stilts to allow for this natural movement of water. The drainage of the water away from the cavity drain membrane is vitally important to the success of the proposed system that is designed should be considered as water management, i.e. 'waterproofing' rather than 'tanking'.

As with any level in a property there is a need to install and maintain a balanced environment to suit the intended usage otherwise water vapour produced internally by that usage may condense upon the internal finished surfaces & in extreme cases interstitially behind the dry lining on the inner face of the cavity drainage membrane.

Measures should be taken to control condensation and please see our Condensation Specification Sheet No. 6 & you may also require to use a dehumidifier to assist with this persistent condition.

The timber floor to the front left hand lower ground room should be replaced with a reinforced concrete slab similar to the remaining lower ground.

Please note due to the limitations of our works we cannot guarantee against, or accept responsibility for any dampness/water ingress where our work terminates or beyond.

General Notes:

These details have been designed to BS 8102:2022 (Eurocode 2) and the structure of a whole is of sufficient mass and quality to resist heads of pressure as required by BS8102.

The drainage channel should always be laid level and connected to the sump chamber with at least two drainage connectors as shown in drawing.

50mm insulation is positioned below the floor membrane as a spacer for the drainage channel. The maximum floor load is 16 Mpa.

All construction/movement joints should be waterproofed with approved waterbars.

Screed to current British Standards

Waterproof tanking render system is between 15-20mm thickness approx. - See Specification 3 for information. Subject to our further site inspections.

Client:
Rory Battett Design Ltd

Job:
18a Greville Place, 'Lower Ground Flat', LONDON NW6 5JH

Title:
Proposed waterproofing works to the lower ground areas

Drawing No.
12882/JB

Rev:
1

Date:
24.11.2023

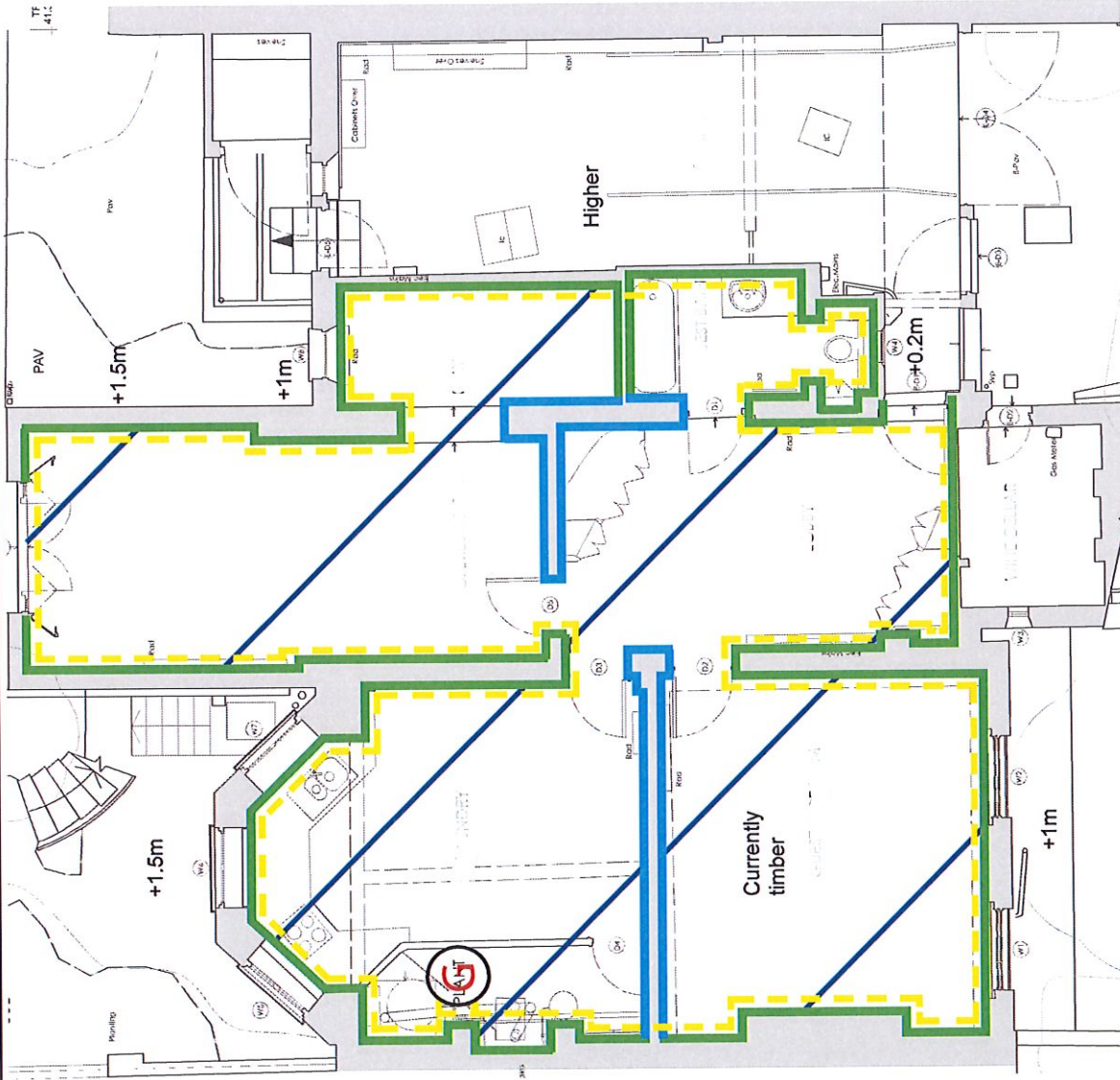
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Details of Wing Waterproofing works

- Cavity drain membrane (8mm depth) to the walls - See Specification 7
- Cavity drain membrane (8mm depth) to the walls up to 1.2m approx. only - See Specification 7
- Cavity drain membrane (8mm depth) to be laid over 50mm insulation to the slab - See Specification 7
- Basedrain following the perimeter of the areas in recess created by insulation
- G Groundwater sump pump location