

STRUCTURAL & BASEMENT WATERPROOFING

To the areas scheduled below

Please read carefully, in conjunction with this report, the **Important Notes**, enclosures, standard work specifications and the **For Action by Client** document, as these all form part of our Contract offer.

Our recommendations are based upon information supplied to us at our meeting / during our telephone conversation and observations made at the time of our inspection. If we have misinterpreted any aspect please notify us immediately, as it may be necessary to amend the proposed specification.

EXTERNAL DEFECTS

The property is currently undergoing complete refurbishment and as part of the scope of works, we have been informed that external defects that may lead to damp/water ingress are to be repaired and made good as part of the scope. We have therefore made no observations or recommendations in this regard.

LOWER GROUND FLOOR

The lower ground floor is set at approximately 2.3m below external ground levels, inspection holes were formed in the modern dry lining during our site visit to the rear and right elevations. This revealed what appeared to be a Type A cementitious waterproofing membrane to the retained walls, which on the day of inspection was dry with no signs of defects to the areas inspected.

There were a number of leaky service penetrations, some of which appeared redundant which will require sealing/waterproofing.

The floor is of suspended timber construction set over sub floor voids and the basement.

BASEMENT

Walls

The external ground retaining walls are of brick construction; internal walls are a mix of brick and block dividing walls with some timber stud partitions.

Varying levels of dampness are evident with free water ingress noted to the rear left at basement level, we believe this to be due to hydrostatic pressure along with surface water penetration at street level.

Floor

The lower basement floor is a concrete slab of unknown depth assumed to be cast directly onto the earth. The rear stairwell floor has stone flags which are also assumed to be laid directly over earth.



The existing solid floor appears to be structurally sound however to comply with BS 8102 it will be necessary for your structural engineer to determine its ability to withstand any upward forces exerted by hydrostatic pressure. No allowance has been made in our quotation for this report or any such works recommended within it.

The stone flags are not deemed to be structural and as instructed by the conservation officer's, are to remain in situ, this will not comply with BS 8102.

Stairs

The existing stairs to the rear of the building are formed from historic stone, which are bearing directly into the retaining walls. There is therefore a risk of ground water penetrating at the joint between the steps/landing areas as they cannot be isolated from the building structure. Again as instructed by the conservation officer's no works are to be undertaken in these areas.

DESIGN CRITERIA

BS 8102: 2022 (Protection of below ground structures against water ingress - Code of practice).

Damp proofing to basements is covered by British Standards document **BS 8102:2022**. This document specifies the performance level for the design of the waterproofing based upon the end use of the basement, grading from 1-3.

Grade ^{A)}	Performance definition
1a	Seepage ^{B)} and damp areas ^{C)} from internal and external sources are tolerable, where this does not impact on the proposed use of below ground structure. Internal drainage might be necessary to deal with seepage.
1b	No seepage ^{B)} . Damp areas ^{C)} from internal and external sources are tolerable.
2	No seepage ^{B)} is acceptable. Damp areas ^{C)} as a result of internal air moisture/condensation are tolerable; measures might be required to manage water vapour/condensation ^{D)} .
3	No water ingress or damp areas ^{C)} is acceptable. Ventilation, dehumidification or air conditioning necessary; appropriate to the intended use ^{D)} , ^{E)} .
^{A)} The agreed grade should meet with the client's expectations for the intended use of the below ground space. Reducing the grade could increase the risk of not meeting the expectations of the client for the intended use of the below ground space.	
^{B)} Seepage (sometimes referred to as weeping) is defined in 3.15 . If there is seepage, there is a possibility of mineral deposits forming.	
^{C)} Damp area is defined in 3.4 .	
^{D)} The scope of this document is limited to detailing the process and best practices that can be followed when creating a waterproof or water-resistant structure below ground. The additional considerations that are required to achieve the required environment are beyond the scope of this document.	
^{E)} See BS 5454 for recommendations for the storage and exhibition of archival documents.	

Having reviewed the drawings and based on the end use of the basement space, we would recommend a Grade 3 environment for the below ground areas as recommended above.

Requested Specifications

Limited Waterproofing.

At your request we have allowed for an isolated limited waterproofing system only to rooms as indicated on the attached sketch insofar as the existing cementitious waterproofing is to remain at lower ground floor level and you have asked us to omit a waterproofing solution to the remainder of the basement; we understand the conservation officer's do not wish to go to the extent of compliance with British Standard 8102. Compliance with this code is not mandatory, however it must be accepted that it is highly likely that untreated areas will remain damp and at risk of water ingress should hydrostatic pressure come to bear, and Peter Cox can accept no liability for future failures due to non-compliance with the aforementioned code of practice.

Accordingly, this specification does not offer full protection against water ingress. If surrounding ground water conditions change, the existing lower ground floor and basement system may be unable to prevent potential flooding or moisture ingress. Any guarantee issued will therefore be limited to ingress through lined basement walls only and not the lower ground floor areas and un-lined basement walls and floors the consequence of which may result in future groundwater ingress breaching the treated areas.

In some circumstances limited waterproofing systems may be able to be upgraded at extra cost at a future date if required. Alternatively, if you wish to have full protection from the outset we will be pleased to provide a price for this option on request; this is likely to be less expensive than upgrading in the future and is always our recommendation.

If we have misinterpreted your instructions, please let us know at once.

LOWER GROUND FLOOR

Walls are dry lined with metal frame system with plasterboard and a polythene vapour check.



A render coating was noted to the retained areas which appears to be well adhered. The walls appeared to be dry to the areas exposed. The coating may be a Type A cementitious multi coat render barrier tanking system, which is intended to protect against water ingress by providing a physical barrier to hold back water.

Based on the condition of the retained walls at lower ground floor level, we have assumed as per our discussions on site, that these are to remain untouched given they appear to be working effectively at preventing water penetration and guiding ingress down to the sub floor voids and adjacent basement.

The leaky service penetrations will require sealing/waterproofing, and at present no allowance has been made for these works in our budget cost as numbers and locations will need to be determined following the strip out.

Basement Rooms as indicated

Drainage

The effectiveness of the Dry Room system is dependent upon discharging free water before pressure can build up behind the system.

It is therefore essential that an effective drainage system is installed and maintained.

We recommend the installation of 3no new sump chambers to evacuate water from behind the system.

Carry out a water flow test to establish falls and low spots and to also establish that water will reach the discharge point, without build up. Where necessary temporarily connect pump(s) to facilitate testing and subsequently disconnect.

NB. Where existing floors are allowed to remain and are found to be uneven or unlevel, should this necessitate further works a supplementary estimate will be supplied, prior to the application of a membrane.

All existing and new drains within the below ground areas should be protected with anti-flood valves by the client's own plumber/builder under separate contract. This is to prevent flooding via a charged sewer system.

THE REQUESTED SYSTEM

Basement

In this instance due to the conservation officer's constraints, we have as requested allowed for installing a Limited Type C Waterproofing System to the areas indicated on the enclosed plan.

WORK TO BE COMPLETED BY THE CLIENT UNDER A SEPARATE CONTRACT

PREPARATORY WORKS

Provide skips.

Remove any fixtures, fittings or any other items preventing full access to the areas of application.

Remove heating / plumbing pipework, isolate electrical circuits and remove switches and sockets from the areas of work.

Remove door linings and windows in specified walls to allow waterproof membrane system to extend into reveals and subsequently re-fix prior to finished detail.

Prior to the application of the membrane remove the existing waterproofing and lightweight or defective plasters to include loose and flaking paint from the area(s) as detailed on the enclosed sketch plans. These plasters must be removed to prevent their deterioration which will ultimately lead to the blockage of the drained cavity and prevent the free passage of water and gasses.

All existing and new drains within the below ground areas should be protected with anti-flood valves by the client's own plumber/builder under separate contract. This is to prevent flooding via a charged sewer system.

An "aco" drain will be required to the thresholds of the proposed areas of treatment.

Where steel beams penetrate into the retaining wall or there are embedded steel items such as lintels and floor beams, ground water has come into contact with these causing them to severely corrode. We recommend that you have these checked by a Structural Engineer.



Embedded Timbers:

Any embedded timbers must be removed by others with any incidence of decay. Any in-situ timber (lintels, old fixing plugs etc.), left in place represent a risk in respect of fungal decay.

Wall mounted services:

The client is to arrange for a competent electrician to connect the pumps in accordance with the manufacturer's instructions and provide within 6m of each of the sump chambers 2 neon 13-amp non-switched fused spurs on their own 16-amp RCBO circuits from the fuse board, MCB to be 'Type C'. The electrician is to also connect the alarms, battery back-up equipment etc and fully test the system. When notified that the installation is complete, independent commissioning of the system will be carried out by PPS and overseen by Peter Cox Ltd.

In the interim the pumps should be soft wired to power to allow their unhindered operation until such time as the final connections can take place.

All existing and new drains within the below ground areas should be protected with anti-flood valves by the client's own plumber/builder under separate contract. This is to prevent flooding via a charged sewer system.

Excavate the existing floor slab to accommodate the installation of the recommended perimeter drainage to the areas shown on the enclosed plan. NB. When cutting a channel in an existing concrete floor it is likely that the full thickness of the slab will be broken through. Where this happens, the floor will need to be over-excavated, and concrete re-laid to form a solid channel base. channels **(Recesses to be 100mm wide x 100mm deep)**.

Carry out a water flow test to establish falls and low spots and also establish that water will reach the discharge point, without build up.

Excavate the sub site to accommodate the installation of the sump chamber(s) in location(s) detailed. **(1.2m x 1.2m x 1m deep)**

Breakthrough / make access points in division walls where required to allow perimeter drainage pipe through at the base minimum 150mm diameter.

WORKS BY PETER COX

TYPE C DRAINED PROTECTION – WATERPROOFING

DRAINAGE

The effectiveness of the Dry Room system is dependent upon discharging free water before pressure can build up behind the system.

It is therefore essential that an effective drainage system is installed and maintained.

We recommend the installation of 3no new sump chambers to evacuate water from behind the system.

Carry out a water flow test to establish falls and low spots and to also establish that water will reach the discharge point, without build up. Where necessary temporarily connect pump(s) to facilitate testing and subsequently disconnect.

NB. Where existing floors are allowed to remain and are found to be uneven or unlevel, should this necessitate further works a supplementary estimate will be supplied, prior to the application of a membrane.

We are unaware of the water table for this particular site. However as stated in BS8102 "waterproofing measures should be designed on the basis of water to the full height of the retained ground at some time during the structure's life where:

- *no detailed geological or hydrogeological assessment has been undertaken*
- *the results of the soil investigations are inconclusive with respect to ground water*

We have therefore taken this into consideration when designing the waterproofing system. The pumping system has been designed to deal with a flow rate of 150 litres per minute entering each sump chamber with a 7.5m discharge head.

DRAINAGE CHANNEL RECESSES

Apply an epoxy resin/crystalline slurry to the channel extending 50mm horizontally along the floor and 100mm vertically up the wall above the floor level.

PUMPS

Provide and fit a 3no V6 sump chambers each incorporating a submersible double pump unit, high water level alarm and battery backup. Run waste discharge in 32/50mm Class 'C' pipework to terminate above a gully at street level to the rear of the building. Fit an inspection cover to allow access to the chamber.

All electrical connections will be left as tails on site to be installed and connected by others under a separate contract as agreed.



NB. The client is to arrange for a competent electrician to connect the pumps in accordance with the manufacturer's instructions and provide within 6m of each of the sump chambers 2 neon 13-amp non-switched fused spurs each on their own 16-amp RCBO circuits from the main fuse board, MCB to be 'Type C'. The electrician is to also connect any alarms, battery back-up equipment etc and fully test the system. When notified that the installation is complete, independent commissioning of the system will be carried out by PPS and overseen by Peter Cox Ltd.

In the interim the pumps should be soft wired to power to allow their unhindered operation until such time as the final connections can take place.

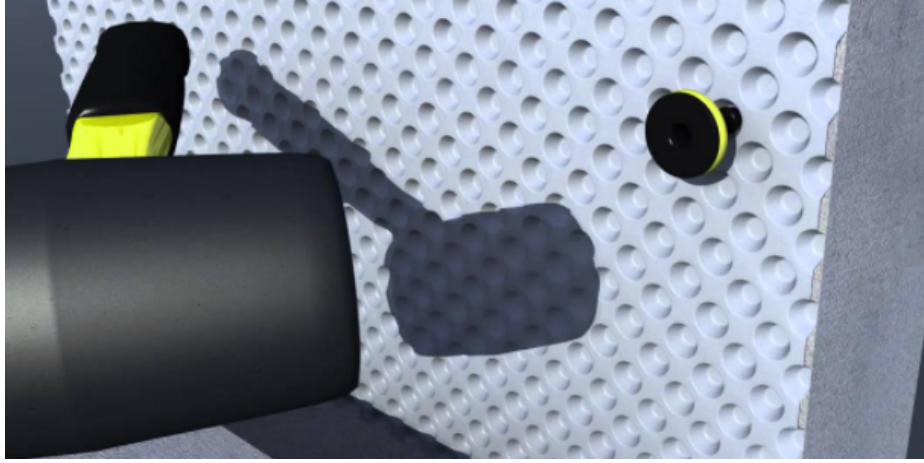
Peter Cox have allowed to supply a Hi-Powermaxx battery backup and an Alertmaxx 2 EC high water level alarm for each sump chamber.

The AlertMaxx2 EC is a state-of-the-art system that not only provides a high-water level alarm but can also monitor you're pumps activity when connected to WIFI. Once the AlertMaxx2 EC has been registered with Sidewinder Technology through WIFI connection, clients will have access to monthly health reports on the condition of their basement sump pump system and regular algorithm information providing differential patterns of the sump pumps to be detected (Free for 12 months, subscription required thereafter).

WALL MEMBRANE

Apply a Lime inhibitor to the walls to prevent leaching of free lime and mineral salts which could potentially block the drainage system.

Provide and fix a Cavity Drain Membrane to all walls as indicated on the attached plan as follows: -



An 8mm Cavity Drain Membrane system is to be fixed to the wall surfaces with standard fixing plugs which will be sealed. The plug has a dual purpose; fixing the membrane system to the wall surface and allowing studding/battens to be secured when specified, without piercing the installed system.

All joints where flanged sections are located will be sealed with tape and over taped. Where studded sections meet, sealing rope will be used and then over taped.

In some instances when our works commence it may be found that the substrate is too weak to accept standard fixings in which case special fixings will be required and may incur an additional cost.

NOTE - where battens are to be secured into the plugs of the system by follow on trades, they should be as follows

Plug with orange/black or blue rubber grommet - Size 10, 5mm dia. with a maximum penetration into the plug of 30mm.

Plug with black rope seal - Size 12, 8mm dia. with a maximum penetration into the plug of 30mm.

In some instances when our works commence it may be found that the substrate is too weak to accept standard fixings in which case special fixings will be required and may incur an additional cost.

Where services (pipework etc) protrude through the system at the time of installation a joint will be created using either sealing rope or mastic.

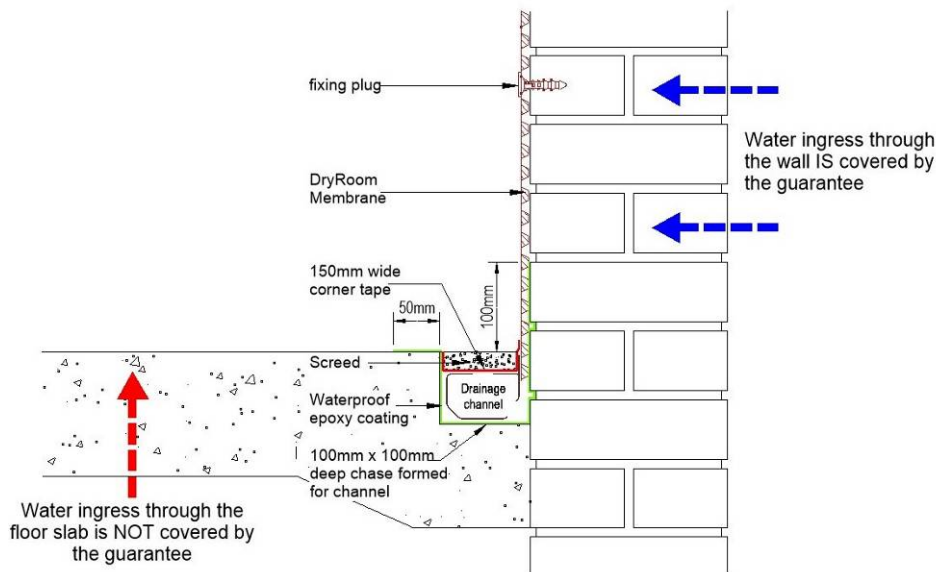
DRAINAGE CHANNELS

Install drainage channels and inspection ports to allow future maintenance. Where required surround channels in 20mm washed aggregate.



Install "Hyload dpc to top of channel and seal to wall membrane and slab edge with corner tape.

Backfill channels recesses flush with slab with a fast-setting, non-shrinking repair mortar.



LIMITED GUARANTEE WHERE THE FLOOR IS NOT BEING TREATED

QUALITY ASSURANCE

Included within our quotations is the assurance that at every step of the installation, checks will be undertaken by Peter Cox to ensure the system is installed correctly and a photographic log kept of each visit, snagging noted will be remedied without delay for further inspection.

These are to be undertaken by either the local Surveyor, Branch Manager, Area Operations Manager, National Waterproofing Manager or National Commercial Manager.

In addition to the above, additional unannounced inspections may be undertaken by the membrane manufacturers to ensure compliance with their installation guidelines; any snagging noted will be remedied without delay for further inspection.

LIMITED WATERPROOFING GUARANTEE

Upon completion of the contract and where applicable our 10-year Guarantee will be issued, protecting you against the re-occurrence of water penetration through our waterproofing fitted to the treated walls ONLY, offering you peace of mind for your property in the future. A specimen guarantee is available on request.

Water Penetration through the adjacent untreated areas and floors is not covered by the guarantee.

The installation can be upgraded to a full Waterproofing specification, and full Waterproofing guarantee upon request.

Whilst any general building and ancillary works undertaken by Peter Cox are excluded from any treatment guarantees issued, you will of course be protected by your statutory rights under The Consumer Protection Act 1987.

The membrane products used in the Peter Cox DryRoom System have a 30-year product warranty against degradation (specimen on request). Your attention is drawn to the terms of the warranty.

In deciding on your preferred contractor to deal with the above, I would like to clarify if the NHBC or a similar warranty provider is involved, I am CSSW qualified (the benchmark waterproofing qualification) to meet their criteria.

With the best guarantees on the market we are also an established member of the BSWA (British Structural waterproofing Association) and all our services are administered under a third party accredited ISO 9001 Quality Management System.



WORK TO BE COMPLETED BY THE CLIENT UNDER A SEPARATE CONTRACT

FINISHING SPECIFICATIONS

Walls

Provide and fix a free standing pre-formed metal/timber framework to support the plasterboard linings.

Initially, fix 1200 gauge 'Visqueen' dpm to the metal framework using tape. Provide and fix Thermal plasterboards to the free-standing metal framework, apply scrim tape to the joints and skim using multi-coat finishing plaster.

IMPORTANT INFORMATION – Client to Note

INDEPENDENT COMMISSIONING OF SYSTEM

On completion of the installation Peter Cox will carry out an independent commissioning check of the system to ensure that the pump and drainage system are functioning correctly.

This will not be possible until all final plumbing and electrical connections have been made. Where Peter Cox are not responsible for all connections, the Client should notify us when they have been completed. We will then attend site to carry out the necessary checks.

Please note that any guarantee offered will not come into force until such commissioning has been carried out and Peter Cox are in receipt of the completed compliance certificate.

PUMP MAINTENANCE

Our pumps carry a one-year manufacturer's warranty only; therefore, in all circumstances where a pumping system has been installed, we recommend the equipment be serviced initially at 6 months and then every 12 months as a minimum. This servicing will be a condition of our 10-year guarantee.

It is very important that the correct maintenance is undertaken and that records are kept. The servicing should include regular visits at the specified intervals in order to check, clean and service your pump assembly. It must also include testing the alarm where fitted. Sight of servicing reports/invoices will be required before any guarantee claim can be considered.

Our preferred pump engineers are PPS - Tel: 0330 9000 999. You are of course, under no obligation to use PPS and you can arrange for the maintenance to be carried out independently by a recognised and competent pump engineer.

As well as the above maintenance the inspection points installed to the drainage system should also be checked and flushed where required to discharge any build-up of limescale within the installed drainage channels.

Where the drainage outlet is exposed externally the client is advised that freezing could occur in cold weather which could result in blockage of the system. The client should provide adequate protection to the outlet.

HEATING & VENTILATION

Depending on the required performance level of the waterproofing design space heating and mechanical ventilation may be needed as referred to in the table within our guidance notes. Unless otherwise stated we have not included for any such provision in our quotation as we understand the M&E contractor is responsible for this. We can advise on this requirement at your request which should be discussed prior to the work commencing.

FIXING TO OR THROUGH WATERPROOFING SYSTEMS

All fixings or fixtures which need to be fixed through the membranes, for example plumbing or electrical fittings, should be sealed as follows:

Below Ground Walls

To maintain the integrity of the system membrane fixing plugs must be used and sealed with rope or mastic to the membrane surface (plugs available from your local branch).

NOTE - where items are to be secured into the plugs of the system, they should be as follows:

- Plug with orange/black or blue rubber grommet - Size 10, 5mm dia. with a maximum penetration into the plug of 30mm
- Plug with bitumen rope seal - Size 12, 8mm dia. with a maximum penetration into the plug of 30mm.

Under no circumstances should the floor membrane be drilled through or punctured.

Further advice on fixings after installation can be sought from your local Peter Cox Branch

Non-Earth Retaining Walls - Screw fixings

Drill through the membrane at the required point and apply waterproof mastic sealant prior to inserting a proprietary plastic fixing plug. Apply waterproof mastic sealant around aperture on membrane to form an effective seal, insert fixing screw.

Suitable mastic can be purchased from your local Peter Cox branch on request.

GENERAL

All electrical first fixing (cable runs etc) should be run on the face of the membrane and not on the wall or wet side.

As you will appreciate, the very nature of our work will involve disturbance from noise and dust. This dust pervades the atmosphere and covers a very large area. Whilst care will be taken, we cannot accept responsibility for furniture, fittings, floor coverings, etc. left within the property affected by dust. The client should consider the welfare of any occupiers within close proximity to the work areas.

The quotation has been prepared on the assumption that the building programme will enable us to carry our work within 1 continuous visit by our team.

Our charge for additional visits (due to measures beyond our control) per technician will be £450.00 + vat per ½ day visit or part thereof.

Standing time beyond our control will be charged at £80.00/hr + VAT or part thereof per technician, this to be agreed with the client/site manager and entered into the standing time log and signed on site at each occurrence by the technician and client/site manager.

Our report and quotation do not make any allowance for the application of planning, building regulations approval or any licenses/permits should they be required for water discharge, which is the responsibility of the client.

Ground Gas protection has not been allowed for in our quotation unless explicitly stated otherwise.

Following installation of the Pumping system by Peter Cox, the client must soft wire the pumps into power at their earliest convenience to ensure their unhindered operation until such time as final hard-wired connections can be made.

As noted in the report above, part of our specification allows for the pumping system to be commissioned by an independent company to ensure it is installed and operating in accordance with the manufacturers' guidelines. If for any reason the commissioning is unsuccessful due to access issues, incorrect or defective wiring not being completed as per the supplied instructions, return visits will be chargeable. Peter Cox provides full wiring diagrams and instructions to ensure you have all the necessary information. If you are not in receipt of these to pass on to your electrician, please follow this link - [Wiring Instructions](#)

Any remaining payments for the Peter Cox contracted works are due on or before the last working day that Peter Cox are on site and not after the commissioning date.

The commissioning date will not be arranged until any outstanding payments have been received.

Guarantees are then released on return of the completed commissioning certificate. If you have any queries relating to this point or require further clarification, please do not hesitate to contact us prior to the acceptance of the contract.

