



JOHN NEWTON
WATERPROOFING SYSTEMS



BS 8102:2009 Waterproofing Regulations - What Does It Mean To Specifiers?



John Newton & Company is the UK's leading independent supplier of structural waterproofing systems, water control and drainage products. Newton System 500 is a maintainable basement waterproofing solution and as such is fully compliant with the criteria of BS8102:2009.

For further information ring 01732 360 095 or visit www.newton-membranes.co.uk

BS 8102:2009 Waterproofing Regulations - What Does It Mean To Specifiers?

What is BS 8102: 2009 and what does it mean to specifiers of structural waterproofing projects?

BS 8102 is a design document whose purpose is to inform the designer of the various methods of waterproofing available and to assist in the correct specification of those systems. Although other documents are available, BS 8102 is THE document that you should be familiar with. Although not UK law, failure to use BS 8102 could result in the designer having a difficult time in a court of law in the event of litigation following a waterproofing failure. It is almost certain that this code of practice will be used by the prosecuting expert witness.

The New British Standard BS 8102:2009 came into effect on 30th November 2009 and supersedes BS 8102:1990

A number of new recent developments are addressed which are important when specifying, designing and constructing below ground structures including:

- More deep construction in urban areas
- The increase in provision of residential basements
- The development of and use of new waterproofing materials

The standard expands on its predecessor in that it provides guidelines for detailed assessment of the risks inherent in below ground construction and how these might be addressed.

“As members of the BS committee on the rewrite of BS 8102 we were very keen to see waterproofing taken as a design and install package by professional contractors, as this in our experience is when waterproofing of below ground structures becomes robust and successful.”

- Warren Muschialli, Managing Director, John Newton & Company

Principles of BS 8102

Principle considerations are listed in BS8102 in order to develop a robust design for protecting a structure against groundwater. The overall general principle is to assess the risk of water reaching the structure and then to select a waterproofing system capable of achieving the required internal environment. The ideal waterproofing solution would be defect-free. However it should be noted that two types of defect might occur in any waterproofing where a structure is subject to water pressure, and this could mean that the required internal environment is not achieved.



The new regulations reflect the increase in residential basements



BS8102:2009 supercedes BS8102:1990



Newton System 500 is fully compliant with BS8102:2009

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These defects are as follows:

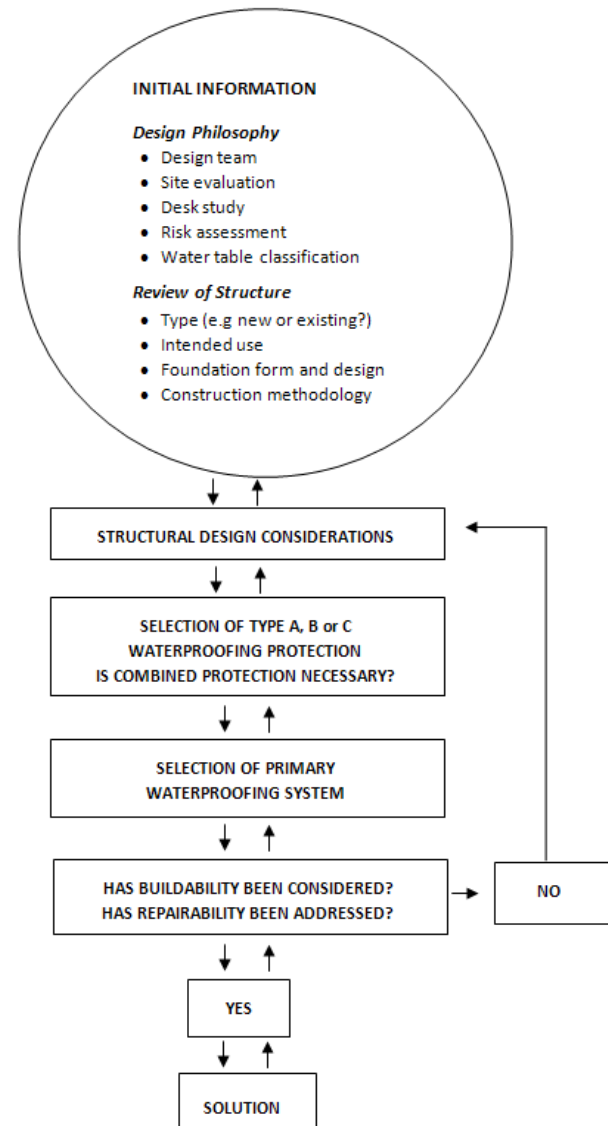
1. Defects owing to poor quality workmanship
2. Defects owing to the specific properties of the materials being used

It is essential that the construction methods and materials used to realise the design are such that the defects in workmanship a) are avoided and b) which are generally minor, should be recognised and catered for in the design. Contingency planning for dealing with any localised defects or system failure that arise should be included as part of the overall water resisting design of the structure. In either case it is vitally important now for specifiers to design waterproofing systems that take into account the form and feasibility of remedial measures. The inability to repair external systems has changed the way professional waterproofing contractors can now guarantee external waterproofing projects and highlights the practical nature of the Type C drained protection option.

Risk Assessment

As a part of the new design standard it is advised to carry out a risk assessment stipulating that the principle risks with respect to water ingress into structures are the external environmental conditions. As a part of the risk assessment it is also suggested to perform a Desk Study in accordance with BS 5930 and BS EN1997:

1. To assess the geology and hydrogeology, including soil permeability, flood risk, radon, methane and other ground gases and contaminates. (e.g. chlorides and acids)
2. To assess the topography of the surrounding ground in relation to the below ground structure
3. To establish the likely highest level of the water table and the potential for the occurrence of a perched water table; and
4. To identify any missing ground and ground water information which should then be obtained by undertaking a site investigation in accordance with BS59230 and BS EN1997
5. The drainage characteristics for analysis of the soil should be determined in accordance with BS8004



This chart outlines the principal factors and stages that need to be addressed in order to produce a robust waterproofing solution for a below ground structure. It demonstrates that some matters are interrelated and that a degree of iteration might result from a need to address buildability and repairability. The principal issues (boxes) do not necessarily need to be addressed in the order shown but all need to be understood and evaluated.

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Taking all the information above on board allows the design team to prepare the most robust waterproofing details to provide the environmental grade that they are seeking to achieve. However even with all this analytical information it is a brave individual who seeks not to protect the structure by believing that water will not come to bear against it. The burst water main and flash periods of flooding are becoming more prevalent and the design must be able to deal with all eventualities. It may very well be the worst case scenario but waterproofing designers have to be 100% sure that their designs are robust enough to deal with all possibilities.

It is worth noting that in the standard it clearly states: "Even in a permeable subsoil, groundwater requires time to drain away and this can result in limited pressure periodically coming to bear against the structure".

Other Design Principles

The new standard has many other important design principles for the design team to consider:

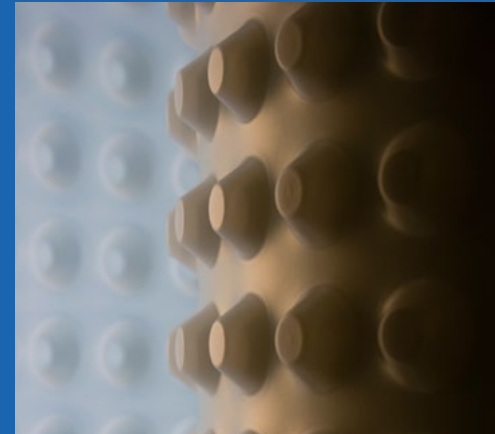
Designers are urged to design structures to full head in all earth retaining situations where:

1. No detailed geological or hydro geological assessment has been undertaken
2. The results of the soil investigations are inconclusive with respect to groundwater
3. The ground drainage characteristics are unreliable
4. The drainage measures either internal or external are unreliable or un-maintainable and infiltration cannot be controlled

Even with a full site investigation available to you, as a designer you are required to make the design decisions to protect your structure from water from the following sources, not just underlying water tables:

1. The inflow of surface water, ranging from percolation of rain to inundation of water from burst water mains
2. The water pressures acting on the external retaining wall system
3. The water pressures below the slab base

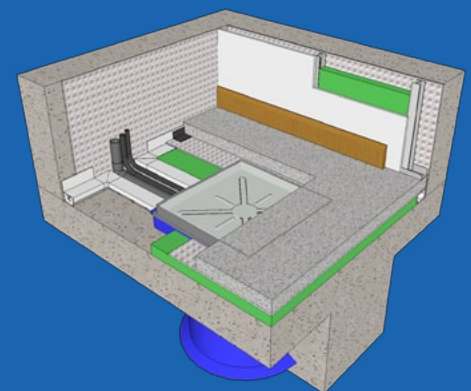
It is also noted that water resisting design should enable the system to withstand a pre-determined head of water or control the water before it reaches the structure.



Newton 508 is Newtons flagship cavity drain waterproofing membrane



Newtons have an extensive range of submersible pumps and ancillaries



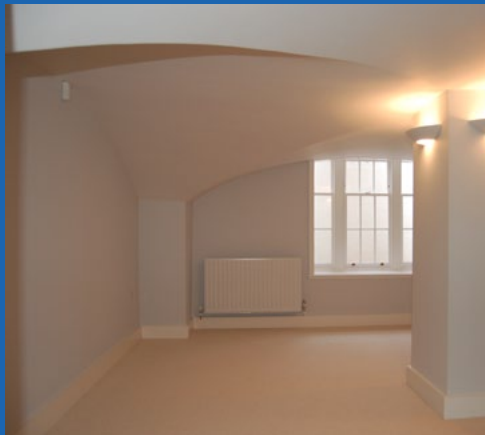
Newton System 500 is a fully maintainable system with complete drainage provision

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Newton 508 has been applied to the walls of this domestic basement



The finished basement, free from water ingress problems



Newton NSBC Contractors conform to the recommendations of BS8102

In Conclusion

To sum up, the British Standard has been upgraded to include the new technologies available to waterproofing designers, and the suggested “packaged” waterproofing design involving a qualified design team has addressed the previous issues which resulted in many failures of waterproofing systems, namely poor workmanship and poor choice of materials. These changes give manufacturers, specifiers and end clients the peace of mind that waterproofing, when installed by a professional waterproofing contractor, will manage out any poor quality design and installation. In addition, the design criteria to install “*maintainable and repairable systems*” give rise to the use of Type C internal drained protection in new build and refurbishment projects.

Newton Specialist Basement Contractors (NSBC)

John Newton and Company are one of the only waterproofing material suppliers who actively promote installation of our waterproofing systems by specialist installers. Our nationwide network of Newton Specialist Basement Contractors (NSBC) are vetted by us financially and technically and must satisfy a strict and comprehensive set of criteria to join. In our opinion this helps to give quality assurance through the whole process from the design stage right through to the end user. The designer can delegate full design liability to the contractor. NSBCs have their own PI to cover design of the waterproofing systems they install. By using an NSBC, the designer is conforming to the recommendations of the BS8102 for a ‘waterproofing’ specialist to be part of the design team. In addition, the installation will be covered by a meaningful **10 year insured guarantee**. This means that the contractor is formerly committed to the waterproofing system they install which gives peace of mind to the end user/owner/buyer of the property and becomes a good sales aid for builders/developers/vendors.

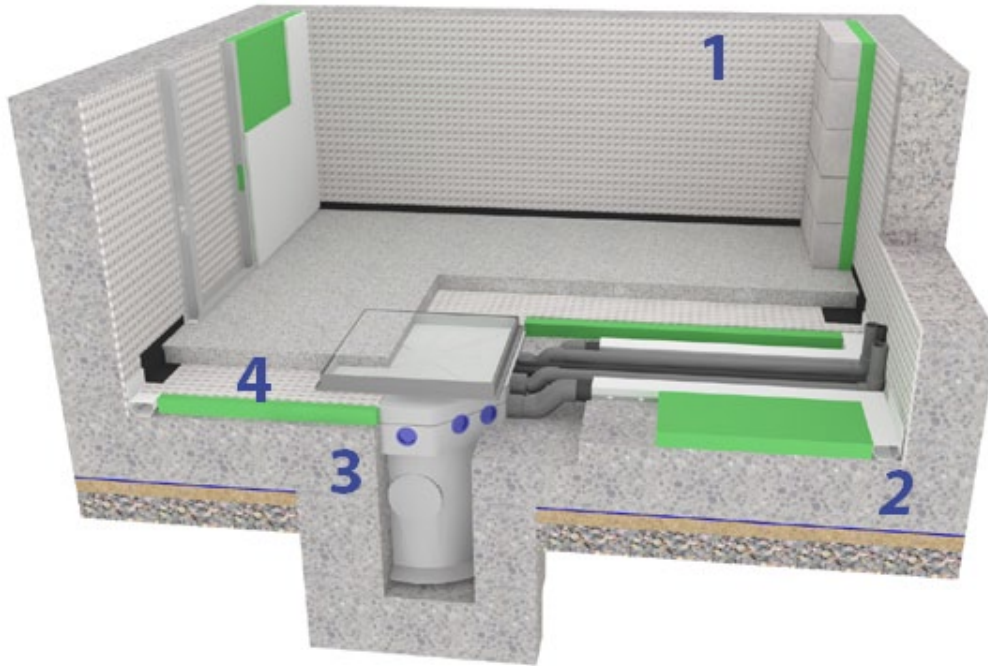
For a full analysis of BS 8102:2009 please contact John Newton who can give double points RIBA approved CPD on the topic.

“With the refurbishment of an entire basement apartment, every room, every floor, every wall, and most ceilings needed treatment of some description. I can tell you that due to the John Newton system of waterproofing, the apartment is a dry, warm and comfortable dwelling for the first time in known history” – Dave Salmon, Reading

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Newton System 500 - The BS8102:2009 Compliant Solution

Newton System 500 is not only the safest form of waterproofing available, but one of the easiest to understand and specify. A guaranteed dry basement or cellar is just four easy steps away. The image shows Newton System 500 to a new-build concrete construction but the system is equally effective when applied to existing properties.



STEP 1: WALL MEMBRANE

Choose an appropriate wall membrane to suit your wall finish. In this example, Newton 508 has been chosen for the walls and is shown with both independent metal frame dry-lining and concrete block wall coverings.

STEP 2: DRAINAGE SYSTEM

Choose your preferred method of water collection. Here Newton Basedrain is sat above the slab adjacent to a spacer of 50mm of closed cell insulation.

STEP 3: PUMP SYSTEM AND PUMPS

Choose the correct method of removal of the water. A Titan-Pro sump system collects water from the Basedrain drainage system via two connections of Newton Floordrain. The pumps (not shown) would be chosen depending on factors such as the pumping head and the type of water collected.

STEP 4: FLOOR MEMBRANE

Choose the correct floor membrane for your finishes and floor loadings. Newton 508 is shown here with a 65mm screed above.

“We have always strived to make our Newton System 500 waterproofing system the most effective on the market and as such ensure that it conforms to the salient recommendations made in both the old form of the BS8102 and now the new one” - Warren Muschialli

For technical advice or product literature, please ring 01732 360 095 and we would be delighted to assist