



NWI GUIDELINES

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NEWTON
WATERPROOFING

SECTION	PAGE
1. INTRODUCTION	3
2. BS 8102:2009 AND THE GRADES OF WATERPROOFING	3
3. DESIGNING TO PROTECT: NWI SCORES	4
3.1 SCORING RANGES	4
4. PROTECTION FOR NEW-BUILDS AND REFURBISHMENTS	5
5. THE NEWTON SPECIALIST BASEMENT CONTRACTOR SCHEME	
5.1 NSBC REQUIREMENTS	6
5.2 GRADE 3 WATERPROOFING PROTECTION	6
6. NEWTON PROTECTED BASEMENT GUARANTEE	7
7. HOW TO USE THE NEWTON WATERPROOFING INDEX	8
8. WHY USE THE NEWTON WATERPROOFING INDEX?	
8.1 DETAILED SPECIFICATION SHEETS	9
8.2 BESPOKE TECHNICAL SUPPORT	9
8.3 SPECIALIST INSTALLERS & GUARANTEE SCHEMES	9
9. THE NEWTON WATERPROOFING TECHNICAL TEAM	10
10. CONTACT US	11

1. INTRODUCTION

The Newton Waterproofing Index® (NWI) is a unique and completely bespoke waterproofing specification tool, introduced by Newton Waterproofing Systems to the UK construction industry in 2017.

The NWI has been developed as a means of assessing the ability of a waterproofing specification to successfully protect an earth-retaining or below-ground structure against water from the ground. This assessment is based both upon the type of structure involved, and the type/s of waterproofing being used. The purpose is to give specifiers an accurate understanding of the potential success of different specifications and builds, as well as helping to guide them through the myriad of different waterproofing products and combinations available in the market. Visually, this assessment is then represented as a NWI score that can be used to grade each waterproofing specification.

Although a completely new concept in the industry, the NWI is not a standalone tool as the scoring system is based around the classifications and definitions outlined within British Standard 8102:2009, the 'Code of Practice for Protection of Below Ground Structures Against Water from the Ground'. The primary example of this is in the Index's use of the British Standard's three 'Grades' of internal environment as the basis for its' classification and scoring system of waterproofing designs (Section 3).

Described by the British Standard as Grades 1, 2 and 3, the classifications take into account both the intended use of an internal space as well as how the structure utilises waterproofing in its construction (Section 2). As a result, when this guidance is paired with the NWI we have two absolute design parameters which, for the very first time, provide a clear and concise waterproofing approach based on the risk of water ingress to a structure.

2. BS 8102:2009 AND THE GRADES OF WATERPROOFING

The British Standard defines its three environmental grades for the degree of waterproofing through an intrinsic link to the intended use of the space. The definitions of all three grades are outlined in Table 1 below.

Table 1:

GRADE	EXAMPLES OF USE OF THE STRUCTURE	PERFORMANCE LEVEL
1	Car parking; plant rooms (excluding electrical equipment); workshops	Some seepage and damp areas tolerable, dependent on the intended use. Local drainage might be necessary to deal with seepage.
2	Plant rooms and workshops requiring a drier environment (than Grade 1); storage areas	No water penetration acceptable. Damp areas tolerable; ventilation might be required.
3	Ventilated residential and commercial areas, including offices, restaurants etc; leisure centres	No water penetration acceptable. Ventilation, dehumidification or air-conditioning necessary, appropriate to the intended use.

THE NEWTON WATERPROOFING INDEX

3. DESIGNING TO PROTECT: NWI SCORES

Based on the Grade classifications of BS 8102:2009, the NWI employs the prefixes of 1, 2 and 3 as a means of indicating the score that can be achieved with each specification, with all scores sitting within the range of 0 as the lowest possible, and 4.0 as the highest score for the highest performing specifications. The prefixes 1, 2 and 3 are roughly indicative of the desired internal grade, but, as explained in Section 3.1, this is not always the case when certain specifications have the capacity to span a wide range of scores, and therefore different Grades, dependent on the quality of the final installation.

By creating a scoring system that directly combines the British Standard definitions with a grading scheme for the risk of water ingress, the NWI provides designers with the ability to safely assess designs in the knowledge that the level of waterproofing protection is in compliance with the predominant industry guidelines.

The result is an intuitive and measurable index for industry professionals

NWI scores are awarded to each individual waterproofing design by Newton's team of technical experts. Scores are visually indicated by colour-coded logos on each of Newton's specifications, and which can be appointed to new designs once they have been assessed by the Newton team (Figures 1, 2 and 3).

Fig. 1



Fig. 2

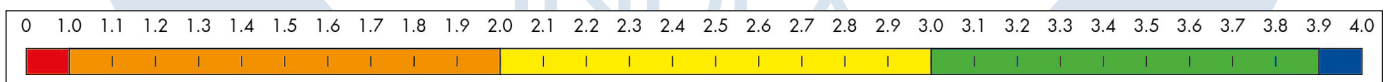


Fig. 3



When scores span multiple Grades, the logo colour will indicate the Grade that forms the greatest proportion of that score. For ease, NWI scores will also be presented on a visual scale, as shown by the Figure 4 template.

Fig. 4



3.1. SCORING RANGES

Whilst it would have been possible to simply use a three-point scoring system with ratings of just 1, 2 or 3, the NWI employs a system that goes to one decimal place, therefore gaining the significantly greater specificity and flexibility of a scoring system that goes from the lowest score of 0 through to the highest at 4.0.

It is this system that provides the NWI with the flexibility to cater to the requirements outlined by BS 8102:2009 for designers to consider using combinations of waterproofing systems in situations where:

- The likelihood of leakage is high
- The consequences of leakage are unacceptable
- Additional vapour checks are required as a part of the system

THE NEWTON WATERPROOFING INDEX

The multitude of different waterproofing combinations that are opened up by this design principle therefore requires a scoring system with the capacity to cater for all such combinations. A zero score indicates a structure on its own that cannot be placed on the NWI scale. From there, scores within the range of 1.0 to 1.9 are the lowest, capable of achieving only a Grade 1 environment, whilst a score of 4.0 is the highest possible mark reserved for the Newton Protected Basement specifications, guaranteed to always remain dry (Section 6).

This is also where the 'scoring ranges' become a significant factor - for example, a waterproofing specification may be appointed with a NWI 'score' of 3.3 - 3.6 rather than a 3.6. This is due to the fact that, even within an agreed specification, the effectiveness of the waterproofing depends on the competency of the installation.

The scoring range is able to cater for this potential disparity - the lower score indicates the standard that can be achieved even with imperfect workmanship, whilst the upper score is what can be achieved by those that are trained in the installation. The larger the range, the higher the risk that an imperfect installation will affect the waterproofing. Smaller ranges therefore indicate a safer specification that will result in a good level of waterproofing even if the installation and build are not of the highest standard (Figure 5).



Fig. 5

This scoring system is also based on a legal precedence within the industry. In the 1999 High Court case 'Outwing vs Weatherald' it was ruled that it is unreasonable to expect overlapping, self-adhesive membranes to be applied 100% defect-free. The implication of this ruling for the industry is therefore that the responsibility for ensuring that waterproofing designs allow for defects lies with the waterproofing designer, not the installer.

It is also important to state however, that when considering the NWI's scoring ranges, unless the installation is of very poor quality then the lowest score that the specification could expect to receive is in this case a 3.3 (Figure 5). If a designer only requires a Grade 2 internal environment with a waterproof rating of approximately 2.5 but they choose a specification with a scoring range of 3.3 - 3.6, then the minimum score will still be a 3.3.

With the NWI at their disposal, any specifier or designer who formulates a waterproofing design will have access to the full range of NWI specifications, allowing them to choose the specification and level of protection that is suitable for the structure, as well as ensuring that the structure achieves the desired internal grade.

4. PROTECTION FOR NEW-BUILDS AND REFURBISHMENTS

Although it is based on waterproofing standards that are specific to the UK, the NWI can be applied to all below ground and earth-retaining structures, whether they are new-build or refurbishment projects, and regardless of their geographical area.

Whilst certain Newton specifications will only be suitable and applicable for new-build projects and, likewise, some will only be suitable for refurbishment projects, the important factor on all projects is that the overall NWI score of the waterproofing design is considered as early as possible as part of the initial building specification.

By providing designers and specifiers with a wide range of NWI-scored specifications for different waterproofing techniques and combined systems, all based not only on their cost vs. risk but also on the level of waterproofing that is applied to a specific build type, Newton aims to make the complex process of assessing and specifying waterproofing systems as straightforward and understandable as possible.

5. THE NEWTON SPECIALIST BASEMENT CONTRACTOR SCHEME

5.1 NSBC REQUIREMENTS

Newton Specialist Basement Contractors (NSBC) are an elite group of professional basement waterproofing contractors who work in partnership with Newton Waterproofing Systems to provide the specifier and their clients with the highest quality products, design and installation available in all aspects of domestic and commercial basement waterproofing.



The NSBC scheme was implemented in 2003 as the first of its kind in the UK waterproofing industry, with the aim of actively raising and maintaining specialist contractor standards, ensuring both that architects and clients have trained and vetted operatives carrying out their work, and that they get the dry basement they require.

Newton and their NSBC network assist in the design of all forms of structural waterproofing, providing a full package that delivers specifiers and clients with the peace of mind that can only come from the assurance that skilled surveyors and operatives are carrying out the waterproofing design process, from inception right through to implementation.

Membership to the NSBC scheme can only be achieved if the following criteria are fulfilled:

- All surveyors must have graduated from the Property Care Association's (PCA) School of Structural Waterproofing and have passed the CSSW Certified Surveyor in Structural Waterproofing Exam
- All members must show a proven track record in structural waterproofing for a minimum of 3 years
- All members do not sub-contract out works and can offer an Insurance Backed Guarantee for the installation of the Newton Structural Waterproofing System (Section 6)
- All members will offer Professional Indemnity on the design/installation of Newton Waterproofing systems
- All members must attend training in-house and on-site, and undergo a technical audit on a yearly basis

The NSBC scheme operates nationwide throughout the UK and Ireland, with the contractor base also successfully installing systems throughout Europe. In addition, the NSBC scheme has developed into both the Australian and New Zealand structural waterproofing markets.

5.2 GRADE 3 WATERPROOFING PROTECTION

NWI scores of 3.0 and above are able to achieve a Grade 3 internal space, as defined by the British Standard, and all such specifications are required to achieve a completely dry and habitable environment.

Specifiers and designers who wish to attain this Grade will therefore have no choice but to consider utilising combinations of different waterproofing systems in order to attain the full degree of water tightness that is required by the design criteria within BS 8102:2009.

With such specifications offering the highest level of waterproofing protection, as well as the highest level of risk, in order to be able to meet the stringent criteria of the British Standard, installation of the specialist systems should only be performed by a fully trained and approved Newton Specialist Basement Contractor (NSBC).

THE NEWTON WATERPROOFING INDEX

As well as installing the products to the highest standards, NSBCs can also take on the Professional Indemnity for the waterproofing design and offer an Insurance Backed Guarantee on the installation (Section 6).

In order to attain an NWI score of 3.5 to 3.9, the structure must be new-build and designed with sufficient mass and quality to resist heads of water pressure as required by BS 8102:2009, as well as incorporating combined waterproofing protection, one of which must be Type C. To give one example, this could include:

- A reinforced concrete box formed of reinforced concrete walls, supported from a reinforced concrete raft, built to BS EN 1992-3 and incorporating Newton 315 Polymer-Waterbar at the construction joints - Type B 'integral' waterproofing protection
- An internally applied Newton System 500 cavity drain waterproofing system - Type C 'drained protection' waterproofing

With this particular example and numerous other combinations, waterproofing designers will be able to achieve a robust level of protection at the same time as gaining one of top scores within the NWI.

Finally, the further addition of the externally applied Newton HydroBond® System would add a form of Type A 'barrier' waterproofing protection. A design that therefore incorporates all three Types of waterproofing (with the inclusion of injectable waterbars in the construction joints) will obtain an NWI score of 4.0 and consequently qualify as a Newton Protected Basement, jointly guaranteed by both the NSBC and Newton Waterproofing Systems (Section 6).

6. NEWTON PROTECTED BASEMENT GUARANTEE

The Newton Protected Basement is a full-basement package for the waterproofing of new-build concrete structures, encompassing comprehensive Type A, B and C waterproofing systems specified by Newton as well as high quality reinforced concrete completed to the standards of EN 1992. Newton Protected Basements are also the only designs capable of achieving the top score of 4.0 on the Newton Waterproofing Index.

Provided that it is installed by a Newton Specialist Basement Contractor, the Newton Protected Basement Guarantee can be granted to support the installation. The guarantee will be underwritten by an A-rated UK insurer at Lloyds of London, and includes the following levels of cover:

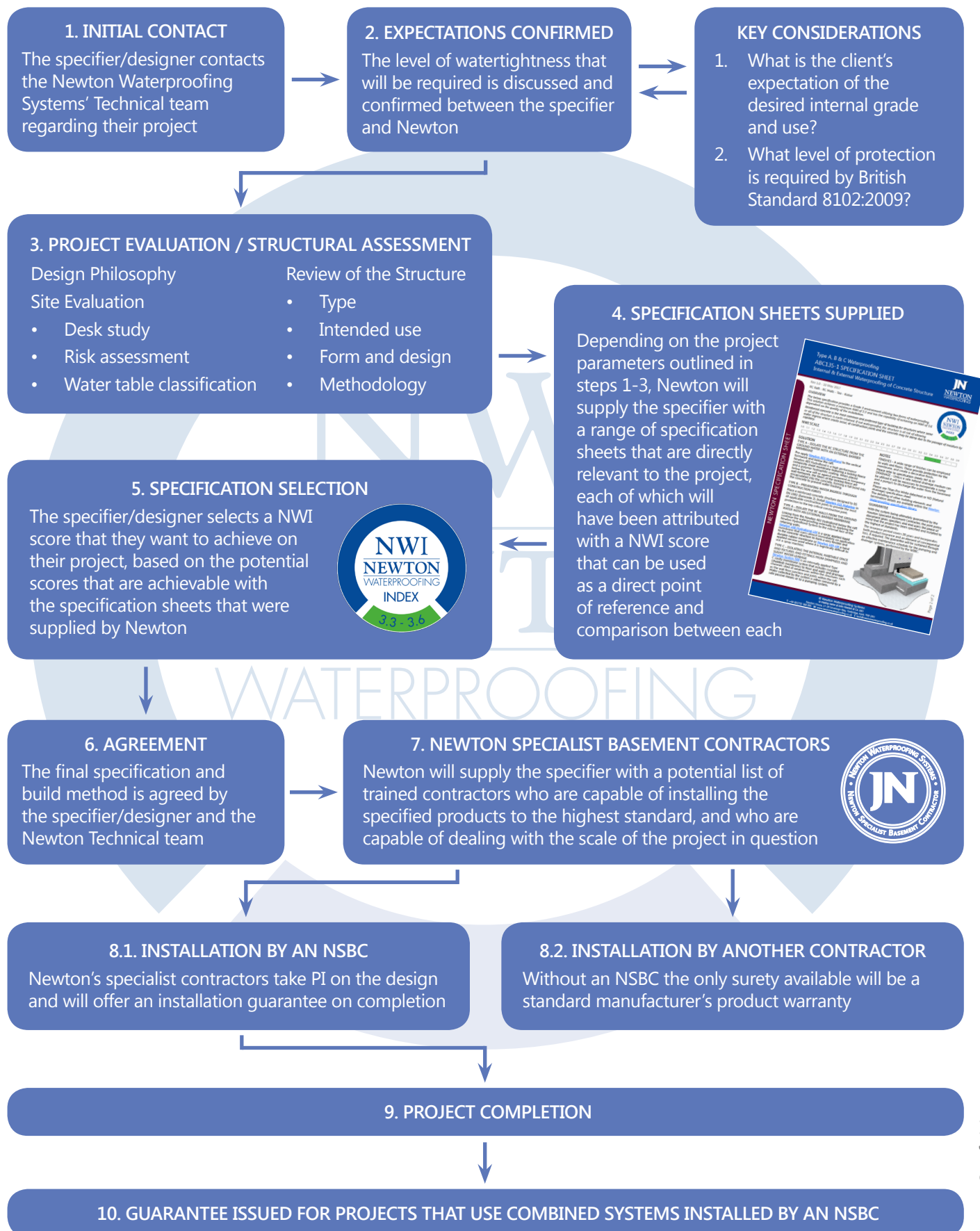
- 10 years of latent defects cover
- £100,000 of cover for consequential loss
- Cover for both product and installation failures
- On-site quality assurance
- Independent auditing



The result is to provide specifiers and clients with the peace of mind that they have received a complete waterproofing solution, installed to the highest standard, and which will be sustained through an NSBC maintenance schedule for the crucial pumping and drainage systems.

THE NEWTON WATERPROOFING INDEX

7. HOW TO USE THE NEWTON WATERPROOFING INDEX



THE NEWTON WATERPROOFING INDEX

8. WHY USE THE NEWTON WATERPROOFING INDEX?

8.1 DETAILED SPECIFICATION SHEETS

Created specifically for use as an integral and essential tool within the NWI, Newton's wide range of Specification Sheets each brings together key product information and the relevant NBS Clauses and 3D drawings into one complete resource.

Each Newton Specification Sheet also carries a defined NWI scoring range that is specific to the products being installed, the structure being waterproofed and the desired internal Grade, therefore creating a central point of information for all specifiers and waterproofing designers to refer to when seeking a complete 'solution' for their project rather than individual, product-specific documents.



8.2 BESPOKE TECHNICAL SUPPORT

We pride ourselves on our level of technical support and have a team of dedicated staff to deal with enquiries, provide technical drawings and help design the best waterproofing solution for your project.

Newton's team of in-house technical experts are able to offer a wide range of specifier services to aid in the correct specification of products and in the correct use of the NWI, including:

- In-house CAD design service
- Bespoke specifications produced in-house and tailored to your project using NBS Create and NBS Building
- BIM objects for insertion into your project
- Technical drawings created and supplied in .dwg (AutoCAD) and .pdf (Acrobat) formats, and also freely available on FastrackCAD
- Product information listed on NBS Plus



NBS
BIM

AUTODESK
AUTOCAD

8.3 SPECIALIST INSTALLERS & GUARANTEE SCHEMES

Other than providing the Newton Protected Basement Guarantee (Section 6), and taking on the PI for the waterproofing design, the main benefit of using a specialist NSBC comes from the peace of mind taken from the knowledge that the products used to protect your structure are being installed by experienced waterproofing professionals, trained by Newton Waterproofing Systems.

As mentioned previously (Section 5), NSBCs are a hand-picked group of companies who work in partnership with Newton to provide the very highest quality products, design, installation and support in all aspects of commercial and domestic waterproofing.

All NSBCs adhere to strict criteria and are required to demonstrate consistently high quality workmanship, resulting in a meaningful scheme that provides unrivalled technical excellence.

Finally, by performing the role of 'waterproofing specialist' on your project, your NSBC will also aid in fulfilling the requirements of BS 8102:2009.



THE NEWTON WATERPROOFING INDEX

9. THE NEWTON WATERPROOFING TECHNICAL TEAM

The Newton team are always on hand to assist with any and all technical and NWI enquiries.



RICHARD CROSSLEY

Technical Director

- *Certificated 'Waterproofing Design Specialist', the highest qualification available in waterproofing*
- *Experienced in UK waterproofing since 2001*



AIMEE-JAYNE GOODES

Technical Manager

- *Certificated Surveyor in Structural Waterproofing (Property Care Association 2016 Student of the Year)*
- *BA (Hons) Architecture*



DAVID BUCKNELL

Product Director

- *Committee member on British Standard 8102:2009*
- *Experienced in UK waterproofing since 1995*
- *Started at Newton Waterproofing in 2001*



BEN FORDHAM

Technical Manager

- *Experienced in UK waterproofing since 2012*
- *Past experience as a Quantity Surveyor*



WARREN MUSCHIALLI

Managing Director

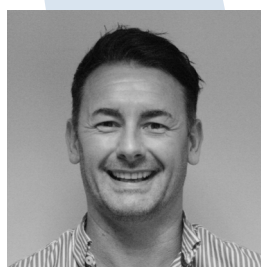
- *Certificated Surveyor in Structural Waterproofing*
- *Experienced in UK waterproofing since 1999*



DANIEL GILMOUR

Technical Manager

- *Certificated Surveyor in Structural Waterproofing*
- *Experienced in UK waterproofing since 2002*



TOBY CHAMPION

Commercial Director

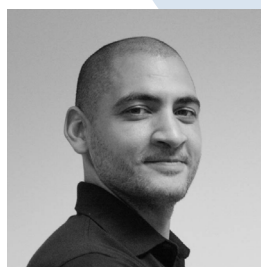
- *Certificated Surveyor in Structural Waterproofing*
- *Certificated Surveyor in Remedial Treatments*
- *Experienced in UK waterproofing since 1996*



ADAM SMITH

Technical Advisor

- *Experienced in UK waterproofing since 2008*



STUART TANSEY

Senior Technical Manager

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- *Certificated Surveyor in Remedial Treatments*
- *Experienced in UK waterproofing since 1999*



REECE CATT

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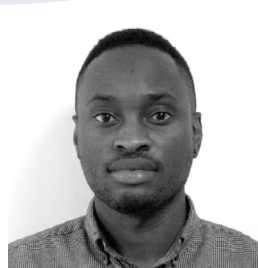
- *Certificated Surveyor in Structural Waterproofing*
- *Experienced in UK construction since 2011*



CLARE RUSSELL

Office Technical Manager

- *Certificated Surveyor in Structural Waterproofing*
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CHRIS THOMPSON

Technical Advisor

- *BA (Hons) Architecture*

THE NEWTON WATERPROOFING INDEX

10. CONTACT US

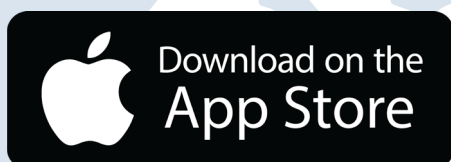
If you would like to discuss any aspect of the Newton Waterproofing Index mentioned above, or if you have any sort of technical or product enquiry, you can get in touch with us by any of the following methods:

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Email (Technical Enquiries): tech@newtonwaterproofing.co.uk

Alternatively, if you are simply looking for further information, guidance, case studies, or product and technical documentation, then please access our website at www.newtonwaterproofing.co.uk or download the Newton Waterproofing App on your tablet or smartphone from either the Apple App Store or Google Play for Android.




Warren Muschialli
Managing Director

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