

Salamander Pumps

# The Housebuilder's Guide to Good Water Performance

Practical guidance for designing, specifying and delivering the water performance homeowners expect in new homes.



# Contents


3 Maintaining customer experience

4 Changing expectations in the modern home

5 Understanding water performance

6 Water performance at property level

7 Water performance at development level

8 A practical water performance assessment

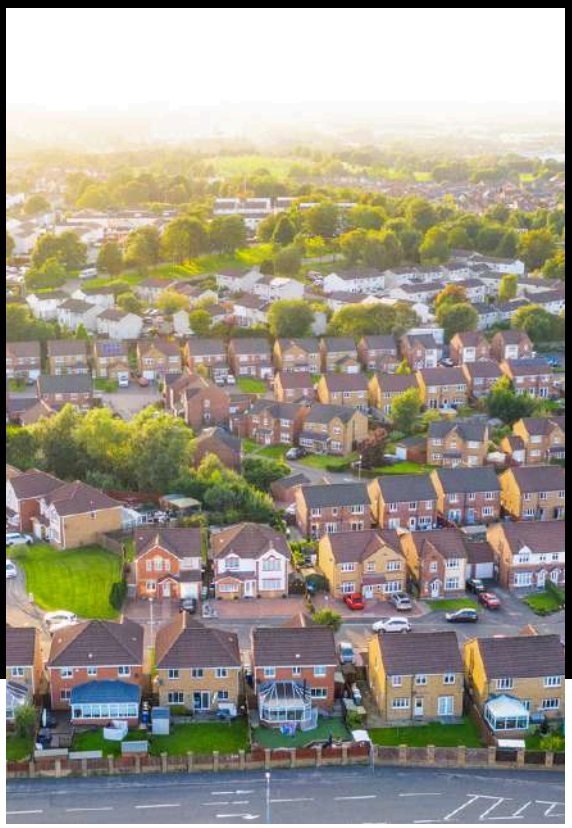
9 Water boosting solutions

10 Solutions for different properties

11 When stored water may be appropriate

12 From installation to handover

13 Your water performance checklist



# Maintaining customer experience

## Water performance is more than a technical consideration in new homes, it is key to the homebuyer's experience.

It is an important part of delivering a comfortable, quality home, which should be considered alongside the property's heating, hot water and bathroom design.

If water pressure and water flow are not sufficient, the consequences for purchasers are immediate. When a new shower struggles to deliver the necessary water pressure, or a system cannot comfortably support multiple outlets being used at once, it goes beyond snagging.

Water-related issues can lead to customer complaints and reputational damage, not to mention additional investigation and remedial work.

These challenges are becoming more relevant as new homes evolve. Three-storey properties, air source heat pump installations, new bathroom configurations and even high-performance showerheads all place specific demands on the water system, which are explored in this guide. There is also growing demand for homes with multiple bathrooms, en-suites and/or a WC on the entrance level.

The good news is that many issues can be identified and addressed through early assessment and informed specification. A host of water boosting solutions are available, with relatively simple installation if considered early in the design stage, or as a retrofit solution for any new homeowners unhappy with their water performance - a quick, easy and cost-effective result.

This guide explores the fundamentals of water performance, how to assess a property's requirements, and the practical decisions that can help housebuilders deliver reliable water performance for purchasers.

# Changing expectations in the modern home

## Homebuyers expect a water system that operates without fluctuations. While that expectation hasn't changed, the challenges to delivering it have.

Ofwat's Guaranteed Standards Scheme (GSS), Regulation 10 sets the legal minimum water pressure water companies must deliver to a property's boundary stop tap as 0.7 bar.

In most cases this minimum standard is not enough to satisfy the demand of a standard residential property, let alone one with multiple occupants and numerous outlets.

Water companies are also legally required to provide a minimum flow rate of 9 L/min at the communication pipe (the boundary of the property).

Separately, water consumption regulations and actual usage for new build homes in England and Wales are governed by Building Regulations Part G. This sets out the maximum daily water consumption of 125 litres per person.

Evolving construction and living trends are placing additional demands on water systems, forcing housebuilders to ask new questions at design and specification stages. With this in mind, it is important to recognise the factors that might impact water pressure and flow.

**0.1 bar**

Approximate drop in pressure for every metre water travels upwards



# Understanding water performance

## Water pressure and water flow are closely related, but they are not the same.

### Water pressure

Water pressure is the **force that pushes water through the plumbing system**, typically measured in bar.

### Water flow

Water flow is the **volume of water that comes from an outlet**, such as a tap or shower, over a specific period of time (l/min).

Assessing static water pressure alone (when no water is flowing) is misleading because while the incoming mains water supply is important, it is only one determining factor.

The water system must be capable of delivering the required flow, at the required pressure, under realistic operating conditions.

### This depends on several interconnected factors, including:

- The water pressure and water flow available from the incoming mains supply
- The size, layout and condition of the property's pipework
- The type and performance requirements of taps, showers and other outlets
- The number of outlets likely to be used at the same time
- The vertical distance between the incoming supply and the outlet
- Any restrictions or losses introduced by fittings, valves and other components





# Water performance at property level

## Building higher

Townhouses and three-storey homes allow developers to maximise housing density, but these properties can present water pressure and flow challenges, particularly where showers and bathrooms are located on upper floors or where multiple outlets may operate at the same time.

This is because water pressure drops by approximately 0.1 bar for every metre it travels upwards. Likewise, larger homes may have several bathrooms and/or higher ceilings, and the plumbing system needs to accommodate simultaneous use under these conditions.

## New heating technologies

From March 2028, virtually all new homes built in England must include a heat pump or other low-carbon heating technology under the Future Homes Standard.

Air source heat pumps paired with an unvented hot water cylinder provide an efficient way to heat and store domestic hot water, but they rely on the incoming mains supply to deliver sufficient water pressure and water flow to meet household demand.

An unvented cylinder typically requires an approximate operating flow rate of 20 L/min and operates at a regulated pressure of around 3.0 bar, but this does not necessarily mean the same performance at every outlet.

## Specification shaping demand

In competitive markets, housebuilders are increasingly forced to balance maximising saleable floor space with ensuring water performance.

Every square metre allocated to plant rooms, airing cupboards or bulky plumbing equipment is space that could otherwise be used for bedrooms, living areas or storage, but that space can't come at the cost of water performance.

## Specification shaping demand

Large rainfall showerheads, body jets and other high-demand outlets are increasingly popular as part of high specification bathrooms, but can require greater flow rates than conventional fittings.

## Pipes and elbows

It is also important to optimise plumbing system design. Lengthy pipe runs create friction and decrease water pressure and flow rates, while undersized pipes can restrict flow, particularly when multiple outlets are in use.

Likewise, additional elbows to the pipework can introduce restrictions and turbulence.



# Water performance at development level

## Land challenges

Not all new-build developments have a dedicated water boosting pump station, particularly smaller sites with fewer than 200 plots.

Meeting the demands of each property can be a challenge, particularly for developments on elevated or sloping sites, where changes in ground level can reduce available water pressure and potentially affect performance at higher floors or outlets. Agreeing and working with water undertakers can also slow down developments.

## Increasing housing supply

In addition, adding new homes to an existing development or community can increase demand on the local water network, which might lead to inadequate water pressure or flow.

The design challenge is not simply to deliver more water.

It is to ensure that each dwelling's water system provides the required performance on demand when it is needed, within the constraints of the property.

Assumptions based on neighbouring properties or similar sites may not be reliable.



# A practical water-performance assessment

## Before specification, housebuilders should consider:

What is the static water pressure at the incoming supply?

What is the dynamic water pressure (when water is flowing)?

How many bathrooms and outlets are in the property?

Which outlets are likely to operate simultaneously?

What is the static water pressure at the incoming supply?





What is the dynamic water pressure (when water is flowing)?

How many bathrooms and outlets are in the property?

Which outlets are likely to operate simultaneously?

What is the dynamic water pressure (when water is flowing)?

How many bathrooms and outlets are in the property?

If the answers suggest a shortfall in water performance, the next step is to establish the most appropriate solution.



# Water boosting solutions

If the incoming supply cannot meet the demands of the property, then housebuilders can specify from a range of water boosting solutions – either at design stage, or as a retrofit solution.

In the design stage, choosing the most suitable approach relies on early coordination between housebuilders, architects, consultants, manufacturers and plumbing contractors.

This ensures that the water system is suitable for the property, is matched to requirements such as the heating and hot water system, and that any design changes are considered from the outset.

Early planning can also help identify suitable locations, coordinate pipe routes and ensure that equipment can be accessed for installation, maintenance and servicing.

If this has not been achieved and water performance issues are identified once the house is occupied, then water boosting solutions can also be installed as a retrofit solution.

## The cost of poor planning



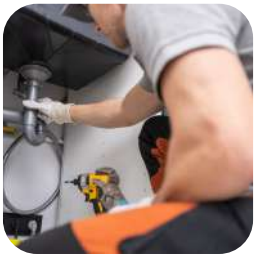
Daily inconvenience for homeowners




Perceived quality issues



Reduced customer satisfaction



Cost of investigative or remedial works



Increased customer service workload



Disruption from site visits

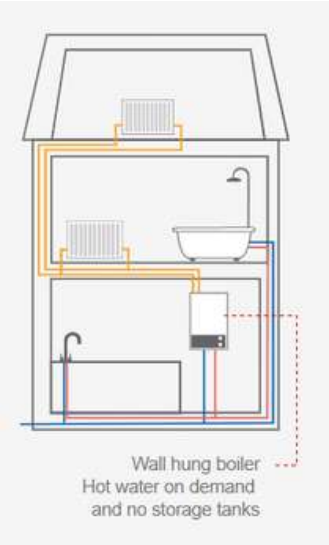


Reputational damage

# Solutions for different properties

There are two types of mains-fed plumbing systems in modern properties.

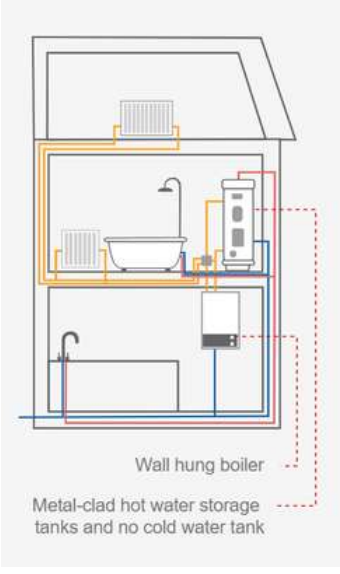
## Mains-fed combi boiler




Rely on mains pressure to deliver water and provide hot water on demand, without storage tanks.

Water pressure and flow may fluctuate at different times of the day, such as when neighbouring properties are also using water.

## Mains-fed unvented




Systems have a separate hot water cylinder that stores hot water at mains pressure.

These are increasingly paired with air source heat pumps in new homes and typically operate with regulated pressure around 3.0 bar,

The incoming mains supply must still provide sufficient dynamic pressure and flow to meet the property's requirements.

In both systems, if the mains supply is insufficient for the demand for water in the home, products can boost water performance to deliver flow rates from 7 l/min to 120 l/min.

These can include inline booster pumps, single outlet booster pumps, tank-fed water storage solutions, such as **Salamander Pumps' MainsBooster range**.

# When stored water may be appropriate

In some circumstances, a stored-water system may be more appropriate than direct mains boosting.

This might be where the incoming supply cannot provide the required flow, or where the wider system design calls for additional water storage. Under the Water Supply (Water Fittings) Regulations 1999, the maximum flow rate for a pump connected directly to the mains water supply in England and Wales is 12 L/min.

In these cases, water storage products, such as Salamander Pumps' TankBoost range, offer a solution, typically combining a storage tank with an integrated submerged pump.







Water storage solutions do introduce new considerations, including the space required for tanks, installation arrangements and maintenance access, but flexible installation options are available – some models will fit in a kitchen cupboard, for example.

Salamander Pumps makes it easy to choose the right product for each property thanks to our simple online product selector tool – simply enter details about the property, incoming supply, number of outlets and other key factors. We also have experts on hand to discuss individual requirements with housebuilders, across projects of any size.

# From installation to handover

Once the most appropriate solutions have been identified, it is important to make sure contractors and maintenance teams have the information they need to install products correctly.

Even a well-designed specification can fail to meet demand if installation and commissioning are not carried out in line with manufacturer guidance.

### Follow installation requirements

Ensure products are installed in line with the manufacturer's instructions and the requirements of the wider plumbing system, including pipe sizing, pipe routing and access requirements.

### Commission and check the system

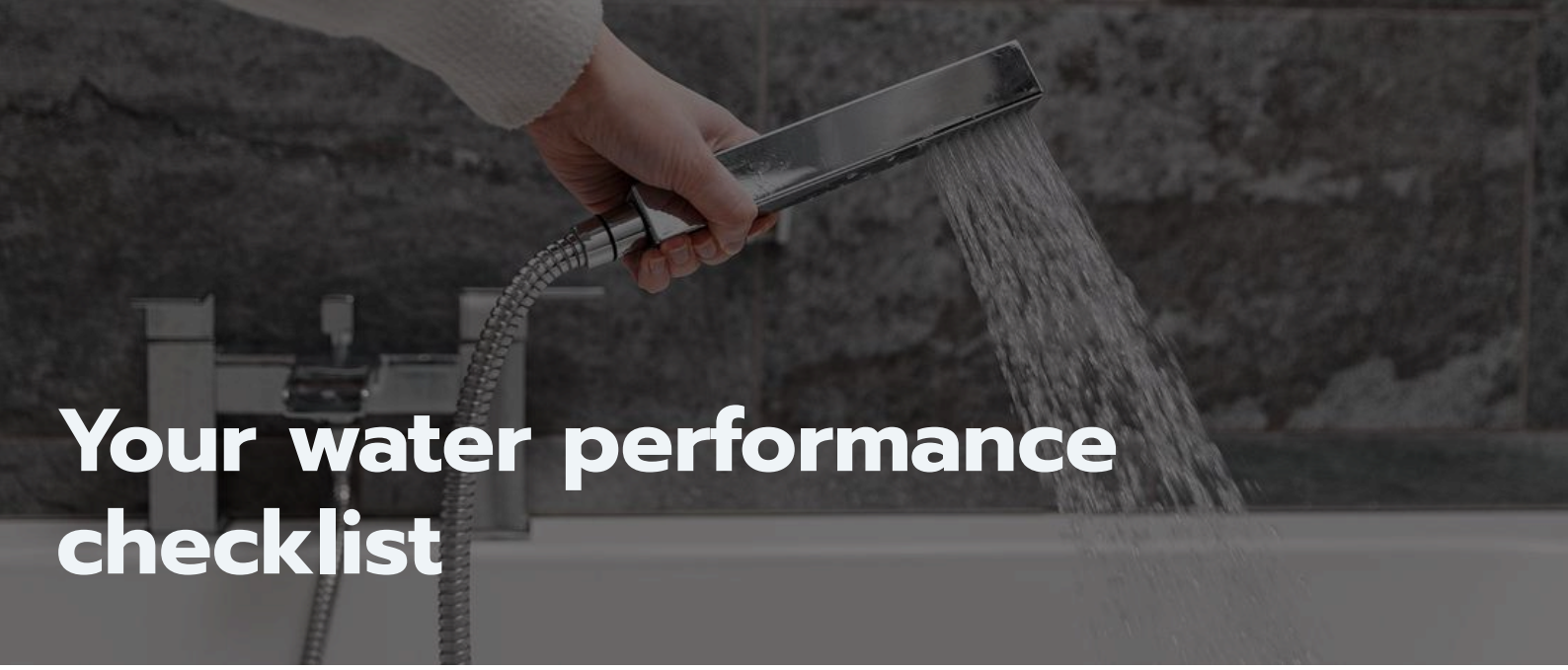
Commissioning should include checking that adequate water pressure and flow is available at each outlet, under the relevant operating conditions.

### Give useful guidance

Developers should provide clear information to purchasers about how their water system operates and any relevant maintenance requirements, as they would with heating and hot water systems – particularly when water boosting solutions have been installed.

### Work with manufacturers

Salamander Pumps offers support at every stage, including pre-installation product selection, installation guidance, and ongoing technical/customer support.



# Your water performance checklist

## Design and planning

- Have you considered water performance requirements alongside bathroom and heating layouts?
- Have you established the number of outlets and expected simultaneous demand?
- Have upper-floor bathrooms and high-demand outlets been identified?
- Have suitable locations for pumps, tanks and associated equipment been considered?
- Has the pipework system design been considered to minimise elbows and ensure correct sizing?
- Is sufficient space and maintenance access available?

## Installation and commissioning

- Has equipment been installed in line with manufacturer guidance?
- Are pipework and connections suitable for the intended performance?
- Has the system been checked under realistic operating conditions?
- Have any performance issues been investigated and resolved?
- Is equipment accessible for future maintenance?

## Supply assessment

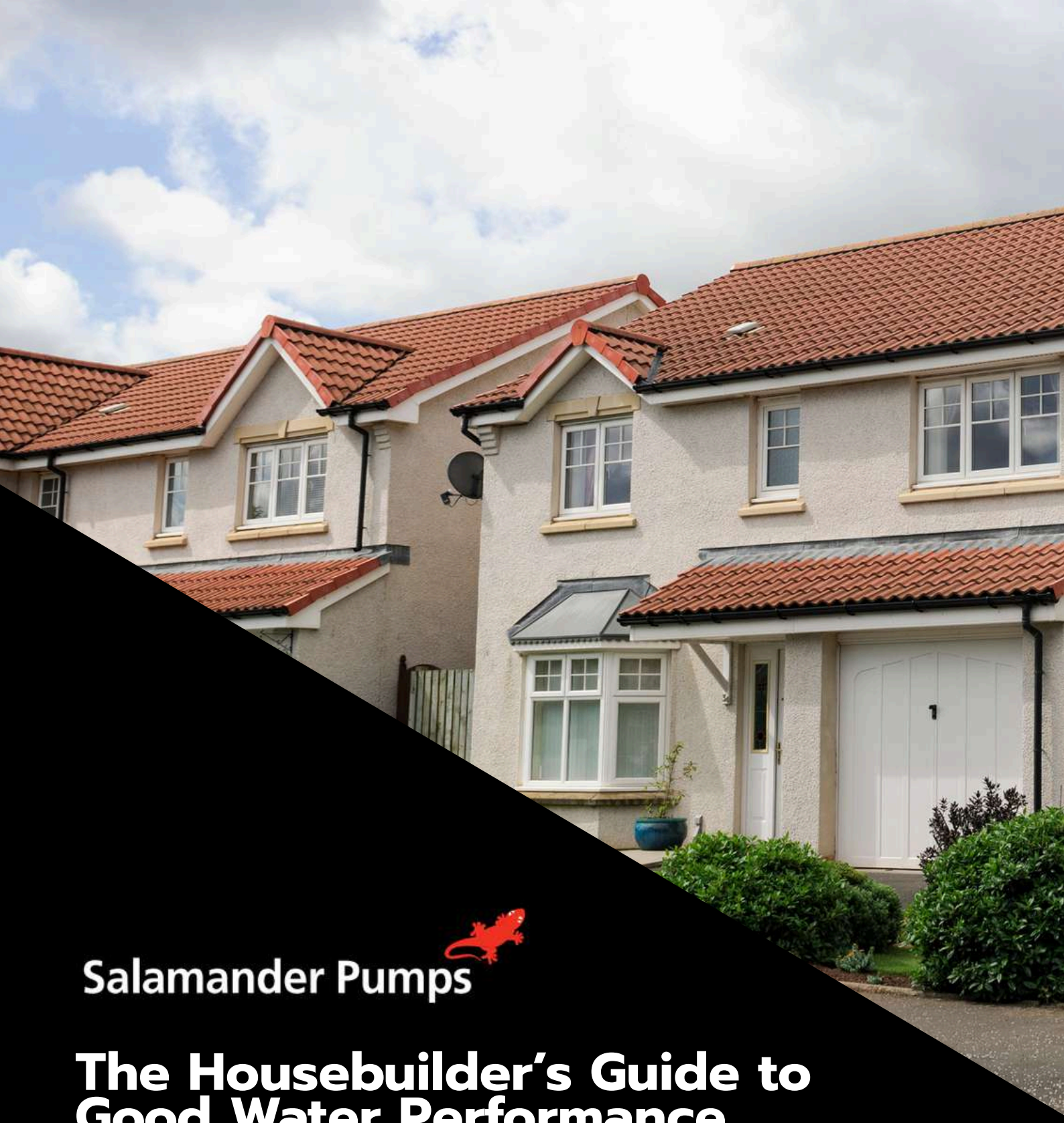
- Have you established the incoming static water pressure, dynamic water pressure and flow rate?
- Is the supply sufficient for the property's anticipated demand?
- Are there any known limitations affecting the development or local network?
- Is further investigation or specialist advice required?

## Specification

- Has the relationship between the mains supply and hot water system been considered?
- Are water boosting solutions required?
- Have you or your contractors used all available support from manufacturers to specify those solutions according to the specific demands of each property?
- Have relevant technical and installation requirements been reviewed?

## Handover and support

- Has the homeowner received clear information about the water system?
- Have relevant operating and maintenance requirements been explained?
- Is the customer clear about any available support beyond handover?



Salamander Pumps

# The Housebuilder's Guide to Good Water Performance

If you need support to achieve good water performance in new homes, speak to our specialist team.

Call 0191 516 2002 or email sales@salamanderpumps.co.uk.