

Guidance Notes: PROPERTY LEVEL RESILIENCE (PLR)

If you are unsure about anything within these notes, then please contact the Flood Risk Management (FRM) team using the details at the end of this document.

Property Level Resilience (PLR) products offer an alternative and more permanent means for homeowners to manage their flood risk, without having to rely on sandbags. PLR measures can be more cost-effective and easier-to-implement providing peace of mind and helping to reduce the stress and damage that flooding causes.

What is Property Level Resilience (PLR)?

It is not always possible to install a structural flood defence or implement flood mitigation measures to protect homes and businesses etc., from flooding, due to economic or practical reasons. Therefore, in some cases, property owners have had to utilise other means to reduce the risk of water entering their property. Manufacturers have developed products that, when fitted to a home or business, can increase the properties ability to cope with, or be more 'resistant' or 'resilient' to flooding. PLR consists of a range of flood resilience and flood resistant measures designed to limit water entry into the property and make the process of getting back into a home following a flood quicker.



Example flood door






- **Flood resistant measures** - preventing flood water from entering properties and include products such as flood doors, flood barriers and dry proofing.
- **Flood resilience measures** - reducing the amount of damage caused once water has entered the property for example waterproof plaster, higher electrical sockets, and tiled floors.


Type of products:

The range of products that can be fitted to a property will vary depending on the home and level of protection that is required. There are a range of brands available as detailed later in this document.





Flood Resistant products:

Table 1 provides examples of some Flood Resistant or Passive measures that can be installed to a property. Flood resistant measures can be fitted as permanent features (fit and forget) usually to the exterior of a building. This provides a peace of mind knowing a property will have some level of flood protection should a flood incident occur when the owner or resident is away from the property. Other PLR measures can be manually fitted by the proprietor in preparation when a flood warning has been issued and is thought to be imminent. These measures rely on the homeowner understanding how to install products effectively and in time.

Resistant Measure	Example	
Non-Return Valves	Allows wastewater to flow through in one direction. Applied to wastewater pipes this can hinder the ingress of water via this method. Fit and forget product.	
Anti backflow valves	Applied to foul water pipes this method may restrict foul water/sewerage from coming into the property via sewage outlets. Fit and forget product.	
Airbrick Covers	Designed to prevent water ingress through airbricks. These can be manual or automatic in operation. Fit and forget product.	
Flood Doors	A permanent solution to preventing water from entering the property through external doorways. Protection is provided up to approximately 600 - 900mm high depending on the specific product. Fit and forget product.	
Pumps	Pumps can be used to remove water that has collected in cellars or homes where water has entered the property. Can be manual or automatic in operation. Fit and Forget depending on the property or product.	





Sealant	Bricks are porous and water can enter a property through the walls. Applying sealant to brickwork can make bricks more resistant to water. However, it is important that the correct sealant is used so the bricks can breathe. Pipes and cables servicing the property may provide an additional entry point for flood water. Sealing the entry points can provide further protection. Fit and forget product.	




Other PLR Measures

Flood Barriers	Can be installed to a property doorway, garage, driveway and french doors to protect the property from flooding. Flood barriers are manually installed and rely on the property owner efficiently installing them to the property when a flood warning is in place.	
Alternatives to sandbags	As an alternative to sandbags there are a range of absorbent sacks available. These are quick to deploy, lightweight and in many cases easier to store than traditional sandbags. The sacks are designed to absorb a number of litres of water (depending on the brand) and are placed in situ when a flood warning is in place to act as a barrier. Manual installation required.	 
Toilet seal/bungs	Fitted into the toilet these products are designed to prevent floodwaters entering the property from the toilet. Manual installation required when flooding is imminent.	

Flood Resilient products:

Resilience measures are aimed at allowing a building to flood but constructing the interior from materials that are not easily damaged by water. Following flooding, a clean-up will be needed but no major drying and refurbishment should be required. Correctly applied resilience should ensure that no permanent damage is caused, the structure of the building is protected, and drying/cleaning is quicker. These resilience measures are designed to reduce the amount of damage caused when water enters a building but will still require the owner/resident to move soft furnishings and electrical goods to a higher room.

Resilience Measure	Example	
Water compatible internal walls	<ul style="list-style-type: none"> . Silicon or mineral board . Hydraulic lime finish rather than gypsum plaster . Closed cell insulation . Tiled walls (pictured) 	
Flood conscious renovations	<ul style="list-style-type: none"> . Horizontal plasterboard (pictured) . Raised electrical sockets . Raised gas/electric meters . Enamelled radiators 	
Water compatible flooring	<ul style="list-style-type: none"> . Tiles (pictured) . Concrete rather than timber . Suspended floors 	
Water compatible kitchen and bathroom fittings	<ul style="list-style-type: none"> . Steel units (pictured) . Plastic units . Units on legs and removable kickboards . Wall mounted cupboards/shelves . Wet room style bathroom 	

Plinths for white goods	<ul style="list-style-type: none"> . Concrete or metal plinth to raise white goods (pictured) . Stainless steel or plastic feet to raise white goods 	
Practical heating solutions	<ul style="list-style-type: none"> . Wall mounted boiler . Separate heating and electrical circuits for upper and lower floors 	
Removable internal doors	<ul style="list-style-type: none"> . Quick release hinges 	

Next steps:

When considering installing PLR it is recommended you obtain an independent property level protection survey by a qualified professional. Most surveyors will recommend a range of products for one property, and it is good practice to take into consideration other properties, location of drains and historic flood information to be sure protection is not reduced by water entry from adjoining properties. Please refer to our [Using Experts Guidance Notes](#) for further assistance.

It is worth bearing in mind that PLR products will require periodic maintenance to ensure the products will continue to work efficiently. The level of maintenance will vary depending on the product. The responsibility of maintenance lies with the property owner, this is particularly important to remember when deciding to purchase fit and forget style products. When PLR products are installed at the property it is good practise for contractors to leave homeowners with a maintenance schedule and contact details.

You may also wish to find out about the flood risk to your property. The Environment Agency provides an online postcode search facility to help you and is available online at:

www.gov.uk/check-flood-risk and by clicking "[flood maps for England](#)"

The website has various live maps designed to show the flood risk posed from a range of sources.

Where can I purchase PLR products and services?

Derbyshire County Council is unable to endorse the use of any expert company, product, or service. However, there are a number of organisations which may be able to provide help and advice.

Our Guidance Notes for "[Using Experts](#)" may be useful.

The **Flood Advisory Service**¹ (FAS) is a not-for-profit organisation which offers free, independent advice on practical flood mitigation solutions. Their service is designed to provide step by step advice and support flood mitigation to ensure residents understand and take control of their own flood risk. As part of this the FAS can provide information on the specific flood risk in your area, point you in the direction of local flood groups, advise on 'flood vulnerable' areas in your property, provide an independent overview of all Kitemark certified flood mitigation products in the marketplace and guide you through the flood survey and installation process, providing contacts for reliable, local, certified Flood Professionals.

The **National Flood Forum**² (NFF) is a national charity dedicated to supporting and representing communities at risk of flooding. The NFF works to support the recovery of victims of flooding and to improve the resilience of the community. The NFF has provided a platform called 'The Blue Pages' to enable property owners to make an informed decision about the range of products available. The Blue Pages is a directory of flood products and services which are available to help reduce the risk of flooding to homes and businesses.

A **BSI Kitemark**TM for **Flood Protection**³ has been developed for some products and certified flood installation specialists and offers homeowners and businesses a greater level of confidence when committing to a purchase. A BSI kitemarkTM confirms that a product or service has been tested rigorously to meet a recognised industry standard. A list of products that have been

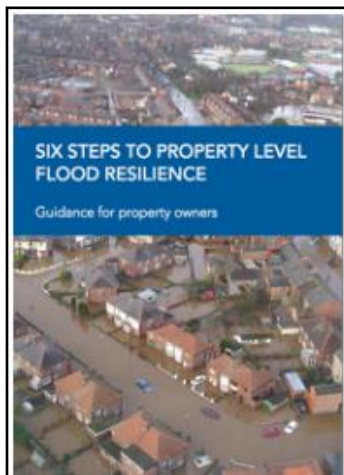
¹ www.floodadvisoryservice.co.uk

² www.nationalfloodforum.org.uk and www.bluepages.org.uk

³ www.bsigroup.com/en-GB/our-services/product-certification/industry-sector-schemes/construction/flood-protection-and-waterproofing-materials

awarded the BSI Kitemark™ is available via the BSI Group product directory search using the standard “PAS 1188”.

A free impartial guide to property resilience is available online⁴, this has been developed by researchers at the Manchester Universities and is endorsed by:



- The Association of British Insurers
- Department for Environment, Food, and Rural Affairs (Defra)
- The Environment Agency
- The Flood Protection Association
- The Local Government Association
- The National Flood Forum

The booklet contains in depth guidance on making a property resilient and contains further links to organisations that can provide more information and advice.

Local Businesses

Many of the UK's 4.5 million small and medium sized enterprises (SMEs) are exposed to the effects of flooding. Few SMEs have measures in place to ensure that their business can operate during a flood and its aftermath. The **SESAME project**⁵ aims to develop tools to encourage businesses to discover ways of becoming more resilient to floods that will highlight how better off the business will be by adapting to the ongoing risk.

As part of this aim, SESAME has created an e-tool using innovative techniques, designed by businesses, for businesses, on the topic of flood resilience. The e-tool can be accessed through the SESAME website along with a range of factsheets and a practical guide for SME business continuity.



CIRIA is the Construction Industry Research and Information Association, a neutral, independent, and not-for-profit body.

Codes of practice in relation to Property Flood Resilience can found on the website below

https://www.ciria.org/CIRIA/Resources/Free_publications/CoP_for_PFR_resource.aspx

⁴ www.smartfloodprotection.com

⁵ www.sesame.uk.com