

The recent flooding across Queensland, Northern NSW and Western Victoria has caused loss of life and immense damage to properties. Understanding where to start in the rebuilding or reconstruction process can be difficult. As people now start to assess the damage to their homes, CSR appreciates the situation they may be in and in order to assist the process this bulletin will aim to provide corrective measures and relevant information relating to products which may have been affected. Your safety and understanding of what to do is our priority and this recommendation is based on dealing with plasterboard, fibre cement, insulation, glass, bricks and roofing products.

Before the work begins – things to consider...

Assessment of damage

- Prior to any assessment or repairs commencing, we recommend using licensed trades people to undertake relevant assessments to understand the extent of the structural damage. Assessments include electrical safety inspection, plumbing safety inspection and an inspection and assessment of structural damage to buildings and houses. If you are insured, make sure your claim has been submitted and the insurance company has conducted their assessment before works commence (unless they advise otherwise).
- Once this has occurred and it is deemed that structural damage has occurred, repairs should be undertaken in accordance with and under the direction of professional advice.
- Before starting any work it is important to take all safety precautions to avoid any injury. When cutting or grinding fibre cement sheets using power tools, always ensure the work area is well ventilated. An Australian Standard approved dust mask and safety glasses must be worn as well as gloves to ensure materials are handled responsibly. CSR recommends that hearing protection be worn where appropriate.
- For any health concerns resulting from the residue of contaminated floodwaters, seek medical advice or contact your local health inspector or relevant authority.
- When handling sheets, please consider the size and weight before lifting.
- Ensure that the power switch is off. We recommend the use of battery operated electrical tools in wet areas.
- Please contact your local authorities for guidelines on the safe disposal of building materials.

For Fibre Cement (commonly known as fibro), before any action, it needs to be assessed if the product contains asbestos. Any buildings constructed prior to 1987 may contain asbestos, although it is important to obtain a verification from an approved assessor. Removal of asbestos products can only be done by an authorised person using approved processes. Contact your State building authorities for information on the removal of asbestos.

Getting started....

Draining any water from the cavities

Walls

- Where flood water has risen up walls, it is important to drain any water from the cavities. Skirting boards need to be removed and holes drilled above the bottom plate, or if you have metal stud walls then they are removed by drilling through the channel at floor level. If water is present in the cavities then cut a hole which is large enough to drain the water. To ensure all water is completely drained, this process must be repeated at each cavity. If the wall cavity has insulation material in it and this is wet, then the lining on at least one side of the wall will need to be removed to take the wet insulation out.



Ceilings

- There is a significantly greater risk to the integrity of plasterboard when it is on ceilings, particularly when it is in contact with saturated insulation. Saturated ceilings can be unsafe so it is important to also drain the water carefully. Be alert to warning signs that it may collapse. Starting from the perimeter, away from the worst sagging area, you need to work towards the centre of the sag progressively by poking holes allowing water to exit slowly. Wet insulation should be removed as soon as possible. In most cases it will not be suitable for reuse.



Once the draining process has been completed an assessment can then be made on the best course of action for your plasterboard.

Assessing the damage

Walls

- In general, we recommend that Gyprock™ plasterboard and cornice be replaced after being wet. When the paper is wet, or if the paper lining is subject to deterioration, board strength and the holding capacity of fixings may be reduced.
- The board or cornice should be allowed to dry and be inspected for signs of deterioration or distortion. Inspect the walls under glancing light conditions, or use a long straight edge to determine if the plasterboard is distorted and will need to be removed.
- Contamination of sheeting by sewage, toxins and chemicals should also be evaluated. If so, it will need to be removed.

Ceilings

- Almost all ceilings that have been inundated will need to be replaced (especially where absorbent insulation is involved) as water will likely have ponded for too long a period and all the fixings will be compromised.



Considerations for removal

Plasterboard

- If the plasterboard is flat and shows no sign of the paper delaminating from the plaster core, and that its strength does not appear to be affected, it is expected that the board can be retained. When fully dry, plasterboard can maintain its properties and strength and not be permanently affected. However, if there is any doubt, it should be replaced.
- Check also that the stud adhesive is holding the board firmly to the frame and that any nails or screw fixings have not been compromised.

- Plasterboard that is affected by mould, particularly on the unpainted back surface, should be removed. Mould on the painted surface of plasterboard can usually be removed by washing with a bleach solution (sodium hypochlorite) mixed 1 part bleach to three parts water. Allow to stand for 15 – 20 minutes before washing off with clean water. Care must be taken to protect hands, skin and eyes when using bleach solutions. If the mould cannot be removed by this method then the plasterboard should be removed.
- Plasterboard joints that have been wet or immersed may show some deterioration. In many cases it will be possible to repair these joints by scraping off loose material, skimming the joint with a plasterboard compound, and sanding prior to re-painting. If there is any doubt regarding the integrity of the joint, seek the advice of a plasterboard tradesman.
- Advice should be sought from paint manufacturers for over coating walls and ceilings which have been stained due to flooding.

Fibre Cement

- The above comments apply to fibre cement as well although it retains greater strength than Gyprock™ plasterboard when wet and may resist warping or deterioration to a greater extent. Tiled areas are likely to be OK as long as there is no visible deterioration.
- External cladding and eaves can be expected to survive immersion in water as long as they are not subjected to impact from floating objects etc.

Insulation

- If the insulation has been completely saturated then it will be required to be replaced. If the insulation has been completely saturated and then dried out, it may not recover to its original thickness and its thermal performance will be significantly reduced.
- On the other hand if the insulation is only slightly wet due to something like minor leakage through the roof and then it can be removed, dried out and reused.



Disposal considerations

Insulation

- It is recommended to use gloves to avoid the mechanical irritation from the glass fibres. Some rubbish disposal places also require it to be placed in bags to stop the batt breaking up and being blown around. CSR recommends that you refer to your local authorities for specific regulations.

Plasterboard

- Plasterboard that needs to be removed should preferably be taken to the nearest board joint above the inundation level. Depending on the size of the plasterboard, this will either be 1200mm or 1350mm from the floor. In some instances, all the plasterboard on the walls may need removal, including the cornice. This work may be best left to a tradesman, as careful removal of the cornice can considerably reduce rectification costs. Note: Insurance companies may only agree to cover the costs of removal to a certain height.
- Contact your local CSR Gyprock™ Customer Service Centre for more information for a list of recommended contractors in your area. PHONE 13 17 44. CSR recommends using members of the Association of Wall and Ceiling Industries.
- Waste should be placed in containers and disposed of with other construction waste in accordance with local authority guidelines.

Fibre Cement

- Please note: before any action can be taken on Fibre Cement, it needs to be assessed if the product contains asbestos.
- Fibre Cement can be treated as a common waste for disposal or dumped into a landfill site in accordance with local authority guidelines

Preparing for new linings

Prior to commencing any work, contact your insurance supplier to ensure you are adhering to any requirements in your policy.

- It is important that the substrate (ie; timber frame/masonry etc) is fully dry before replacing any plasterboard. Use fans and open windows (when low humidity outside) to assist in the drying process. Moisture measurement tools are available to test walls and timber frames before commencing any work if required

Where to from here?

Should you require any further information, please contact our help line or log onto the CSR website for further information as the safe handling of these products is our priority.

- All Material Safety Data sheets and product related information can also be located at www.gyprock.com.au, www.bradfordinsulation.com.au, www.cemintel.com.au, www.viridianglass.com
- Contact your local CSR Gyprock™ Customer Service Centre for more information or for a list of recommended plasterboard contractors in your area. PHONE **13 17 44** or log onto www.gyprock.com.au
- We recommend that local authorities be contacted should you have any specific enquiries relating to your area.

The information contained in this advice is general in nature and does not take into account your personal situation. You should consider whether the information is appropriate to your needs, and where relevant, seek professional advice from the relevant body in your state.

Flooding of houses and the effect on glass products.

In general glass is one of the building materials which is more resilient to water – that's why it is so frequently specified for surfaces which need to keep the water out, like windows, shower screens and kitchen splashbacks. But given the unintended exposure to water that arises during flooding, there are some issues to consider with the glazing in flood affected homes. Damage to glass from flooding ranges from diminishing the visual appeal of the glass (which is an important consideration in most cases – generally glass is employed for its optical clarity, consistency and lustre) through to physical degradation of the glazing or the structures that hold it in place. Note that immersion and periods of continuous exposure to water can void the product warranties of some glass products, even though damage may not be immediately obvious.

In this section, we set out the problems that may arise with flood-water exposed glass and how to address them.

SAFETY NOTE: Glass can be a uniquely dangerous material when used or handled the wrong way – it is heavy, can react in unexpected ways outside of its intended installation, and can form large sharp shards that can maim and kill. Any operation involving the removal, replacement or disposal of glass should be conducted only by a qualified glazier.

If glass is deemed to be unsafe but cannot be attended by a glazing professional immediately, the simplest and most effective step may be to minimize potential harm, by isolating the area into which the glass would land should it fall. (If small children could be in the area, take particular note of keeping the area secure from them). Again, a glazing professional should be consulted for advice on specific cases.



Glass in general

Where it occurs in a home: All glazed applications – windows, shower-screens, pool fences, etc.

Problem: Etching of surface due to highly alkaline environment.

Possible places where damage may occur: Glass in or around areas where household chemicals are kept (pool chemicals, drain cleaner, etc.), fertilizers, alkaline water from any other source.

Evidenced by: A slight cloudiness or a slight rainbow effect on the glass which seems to disappear temporarily when the glass is wet but will not clean off.

Corrective action: Attempt to clean the glass (Procedures for cleaning glass can be found at <http://www.viridianglass.com/Products/default.aspx>). If the surface is etched then this is permanent and will not be improved by cleaning - the functional performance of the glass will not be impacted, but determine whether the aesthetic qualities of the glass are unacceptable, and if so replace.

Laminated Safety Glass

Where it occurs in a home: Windows and other glazed areas requiring safety glass (low-level windows, windows in or around doors, glass in kitchens and bathrooms, etc.). Most easily identifiable at its edge where a narrow layer of plastic (generally less than 0.5mm thick) will be visible between two layers of glass.

Problem: Laminated glass is a safety glass product in which a polymer layer is sandwiched between two layers of glass. It is often used in wet areas in windows and shower screens to reduce the risk of injury if people slip on wet surfaces and fall into the glass, but it is not intended to have its exposed edges immersed in water for prolonged periods (i.e. they should be protected by the frame around the glass). If the house is inundated with water, the frame may fill with water exposing the edges of laminated glass allowing water to be absorbed into the interlayer. Also, in windows, mud and other debris in flood water can block weep holes in the window frame which may leave the base of the window filled with water. Laminated glass in this situation will be subjected to extended exposure to water.

Generally this is an issue of aesthetics rather than impacting the functioning of the glass as a safety glass, but in extreme cases this can be the starting point for the progressive delamination of the glass.

The laminate interlayer can in some cases also pick up colouring agents from the water or materials close to the glass when wet, which can migrate into the interlayer causing discolouration.

In general, edge exposure of any prolonged period (more than a few hours) would be grounds for voiding the supplier's product warranty for laminated glass.

Possible places where damage may occur: Framed safety glass where the edges are kept wet by water retained within the frame or any other substructure below the glass (channels and rebates in damp timber / masonry flooring / etc.)

Evidenced by: The presence of a milky or other unusual colouration to part of the glass, so look for the interlayer becoming discoloured or opaque at the exposed edges. Note that this may take some weeks to develop as the water migrates through and reacts with the interlayer material.

Corrective action: Though typically the functional performance of the glass will be largely unaffected, given it is a safety glass used in a high risk application we would recommend replacement as a matter of course. Moreover it is highly likely that the aesthetic qualities of the glass will be considered unacceptable.

Regardless of evidence of water damage, in general it would be good practice to check and clear any blocked weep holes within window frames as a preventative action against damage during future rainfall.

Mirror

Where it occurs in a home: permanently mounted to walls and within doors in bathrooms, wardrobes and mirrored walls, and also as freestanding mirrors and in furniture.

Problem: The material which produces the reflective characteristic of mirror is silver metal, which is prone to oxidation in the presence of water and moisture. The presence of materials such as acids or alkalis will also cause the silver to oxidize. For routine use the protective paint layer on the back of the mirror defends the silver from oxidation, but when exposed to prolonged immersion or moist environments, the silver can degrade especially at the edges or near any points of physical damage to the paint layer.

Possible places where damage may occur: Mirrors which have been immersed (such as wardrobe doors, floor to ceiling mirrored paneling, low level framed mirrors and mirror in furniture items), and those where moisture may have been absorbed into the framing system or the backing material.

Evidenced by: The appearance of black spots, rings or strips on the reflective surface.

Corrective action: This type of damage to the mirror is permanent and it will almost certainly be uneconomic to attempt repair. Initial points of discolouration may well progress further into the area of the mirror. If this is deemed aesthetically unacceptable then the mirror will need to be replaced.



IGUs

(Insulating Glass Units or “double glazing”)

Where it occurs in a home: In windows and doors – look to the base of the glass to see the spacer bar (metal or plastic material) between the two glass layers, and a slight double reflection in the glass.

Problem: The edge sealants of double glazed units are not intended to be exposed to water for prolonged periods. IGUs left sitting in wet or damp frames may cause the breakdown of the sealing system which will allow moisture to enter the (otherwise) sealed gap between the glass. Modern IGUs incorporate a desiccant within their edge spacer to combat moisture within the unit, but this has a limit. Free moisture within the IGU can impede the effectiveness of the unit – both in terms of its energy efficiency performance and vision through the window.

Possible places where damage may occur: low lying windows, doors, and windows where the frame’s weep holes have become clogged.

Evidenced by: Moisture within the IGU will most frequently present as condensation on the glass surface inside the unit - within the space between the two glass panels – particularly when the glass is cold. Note that this may not present itself immediately, as the moisture may take some time to migrate through the seal and consume the desiccant within the unit. It may also not be cold enough weather to allow moisture to condense on the inner surface until later in the year.

In more extreme and longer standing cases, moisture damage may present as corrosion or discolouration of the spacer, or even the presence of liquid water within the unit.

Corrective action: Replace any IGUs showing internal condensation or otherwise suspected of having moisture ingress. Generally prolonged exposure of the edges of IGUs to moisture is specifically noted within suppliers’ product warranties as being a cause for voiding of the warranty.

Other wall-mounted glass

Where it occurs in a home: mirror and glass paneling, splash-backs, etc.

Problem: the substrate may no longer be structurally sound. Gyprock, other plaster, even wallpaper in some instances may no longer have the integrity to hold the weight of glass adhered to its surface following inundation. The problem may not be immediately obvious if only a portion of the wall was made wet or if the plaster behind the glass takes a long time to fully dry out. Even where fixed with screws or channels, these fixings may no longer have adequate “bite” into the backing material to be considered adequate to hold the weight of the glass. This presents a particular hazard should the glass fall from the wall as it is unlikely to be safety glass; hence it may break into large sharp shards which could cause great injury or death if they were to fall upon someone.

Specifically in the case of splash-backs and other non-mirrored glass wall paneling, silt and other foreign bodies may have been washed into small gaps behind the splashback (between the wall and the glass). Because the colour applied to the glass may not be 100% opaque, this foreign material may be faintly visible through the glass creating an unwanted visual effect.

Possible places where damage may occur: at low-lying mount points behind point-fixed and adhered glass paneling and wall-mounted framed mirrors, and immersed areas of splashback where the adhesive used creates a narrow standoff between wall and glass.

Evidenced by: Softness behind the glass – check all points around the edge of the glass likely to be immersed in flood water. Check for movement in any fixings and the glass itself.

Corrective action: Replace backing material and if the glass remains intact, remount the glass. Otherwise replace glass. Silt behind splashbacks will generally be difficult to correct without removing the glass – it can then be cleaned and remounted.

The information contained in this advice is general in nature and does not take into account your personal situation. You should consider whether the information is appropriate to your needs, and where appropriate, seek professional advice from the relevant authority in your state.



PGH Clay Bricks after Flood

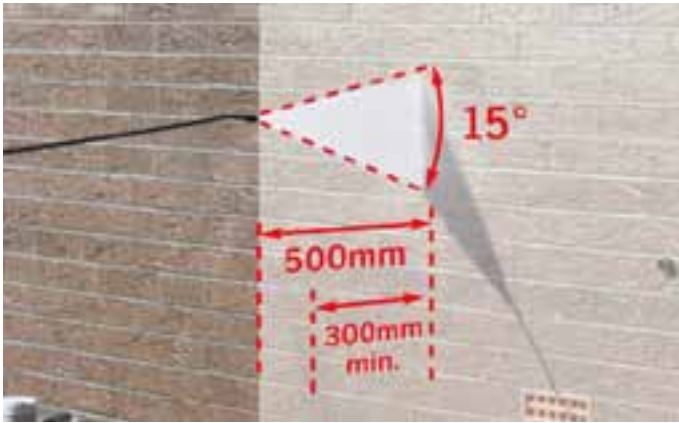
In general, clay bricks as compared to other cladding products are highly resilient to water damage from a flood event. Where brickwork has flooded, generally the only damage to clay bricks is short term deterioration in the visual appearance of your brickwork, as a result of mud and debris on the surface. In order to clean flood affected brickwork, we recommend the following.

Brick cleaning is a specialist trade, and should only be undertaken by a professional to decrease the potential for damage to the face of your clay bricks.

In the case of flooding, brick cleaning using aggressive chemicals can easily damage the product and is not recommended.

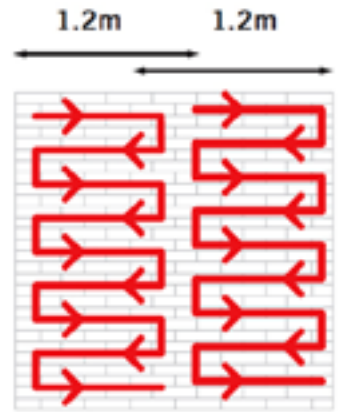
High pressure water jet cleaning is the best way to clean clay masonry affected by flood waters, but the following simple precautions must be taken so that the bricks and the mortar joints are not damaged by the process.

1. Masks and other protective clothing should be worn whilst cleaning.
2. Any non fixed or adjacent materials such as loose metal, glass and wood should be removed prior to commencing.
3. Wash the wall with a high pressure water hose or gurney from top to bottom so all dissolved mortar particles will be completely flushed from wall surfaces.
4. The maximum pressure of the pump should be kept low, around 7000 to 8000 kPa (1000 to 1200 psi), to prevent damage to either the masonry units or the mortar. The concentration of power with which the water jet strikes the wall is a function of the flow in the hose, the pressure, the type of nozzle and the distance from the nozzle to the wall.



5. A straight or zero degree water jet should never be used. A spray angle of 15 degrees, called a fan jet, will allow the operator to concentrate the pressure on the bricks and not on the joints. (Shown above)
6. The jet should generally be 500mm from the wall and never closer than 300 mm for localized patches.

7. Pressure cleaning should be carried out in 'runs' from the top of the wall down, to rinse down debris during cleaning. The width of a run is usually 1 to 1.2 meters, and should only be as wide as the operator can clean while keeping full control of the pressure gun.
8. The gun must be kept moving: surface abrasion will occur if it pauses in one spot.
9. When all pressure cleaning is finished, go back and rinse loose sand and dirt from the eaves, walls and windows. Once the walls begin to dry, check to see if any further cleaning is required.



Cleaning

Caution:

- Test clean a sample area to determine the effectiveness of the cleaning compound and the technique, and to check the wall for possible damage caused by the system before continuing with the rest of the house.
- Turbo or rotary head attachments damage brickwork and mortar and are not recommended for use.
- If the mortar joints or the bricks are being damaged, either the pressure is too high or the water jet is too close to the wall.
- High pressure water cleaning is not recommended for dry pressed bricks. Hand cleaning is required for these type of bricks.

In very limited and extreme cases of intense flash flooding or where extreme currents have been experienced, physical degradation of the brick structure itself may occur. As these very rare instances, we recommended that your brickwork should be inspected by a licensed builder and/or structural engineer.

For further technical assistance please call **13 15 79** or visit us at www.pghbricks.com.au

The information contained in this document is designed to give additional guidance for brick cleaning specific to PGH Bricks and Pavers™ products. It should be read in conjunction with "Cleaning of Clay Masonry" and "Industry Reference Guide – Fifth Edition" produced by Think Brick Australia (www.thinkbrick.com.au). PGH Bricks and Pavers™ are a member of Think Brick Australia, and some of the information contained in this document has been supplied and reprinted with its permission.

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Your Roof after a Flood

After a flood event, the critical factor relating to your tiled roof is to ensure that it remains watertight.

When your roof needs checking or if you have a roof leak, we recommend that it is inspected by a CSR Roofing specialist, as walking around on your roof can be dangerous and create more damage to your roof.

If you do need to inspect or make minor repairs to your tiled roof, below are some simple hints for you to consider:

- Look for broken cement mortar bedding to the ridge or hip capping. If the ridge capping is damaged they should be re-bedded or re-pointed.
- Look for cracked or dislodged tiles. These should be replaced.
- Displaced tiles should be put back into their proper position.
- Blocked drainage channels under the 'side laps' of individual tiles should be cleared.
- Blocked gutters (including valley gutters) and downpipes should be inspected and clear of debris.
- Use a long stick or rake to remove objects from the roof where possible.
- Remove roof tiles by kicking the lower centre of the tile towards the ridge.

If you are in doubt, we recommend that you consult with a roofing specialist.

Finally, foot traffic on your roof during inspection and repair should be kept to a minimum as it can result in damage. If you do need to walk on your roof, below are some handy hints to minimize damage that you may cause.

- Only access your roof when absolutely necessary and observe safety requirements
- Wear soft sole, non-slip footwear
- Always be aware of weather and conditions, as tiles can be slippery
- Extend your ladder at least 1 metre past the gutter and secure
- Only step on the lower centre of roof tiles
- Secure a walkway of plywood, ladders, planks etc. if heavy traffic is necessary

To have your roof inspected by a CSR roofing specialist visit our website www.csroofing.com.au or call **1800 666 437 (1800 MONIER)**.

