

DESIGN GUIDANCE FOR

Flood Resilient Homes



Australian Government

DELIVERING
FOR QUEENSLAND



Queensland
Government

Acknowledgement

This design guidance has been developed by the Queensland Government Department of Housing and Public Works in collaboration with the Office of the Queensland Government Architect, the Queensland Reconstruction Authority and JDA Co. We acknowledge the valuable insights, expertise, and shared commitment of all partners in supporting more flood-resilient homes and communities across Queensland.

www.getready.qld.gov.au/strengthen-your-home

Building back stronger

Flood-resilient design is vital for helping Queensland communities prepare for, endure and recover from floods. With the increasing frequency and severity of flooding, integrating flood-resilient design into homes, infrastructure and urban planning is essential.

Flood-resilient design reduces building and community vulnerability through practical measures like raising floor levels, using water-resistant materials, elevating essential services and ensuring properties can be easily cleaned out and reoccupied after a flood. While it doesn't prevent flooding, it minimises damage, costs and recovery time.

This document highlights practical examples of flood-resilient design across Queensland, including projects under the joint Australian and Queensland Government's Resilient Homes Fund (RHF) and efforts by private homeowners.

These initiatives show how targeted design can enhance resilience, support recovery and help Queenslanders adapt to a future with more frequent flooding.





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How to use this Design Guidance

This guidance material provides practical examples of the types of homes and specific work activities that may be suitable to help make your home flood resilient.

Step 1 Understand flood-resilient building and design

Step 2 Understand your flood risk

Step 3 Understand housing typologies and suitable resilience measures

Step 4 Look to existing case studies

Step 5 Learn about available support

Queensland's flood history

Queensland is one of Australia's most flood-prone states due to its large river systems, tropical climate and frequent cyclones. Since 1852, over 850 major floods have been recorded.

Key events include:

1974 Brisbane Flood: Caused by Cyclone Wanda, the 1974 floods claimed 14 lives and affected thousands of properties. This led to floodplain management strategies like building Wivenhoe Dam.

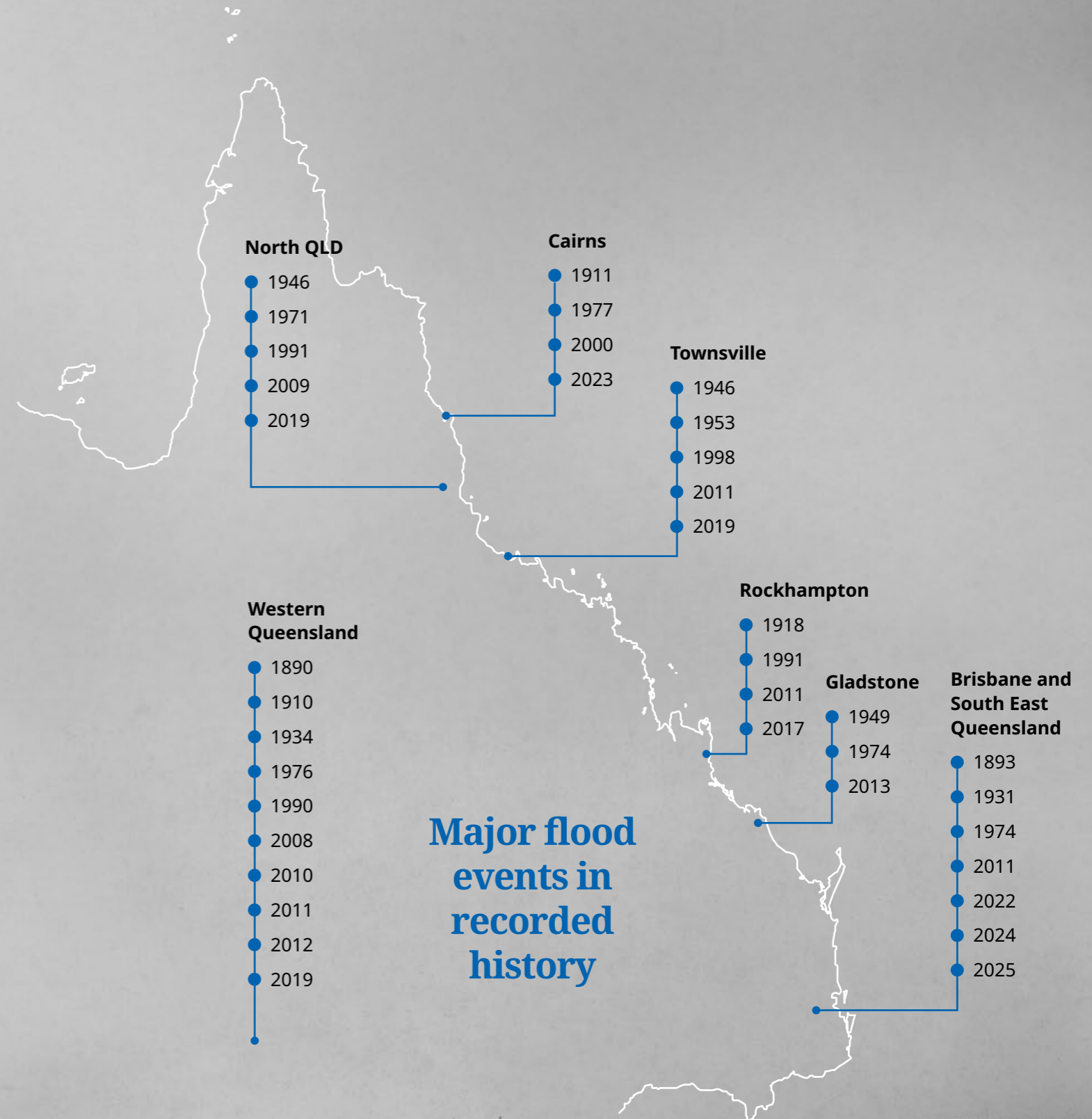
2010–2011 Floods: One of Queensland's worst disasters, affecting 78% of the state, flooding 28,000 homes and businesses and causing 33 deaths.

2019 Townsville Flood: A rare event brought over 1.2 metres of rain in 10 days, causing \$1.2 billion in damage.

2022–2025 Floods: During these 4 years, record-breaking rainfall and cyclones have caused severe flooding across Queensland, displacing thousands and damaging infrastructure.

These events show how the intensity of flooding is increasing. Between 2018 and 2023, flood-related insurance claims exceeded \$7.7 billion. In response, Queensland is investing in flood resilience, including home upgrades, early warning systems and better planning to protect communities.


Image: Brisbane flood.
Monday 6 February 1893.
Queensland State Archives.



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What is flood-resilient building design?






Flood-resilient homes are designed using materials and construction methods that can endure repeated flooding with minimal long-term damage. These homes are not just about staying structurally sound—they make it easier for residents to prepare ahead of time, protect important belongings, and clean up and return home sooner after a flood.

By reducing the impact and cost of repairs, flood-resilient design helps households avoid long periods of disruption and financial strain, allowing a quicker return to everyday life.

The benefits of a flood-resilient home

A flood-resilient home may help:

- minimise the chance of flood damage to your property
- minimise the costs and inconveniences of getting your life back to normal after flood events
- save you in the long term from having to pay for repetitive repairs to your home following flood events
- prepare your home for changing flood conditions in the future.



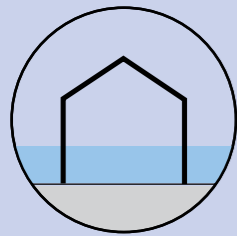
“Don’t try to talk about resilience after a disaster. Talk about preparedness before. That’s where the change happens.” – Designer

Approaches to flood-resilient design

There are two recommended flood-resilient design approaches—raising and retrofitting.

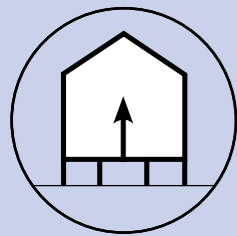
Raising a home is a complex process and you need to consider whether it is physically and financially practical in your situation.

Retrofitting is a practical alternative. Making changes to your home and using flood-resilient design doesn't have to be done all at once. You could make these improvements to your home over time, and as your budget allows.



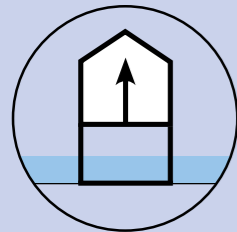
Retrofitting

Retrofitting involves using flood-resilient materials and construction methods to allow floodwaters to enter the home with minimal risk of damage or long-term moisture issues. By safely allowing water in through “wetproofing” strategies and creating space for it to flow through and drain away, you can significantly reduce the impact of future floods. It's about going with the flow—working with water, not against it.



Raising

Raising the level of the house or its services above the projected flood level can be effective. Footings, posts, slabs and other structures all need to withstand the flow of water across the site. Services such as air conditioners, hot water units and electrical meter boards can be easily raised above the flood level to minimise the chance of important utilities failing.



Combination

For two-level or split-level homes a combination of raising and retrofitting can be used to increase resilience while maximising the use of the home.



Flood-resilient strategies

The diagram below sets out a hierarchy of highest to lowest priority strategies which give homeowners the greatest chance to recover from future flooding in the most effective way.

Priority areas (highest, high, medium and low)

Highest **Essential services, structure and accessibility**
These are the most critical for making the home safe and habitable. Resilient services, structure integrity, and accessible entry allow the home to be occupied and protected from further damage.

High **Walls, floors and bathroom**
These elements come next, as they make the home functional and comfortable for daily living. Resilient walls and floors protect against future damage and reduce clean up time, while a functional bathroom restores essential hygiene and washing facilities.

Medium **Doors, stairs and other large cavities**
Features that assist with cleaning - such as open riser stairs—and resilient internal doors should be the next priority. They help speed up the clean up process, reduce flood waste (e.g. damaged hollow-core doors), and allow for privacy and normal household use.

Low **Cabinetry and appliances**
While these elements support daily life, kitchens and other appliances can be substituted temporarily and are typically reinstalled later in the recovery process.

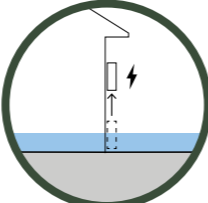
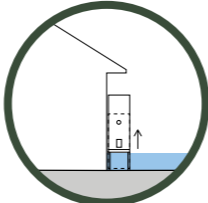
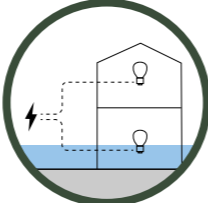
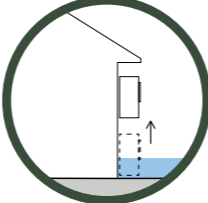
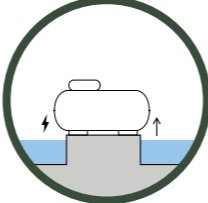
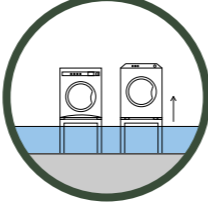
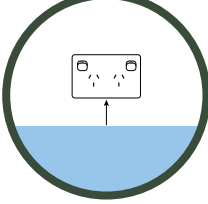
Here's what you need to know about the strategies in the following table (p18):

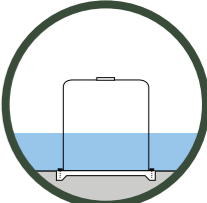
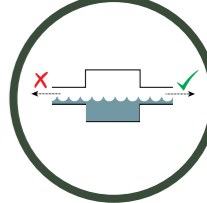
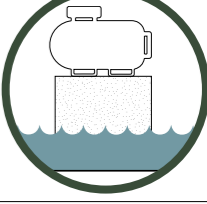
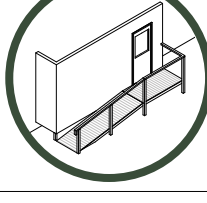
- Some strategies might be subject to building requirements, and you may need to seek professional advice to make sure you are satisfying building standard or regulations.
- Some strategies might need planning approval, and you may need to check with your local council.
- You might need advice from a qualified engineer (structural, hydraulic, or civil).
- Flood-resilient work should always consider flood risk, including work to at or above your local council's flood level requirements, keeping safety, function, and industry standards in mind.
- You will need to engage an appropriate Queensland Building and Construction Commission Licensee or building certifier as well as a licensed electrician or plumber.



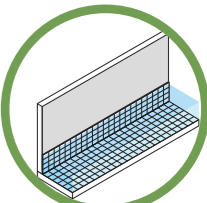
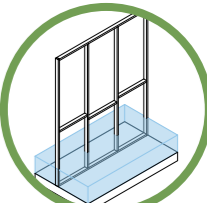
Highest priority: Essential services, structure and accessibility

The following tables set out levels of priority for resilient retrofit activities and related works.


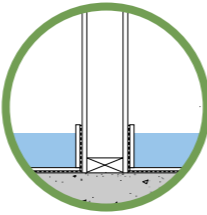
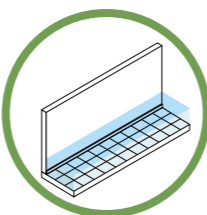
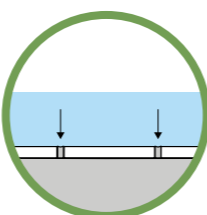
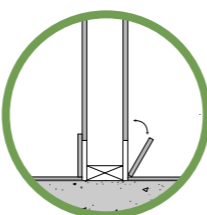
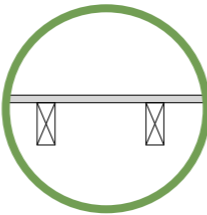
STRATEGY	DESCRIPTION	DIAGRAM
Raise the electrical switchboard	Raise the electrical switchboard to keep your home's utilities functioning and minimise the chance of damage. Note: Consult a licensed electrician.	
Raise the hot water unit	Raise the hot water unit or replace with an equivalent system more practical to raise to keep your house's utilities functioning and minimise the chance of damage. Note: Consult a licensed electrician or plumber.	
Install separate circuits (with breakers) on the lower and upper levels	Install separate circuits to each storey of your house. This allows electricity to run on the upper level if the lower levels circuit cuts off in a flood. Note: Consult a licensed electrician.	
Raise air conditioning condenser units	Raise air conditioner condenser units or replace flood damaged units and raise them to keep your house's utilities functioning and minimise the chance of damage. Note: Consult a licensed electrician.	
Raise water tank's pump and electrical systems	Water tank pumps are often very costly to repair, and flooding of the electrical components can be the cause of their breakdown. This can also affect other electrical equipment on the property. Raise pumps and pump power systems if the rainwater is used for greywater purposes (e.g. toilet flushing) to minimise the chance of damage.	
Raise washing machine and dryer	Raise stand-alone appliances such as washing machines and dryers on stainless steel framed benches, wall brackets or cabinetry made from flood-resilient materials or relocate to a higher level in order to minimise the chance of damage.	
Raise the data and electrical power points	Ensure the power points, data points and all other electrical services are raised to minimise the chance of power outages and faults. Allow provision for safety cut-off switches. Note: Consult a licensed electrician.	

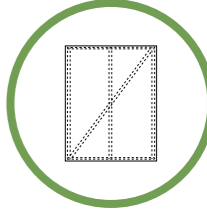
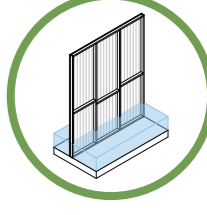
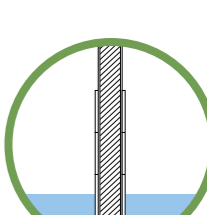
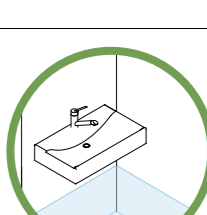

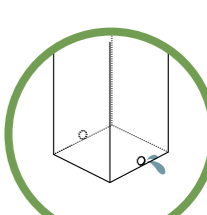
STRATEGY	DESCRIPTION	DIAGRAM
Anchor existing buoyant objects such as water tanks	Ensure external structures and rainwater tanks are fixed to a concrete slab. Floods have the ability to uplift structures such as rainwater tanks and sweep them downstream toward other properties causing serious damage.	
Install reflux valves	Ensure there has been a reflux valve installed to stormwater and sewer pipes servicing the property. Note: Speak to your water provider or licensed plumber.	
Other essential services, plant and equipment raising	Raise other essential services, plant and equipment (e.g. heat pumps, septic tanks or photovoltaic (PV) inverter) to keep your house's utilities functioning and minimise the chance of damage. Note: Consult a licensed electrician.	
Passive system disability access for current owner or occupants	Ensure consideration is given to the current mobility of the occupants, such as disability access (e.g. ramps for front and back doorsteps, associated safety rails and devices, concrete path and slab to raised or retrofitted liveable areas).	

High priority: Walls, floors and bathroom

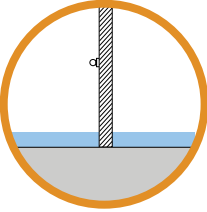
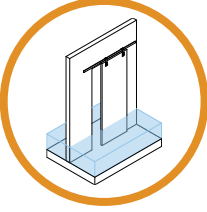
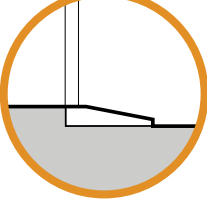
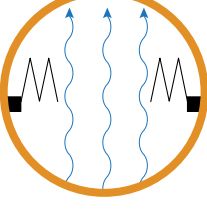
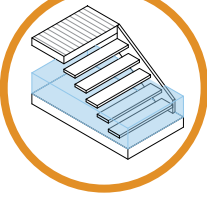
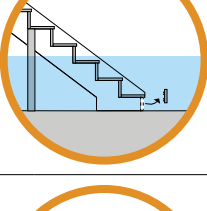
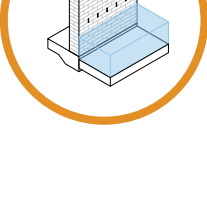
STRATEGY	DESCRIPTION	DIAGRAM
Replace non-water-resistant wall linings with flood-resilient materials	Replace non-water-resistant wall linings with flood-resilient materials. Replace any existing loose fill insulation with rigid cell insulation in cavity walls. Replacing wall linings in areas that are likely to be flooded is highly recommended. Walls with cavities should be fixed with stainless steel screws so they can be removed and the cavity cleaned after a flood. Note: This means using fibre cement linings instead of plasterboard, and floor finishes such as tiles or polished concrete instead of carpet. If a timber floor is desired, ensure it is a hardwood floor directly onto subframe with no substrate—this is only recommended for lightweight raised homes. For slab-on-ground properties, apply waterproofing membrane onto a substrate such as fibre cement sheeting underneath internal wall linings.	
Use water-resistant wall framing	Use water-resistant wall framing to minimise the chance of mould damage, or paint existing pine frame cavity walls with mould-resistant paint to minimise the chance of mould growth. Alternatively, where possible, replace cavity walls with non-cavity walls. When building framed walls, it is not recommended to use softwoods such as pine as it is prone to rot and mould after inundation and can decay quickly. Use hardwood timber or steel framing where possible. Consider using sustainable plantation hardwood timbers.	

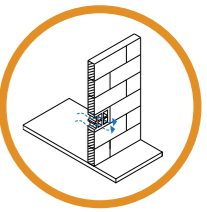
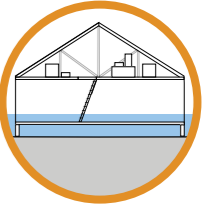

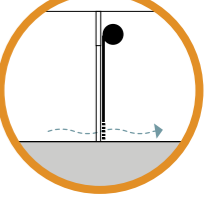
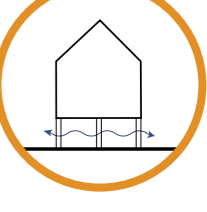
High priority: Walls, floors and bathroom

STRATEGY	DESCRIPTION	DIAGRAM
Install water-resistant external cladding	Install water-resistant external cladding to reduce water absorption and protect internal wall materials during flooding. Opt for durable, non-porous materials such as fibre cement sheeting, metal, or hardwood timber that can withstand repeated wetting without significant damage.	
Waterproof the junction between the wall lining and floor substrate	Waterproof the junction between the wall lining and the floor substrate wherever flooring is laid on a concrete slab. This strategy only applies in low level flooding.	
Replace non-water-resistant flooring and skirting	Replace non-water-resistant flooring and skirting with water-resistant flooring and skirting. This includes sealing and polishing of existing hardwood floors, and epoxy flooring to existing concrete slabs. When replacing flooring, ensure non-resilient substrates (subsurface materials) are replaced with flood-resilient substrates. This will minimise warping, rot and damage to the flooring and below the floor.	
Use epoxy or semi-epoxy grout when tiling. Apply a water-resistant grout sealant to existing tiled flooring	Use semi-epoxy grout and epoxy grout when tiling. This grout is less porous and ensures that the floor lining beneath tiles is protected and minimises the chance of mould. Apply a water proof grout sealant to existing tiled flooring where there is non-water-resistant grout.	
Replace pine skirting with hardwood or PVC skirting	Use water-resistant wall framing to minimise the chance of mould damage, or paint existing pine frame cavity walls with mould-resistant paint to assist to prevent mould growth. Additionally, when internal walls are overtopped by floodwaters it is recommended to install removeable skirting boards removable skirting boards to open up the wall cavity allowing it to be easily cleaned and encourage drying out.	
Remove and replace non-water-resistant substrates	In the instance of lightweight raised homes, ensure timber flooring is hardwood and constructed directly onto the subframe with no substrate. This allows effective drying-out and minimises the chance of mould.	

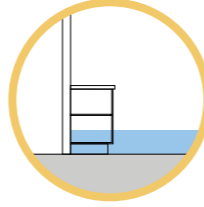
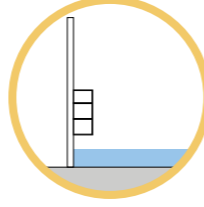
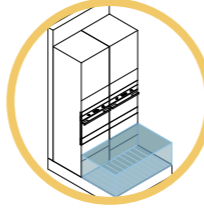

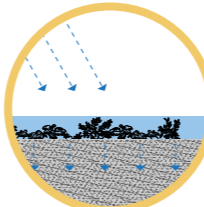
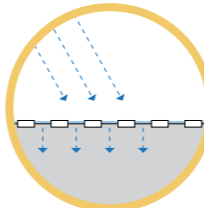
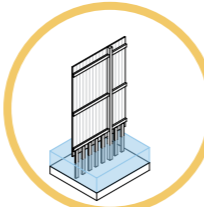
STRATEGY	DESCRIPTION	DIAGRAM
Replace non-water-resistant structural bracing	Replace any structural bracing that has been water damaged or made from materials prone to rot or loss of strength after inundation. Use water-resistant bracing materials, such as treated plywood, fibre cement sheets, or steel, to maintain the structural integrity of the home during and after flooding.	
Where possible, replace cavity walls with non-cavity walls	When building new walls or modifying existing walls, single skin construction systems allow for easy cleaning after floods while avoiding cavities where mould may grow and water can get trapped.	
Install suitable closed-cell insulation	The following closed-cell insulation types may be appropriate: <ul style="list-style-type: none"> • Extruded Polystyrene (XPS) • Thermoset Polyisocyanurate (PIR) • Phenolic Make sure the insulation is cut to the studs. Consider energy efficiency and fire rating requirements when selecting insulation.	
Install wall hung vanity basin with no cabinetry	Where possible it is recommend to install stand-alone vanity basins for easy cleaning after a flood event.	
Install a removable panel or replace the built-in bathtub with a freestanding bathtub	Built-in baths with cavities, often built into cabinetry or in tiled areas, are prone to trapping water in the gap between the tub and exterior, damaging the framing and forming mould. A freestanding bathtub eliminates gaps where water can be trapped and enables easy access for cleaning around the entire tub. Alternatively, install a removable panel to the built-in bathtub or change the bathtub to be a shower.	
Allow water to drain from within steel columns	Ensure steel columns have drainage holes at their base to allow water to escape after a flood event. This prevents water from being trapped inside the column, which can lead to internal corrosion and reduce the lifespan of the structural steel.	

Medium priority: Doors, stairs, dry-out and cleanup

STRATEGY	DESCRIPTION	DIAGRAM
Replace hollow core doors with solid core doors	Avoid the use of hollow core doors to mitigate damage and limit mould growth after a flood event. Ensure the core is timber blockboard or solid timber and all sides are painted or sealed (particleboard or MDF cores are not flood resilient).	
Replace cavity sliding doors with swing or face-of-wall sliding doors	Replace cavity sliding doors with swing or face of wall sliding doors to minimise the chance of flood water ingress into your cavity wall. Ensure when you replace the door that you also seal off the existing cavity.	
Install flush door sills	Small steps and sills at doorways often complicate the clean up process after a flood event. Remove sills by installing flush thresholds recessed into the floor.	
Change door configuration to maximise the existing opening	Having only a few small openings in your home makes it difficult for water entering your house to escape, trapping water inside and taking longer to dry after a flood event. By having large openings, water can flow out quickly, reducing pressure on your walls and providing more ventilation.	
Replace close riser stairs with open riser stairs	Make stairs resilient by using flood-resilient materials, such as metals or hardwood and open risers to avoid water being trapped in any cavities underneath.	
Make the bottom riser of stairs removable	If an existing cavity stair on your property is at risk of flooding and you cannot retrofit the stairs to have open risers, make the bottom riser removable to enable easy post-flood clean-out.	
Add additional weep holes above flood level	Add weep holes above the flood level to help dry out the wall cavity or subfloor spaces after a flood event.	

STRATEGY	DESCRIPTION	DIAGRAM
Add additional air vents to enclosed sub floor spaces and garages	Installing additional air vents will allow subfloor areas and garages to dry out after a flood.	
Elevated and safe storage of belongings during flooding	Create additional storage for safe storage of belongings. Note: It is not a retreat/refuge space.	
Install corrosion-resistant door and window hardware	Install corrosion resistant door and window hardware such as stainless steel so these do not need to be repaired or replaced following a flood event.	
Install permeable garage doors	Permeable garage doors allow water to flood in and out quickly, and minimise damage to the door itself.	
Provide adequate drainage and ventilation to subfloor area	Improve drainage and airflow in the subfloor space to prevent water pooling, dampness, and mould growth after flooding.	

Low priority: Cabinetry and landscape elements

STRATEGY	DESCRIPTION	DIAGRAM
Replace non-water-resistant cabinetry	Replace non-water-resistant cabinetry with water-resistant cabinetry and raise built-in appliances if possible. Use water-resistant wall linings behind cabinetry and allow cabinetry kickboards to be removable or install wall-hung cabinetry.	
Raise storage shelves	Install storage shelves above expected flood levels to protect belongings from water damage.	
Raise kitchen appliances	Relocate appliances as high as practical in cabinetry design.	
Garden beds with deep friable soils	Garden beds with deep friable soils can help to slow, filter and collect water.	
Create a rain garden system	Create a rain garden system to help slow, filter and collect flood water.	
Permeable surfaces	Replace existing ground surfaces with permeable materials to absorb and slow the flow of water.	
Replace existing fences with permeable fencing	Replace existing fences with permeable fencing components that allow water to flow through.	





Floodwaters can rise quickly.

When planning for flood resilience, it's important to consider how long it takes to implement effective measures.

Don't wait for the disaster season—start preparing as early as possible.

A property during the 2022 flood event



02

Understanding your flood risk

Flood risk can vary significantly depending on where you live. Some areas may be affected by riverine flooding, others by creek flooding, stormwater runoff, or overland flow. Understanding the types of flooding that could impact your property is the first step toward making it more flood resilient.

The Queensland Government and your local council provide a range of information to help you identify and understand flood risk. This can include flood maps, historical data, and planning advice.

Your local council is also a key point of contact for learning about the specific types of flooding in your area and any planning or building requirements that may apply.

Before beginning any building, renovation, or flood-resilience work, it's essential to check with your local council to see what flood information is available and whether any approvals or conditions apply.



Types of flooding

Flooding can happen in different ways, and understanding the type of flooding your property is exposed to is essential when planning resilient upgrades to your home.



Riverine flooding

Riverine flooding occurs when rivers and major waterways overflow due to prolonged or intense rainfall across a catchment. This type of flooding tends to be slower to arrive but can cover large areas and last for days or even months.



**Very high,
potentially
polluted water**

Flood-resilience measures often include raising the entire liveable floor level, with flood-resilient construction below—such as fibre cement sheeting, sealed blockwork, or exposed, treated timber frames designed to drain and dry quickly.



Creek flooding

Creek flooding is similar to riverine flooding but happens on a smaller scale, often in local creeks or tributaries. It can occur quickly after heavy rain and may affect specific neighbourhoods or streets, particularly those near hilly or elevated catchments.



Fast flowing

For properties subject to creek flooding, raising the home may be appropriate along with raising circuits and appliances. Consider one-way plumbing valves to reduce the risk of backflow into bathrooms and laundries.



Overland flow

Overland flow (or stormwater flooding) happens when rainwater can't soak into the ground or drain away quickly enough. It typically flows across land and streets, often in urban areas where drainage systems become overwhelmed. This can happen far from rivers or creeks and with very little warning.



**Very fast, less
predictable**

In areas prone to overland flow, retrofits can be appropriate. Retrofits often prioritise easy to drain and clean floor finishes, removable cabinetry (like screw-fixed kickboards and carcasses).

Understanding flood mapping

It is important to understand that each local council is different, and flood risk can change over time. Before raising or resiliently retrofitting your home, consult with your local council to obtain the latest flood data for your property.

There are a few things you should be aware of when it comes to flood water and your property.

These include:

- types of flooding that may affect your property. See pg. 30
- potential flood levels (heights) and flood depths to help you decide how high to build resilience to
- how likely is it that your property could flood and what areas of your property are at risk
- planning and building requirements.

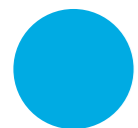
It is good to understand the ground and floor levels of your property. Talk to your builder or seek advice from a licensed surveyor.

Understanding your flood risk will also help you to understand how to prepare and respond when flooding or severe weather is forecast.



High likelihood

This type of flood is considered to happen regularly.



Medium likelihood

This type of flood is likely to happen within the lifetime of a home.



Low likelihood

This type of flood is considered rare, although there is a possibility it may occur.



Understanding flood frequency and severity

Floods aren't all the same. They can vary in how deep the water gets, how fast it moves, and how far it spreads—even in the same area. This depends on things like how much it rains, the condition of the land, river levels, and tides. Because of this, flood risks aren't fixed—they can change over time and affect each property differently.

Most councils will report risk of frequent flooding using Annual Exceedance Probability (AEP). This is shown as a percentage chance each year.

The severity of flood, in other words, how high it gets, is often reported using Australian Height Datum, which can be referenced to your floor level.

For homeowners, this means that if you raise your house to meet today's flood level requirements, it might not be enough in the future. You may choose to raise your house higher than the current minimum if you can. This gives you extra protection against future floods and saves you from having to raise it again later.

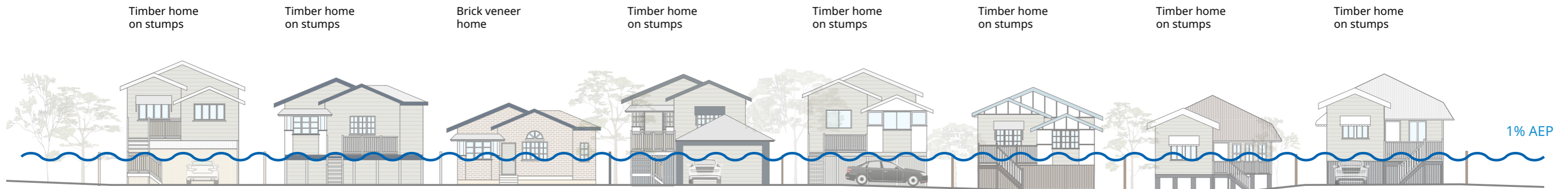
If raising your house isn't possible, you can make other changes to protect it. For example, you can resiliently retrofit to make your home more flood-resistant. Since every house is different, a professional can help you figure out the best options for your situation.

The Australian Height Datum (AHD) is Australia's standard for measuring height above sea level.

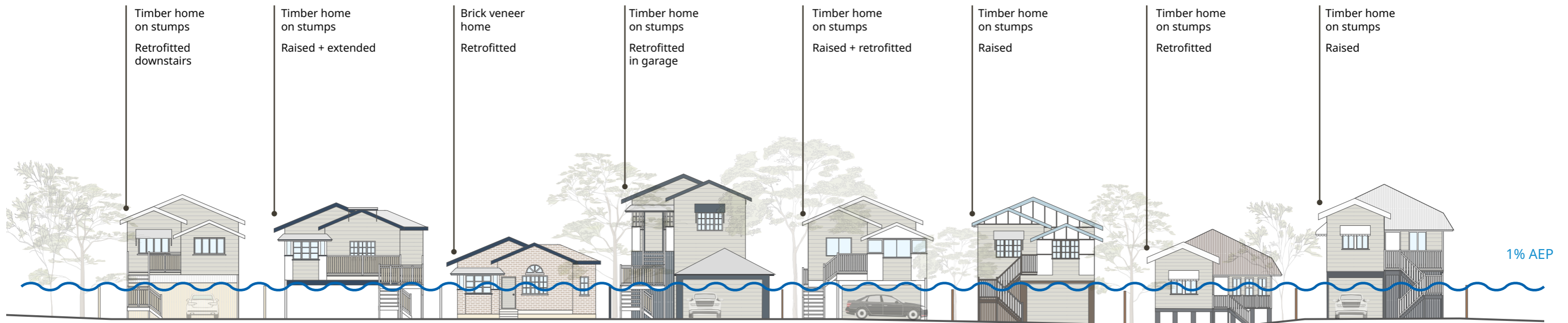
Every flood is different.

Flood risks change, but so can our communities.

1% Annual Exceedance Probability (AEP) means there is a 1% chance of that flood event occurring each year.



Before resilient design and construction



After resilient building design and construction

03

Housing typologies and suitable resilience measures



Types of housing typology

Building typology refers to the classification of houses based on their physical form and structure. It groups homes with similar construction methods and characteristics into distinct types, making it easier to understand how they perform, how they're maintained, and how they respond to factors such as climate, flooding, and soil conditions.

Common building typologies in Queensland



Elevated, lightweight framing

The building is elevated above ground level and supported on stumps, piers, or columns. This typology is typical of older Queenslander-style homes, or post-war homes.



Brick veneer slab-on-ground

A concrete slab is poured directly onto the prepared ground and forms both the floor and the foundation of the home. Lightweight framing supports the roof and is wrapped in a brick veneer.

This is the most common construction method in newer Australian homes, particularly in suburban developments.



Masonry construction

This construction type typically consists of double brick or brick block external walls, often with internal load-bearing masonry walls. The home may be built on a slab-on-ground or elevated on a suspended floor system.

Resilience strategies are based on home typology

Resilience measures are typology-based, meaning the way a home is designed and constructed directly influences what strategies are practical and effective. Different building typologies respond differently to hazards like flooding, heat, wind, and soil movement—so resilience strategies must be tailored to suit the specific type of home.

For example:

- **A high-set timber home on stumps** has an elevated floor level and accessible subfloor, making it more adaptable to higher flood depths and easier to modify with improved drainage, enclosure systems, or structural bracing.
- **A brick veneer home on a slab** sits close to the ground, making it more vulnerable to overland flooding. Resilience measures for this typology may focus on water-resistant materials, improved site grading and drainage, or raising services above expected flood levels.

Understanding the home's typology is the first step in identifying feasible and cost-effective resilience options—some strategies simply aren't practical or beneficial on certain types of structures. Designing and prioritising improvements with typology in mind ensures that measures are appropriate for the home's construction and the hazards it faces.

Tips for identifying your typology

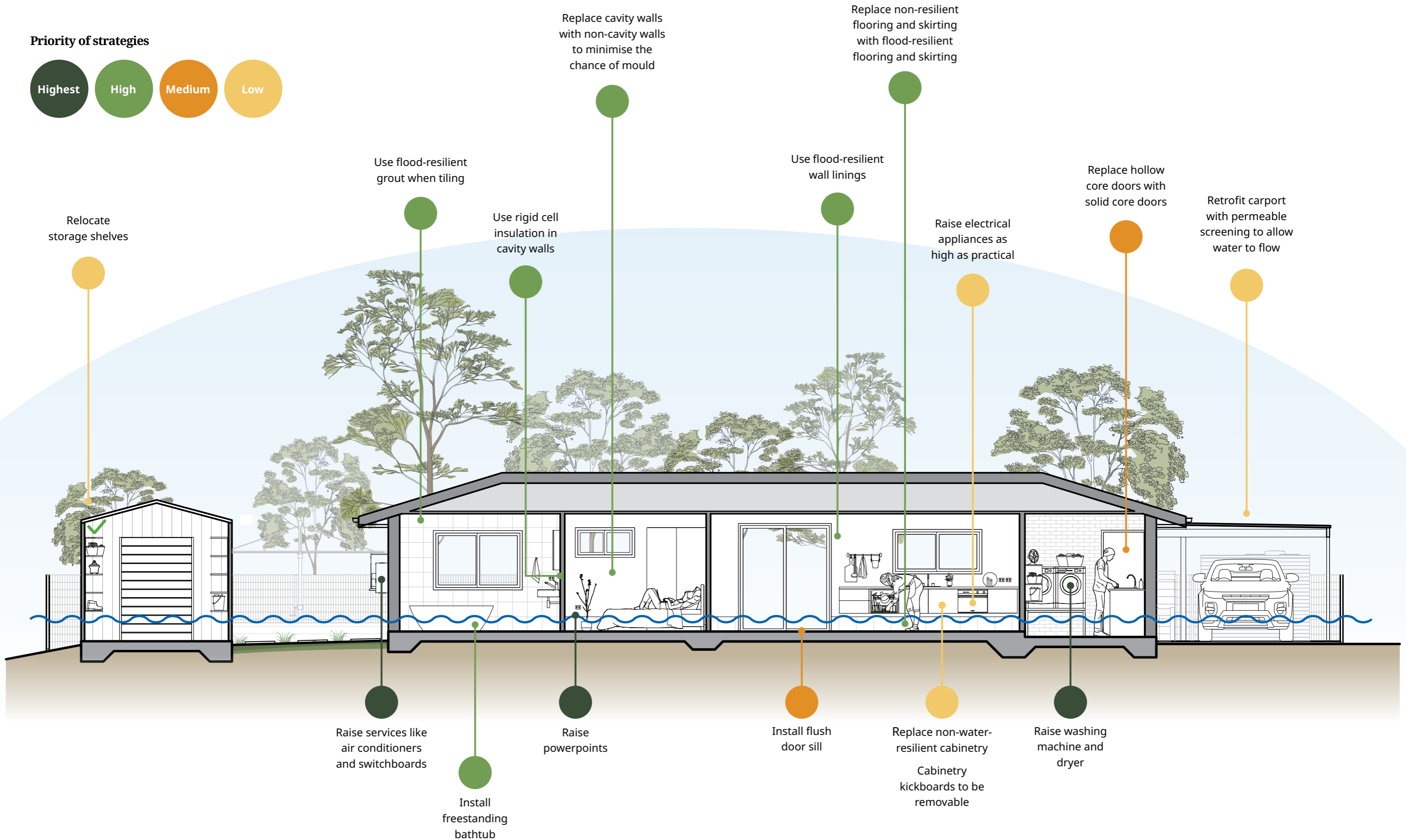
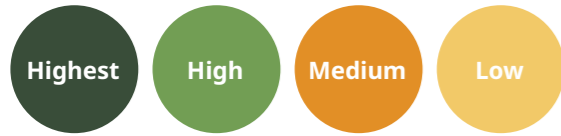
- Look at your home's foundation: Is it on a slab or elevated?
- Observe materials: Do you have a brick veneer, is there a timber framing inside?



Home after flood-resilient works are complete

Home retrofitting considerations

Priority of strategies



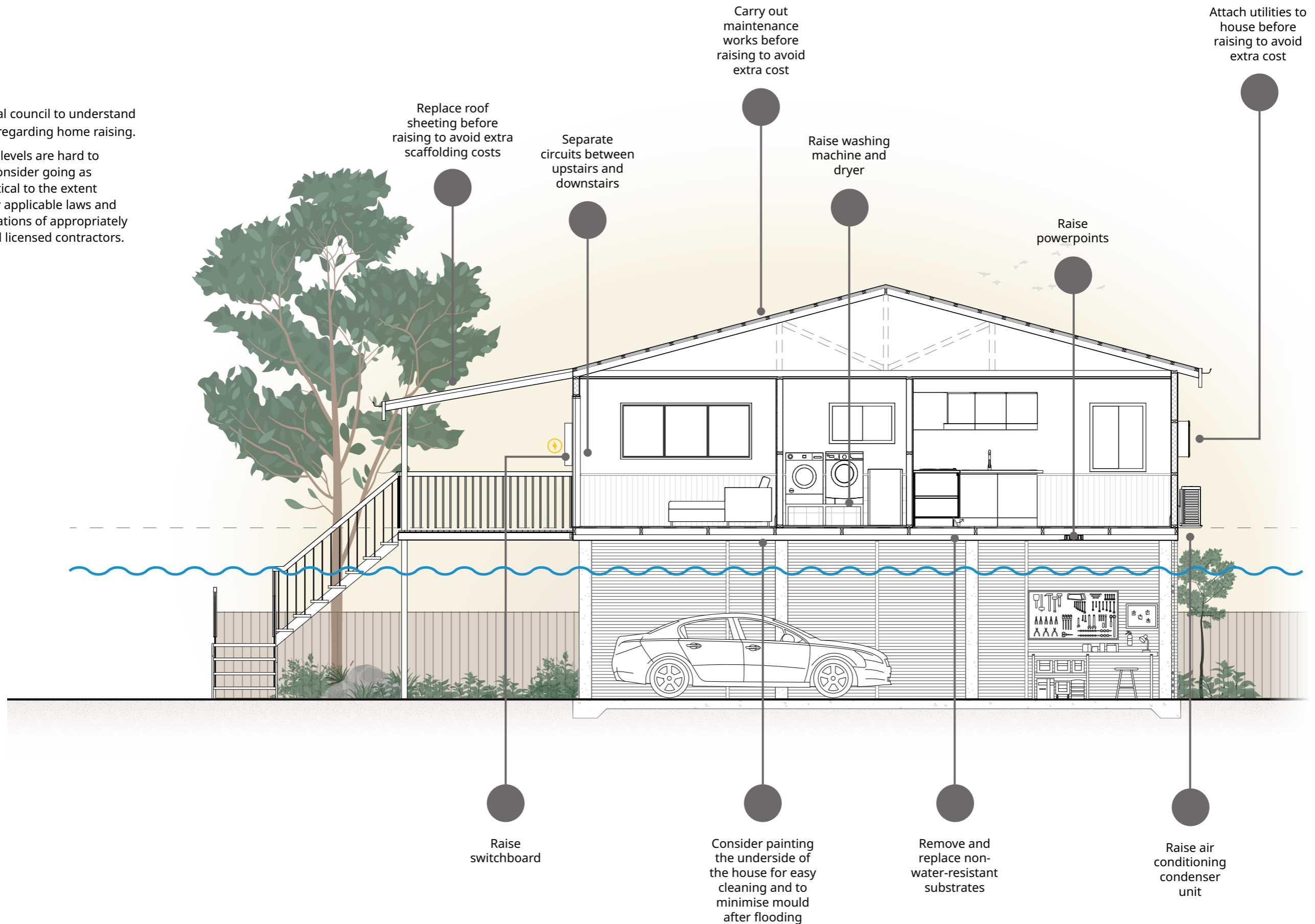


Property after home raise

Home raising considerations

Tips

- Call your local council to understand all the rules regarding home raising.
- Future flood levels are hard to predict, so consider going as high as practical to the extent permitted by applicable laws and recommendations of appropriately qualified and licensed contractors.



04

Case studies



Flood resilience works best when tailored to your home and property.

Across Queensland, homeowners have experienced the devastating impacts of repeated flooding.

These case studies show how targeted resilience measures—raising homes, retrofitting interiors, and rethinking vulnerable spaces—have transformed not just buildings, but lives.

Case studies



01

Chamfer Champs

Resilience works: Home raised

Typology: Lowset elevated, lightweight framing

Page 54



02

Timber Tops

Resilience works: Home retrofitted

Typology: Highset elevated, lightweight framing

Page 64



03

Character Cottage

Resilience works: Home retrofitted

Typology: Traditional Character Queenslander

Page 76



04

Double Take

Resilience works: Home retrofitted

Typology: Slab on ground double storey lightweight framing

Page 86



05

Sky High House

Resilience works: Home raised and retrofitted

Typology: Highset elevated, lightweight framing

Page 98



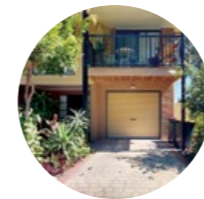
06

The Blockwork Abode

Resilience works: Home retrofitted

Typology: Slab on ground blockwork

Page 110



07

Brick by Brick

Resilience works: Home retrofitted

Typology: Brick veneer apartment complex

Page 122

01 Chamfer Champs

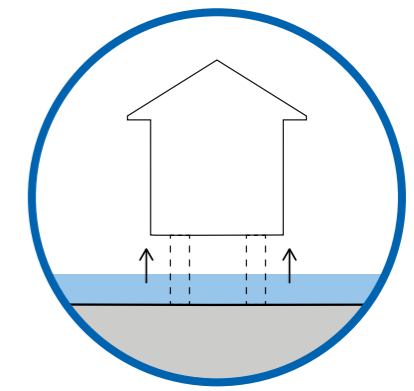
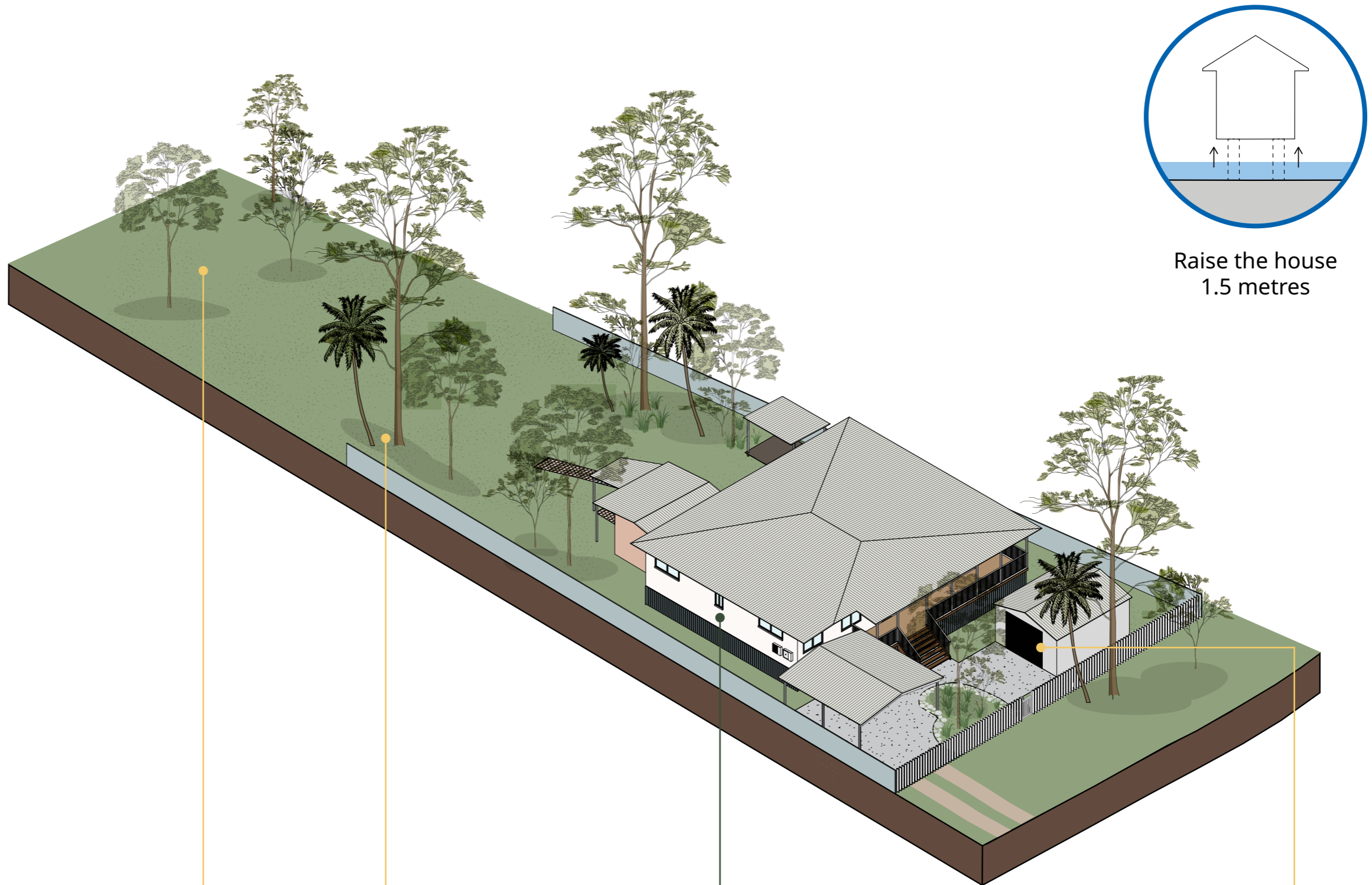
Resilience works: Home raise

Typology: Lowset elevated, lightweight framing

“We knew we’d get heavy rain and high tides with Cyclone Alfred, but we weren’t worried. We’re high enough, and prepared enough, that it won’t impact us again. We just stood on the deck and enjoyed the water views—from above.”

– Homeowner

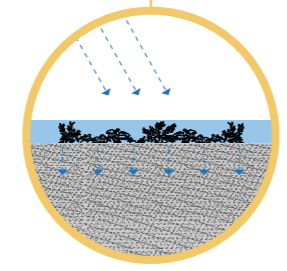




Raise the house
1.5 metres

Retrofit options

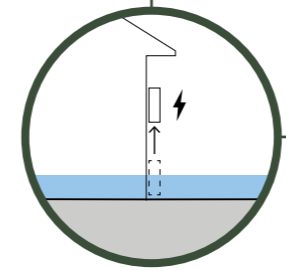
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



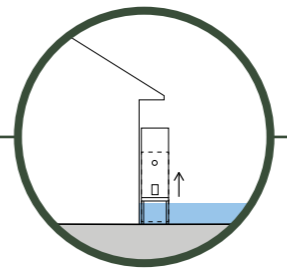
Create a rain garden system to help slow, filter and collect flood water



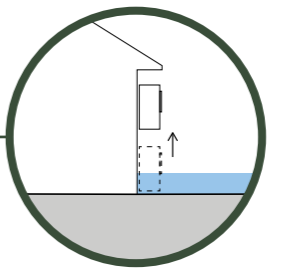
Garden beds with deep friable soils can help to slow, filter and collect water



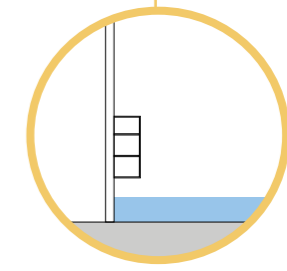
Raise the electrical switchboard



Raise hot water units



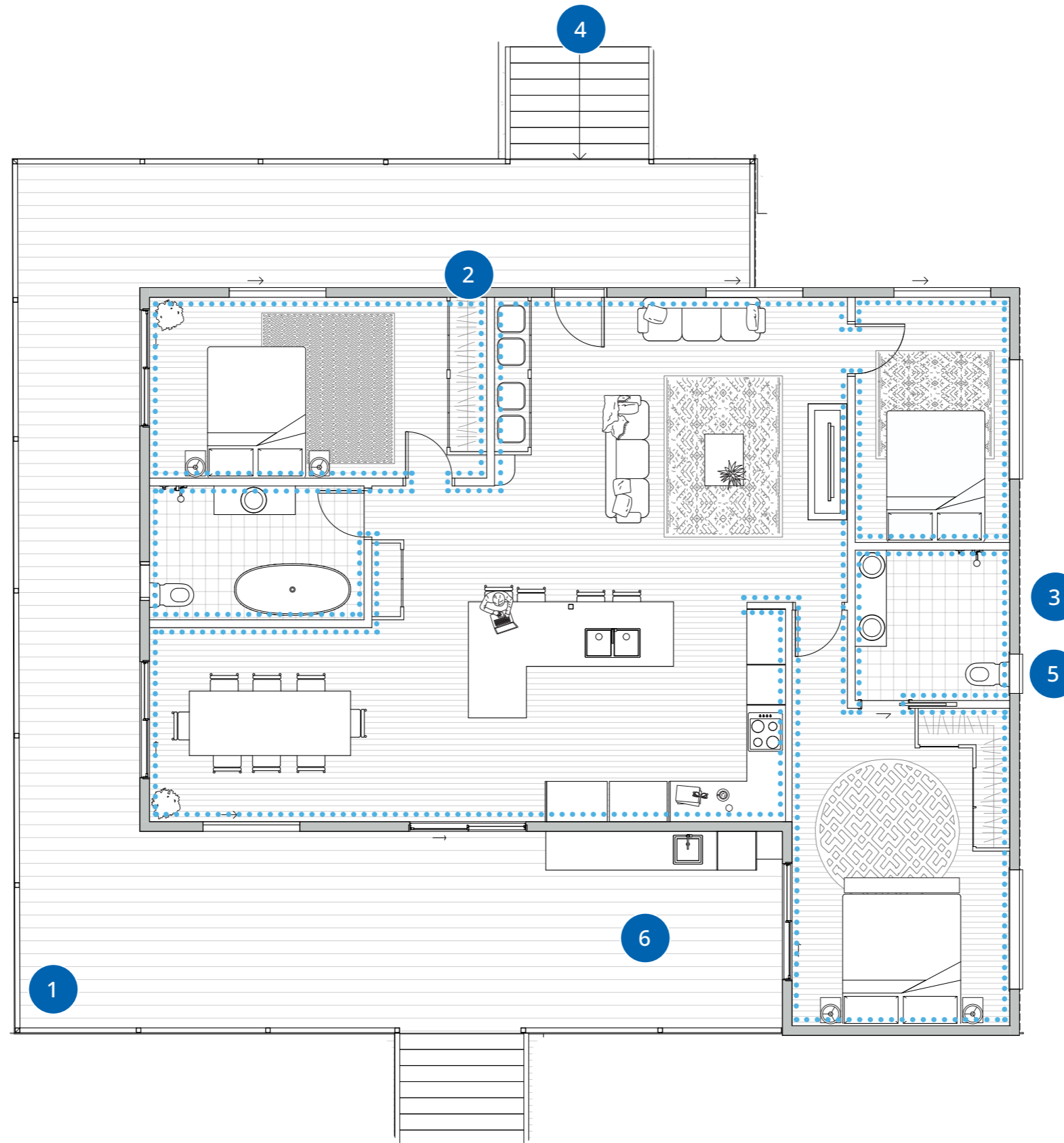
Raise air conditioning condenser units



Raise storage shelves

Strategies

1. Raise the house 1.5 metres
2. Raise electrical switchboard to above flood level to minimise damage.
3. Raise gas hot water unit to above flood level.
4. Replace existing stairs with open stairs made from flood resilient materials to minimise damage.
5. Raise air conditioning units.
6. Raise washing machine and dryer as high as practical onto flood-resilient cabinetry or a stainless steel framed bench to minimise damage.





Homeowners' Story

“The house was up in the air, we had no anxiety about water coming into the yard. We could stand on the deck and look down at water views for a few days.” – Homeowner

When ex-Tropical Cyclone Alfred brought water back to their property, the homeowners didn't panic. They stayed safe and dry, watching the flood unfold from the comfort of their deck.

“I was a lot less anxious, but still wary. The water did come up quite quickly,” one of the homeowners recalls. “There was just that anxiety from past events and second guessing yourself, but we were relieved that it stopped where it did.”

Their home had been lifted 1.5 metres through the Resilient Homes Fund—a decision that turned out to be life-changing. Without it, they estimate 250 to 350 millimetres of water would've flooded through again.

“We watched people around us go out and get sandbags—we didn't even bother. We didn't have to evacuate and didn't even lose power. It was quite comfortable for us this time. We have peace of mind now, and that's the silver lining.”

In 2022, they weren't so lucky. That flood brought 150 millimetres of water through their home, causing extensive damage. They were displaced for over a year while insurance works and house-raising took place. Rain delays stretched the build time even further.

“The house was gutted—the floor ripped out to the joists, walls stripped halfway up,” one explains. “Then came the fans, sealing, testing.”

Such disruptions take a toll. “We were displaced from our home for so long that you become really disjointed in your life.”

But the latest flood proved their investment paid off. The home stayed dry, their nerves intact, and even a prized 1988 Ducati was safe in a custom flood-resilient shed. The steel-framed structure now includes PVC flooring, raised power points and toolboxes, and a hoist to lift the bike clear of any potential water.

“The shed's ready too. I can just gurney it out after a flood. It's not really an issue anymore.”

The shed walls are coated in yellow tongue panels, and everything inside has been chosen with water resistance in mind.

Three years on from the 2022 flood, the homeowners finally have peace of mind.



Property after home raise

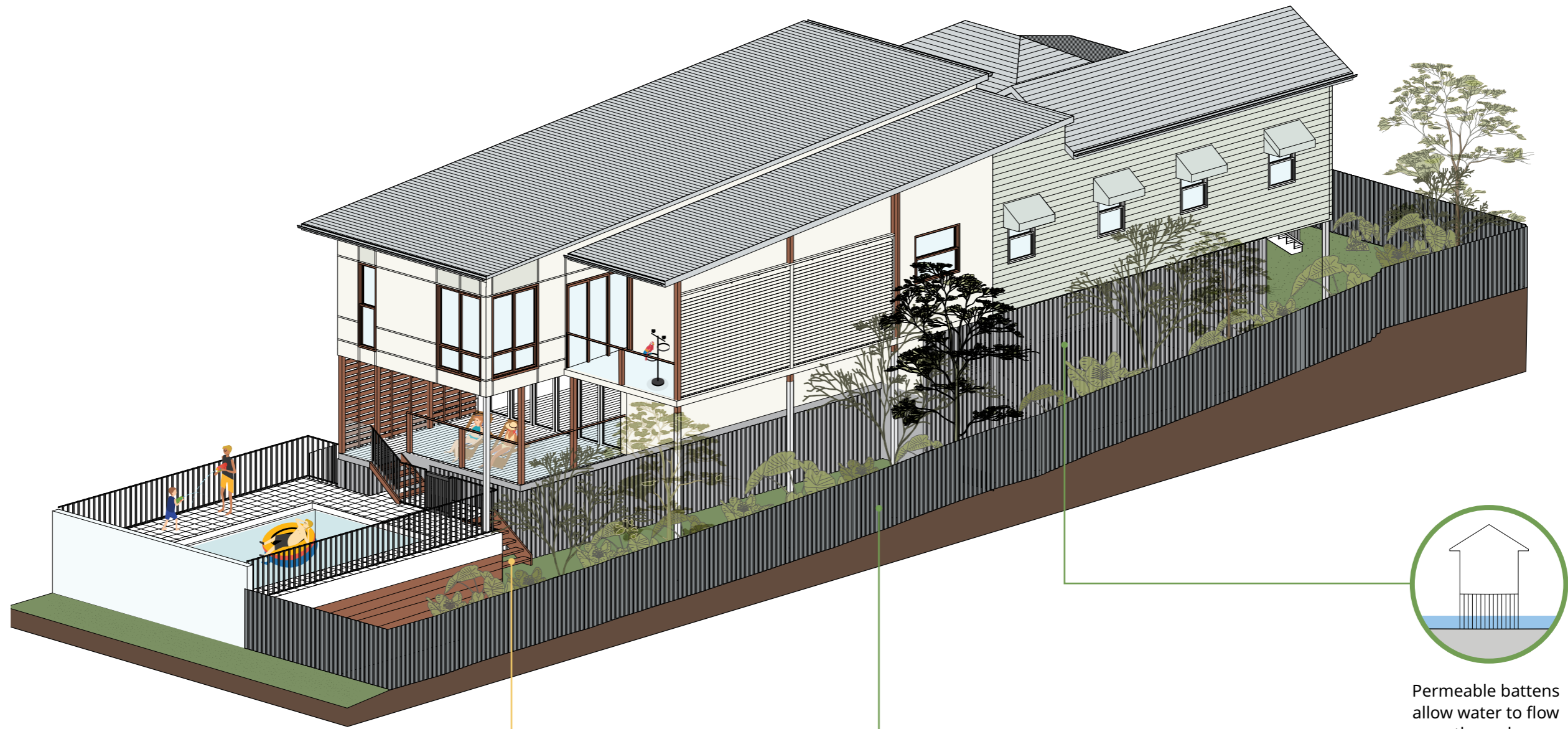
02 Timber Tops

Resilience works: Home retrofitted

Typology: Highset elevated, lightweight framing which has been built under

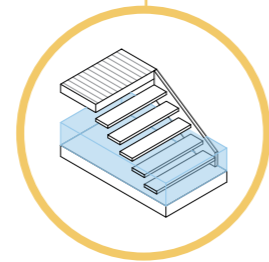
“As well as being resilient it had to be functional for her. It’s all custom built and resilient, so if a flood comes it should just be a matter of hosing the water out.” – Builder



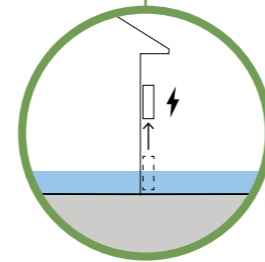


Retrofit options

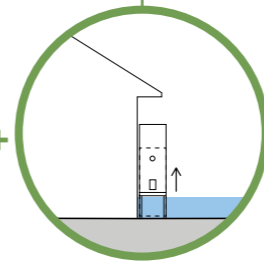
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



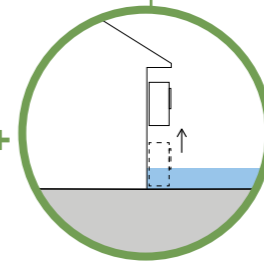
Replace closed riser stairs with open riser stairs made from flood-resilient materials



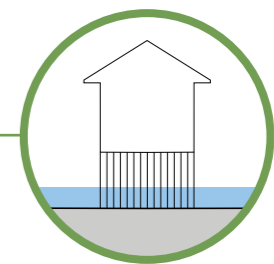
Raise the electrical switchboard



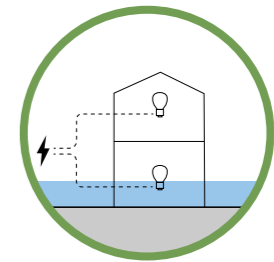
Raise hot water units



Raise air conditioning condenser units



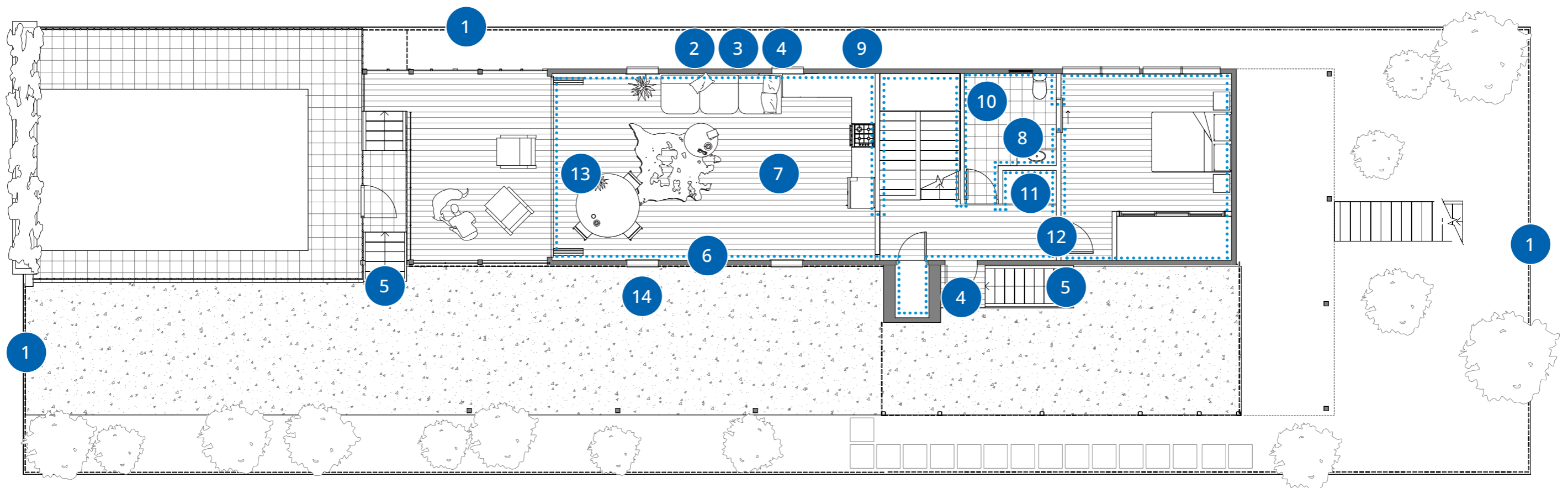
Permeable battens allow water to flow through



Install separate circuits on the lower and upper levels

Strategies

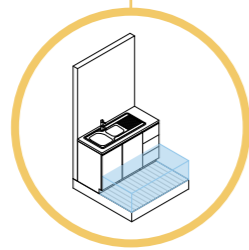
1. Replace existing fences with permeable fences that allow water to flow through.
2. Raise air conditioning condenser units to above flood level to minimise damage.
3. Raise water pump and electrical systems above flood level to minimise damage.
4. Raise electrical switchboard to above flood level to minimise damage.
5. Replace existing stairs with open stairs made from flood-resilient materials to minimise damage.
6. Replace internal wall linings with flood-resilient linings to minimise chance of damage.
7. Replace existing flooring with flood-resilient flooring to minimise damage.
8. Seal existing tiled areas to minimise chance of mould.
9. Replace cabinetry with flood-resilient materials to minimise damage.
10. Replace built-in bathtubs with freestanding bathtubs or showers to minimise mould.
11. Raise washing machines and dryers above flood level to minimise damage.
12. Replace hollow core doors with solid core doors to minimise damage.
13. Enlarge ground floor openings to allow water to flow through.
14. Ensure window sills are above flood level to minimise the chance of water entry.



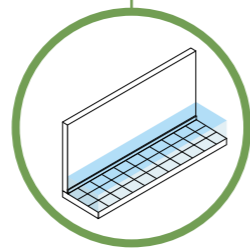


Recommended priorities

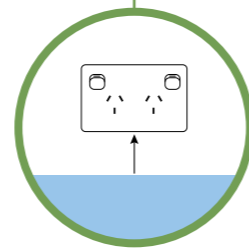
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



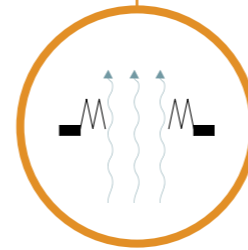
Replace cabinetry with flood-resilient cabinetry



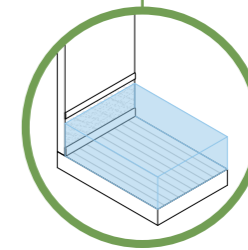
Replace non-water-resistant skirting



Raise the data and electrical power points



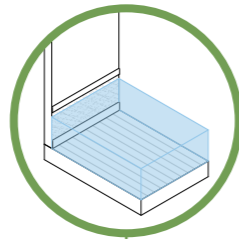
Change door configuration to maximise the existing opening



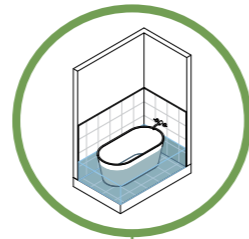
Replace wall linings with flood-resilient wall linings

- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape

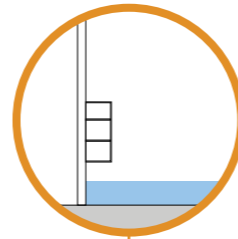
Replace wall linings with flood-resilient wall linings



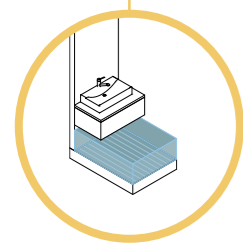
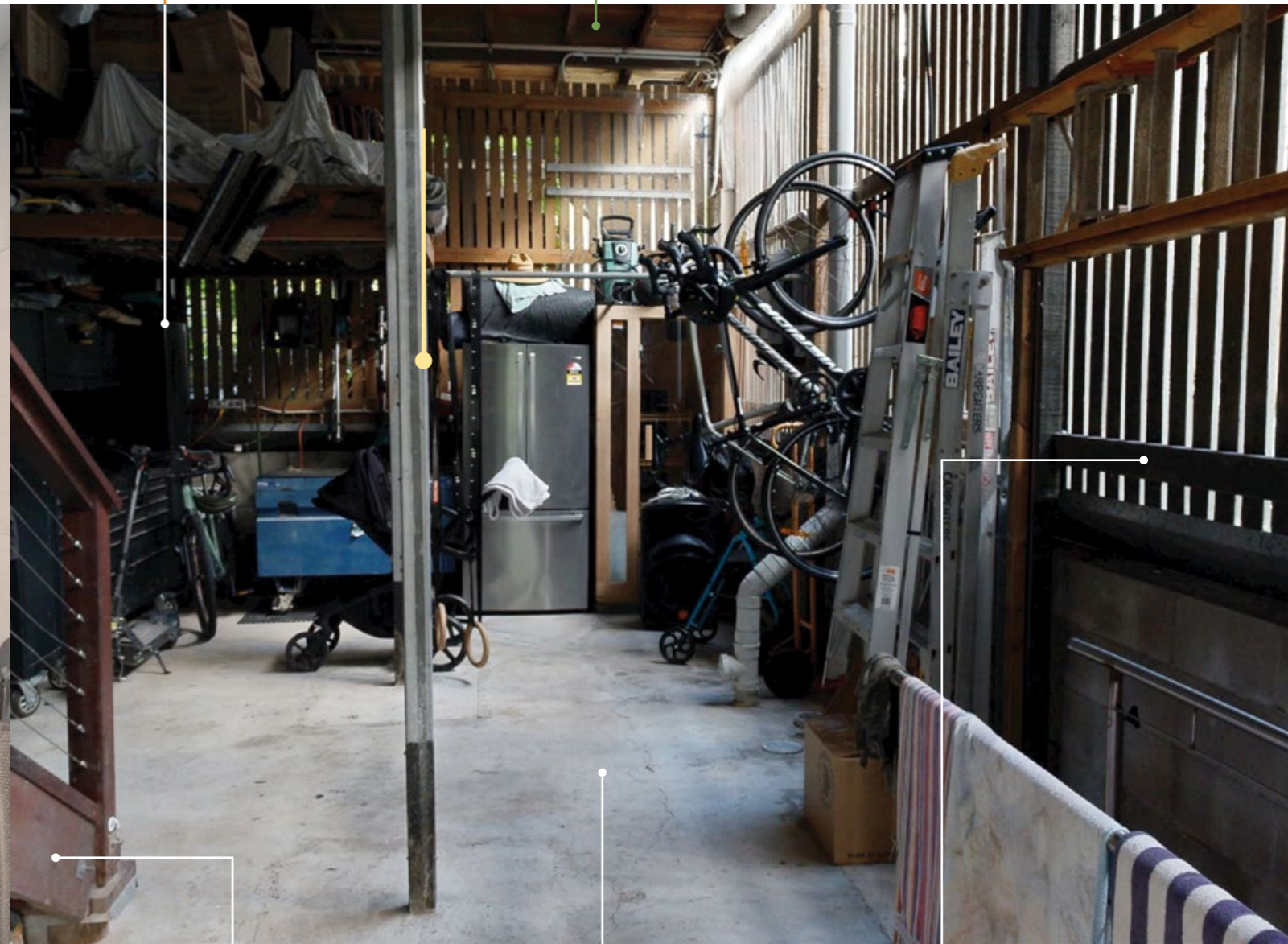
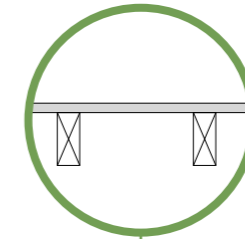
Install a removable panel or replace cavity bathtubs with freestanding bathtubs or showers



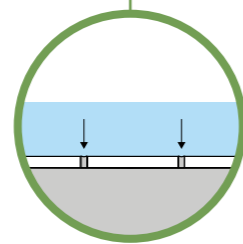
Raise storage shelves



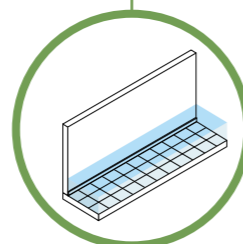
Remove substrate from timber flooring



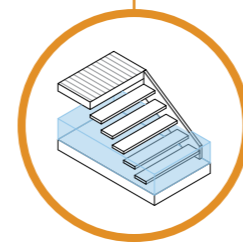
Install wall hung cabinetry



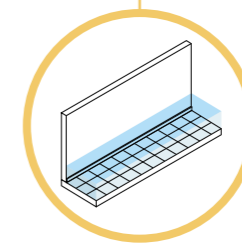
Use flood-resilient grout and apply flood-resilient sealant when tiling or re-tiling wet areas



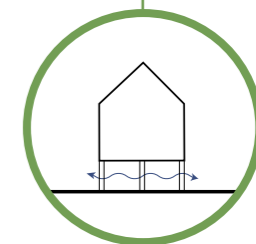
Replace non-water-resistant flooring and skirting



Replace closed riser stairs with open riser stairs made from flood-resilient materials



Replace non-water-resistant flooring and skirting



Provide adequate drainage and ventilation to subfloor area

Homeowner's Story

“We treated the bathroom like a swimming pool—with the tiles, adhesives and epoxy grout all water-resistant.” – Builder

Life is slowly returning to normal for this homeowner.

She's back in her 'hood' and once again relishing long outings outside with her dog, along the flat bike paths near her home beside Enoggera Creek. She frequents the Brisbane Broncos Leagues Club and has easy access to her local supermarket.

It's been a tough road back after her home flooded in 2022.

“We had fish in the pool, and the boys shovelled multiple skip bins worth of mud from under the house and pool,” the homeowner recalls.

The biggest challenge was the flooding of her lift and its control panel, which was on the ground floor. Compounding matters, the elevator company she used had also flooded.

The homeowner uses a wheelchair. No workable lift meant it was seven months before she was even able to access her home to inspect the flood damage.

During that time, as she struggled to find appropriate rental accommodation to suit her needs, the homeowner started researching flood-resilient strategies for her home.

Raising the lift control panel from downstairs to the upstairs space where her son and his family live in was probably the most significant flood-resilient improvement made.

The lower level space is a great example of what smart resilient building can achieve.

The hardwood timber floors didn't need to be replaced. Her kitchen was built back with marine ply, double two-packed for water resilience. The kickboards are removable, meaning they can be taken off before or after a flood event and the area hosed out easily.

The existing pine frame cavity walls were painted to help with future cleaning and prevent mould growth, her doors are now solid core.

The bathroom is a beautiful space with floor to ceiling tiles—the same tiles that are around the pool. The vanity unit is suspended on stainless steel legs.

“We treated the bathroom like a swimming pool – with the tiles, adhesives and epoxy grout all water-resistant,” says her builder Steve, of Arlidge Constructions.

“In her case, as well as being resilient it had to be functional for her. It's all custom built and resilient, so if a flood comes it should just be a matter of hosing the water out.”

For the homeowner, it's brought peace of mind.

“I'll probably always have PTSD about water, but this has made a massive difference.”

Home after flood resilient retrofit works



03 Character Cottage

Resilience works: Home retrofitted

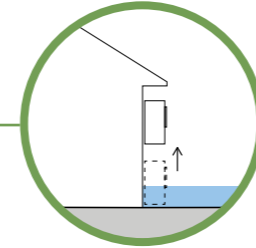
Typology: Traditional Character Queenslander

“The resilient retrofit works completed last year now provide peace of mind, knowing that the impact of future flood events will be significantly reduced.” – Homeowner

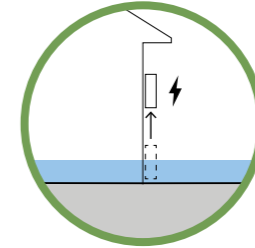




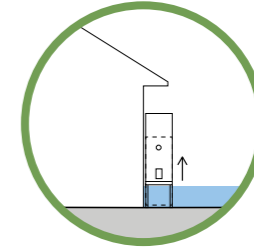
Raise air conditioning condenser units



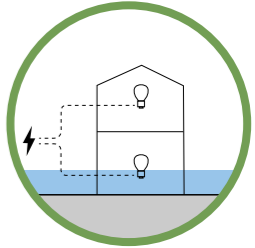
Raise the electrical switchboard



Raise storage hot water unit or replace with a raised instantaneous gas hot water unit

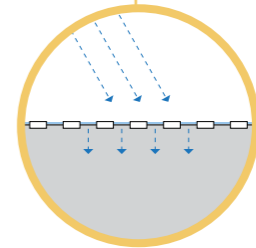


Install separate circuits on the lower and upper levels



Retrofit options

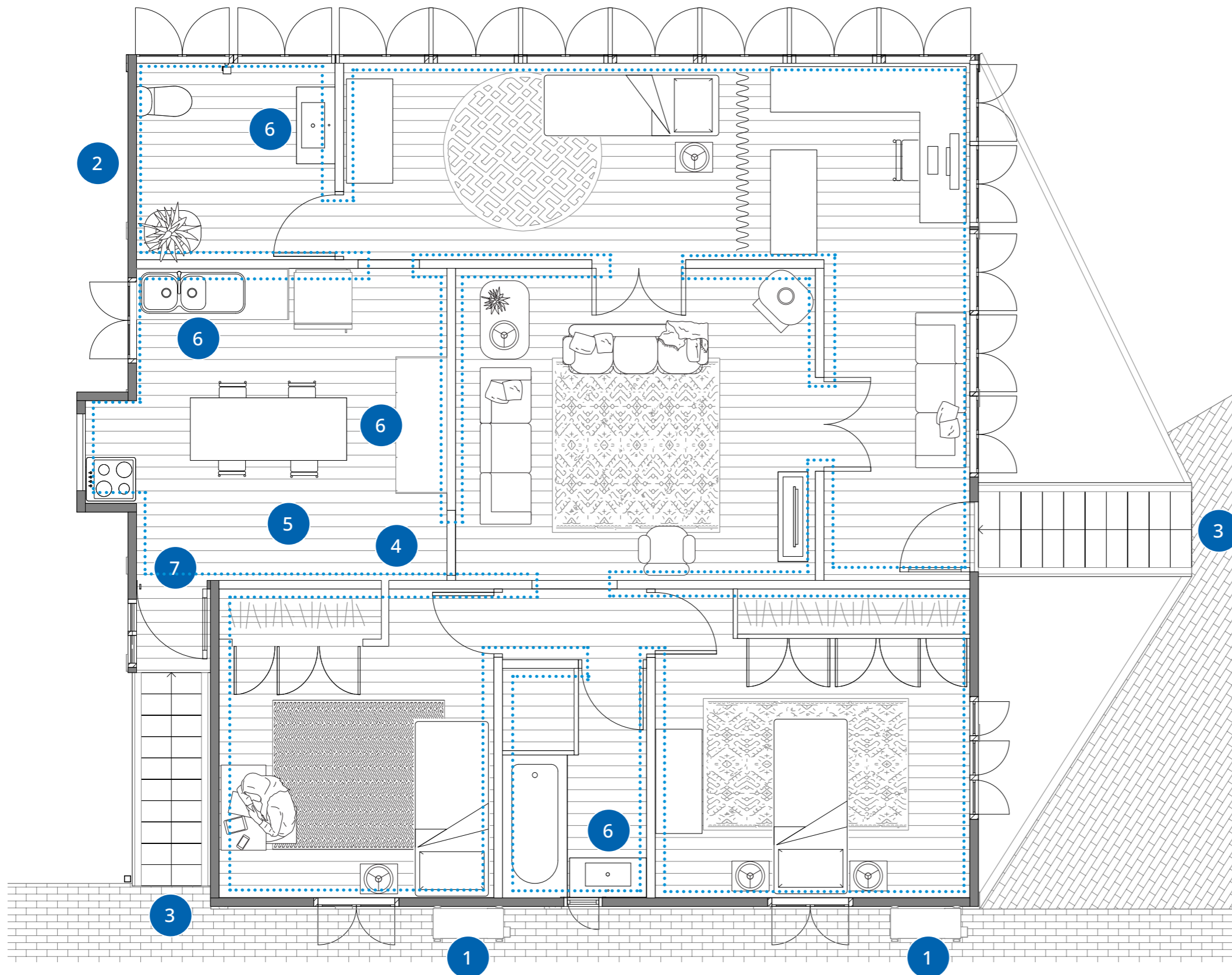
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



Replace existing ground cover with permeable materials to absorb and slow the flow of water



Garden beds with deep friable soils can help to slow, filter and collect water

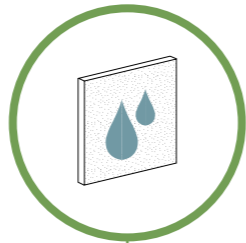


Strategies

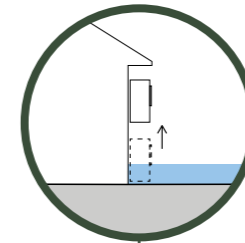
1. Raise air conditioning condenser units to above flood level to minimise damage.
2. Raise electrical switchboard to above flood level to minimise damage.
3. Replace existing stairs with open stairs made from flood-resilient materials to minimise damage.
4. Replace internal wall linings with flood-resilient linings to minimise chance of damage.
5. Replace existing flooring with flood-resilient flooring to minimise damage.
6. Replace cabinetry with flood-resilient materials to minimise damage.
7. Replace hollow core doors with solid core doors to minimise damage.

- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape

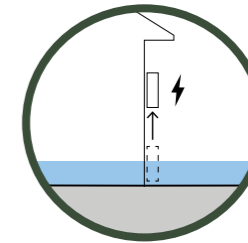
Install water-resistant linings



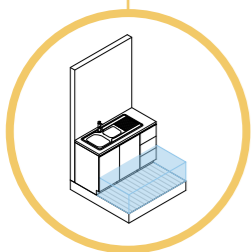
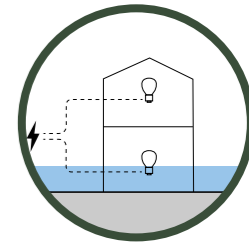
Raise air conditioning condenser units



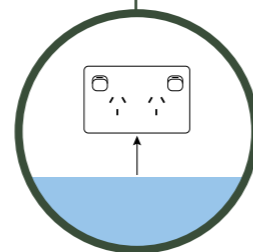
Raise the electrical switchboard



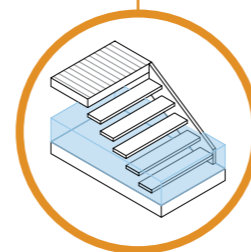
Install separate circuits (with breakers) on ground and upper levels



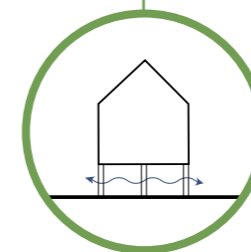
Replace cabinetry with flood-resilient cabinetry



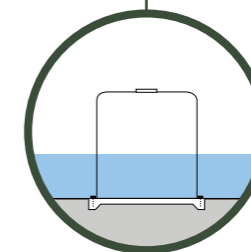
Raise data and electrical points



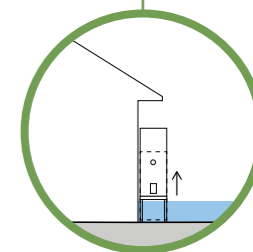
Replace close riser stairs with open riser stairs



Provide adequate drainage and ventilation to subfloor area



Anchor existing buoyant objects such as gas tanks



Raise hot water units

Homeowner's Story

“I think if it happens again (flooding), the house will be fine. It will just be a matter of cleaning it out.” – Homeowner

This 1940s Queenslander was one of the first homes built on the street in what was then a predominantly farming community. With its traditional VJ timber walls and hardwood floors, the home has stood through many storms—and, in more recent years, floods.

The homeowner says the resilient retrofit works completed last year now provide peace of mind, knowing that the impact of future flood events will be significantly reduced.

The high-set home was purchased in 2010. Just months later, the 2011 flood brought water above the floorboards. The cleanup was supported by the Mud Army. In 2022, floodwaters reached just below the floorboards. Everything underneath the house was lost—including the laundry, washing machine, electric hot water system, and garden shed. Another large shed in the backyard was inundated, resulting in the loss of power tools and other belongings.

While the initial cleanup took about a week, the deeper clean and assessment of what could be salvaged continued over the following six months.

The homeowner undertook a range of resilient retrofit measures. Kitchen cabinetry was replaced with a water-resistant alternative, and renewable surface splashbacks and benchtops were installed using water-resistant epoxy grout. Both bathrooms were upgraded with water-resistant cabinetry. Air conditioning units were raised to 2.6 metres above ground, the hot water system was elevated, and electrical power points were relocated to higher positions.

Belongings stored underneath the house, such as replacement power tools, are now kept on high shelving.

The main concern moving forward is receiving enough warning to relocate vehicles to higher ground, which is within walking distance. The homeowner notes that they are now more vigilant when it comes to monitoring potential flooding, as they have a stronger understanding of their flood risk.



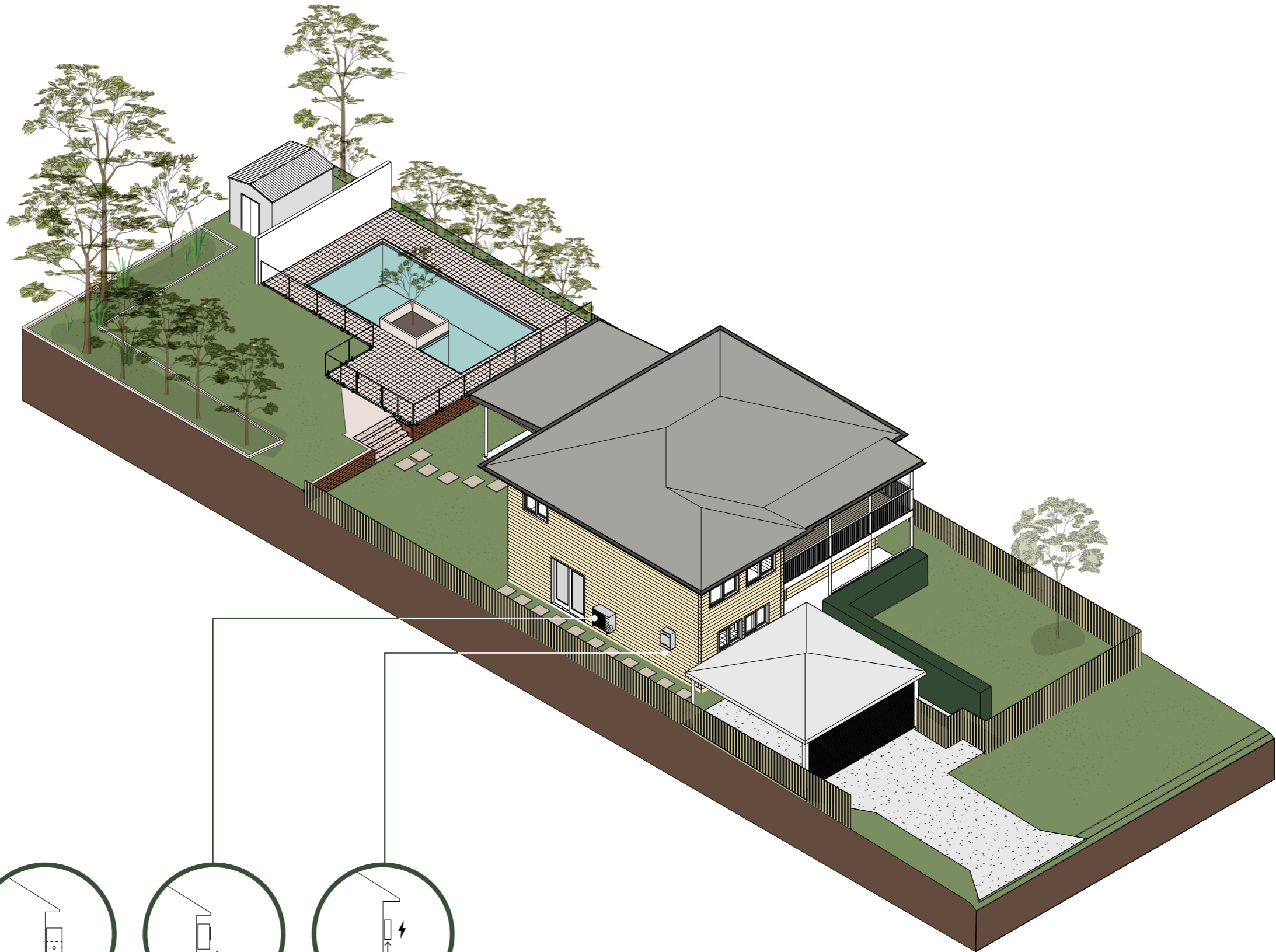
Home after flood-resilient works complete

04 Double Take

Resilience works: Home retrofitted
Typology: Slab on-ground double storey

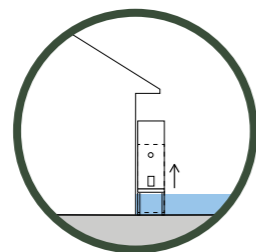
“The resilience measures made a huge difference to our daily lives,” the homeowner said, describing how water-resistant cabinetry, tiled skirting, and solid timber doors far exceeded what they had before.



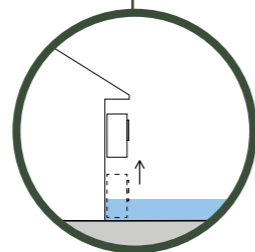


Retrofit options

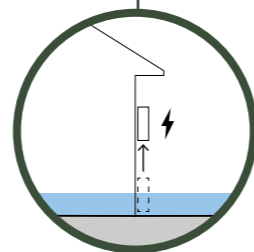
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



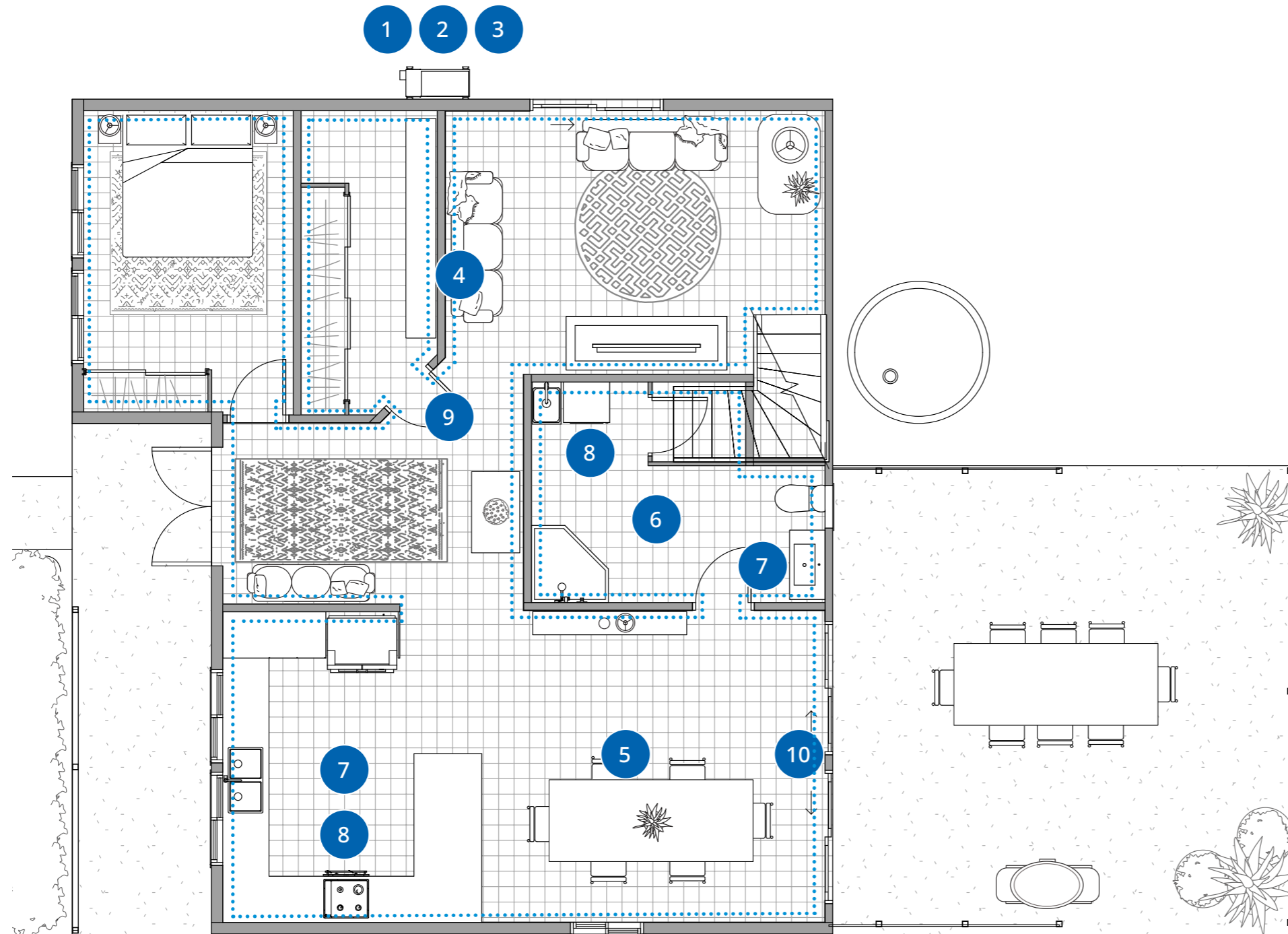
Raise the hot water unit



Raise air conditioning condenser units



Raise the electrical switchboard

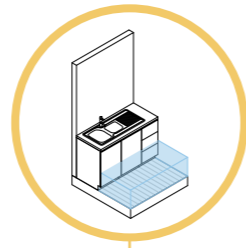


Strategies

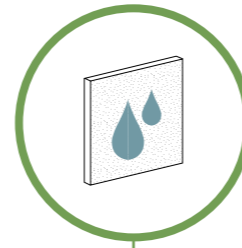
1. Raise air conditioning condenser units to above flood level to minimise damage.
2. Raise water pump and electrical systems above flood level to minimise damage.
3. Raise electrical switchboard to above flood level to minimise damage.
4. Replace internal wall linings with flood-resilient linings to minimise the chance of damage.
5. Replace flooring with flood-resilient flooring to minimise the chance of damage.
6. Apply flood-resilient sealant to existing tiled areas to minimise the chance of mould and damage.
7. Replace cabinetry with flood-resilient materials to minimise the chance of damage.
8. Raise kitchen and laundry appliances to above flood level onto flood-resilient cabinetry or a stainless steel framed bench to minimise damage.
9. Replace hollow core doors with solid core doors to minimise damage.
10. Enlarge door and window openings to allow water to flow through.

- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape

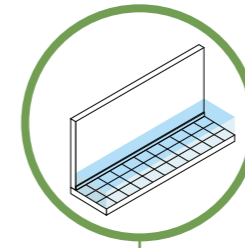
Replace cabinetry with flood-resilient cabinetry



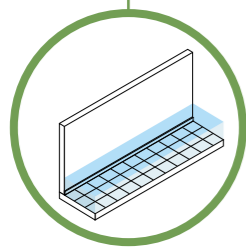
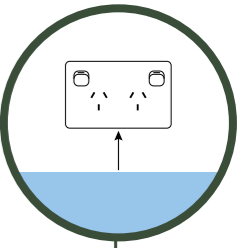
Install water-resistant linings



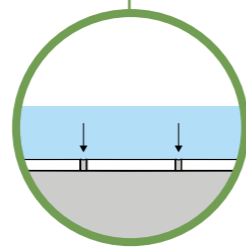
Replace non-water-resistant skirting



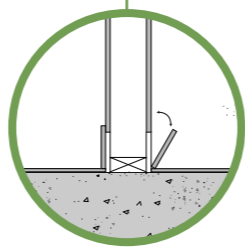
Raise the data and electrical power points



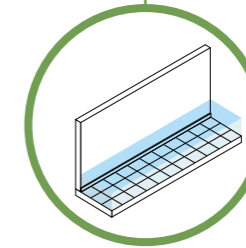
Replace non-water-resistant flooring and skirting



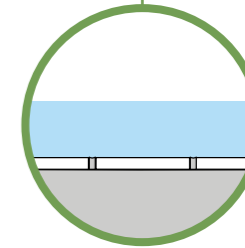
Use flood-resilient grout when tiling or re-tiling wet areas



Removable kick boards

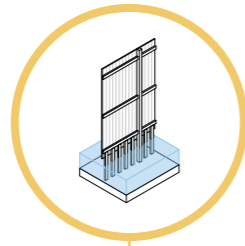


Replace non-water-resistant skirting

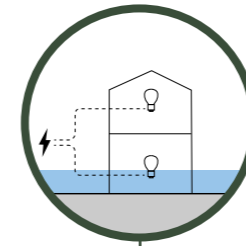


Use flood-resilient grout and apply flood-resilient sealant when tiling or re-tiling wet areas

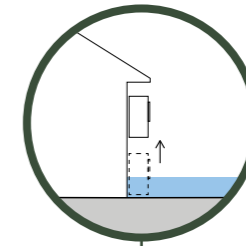
Replace existing fences with permeable fencing components that allow water to flow through



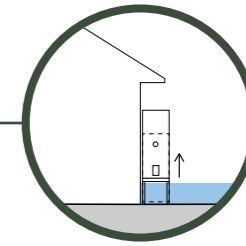
Install separate circuits on the lower and upper levels



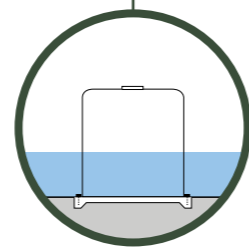
Raise air conditioning condenser units



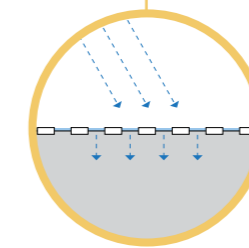
Raise the hot water unit



- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



Anchor existing buoyant objects such as water tanks and gas bottles



Replace existing ground cover with permeable materials to absorb and slow the flow of water

Homeowner's Story

“A resilient home reduces anxiety in flood events, allows you to stay in your home, and reduces the environmental impact of rebuilding” – Homeowner

The homeowners purchased their property in 2009 and quickly discovered overland flow flooding was a recurring concern. By 2012, the severity of backyard flooding and gurgling sewer pipes left them deeply anxious during heavy rains. “We knew one day we would have water and sewerage in our home,” they reflected, recalling how they would sweep water away from the patio to keep it out of the house. Having witnessed neighbours' homes inundated within an hour of a storm — and the heartbreak of them losing sentimental items — they decided to take action when a Brisbane City Council Floodwise leaflet arrived.

Through a program, they invested in resilience works that transformed both the home and their peace of mind. “The resilience measures made a huge difference to our daily lives,” they said, describing how water-resistant cabinetry, tiled skirting, and solid timber doors far exceeded what they had before. Even features they were unsure about, like tiled skirting, proved invaluable:

“Surprisingly, the tile skirting has ensured the inside of our home is protected, clean and presentable - even with young kids and a dog.”

When the February 2022 floods struck, the entire property flooded. Water and sewage entered through the laundry, but thanks to the resilience measures, the damage was contained and they were able to stay in their home. “We were fortunate enough to remain here while some of our neighbours were displaced for more than 12 months. Our ability to return to regular life is directly attributed to having the resilience works completed.”

Since then, they have developed action plans and flood-readiness strategies with guidance from their architect and builder. They now proudly show off the home to family, friends, and neighbours - many of whom joined the program after seeing the results.

They “absolutely recommend” resilience works.



Home after flood-resilient works complete

05 Sky High House

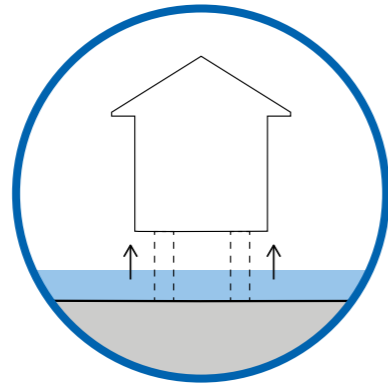
Resilience works: Raised and retrofitted
Typology: Highset elevated, lightweight framing

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*“(After the raise) I have a lot more confidence I won’t find myself in the same position again.”* – Homeowner

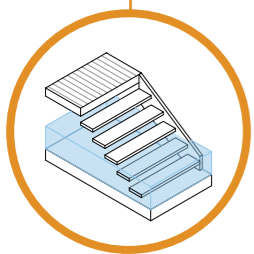
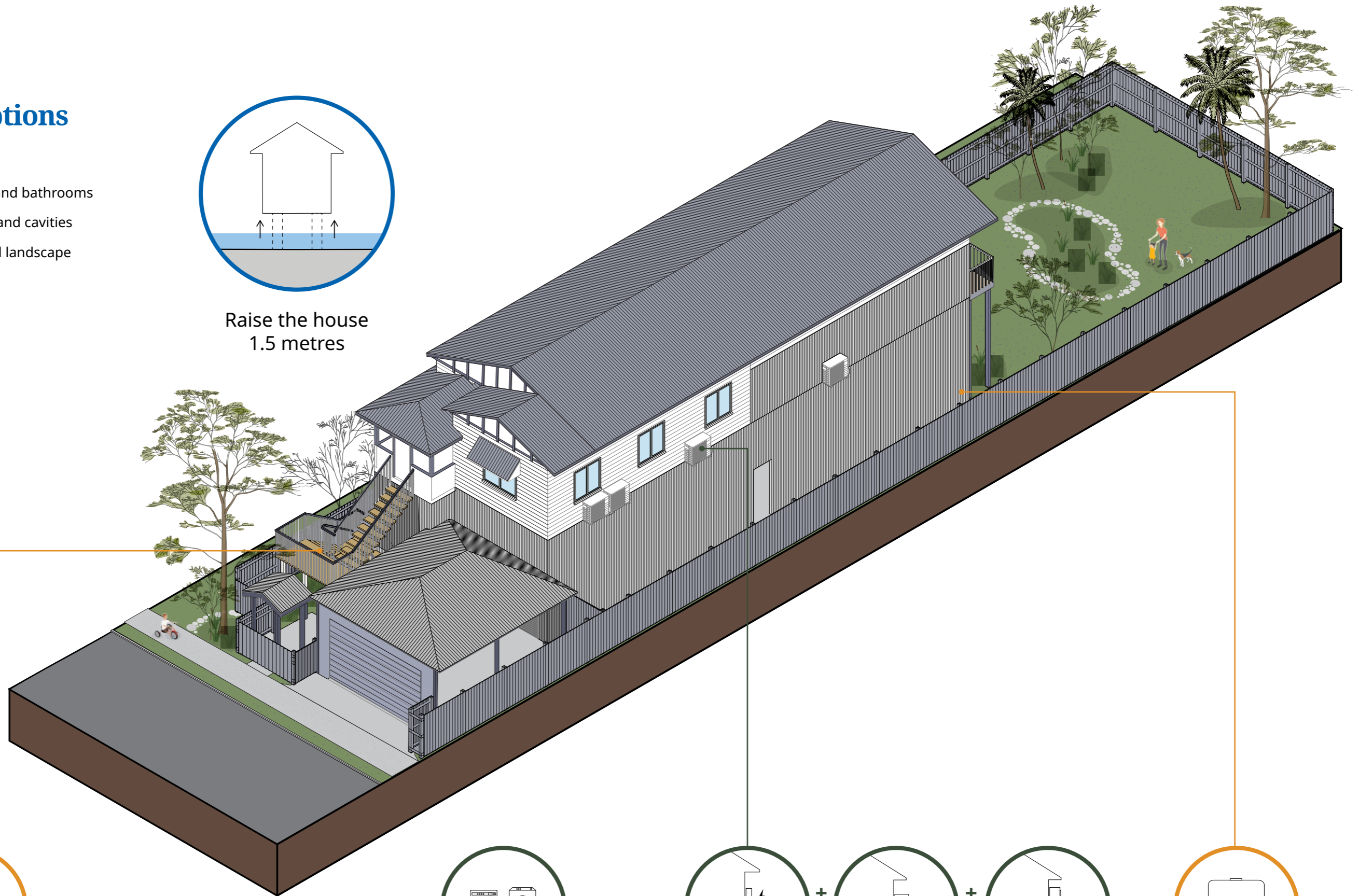


# Retrofit options

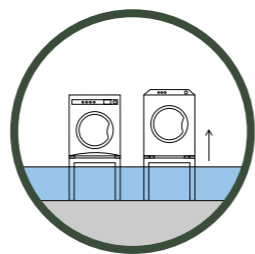
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



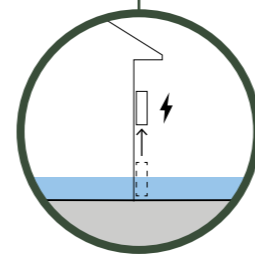
Raise the house 1.5 metres



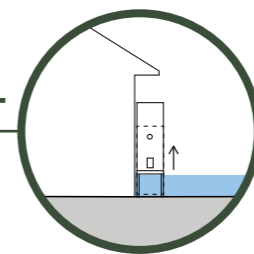
Open riser stairs



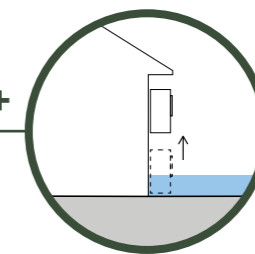
Relocate appliances onto back deck or inside home



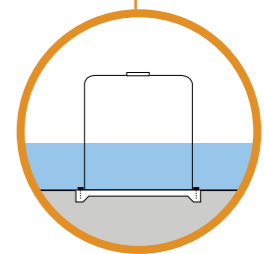
Raise the electrical switchboard



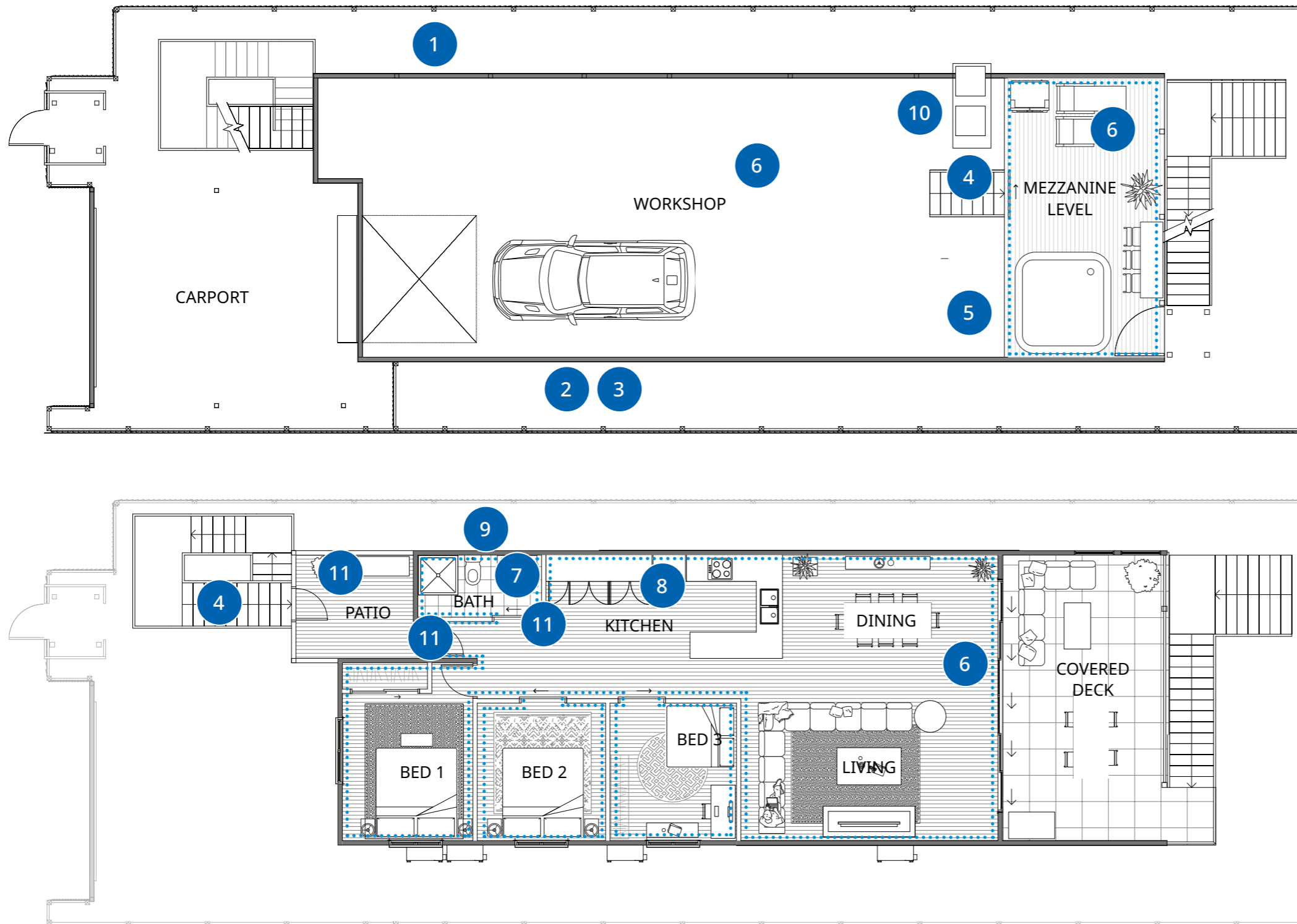
Raise hot water units



Raise air conditioning condenser units



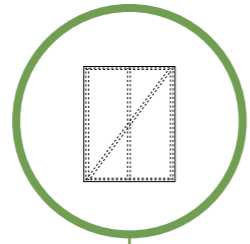
Secure rainwater tanks and pump



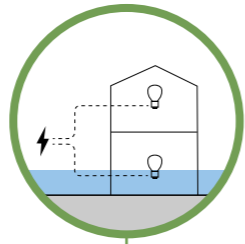
## Strategies

1. Raise the house 4 metres.
2. Raise electrical switchboard to above flood level to minimise damage.
3. Raise gas hot water unit to above flood level onto a concrete plinth, steel brackets or stainless steel framed bench to minimise damage.
4. Replace existing stairs with open stairs made from flood-resilient materials to minimise damage.
5. Replace internal wall linings with flood-resilient wall linings to minimise damage.
6. Replace flooring with flood-resilient flooring to minimise damage.
7. Seal existing tiled areas to minimise the chance of mould.
8. Replace cabinetry with flood-resilient materials to minimise damage.
9. Replace built-in bathtubs with freestanding bathtubs or showers.
10. Raise washing machine and dryer above flood level onto a flood-resilient cabinetry or a stainless steel framed bench to minimise damage.
11. Replace hollow core doors with solid core doors to minimise damage.

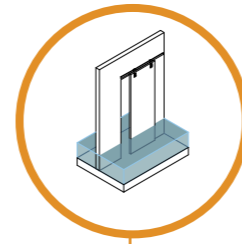
Replace water damaged or non-water-resistant structural bracing



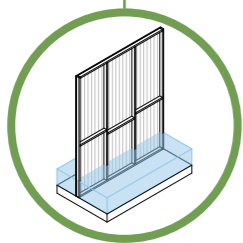
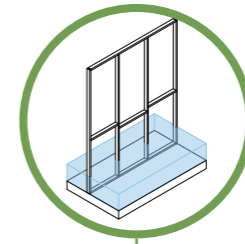
Install separate circuits (with breakers) on ground and upper levels



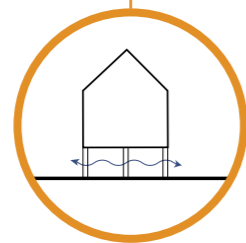
Replace cavity sliding doors with swing or face of wall sliding doors



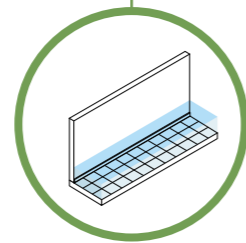
Install water-resistant framing



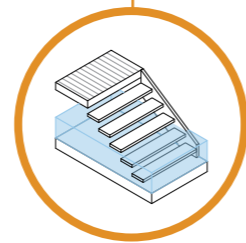
Use single skin construction systems



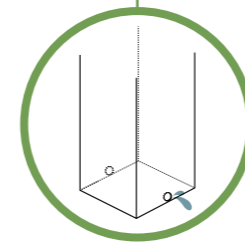
Provide adequate drainage and ventilation to subfloor area



Install water-resistant flooring



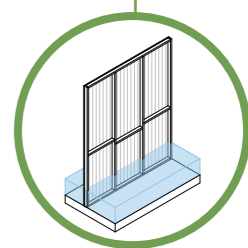
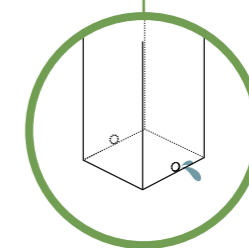
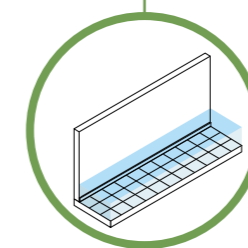
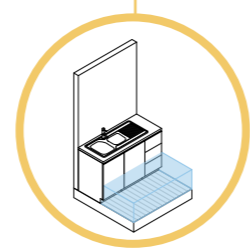
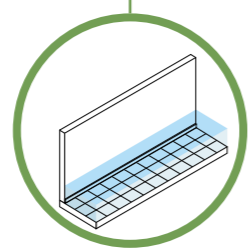
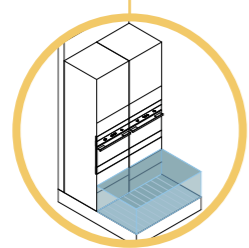
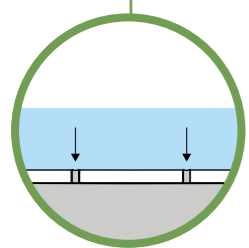
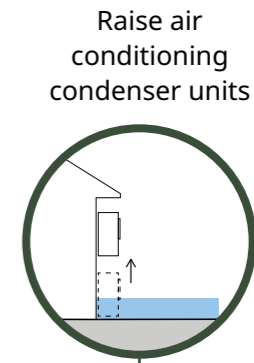
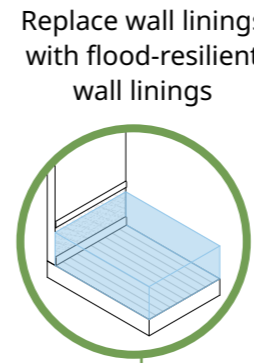
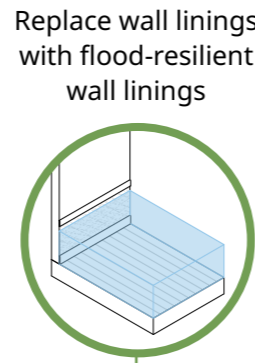
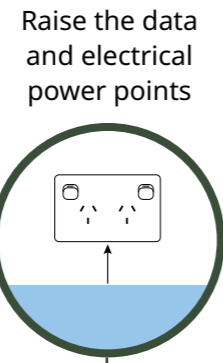
Design without cavities under stairs



Allow water to drain from within steel columns

- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cleanup
- 4. Cabinetry and landscape

- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



## Homeowner's Story

*"(After the raise) I have a lot more confidence I won't find myself in the same position again." – Homeowner*

A homeowner has had to rebuild both her life and home twice due to riverine flooding.

Relocating was never an option—she loves her home and suburb too much—but extensive resilience works have been undertaken to help ensure the home should never flood again, considering the home is at a high risk of flooding, in frequency and in height.

The homeowner had resilience works completed through the Brisbane City Council Flood Resilient Homes Program. These works included painting of the internal pine frames, fibre cement sheeting and internal wall linings, hardwood skirtings, raising of internal and external services and electrical, flush door sills, water-resistant kitchen cabinetry, and subfloor weep holes.

Unfortunately, those flood-resilient works were put to the test much earlier than expected when the home flooded again in 2022.

"It was pretty disappointing, and I just thought 'not again,'" the homeowner recalls.

If there was a positive from the 2022 experience, it was that the resilience measures held up well—the kitchen only needed to be washed out. There was minimal damage and disruption apart from the non-resilient floors, which needed replacing.

She was later able to access funding to raise the home—by 4 metres—to further increase its resilience.

"I love this house; it backs on to a park," she says. "It's horrible when it (flooding) happens, but it's just such a lovely area—the park, coffee shops and restaurants. It's nice and quiet and I feel so lucky.

*"(After the raise) I have a lot more confidence I won't find myself in the same position again.*



Home after flood-resilient works complete

# 06 The Blockwork Abode

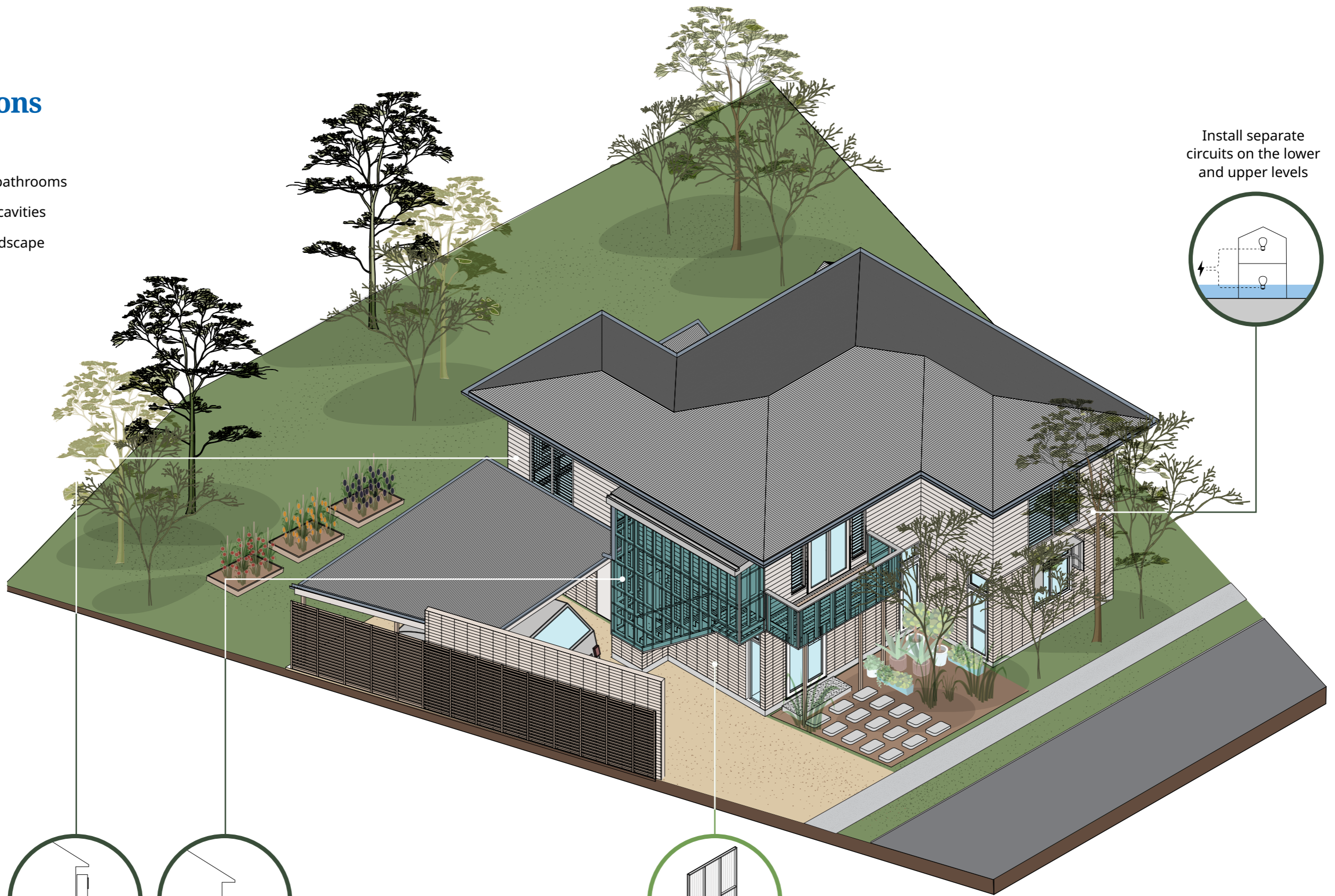
Resilience works: Home raised and retrofitted  
Typology: Highset elevated, lightweight framing

*“When the 2022 floods brought a foot of water into the house, everything held up. Even the cabinetry was unaffected. It was no longer a catastrophe—more like a big spring clean.” – Homeowner*

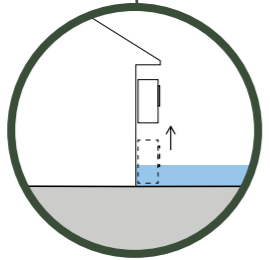
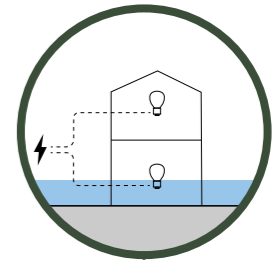


# Retrofit options

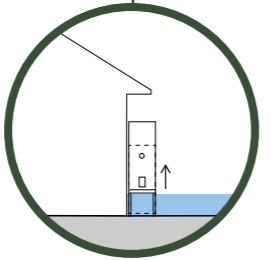
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



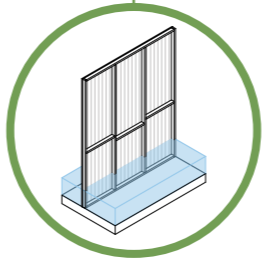
Install separate circuits on the lower and upper levels



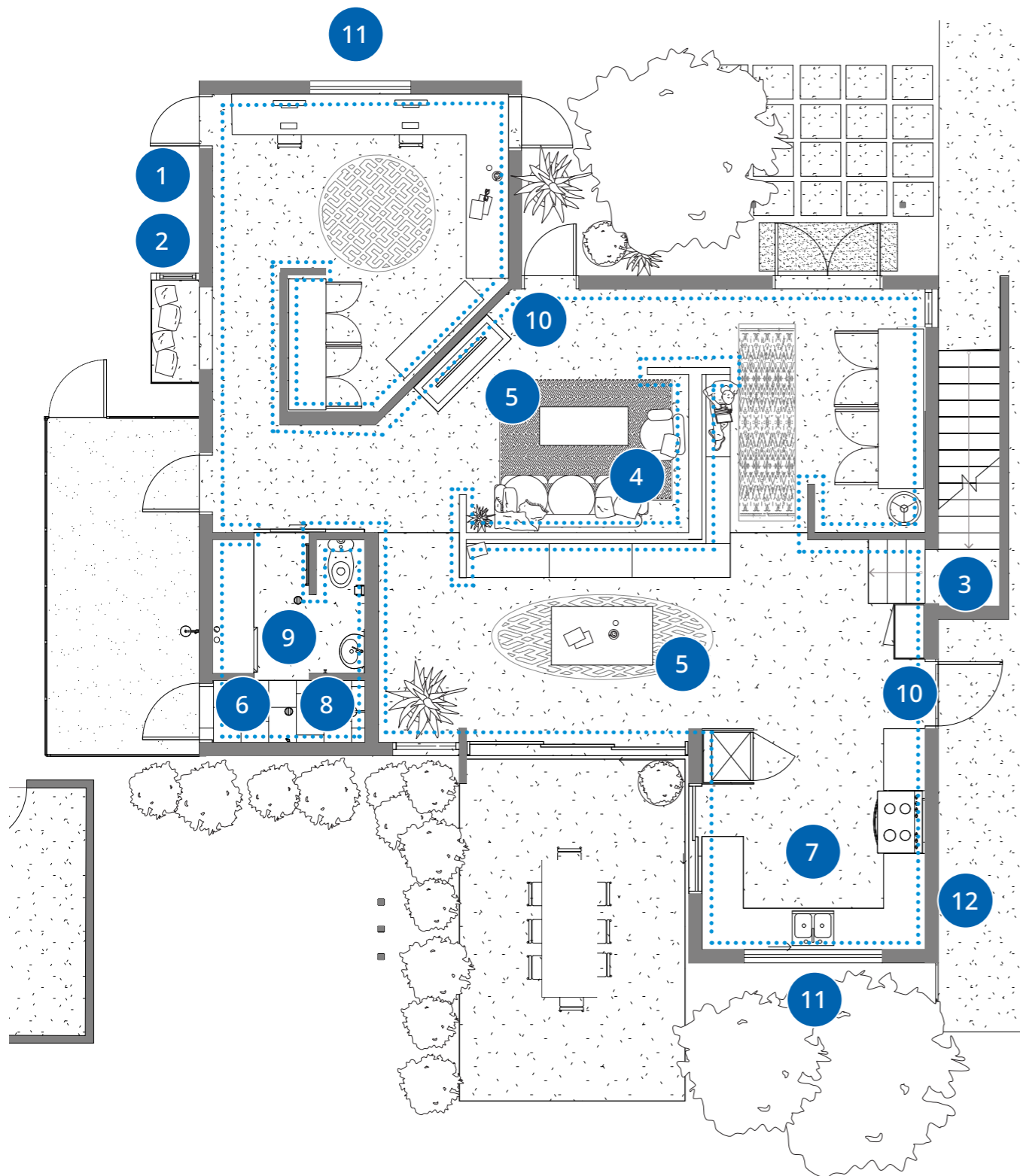
Raise air conditioning condenser units



Raise the hot water unit



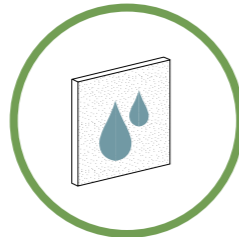
No cavity walls constructed



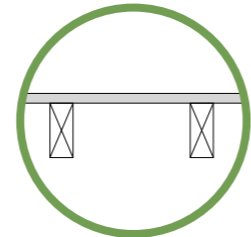
## Strategies

1. Raise electrical switchboard to above flood level to minimise damage.
2. Raise gas hot water unit to above flood level onto a concrete plinth, steel brackets or stainless steel framed bench to minimise damage.
3. Replace existing stairs with open stairs made from flood-resilient materials to minimise damage.
4. Replace internal wall linings with flood-resilient wall linings to minimise damage.
5. Replace flooring with flood-resilient flooring to minimise damage.
6. Seal existing tiled areas to minimise the chance of mould.
7. Replace cabinetry with flood-resilient materials to minimise damage.
8. Replace built-in bathtubs with freestanding bathtubs or showers.
9. Raise washing machine and dryer above flood level onto flood-resilient cabinetry or a stainless steel framed bench to minimise damage.
10. Replace hollow core doors with solid core doors to minimise damage.
11. Ensure window sills are above flood level to minimise the chance of water entry.
12. Seal external wall under existing cladding to minimise the chance of water entry.

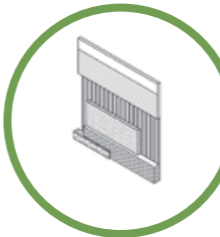
Install water-resistant framing



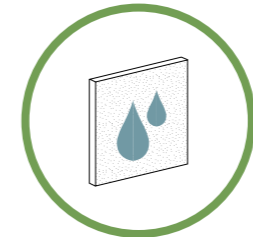
Remove substrate from timber flooring



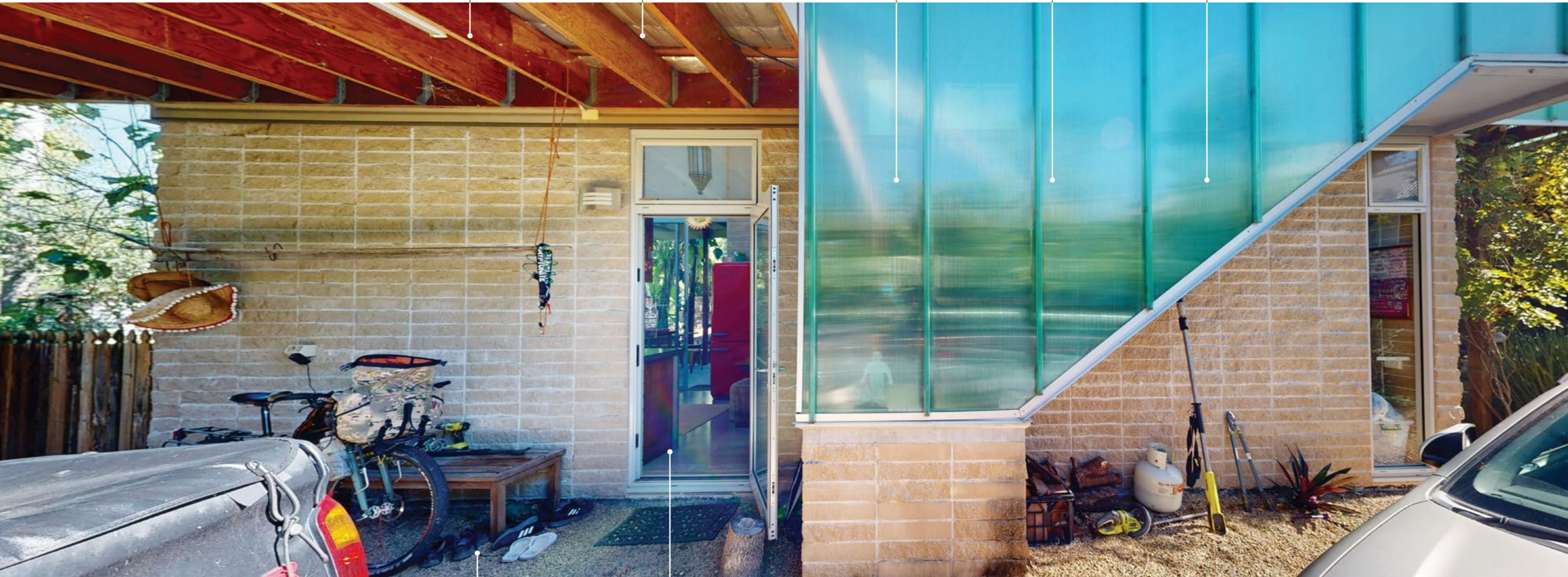
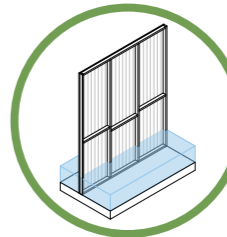
Use composite construction systems



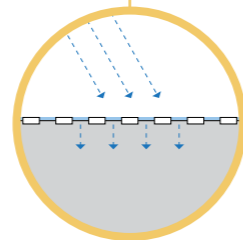
Install water-resistant external cladding



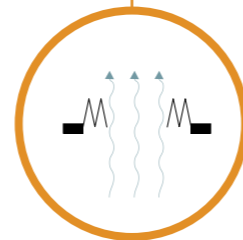
Use single skin construction systems



- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape

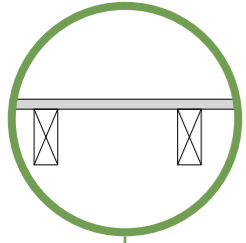


Replace existing ground cover with permeable materials to absorb and slow the flow of water

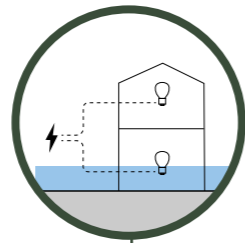


Change door configuration to maximise the existing opening

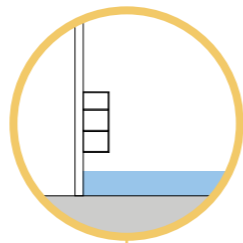
Remove substrate from timber flooring



Install separate circuits on the lower and upper levels

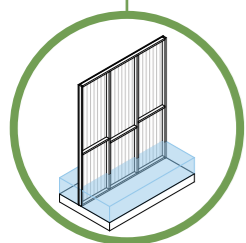
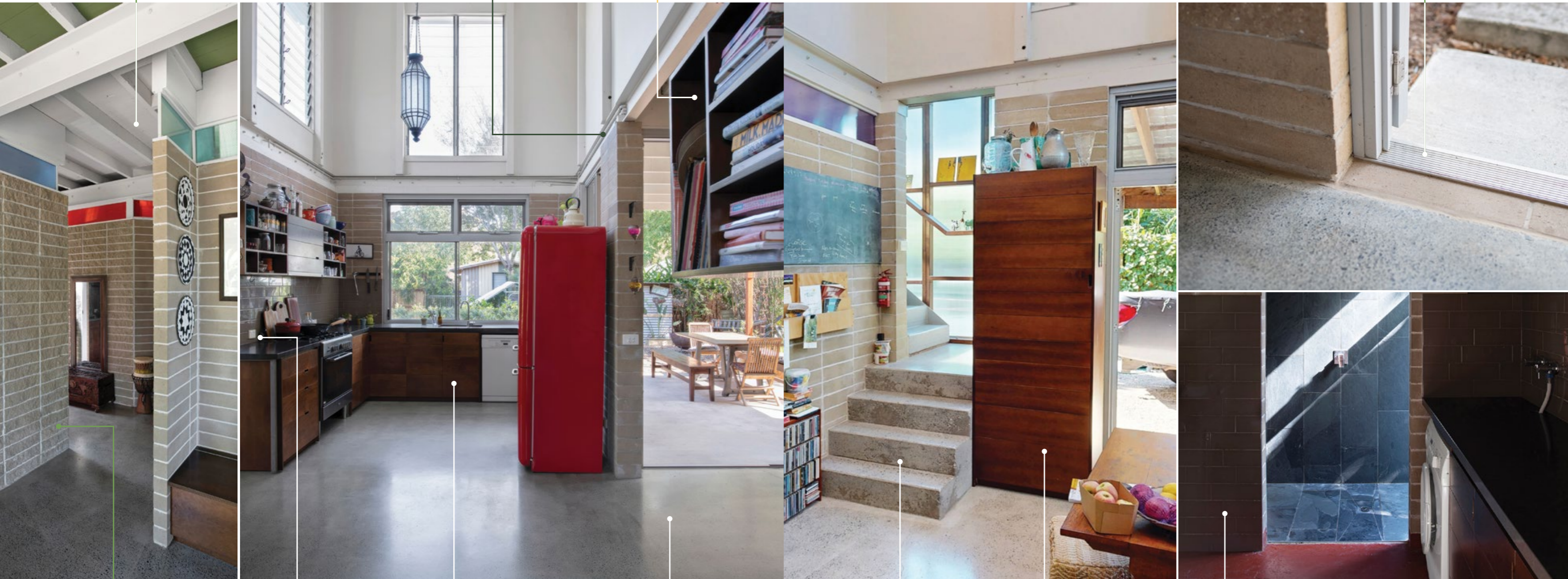
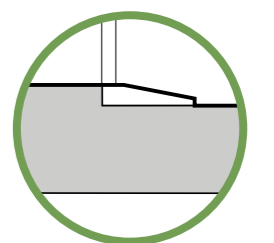


Raise storage shelves

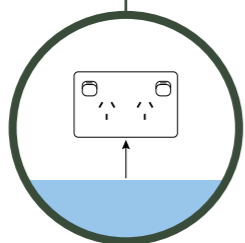


- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cleanup
- 4. Cabinetry and landscape

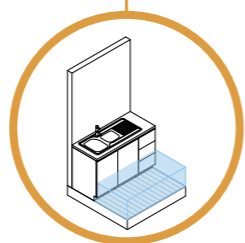
Install flush door sills to ensure easy cleaning after a flood event



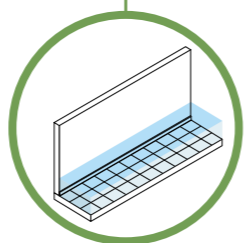
Where possible, replace cavity walls with non-cavity walls



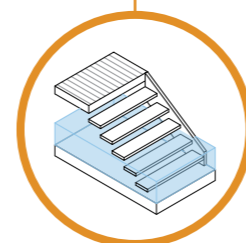
Raise data and electrical points



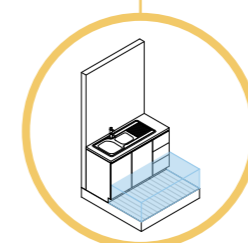
Replace non-water-resistant cabinetry with flood-resilient cabinetry



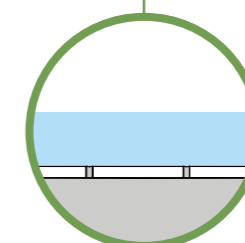
Replace non-resilient flooring and skirting with flood-resilient flooring and skirting



Replace closed riser stairs with solid-core or open riser stairs



Replace non-water-resistant cabinetry with flood-resilient cabinetry



Use flood-resilient grout and apply flood-resilient sealant when tiling or re-tiling wet areas

## Homeowner's Story

*“When storms come, they’re now just a spring clean – not the catastrophe they once were. We feel safe, protected, and no longer live in fear of the next flood.” – Homeowner*

They had lived through two major riverine flood events - first in 2011, then again in 2022. After the devastation of 2011, they made the decision to rebuild the lower floor of their home to be flood-resilient. Watching the lower level destroyed had been traumatic, though they acknowledged they were fortunate compared to many—there was no loss of life, and they were insured. Still, the rebuilding process was deeply frustrating. As one of them recalled, insurers insisted on replacing everything like-for-like, which “struck me as madness. I remember saying, ‘What lunatic would plan to fail again?’”

Determined to avoid that outcome, they rebuilt with materials that could withstand water—concrete, solid timber, metal—nothing that could rot, swell, or crumble. Having already nurtured a personal interest in design, they had mentally rehearsed how to rebuild if another flood came. That planning paid off. When the 2022 floods brought a foot of water into the house, everything held up. Even the cabinetry was unaffected. As they put it, “It was no longer a catastrophe—more like a big spring clean.”

Initially, they had planned to sell the home. But after the rebuild, the family fell in love with the

house again and decided to stay. The irony wasn’t lost on them: the river—the source of the risk—was also part of the attraction. They had come to see storms as “an inconvenience, not a crisis.” As they described it, “It’s a good place to live - just gets a little damp from time to time.”

Looking back, they saw the original construction as typical but shortsighted—plasterboard and pine framing, with no consideration for water. “But this is a floodplain. It was always going to happen again.” They reflected on travels through Asia, where buildings in Vietnam were constructed of concrete and hardwood, designed to flood every year. “It made sense to me,” they said. “We don’t often think rationally about risk. We avoid imagining bad things.”

Now, they say they feel safe, knowing the house can withstand up to around three metres of inundation. “Of course, no one wants to flood—but we’ve removed the fear.”

Their designer had summed it up best, they said: “Don’t try to talk about resilience after a disaster. Talk about preparedness before. That’s where the change happens.”



Home after flood-resilient works complete

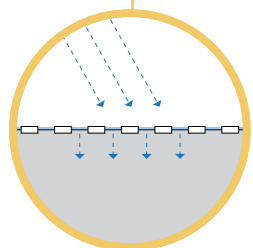
# 07 Brick by Brick

Resilience works: Home retrofitted  
Typology: Brick veneer apartment complex



## Retrofit options

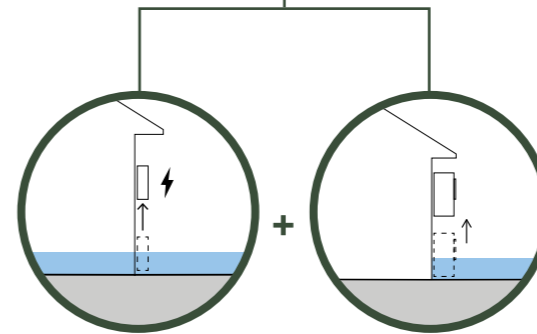
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



Replace existing ground cover with permeable materials to absorb and slow the flow of water

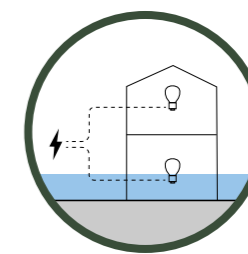


Garden beds with deep friable soils can help to slow, filter and collect water

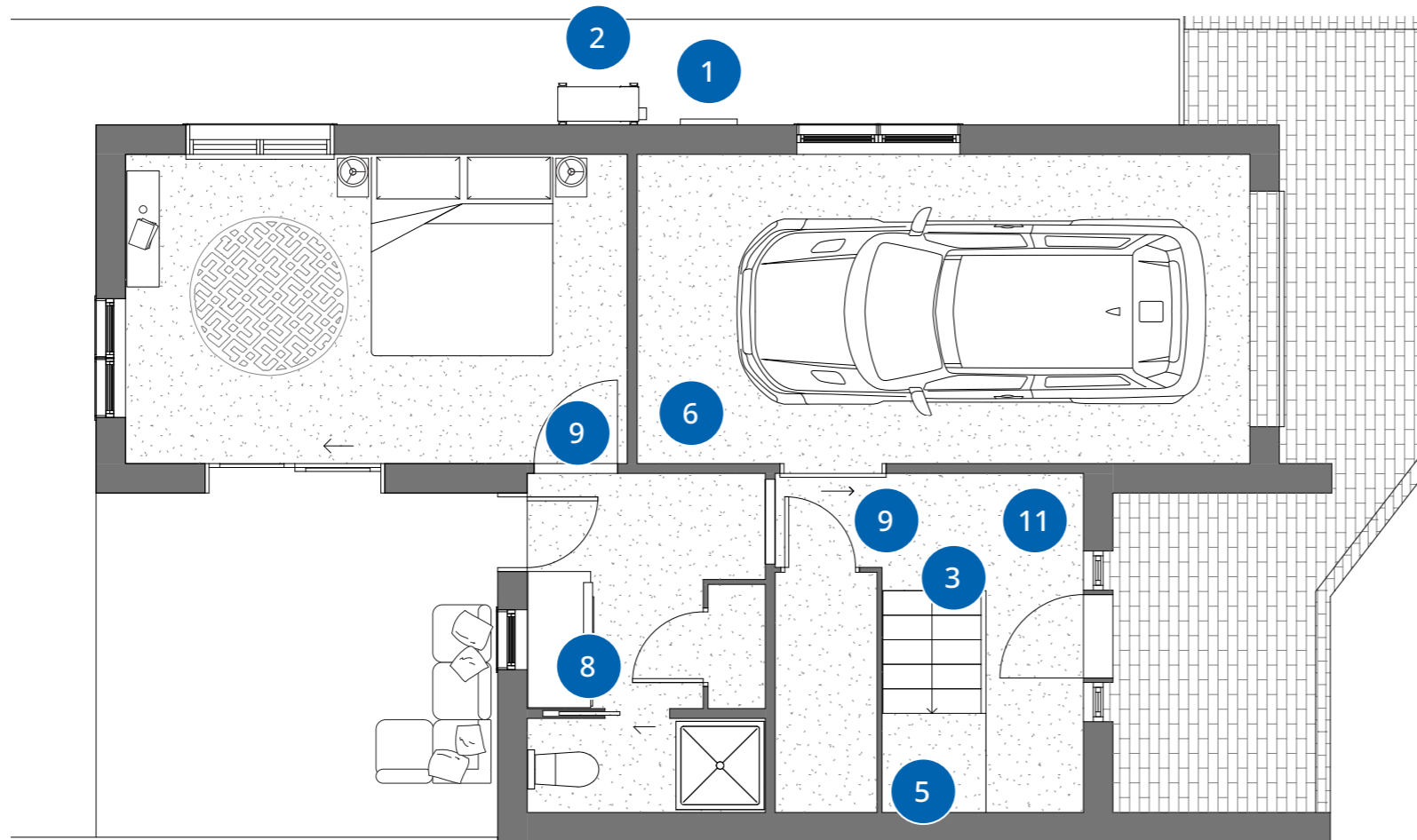


Raise the electrical switchboard

Raise air conditioning condenser units

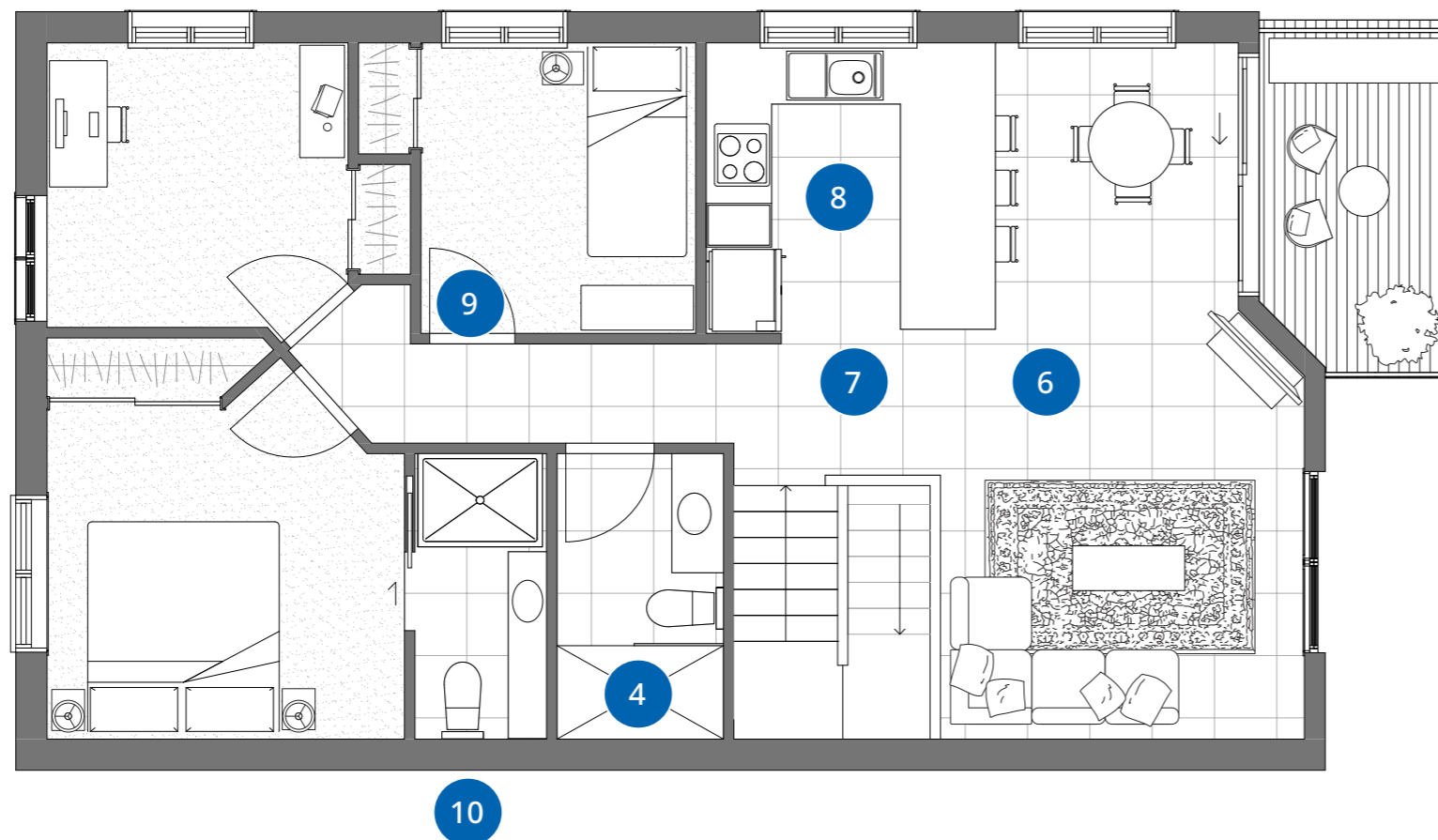


Install separate circuits on the lower and upper levels

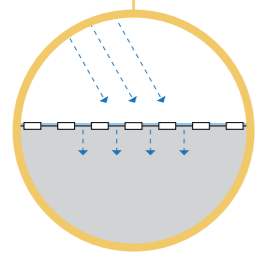


## Strategies

1. Raise electrical switchboard to above flood level to minimise damage.
2. Raise air conditioning condenser units to above flood level to minimise damage.
3. Replace existing stairs with open stairs made from flood-resilient materials to minimise damage.
4. Replace built-in bathtubs with freestanding bathtubs or showers.
5. Replace internal wall linings with flood-resilient linings to minimise chance of damage.
6. Replace existing flooring with flood-resilient flooring to minimise damage.
7. Seal existing tiled areas to minimise chance of mould.
8. Replace cabinetry with flood-resilient materials to minimise damage.
9. Replace hollow core doors with solid core doors to minimise damage.
10. Seal existing tiled areas to minimise the chance of mould.
11. Waterproof the junction between the wall lining and floor substrate.



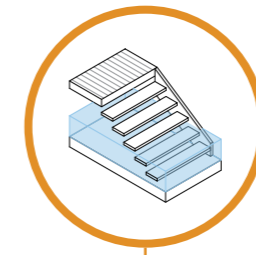
- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape



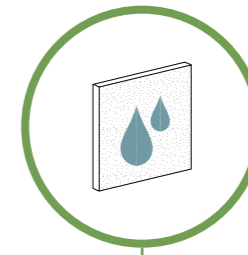
Replace existing ground cover with permeable materials to absorb and slow the flow of water



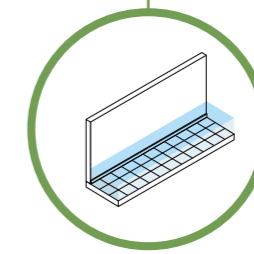
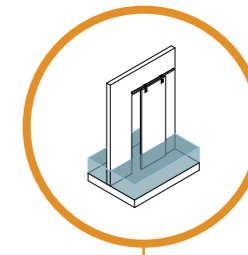
Design without cavities under stairs



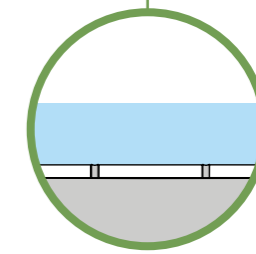
Water-resistant wall lining



Replace cavity sliding doors with swing or face of wall sliding doors



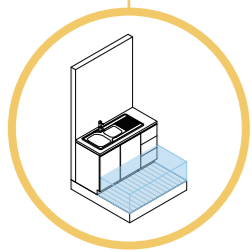
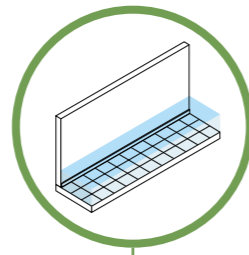
Install water-resistant flooring



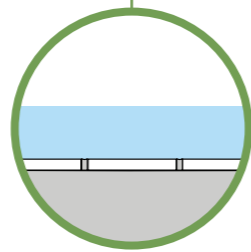
Use flood-resilient grout when tiling or re-tiling

- 1. Utilities
- 2. Walls, floors and bathrooms
- 3. Doors, stairs and cavities
- 4. Cabinetry and landscape

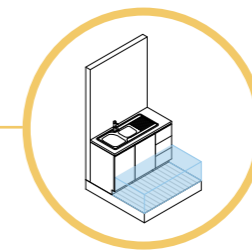
Install water-resistant skirting



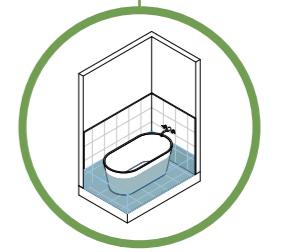
Replace cabinetry with flood-resilient cabinetry



Use flood-resilient grout when tiling or re-tiling wet areas



Replace cabinetry with flood-resilient cabinetry



Install a removable panel or replace the built-in bathtub with a freestanding bathtub or a shower

## Homeowner's Story

*“The 2022 flood gave us the opportunity to leave the place in a much better state. If it happens again, I’m hoping it’ll just be a matter of moving things to higher ground and returning quickly once the water recedes.” – Homeowner*

Several homeowners in this townhouse complex in Brisbane’s western suburbs have taken significant steps to make their properties more flood resilient after devastating floods in 2011 and 2022.

The complex comprises over 50 townhouses, mostly two-storey, with some single-level units. In 2011, riverine floodwaters reached the second storey of most townhouses. While the 2022 flood levels were lower, some properties were still inundated, with water rising just below the second level.

In response, about half of the property owners have either undertaken or are exploring flood-resilience upgrades.

These measures include replacing carpet with tiles, installing water-resistant cabinetry in kitchens, bathrooms and laundries, using water-resilient wall linings and raising essential services such as air conditioning units and electrical switchboards.

The property manager noted that many homeowners are preparing for future floods, recognising the likelihood of recurring events.

One resident, who owns a single-level townhouse, initially replaced damaged materials like-for-like after the 2011 flood, reinstating plasterboard walls and carpet. However, after the 2022 floods, he opted for resilient upgrades.

*“The 2022 flood gave us the opportunity to leave the place in a much better state. If it happens again, I’m hoping it’ll just be a matter of moving things to higher ground and returning quickly once the water recedes.”*



Home after flood-resilient works complete

# 05

## Other considerations



## Journey to resilience

Building, raising or retrofitting a home can be a complex process, so this section provides guidance on who to speak to and what to expect, from planning through to construction.

The below is a guide only. Consult with a building industry professional to determine the pathway that best suits your proposed works.



### Understand your flood risk

- Check council flood maps and reports.
- Consider the types of flood risk including frequency and severity.
- Consider the height of flood risk and how it may affect your home.



### Review local regulations

- Contact your local council for guidance on regulations.
- Consult building and planning professionals, such as a town planner or architect.



### Decide on raising or resilient retrofitting

- Consult a town planner and building certifier to understand if a Development Approval and Building Approval is required, especially if considering a home raise.
- Explore your resilient building options and materials if going ahead with a retrofit.



### Contact professionals (as relevant)

- Building certifier: For certification and compliance.
- Town planner: For Development Approval.
- Architects/Designers: For customised plans.
- Engineers: For structural design and geotechnical engineering.
- Surveyors: For elevation data.
- Licensed builders: For construction management.



### Preliminary works

#### For Home raising, you may need to engage:

- A structural engineer and geotechnical engineer for soil testing and structural design.
- An architect or building designer to prepare architectural plans for approvals and pricing.
- A surveyor to locate the property boundaries and building height.
- A town planner to facilitate development (planning) approval.
- A building certifier to provide building approval and certification.

#### For Resilient retrofits, you may need to consult:

- An architect or building designer to prepare architectural plans for pricing.

*Confirm all professionals involved are suitably licensed.*



### Engage your builder

- Ensure your proposed scope and plans are clearly referenced in a building contract.
- Consult with building professionals or the Queensland Building and Construction Commission (QBCC) for support on building contracts.



### Obtain approvals

- Ensure Building Approval is obtained if needed through a building certifier.
- Submit plans to the building certifier to lodge with council.



#### Once your plans have been approved, you are ready to start construction.

The QBCC's Home Owner Hub is your five-step guide to building and renovating - from planning to completion. Get it right from the start. Visit [www.qbcc.qld.gov.au/home-owner-hub](http://www.qbcc.qld.gov.au/home-owner-hub)

## Being prepared

**If your home has undergone resilient works, this should stand you in good stead in the event of a severe weather event like a flood.**

Being prepared and having a plan for severe weather can help reduce the impact of weather on your property and everyday life activities.

- Keep up to date with the latest flood risk information.
- Make a list of the materials and resilient strategies used in your home and keep this with other important documents in your emergency kit as you may need to provide this information to your insurer after an event.
- Make a decision about what tasks need to be completed around your home when preparing for severe weather impacts, and when you'll action those tasks. For example, if you have removable cabinetry, decide ahead of time when you'll move the cabinetry in the event of a disaster. Make these decisions as part of your household planning and record them in your Household Emergency Plan.
- After a flood event, get a second opinion before ripping anything out. If your property has had resilient works done, certain materials may not need to be ripped out. Seek advice on how best to clean up.

Get Ready Queensland has a range of resources to help you prepare for severe weather.





## Support

### Support in your community

Download the **Queensland Government's Regional Community Support Services Brochures** for information and contact details of key community services available in your area, including financial and emotional support.

[qld.gov.au/community/disasters-emergencies/disasters/resources-translations/regional-support-brochures](https://qld.gov.au/community/disasters-emergencies/disasters/resources-translations/regional-support-brochures)

For further support for communities affected by disasters please contact our **Community Recovery Hotline** on **1800 173 349**.

### Accommodation assistance

**Housing Service Centres** across Queensland provide a range of support including bond loans, rental grants and a **RentConnect** service.

Anyone needing housing assistance can contact their local **Housing Service Centre**.

[qld.gov.au/housing/public-community-housing/housing-service-centre](https://qld.gov.au/housing/public-community-housing/housing-service-centre)

You can also phone the **24/7 Homeless Hotline** on **1800 474 753**.

### Legal aid

**Legal Aid Queensland** provides free legal advice on a variety of areas including, but not limited to, contracts and family matters.

[legalaid.qld.gov.au](https://legalaid.qld.gov.au)

### Finances

**The Financial Information Service, provided by Services Australia**, is a free service that provides informative guidance about financial matters.

[servicesaustralia.gov.au/financial-information-service](https://servicesaustralia.gov.au/financial-information-service)

### Support and wellbeing services

We know this can be a very stressful time. Talking about what you are going through with your family and friends can be helpful. There are also very helpful support services available to you including **Lifeline** and **BeyondBlue**.

**Beyond Blue**  
[beyondblue.org.au](https://beyondblue.org.au)

**Lifeline**  
[lifeline.org.au](https://lifeline.org.au)

## Links Directory

### Building and resilience guidance

This publication can be viewed at  
[www.getready.qld.gov.au/strengthen-your-home](http://www.getready.qld.gov.au/strengthen-your-home)

### Other resources

**Queensland Reconstruction Authority**  
[qra.qld.gov.au](http://qra.qld.gov.au)

**Home Owner hub**  
[www.qbcc.qld.gov.au/home-owner-hub](http://www.qbcc.qld.gov.au/home-owner-hub)

**Queensland Home Warranty Scheme**  
[qbcc.qld.gov.au/your-property/queensland-home-warranty-scheme](http://qbcc.qld.gov.au/your-property/queensland-home-warranty-scheme)

### Government schemes and assistance

**Regional Community Support Services Brochures**  
[qld.gov.au/community/disasters-emergencies/disasters/resources-translations/regional-support-brochures](http://qld.gov.au/community/disasters-emergencies/disasters/resources-translations/regional-support-brochures)

**Information about preparing your household for future floods and other disasters**  
[getready.qld.gov.au](http://getready.qld.gov.au)



## Further acknowledgements

*This guidance was prepared based on the learnings from the Resilient Homes Fund.*

The **Queensland Flood Resilient Homes Fund** was an initiative designed to help homeowners in eligible flood-prone areas strengthen their properties against future flooding. Established in response to severe flood events in 2022, the program provided financial assistance and expert guidance to eligible homeowners for flood-resilience improvements.

The initiative was a collaboration between the Queensland Government and the Australian Government to build stronger, more flood-resilient communities. It targeted homeowners in high-risk areas who had experienced frequent or severe flooding. By reducing damage and recovery costs, the program helped protect homes, improve safety, and enhance community resilience.

### Acknowledgment of country

The Department of Housing and Public Works would like to acknowledge Aboriginal peoples and Torres Strait Islander peoples as the Traditional Owners and custodians of this Country. We recognise their connection to land, sea, waterways and community. We pay our respects to them, their cultures and their Elders past, present and emerging.

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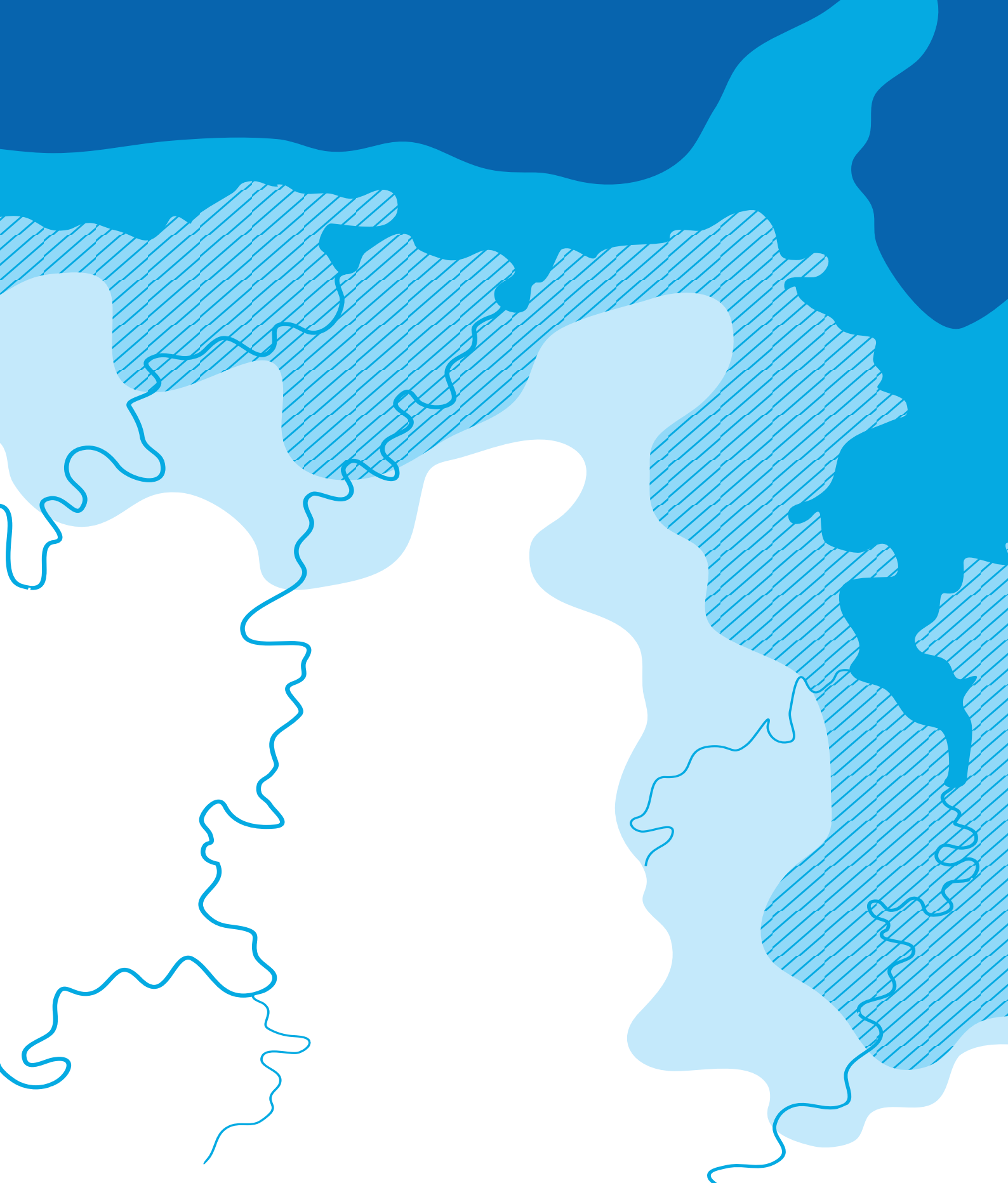
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