



Consider the location of furniture and equipment when planning outdoor areas that may be affected by creek, river or overland flow flooding.
Photo courtesy of The Courier-Mail.

Building outdoor living areas

Brisbane's sub-tropical climate lends itself to outdoor living. As most outdoor areas are considered to be non-habitable, the minimum floor levels are often lower than other property areas. This means that in the event of a flood, these areas will likely be affected by flooding first.

A common water-saving design trend is to replace large lawns and gardens with concrete or paved areas. It is important to remember that this will reduce the ability of your property to absorb rainfall during a heavy downpour, and may result in pooling of water and localised flooding.

If you are building an outdoor area (such as a patio, garage or pergola), make sure you take steps to minimise the risk of flooding. This can include building above ground level or to a habitable floor level, using water resistant materials, installing adequate drainage and arranging for an inspection by a building certifier to make sure your changes comply with Council regulations and building standards.

Be FloodWise when landscaping your property



Choose appropriate vegetation – if flooding on your property is a risk, speak with landscapers or nurseries to understand which types of plants and vegetation are most suitable for your property conditions.



Make sure retaining walls don't block overland flow – when designing outdoor areas, make sure retaining walls don't block the flow of water from drainage pipes, runoff or overland flow.



Filling – if you are using fill to build up your property foundations or garden area, ensure you choose materials that are resistant to erosion. Consult your landscaper or builder to determine what options are most suitable to your property and how the change in landscape will affect the flow of water around your property.

Caution should be taken when filling and excavating as approval from a building certifier may be required. In some instances, a development application to Council will also be required.

Be FloodWise building and renovating checklist

The impact of flooding can be traumatic. By taking the time to *Be FloodWise* when building or renovating, you can reduce the impacts of flooding on your property, your home and your family.

- ☒ Obtain a free FloodWise Property Report from Council.
- ☒ Engage a registered professional engineer to assess your property's flood risk.
- ☒ Consider flooding implications when making improvements or additions to your home.
- ☒ Engage a registered building certifier to approve all work and ensure that Council, State and Federal regulations are met.
- ☒ Do not build underneath a house unless it meets relevant building standards and required habitable floor levels.
- ☒ Choose materials that are suitable for Brisbane's sub-tropical climate and are resistant to flooding.
- ☒ As certain materials such as concrete, wood, stone and steel are either not absorbent, or less absorbent than soil, make sure that runoff from these areas is managed by your drainage and included in your design.
- ☒ Install or upgrade your property's drainage systems when you are making improvements or additions to your home.
- ☒ Ensure newly installed electricity outlets and switches are above possible flood levels.
- ☒ Keep furniture and fittings above flood levels. Flooding can destroy valuables and property and can cause costly and irreversible damage.



Photo courtesy of The Courier-Mail.

Ensure that you seek approval from suitably qualified professionals for all building and renovation works. This will ensure that your actions comply with regulations and laws.

Be FloodWise when seeking approvals

Structural building and renovation work, including any increase to your home's height or size, must comply with Council planning regulations, State and Federal building regulations and Council approval processes. For this reason it is important to engage a registered building certifier to ensure that building or renovations don't create or worsen an existing flood risk.

What other information is available?

The following information is available from Council's regional business centres and customer service centres, by phoning Council on (07) 3403 8888, or by visiting the *Be FloodWise* web pages at www.brisbane.qld.gov.au/floodwise

Publication name	Overview of contents
<i>Be FloodWise – A guide for residents</i>	This booklet provides information on: <ul style="list-style-type: none">preparing and coping with a floodchecklists and forms to assist in planning for flood preparedness.
<i>Be FloodWise – A guide for businesses</i>	This booklet provides information on: <ul style="list-style-type: none">preparing and coping with a floodchecklists and forms to assist in business planning (e.g. Flood cost estimator and emergency kit contents checklist).
<i>Now is the time to Be FloodWise</i>	This fact sheet provides useful information on: <ul style="list-style-type: none">flooding in Brisbanefrequently asked questions about floodingkey actions to take during a flood.
<i>Be FloodWise – Flooding facts for industry</i>	This fact sheet provides information on: <ul style="list-style-type: none">flooding in Brisbaneindustry specific information for property, construction, conveyancing and insurance professionals.
<i>Be FloodWise Emergency contact card</i> *	This wallet sized card can be used to record important phone numbers and policy details.
<i>FloodWise Property Report</i> *	Council can issue you with a free FloodWise Property Report. This report provides: <ul style="list-style-type: none">property-based information about flood levelshabitable floor levels for buildinginformation useful in determining flood risks associated with a particular property.
<i>Be FloodWise bookmark</i>	The bookmark has general information on flooding and a range of tips to assist in preparing your property for a flood.
<i>Be FloodWise – Buying and renting fact sheet</i>	This fact sheet provides useful information on: <ul style="list-style-type: none">determining your flood risks when purchasing a new property or renting.
<i>Brisbane City Council's City Plan 2000</i>	Council's <i>City Plan 2000</i> is available online and sets out policies and controls, including flood information, for the use, development and protection of land.
<i>Brisbane City Council's Subdivision and Development Guidelines</i>	Council's Subdivision and Development Guidelines is available online and provides guidance, including flood information, on the submission of development proposals to support the Codes contained in <i>City Plan</i> .

* only available from Council's regional business centres and customer service centres.

Be FloodWise



Building and renovating

FACT SHEET

Be FloodWise when building and renovating

Making changes to your property by building or renovating your home can be costly if it increases your property's flood risk.

Brisbane is a sub-tropical city that has evolved around its river and creeks. Historically, the city experiences high annual rainfall with a climate and topography that makes some areas susceptible to flooding.

Much of the flooding that occurs in Brisbane's suburbs relates to the many creeks and waterways that make up the landscape of our river city.

Minimising flood damage is a community-wide responsibility. Although Brisbane City Council has an important part to play, residents and businesses can lessen the effect that flooding has on their property and family, while also assisting the wider community to respond to, and recover from a flood.

Council is committed to reducing the impact of flooding by strengthening regulatory schemes such as *City Plan* and the development of a Flood Code. The *Be FloodWise* campaign aims to raise awareness amongst all members of the community to assist in personal flood management.

This fact sheet provides important information to help you understand your flood risk, and the design and renovating decisions that will minimise the impact of flooding on your property.

Start by doing your homework

Whether you are building or renovating, it's important to have a full understanding of your property's flood history.

Start by obtaining a copy of the FloodWise Property Report issued free of charge by Brisbane City Council. The FloodWise Property Report provides property-based information about flood levels, ground levels, habitable floor levels for building and other useful information in determining flood risks associated with a specific property. For more detailed information, see *Be FloodWise* when designing your home.

Get a BiMap flood search for your local area by visiting your nearest Council customer service centre (an administration fee applies). The map will show useful information relating to a property.

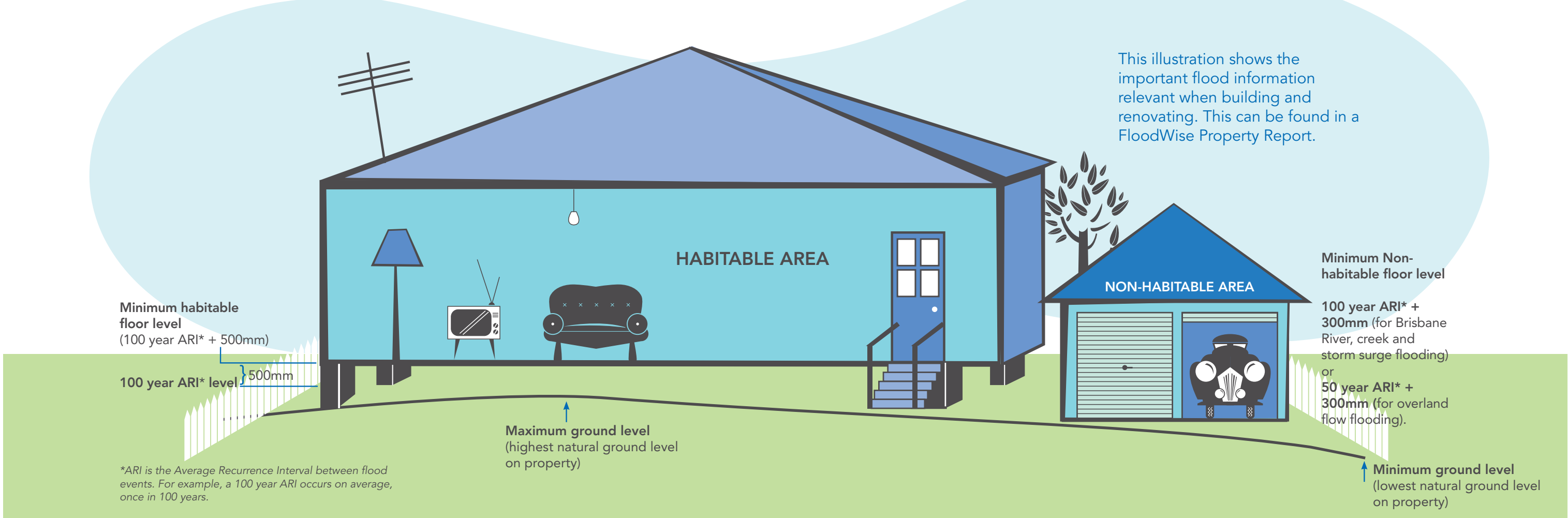
Talk to people who have lived in the area a while. Local knowledge often provides insights into areas that flood quickly, and stormwater and local flooding issues.

In addition to Council resources, you can also engage a surveyor or registered professional engineer to assess your property's flood risks, particularly overland flow paths and flood hazards that may not be identified in a FloodWise Property Report.

Be FloodWise tip

The last thing you expect during a drought is flooding, however overland flow and creek flooding can still occur during summer storms, and heavy or prolonged rainfall.





Be FloodWise when designing your home

Considering flood risk at the initial design stage can save you time and money. There are two important areas to consider – your property’s flood history and its natural characteristics.

Understand your property’s flood history

Council’s most comprehensive record of flood information is available in a FloodWise Property Report. This free report from Council provides flood levels specific to your property.

Flood information helps architects or builders to design a home with appropriate floor levels in accordance with building standards and Council requirements, and to protect you from future flooding.

Other things to consider:

Waterway corridor – properties located within, or near a waterway corridor may have land use restrictions such as areas that cannot have permanent structures built (e.g. house, garage, swimming

pool). If your property is affected by a waterway corridor, it is important to recognise that plans need to be developed in accordance with Council’s *City Plan* codes.

Waterway corridors help to manage runoff and flood water. When flooding occurs, the capacity of the waterway may be exceeded and neighbouring properties affected. Waterway corridors also maintain and enhance water quality and biodiversity, prevent damage to infrastructure by restricting development, especially where a flood risk exists, and provide recreation facilities such as walkways and bikeways.

Habitable floor levels - the level used for building, development and subdivision planning purposes. This is the minimum height that habitable areas of a property must be built above and is usually equivalent to a one in 100 year ARI flood plus 500mm when subject to river, creek, waterway or storm surge flooding.

Habitable areas are those areas where people live (generally including bedrooms, living area and kitchen). Some properties in

Brisbane have declared habitable floor levels at which habitable areas of a home must be built. It is essential that this be complied with to avoid legal ramifications and future flooding. Refer to the illustration above for a visual explanation of these terms.

House enclosed underneath - A popular building and renovating trend in Brisbane has been to extend a house by building in underneath. Many older properties on stumps are not legal height underneath, as under past planning standards, homes were built on stumps to allow for excess stormwater to flow over land, through the yard and under the house. Current town planning standards ensure that in newer subdivisions where stormwater exceeds pipe capacity, excess stormwater flow is initially carried in the roadway instead of through properties. This can reduce potential flooding of residences.

In older areas of Brisbane in particular, excess stormwater will still flow through people’s properties. Homes that were built on stumps, may have been done so to raise the habitable areas of the home above possible flood

waters. If you are looking to extend your property by building-in underneath Council recommends that you investigate the flood risks of the property.

For further information refer to Council’s *City Plan 2000* and Council’s *Subdivision and Development Guidelines*.

Look at your property’s natural characteristics

Slope, elevation and soil type are natural property characteristics that influence flood risk. Sloping, low lying land and properties with poor natural drainage are often subject to localised flooding from overland flow runoff and/or ponding. Building or renovating on this type of land can change the natural flow of water, and in turn can create a flood hazard.

The FloodWise Property Report does not include information on overland flow flooding. It is essential this is assessed by a registered professional engineer during the design phase to make sure allowances are made and flood risk is not increased.

Overland flow

Overland flow occurs when stormwater drains exceed capacity and water flows through properties, or when there is no stormwater drainage system and the stormwater flows over land. If construction occurs within an overland flow path, it will obstruct the natural flow of water which could worsen the impact of flooding on your property and your neighbours. If flooding to a neighbouring property is worsened by your actions, you may be liable for costs incurred.



Do not build underneath a property or over easements unless all regulations are met. Interfering with the natural flow of water, particularly on a sloped allotment could cause flooding. Photo (right) courtesy of The Courier-Mail.

Be FloodWise tip

It is essential that you consider the impact that any changes to your property might have on your house and contents insurance. Some types of flooding are not covered by general insurance - another reason to Be FloodWise when building or renovating.



Be FloodWise when building your property

By taking the time to *Be FloodWise* when building, you can make sure your new home or renovations are protected from flooding.

Choose water resistant materials to reduce the impacts of flooding. Here are some other useful tips:

Garage, carport, shed flooring	<ul style="list-style-type: none">Try to avoid any product that will wash away, such as gravel.Consider a concrete slab on the ground or a suspended reinforced concrete slab to allow flood waters to flow underneath. Alternatively, use permeable paving.
Garage, carport, shed walls	<ul style="list-style-type: none">Try to avoid solid walls such as block or brick.Consider partially open walls such as slats to allow flood waters to flow through.
Internal floors	<ul style="list-style-type: none">Try to avoid any product which will rot if wet. If considering timber floors, ask your supplier about the properties of your chosen timber.Consider tiles, rubber sheets or lino flooring. Seek advice on adhesives as their properties and resistance to water will vary.
Wall structure	<ul style="list-style-type: none">The internal walls of most new homes consist of gyprock or plaster board. Once wet these walls will be damaged, usually beyond repair and will need to be replaced.Consider solid brickwork or water resistant materials. Seek advice or refer to manufacturers’ specifications for individual material properties.
Doors	<ul style="list-style-type: none">Internal doors are usually lightweight and made of materials that are easily damaged if wet and will need to be replaced.Consider solid panel doors with waterproof adhesives, flush doors with marine ply filled with closed cell foam, painted metal construction doors or doors with an aluminum or galvanised steel frame.
Kitchen, bathroom and laundry cupboards	<ul style="list-style-type: none">Avoid materials which retain water or will ruin if they become wet e.g. chipboard.Consider materials such as solid timber or marine ply. Seek advice and refer to manufacturers’ specifications for individual material properties.
Nails, bolts, hinges and fittings	<ul style="list-style-type: none">Avoid fittings which will rust, ruin, or rot when wet.Consider brass, nylon or stainless steel, removable pin hinges, hot dipped galvanised steel wire nails or similar.
Underneath enclosure	<ul style="list-style-type: none">Check before building underneath a house as it may have initially been raised to allow for stormwater to flow underneath.Ensure that all relevant building standards are met prior to building or enclosing underneath a property.



Ensure all fittings and outlets are above possible flood levels. Considering this early on avoids a costly retrofit later on. Photo courtesy of The Courier-Mail.

Building over stormwater drains and easements

Stormwater pipes and/or easements in the vicinity of, or within a property may mean it is in an overland flow path. Overland flow paths are a part of the above ground stormwater network.

Easements for drainage purposes are common in Brisbane and are generally conditioned to protect the natural flow of water from obstruction. An easement may also grant rights for a person or organisation to access the land to maintain drainage infrastructure and facilities or to cross over land to gain access to other streets or properties.

If you have located either an easement or a stormwater drain on your property and wish to build over or in close proximity to it, Council approval is required. Further information is available in Council’s Subdivision and Development Guidelines or by contacting Council on (07) 3403 8888.