

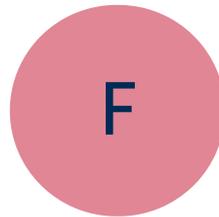
 Sample house, Sample street, Sample town, NSW



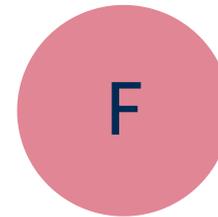
## ClimateIndex™ property risk rating

An assessment of the overall risk at your property from evolving climate-related perils.

Today's risk



30 year risk



[Full details page 2](#)



### Flooding

Today's risk



30 year risk



[Full details page 4](#)

### Bushfires

Today's risk



30 year risk



[Full details page 11](#)

### Coastal erosion

Today's risk



30 year risk



[Full details page 14](#)



## Flooding

### Next steps for consideration

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- Minimum habitable floor levels and ground levels may have been specified as part of the development of the property. Where available, further information on flood related development controls can be provided in the Section 10.7 (2 & 5) planning certificate.
- Review whether any established mitigation measures designed to reduce the flood risk have been incorporated into the property. If such measures are present, their performance and condition should be reviewed by an appropriately qualified person.
- Various forms of flood resistance and resilience measures may be considered to mitigate the risk of flooding to the property.
- Elevated flood risk on the property will likely impact the availability and/or cost of the buildings and contents insurance policies.
- An investigation to fully understand the implications should be undertaken prior to completion. This should include the review of the limitations and omissions of policies available for the property from a few different insurance providers. 'Product Disclosure Statement' of any policies offered should be thoroughly reviewed as this can also have significant bearing on the level of protection offered.
- The flood risk and the associated availability of insurance could have a significant bearing on the valuation and available lending terms for the property.
- You should confirm with your lender or mortgage broker as to the implications to the mortgage offer for the property prior to transaction. Ensure the flood risk has also been considered by the surveyor when valuing the property.

### Full Flooding assessment on [page 4](#)



## Bushfires

### Next steps for consideration

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- Elevated bushfire risk on the property will likely impact the availability and/or cost of the buildings and contents insurance policies for the property. Further advice could be sought from a relevant specialist.
- An investigation to fully understand the implications should be considered prior to completion. Some aspects of fire damage can be omitted from the terms of the coverage of the policy offered (e.g. smoke or soot damage, temporary accommodations etc.). Additionally, policies are based on an average rebuild costs but these costs can be significantly higher in

bushfire prone areas and as such might not be sufficient to cover costs of updated building codes to minimise bushfire risk.

- The bushfire risk and the availability of insurance could have a bearing on the terms of the mortgage. You should confirm with your lender or mortgage broker as to the implications of the mortgage offer for the property prior to transaction.
- Check to see if any bushfire protection measures have been incorporated into the design of the property.
- Investigate the viability and cost of installing various forms of bushfire protection to build additional resilience into the property. The NSW Rural Fire Service provides [examples of measures](#) you could take.
- Prepare a [bushfire survival plan](#).
- Another tool to help you better understand the risk across the community and how to prepare could be available within a Community Protection Plan.
- This assessment is intended to provide an indication of the risk to property for due diligence purposes only. Clear and up to date advice on bushfire risks can be found on NSW Rural Fire Service website, which should be followed at all times.

Full Bushfire assessment on [page 11](#)



## Coastal erosion

### Next steps for consideration

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- No further actions recommended prior to transaction.

Full Coastal erosion assessment on [page 14](#)



## Flooding

Groundsure has assessed flood risk by considering river, tidal and surface water flood risks.

### Today

Very High

There is very high risk of flood events occurring that could adversely affect the value, insurability, availability of finance and/or development potential of a standard property. The main drivers for the very high risk are river flooding and tidal flooding.

### 30 years

Very High

An assessment of very high risk from flooding is retained on the property. This takes into account modelled future weather simulations associated with a climate scenario where greenhouse gas emissions continue to grow without mitigation (RCP8.5).

### FloodScore™ Insurance Rating

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The FloodScore™ gives an indication of the potential cost of damage that could be incurred to an average property based on the flood risk. This approach is used by insurers to assess the risk and set their premiums.

FloodScore™ is calculated based on a different methodology to Groundsure's overall assessment and should be interpreted as an independent assessment as an indication of the insurability of the property.

#### FloodScore™ Insurance Rating

Very Low

Very Low indicates a level of flood risk that should not have any impact on the provision of flood cover for the property.

### Next steps for consideration

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For recommendations of next steps, please refer to Groundsure's expert analysis on [page 2](#)

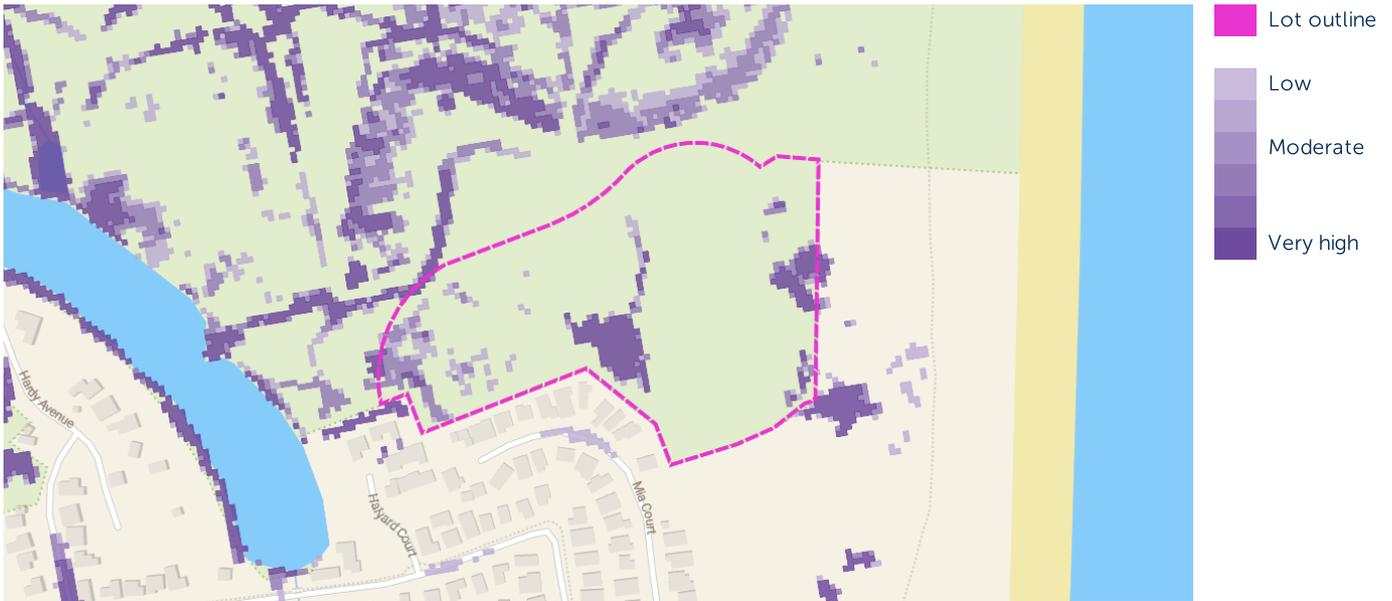


## Flooding: Surface water flooding analysis

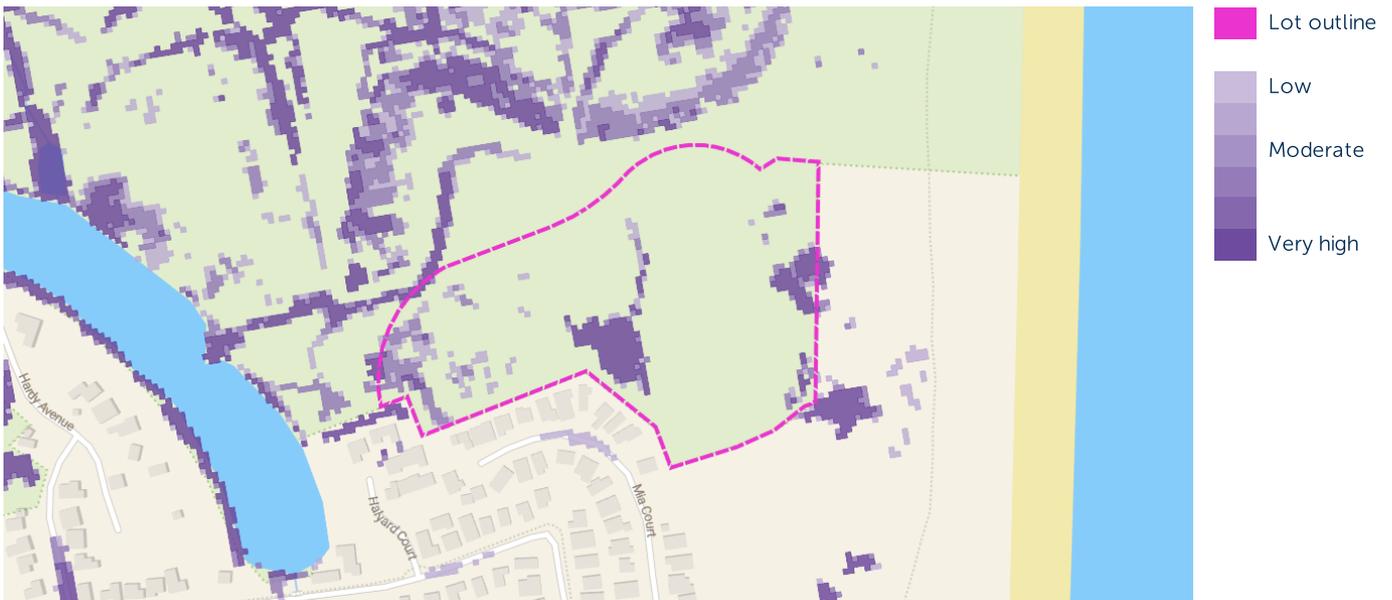
High

Surface water flooding occurs when the source of the flood is from extreme rainfall, independent of an overflowing body of water.

### Today's risk



### 30 year risk



## Today

A high risk of surface water flooding has been assessed on the property. Flood models indicate that a standard property could be impacted by an event that has a 5% chance of occurring in a year (and sometimes referred to as 1 in 20 return period). Such an event is modelled to have a flood depth between 0.2m and 1m at the property.

## 30 years

An assessment of high risk from surface water flooding is retained on the property. This takes into account modelled future weather simulations associated with a climate scenario where greenhouse gas emissions continue to grow without mitigation (RCP8.5).

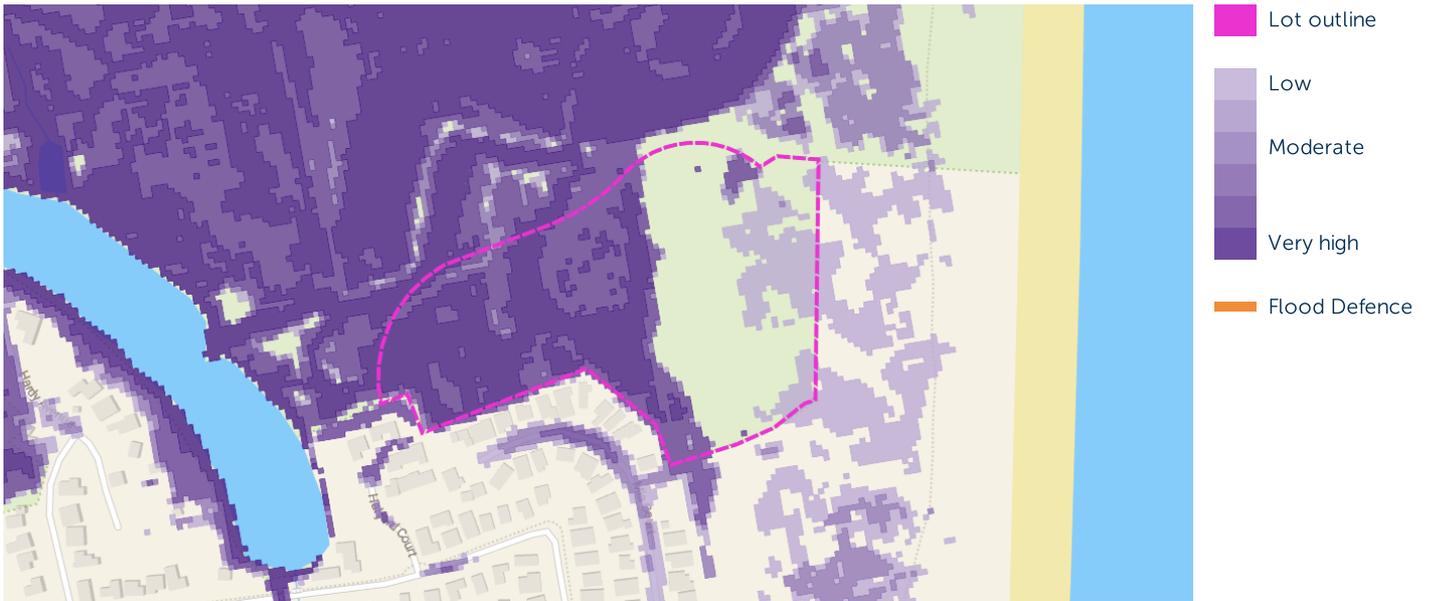


## Flooding: River flooding analysis

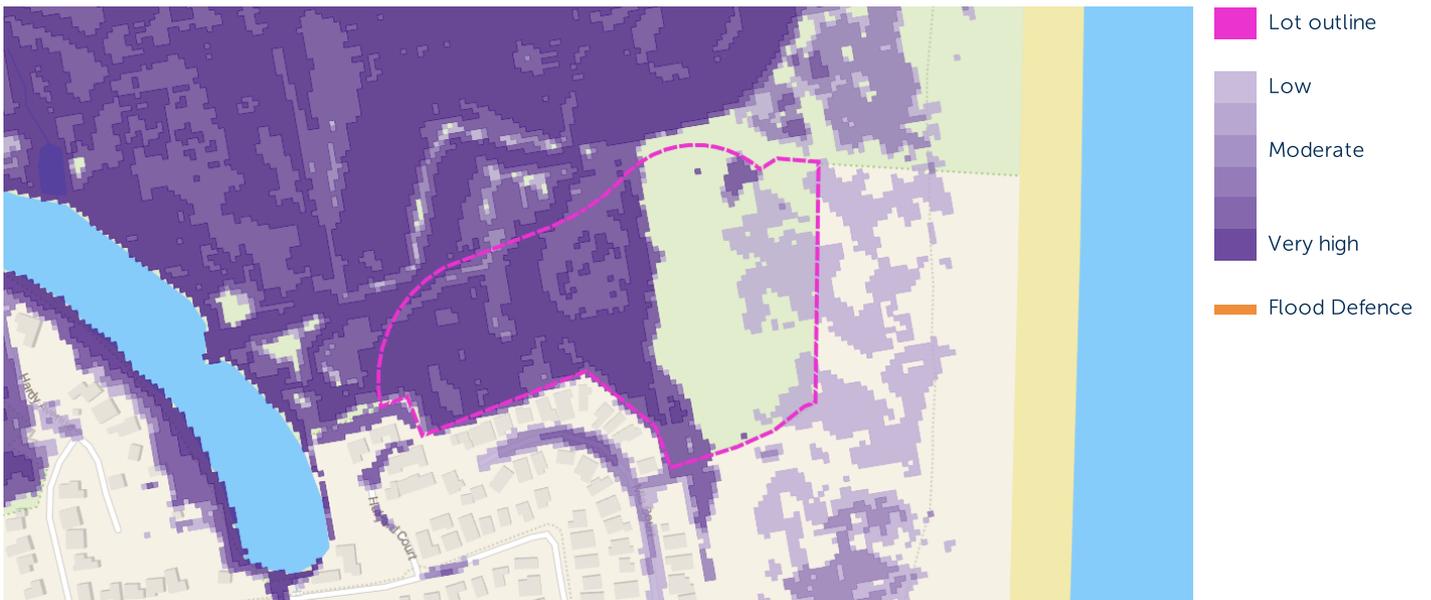
**Very High**

River floods occurs when the source of the flood is from a body of water that overflows, such as a river, lake or stream.

### Today's risk



### 30 year risk



## Today

A very high risk of river flooding has been assessed on the property. Flood models indicate that a standard property could be impacted by an event that has a 5% chance of occurring in a year (and sometimes referred to as 1 in 20 return period). Such an event is modelled to have a flood depth greater than 1m at the property.

This assessment considers the protection offered by flood defences in the area.

## 30 years

An assessment of very high risk from river flooding is retained on the property. This takes into account modelled future weather simulations associated with a climate scenario where greenhouse gas emissions continue to grow without mitigation (RCP8.5).

This assessment considers the protection offered by flood defences in the area.

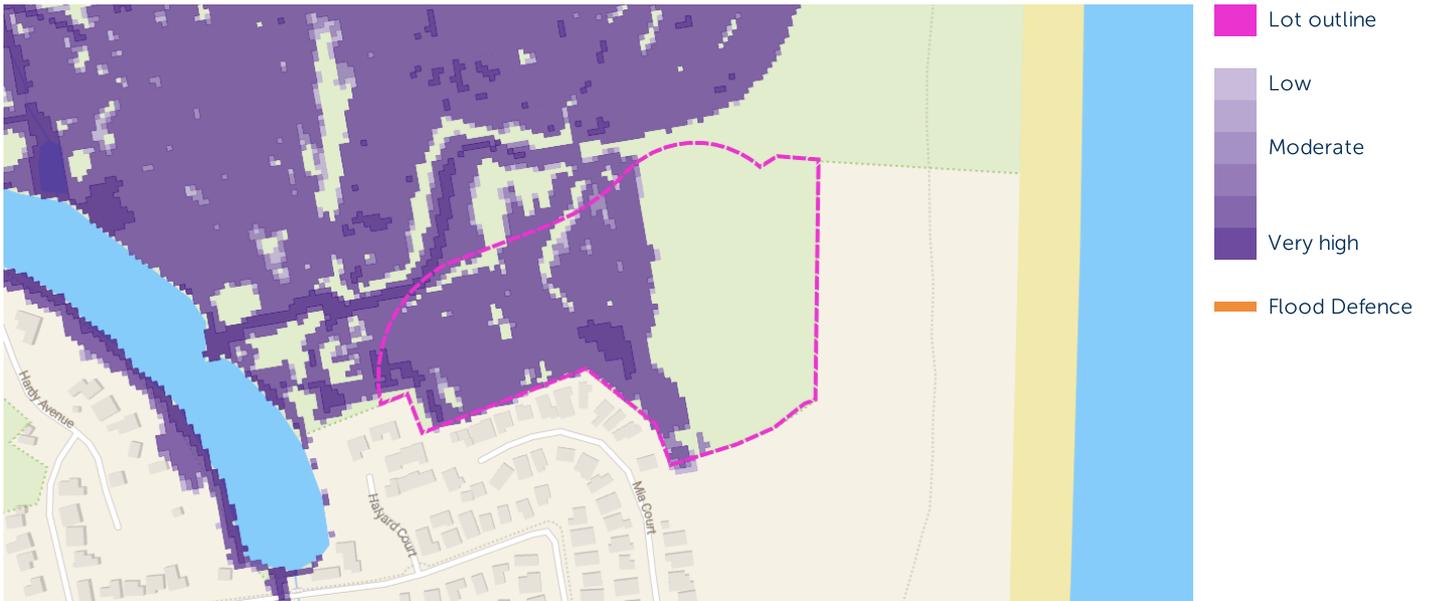


## Flooding: Tidal flooding analysis

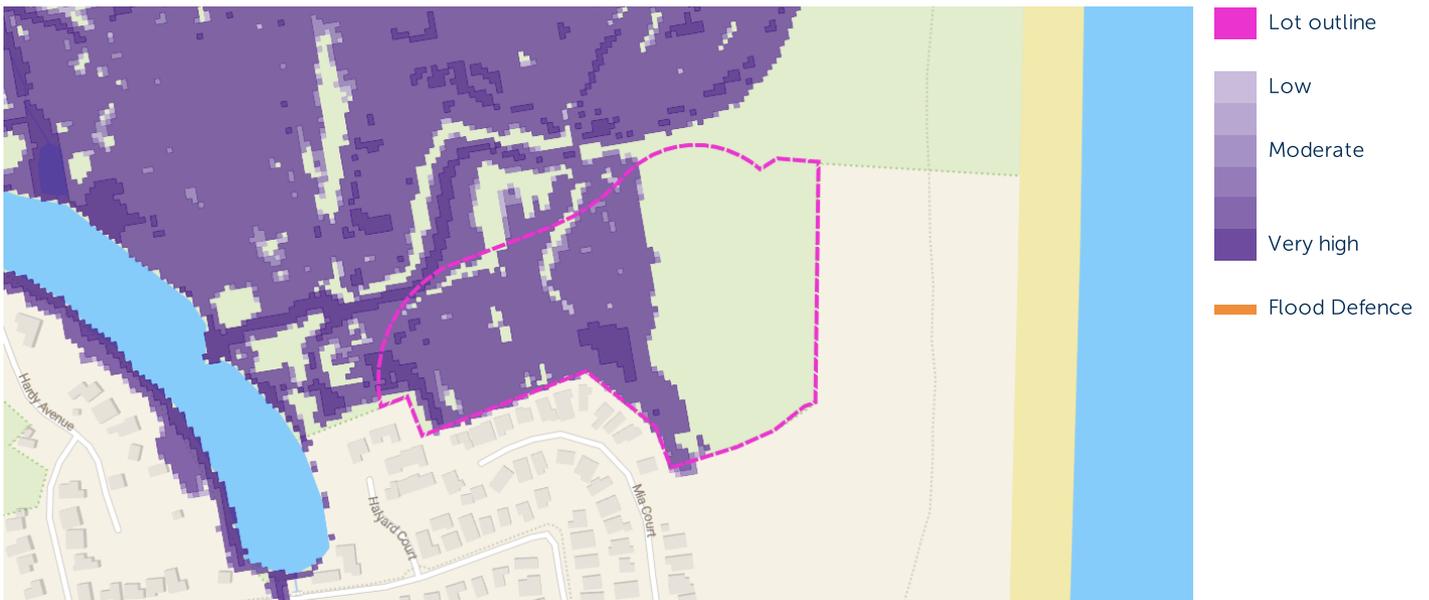
Very High

Tidal flooding occurs when low lying land is flooding with seawater during periods of particularly high tide.

### Today's risk



### 30 year risk



## Today

A very high risk of tidal flooding has been assessed on the property. Flood models indicate that a standard property could be impacted by an event that has a 5% chance of occurring in a year (and sometimes referred to as 1 in 20 return period). Such an event is modelled to have a flood depth greater than 1m at the property.

This assessment considers the protection offered by flood defences in the area.

## 30 years

An assessment of very high risk from tidal flooding is retained on the property. This takes into account modelled future weather simulations associated with a climate scenario where greenhouse gas emissions continue to grow without mitigation (RCP8.5).

This assessment considers the protection offered by flood defences in the area.



## Bushfires

Bushfires are uncontrolled fires that burn through wild vegetation such as forests and grasslands.

Our 30 year model looks at predicted weather patterns and climate change data to understand how bushfire prone land near the property site may be impacted.

The risk to the property is calculated by analysing multiple risk factors:

Bushfire prone land

Distance to bushfire prone land

Weather

Lightning history

Fire history

Urbanity

Elevation

### Today

Moderate - High

There is a moderate to high risk of bushfire events occurring that could adversely affect the value, insurability, availability of finance and/or development potential of a standard property.

### 30 years

Moderate - High

When taking into account modelled changes in regularity and severity of fire weather in the area caused by climate change, a moderate to high bushfire risk is retained at the property.

### Next steps for consideration

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For recommendations of next steps, please refer to Groundsure's expert analysis on [page 2](#)



## Bushfire prone land

**Bushfire prone land (BFPL)** is land that has been identified by local councils which may be affected by bushfires.

Planning for Bush Fire Protection requires certain protective measures to be met in order to make a development within BFPL less likely to suffer damage or destruction from bushfires. In order to provide adequate protection from bushfires, it may be necessary to modify the style, construction material or siting of a building. The Bushfire Attack Level (BAL) affects these construction requirements and as part of the development application process, the BAL will need to be confirmed in a written report.



The risk of bushfire is rated based on the areas of vegetation. These areas are categorised:

### Category 1

The most flammable and likely to cause large fires with lots of embers.

It includes forests, woodlands, tall and short heaths, forested wetlands, and timber plantations.

### Category 3

Areas of middle risk.

Includes grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrub lands.

### Category 2

Areas of least risk due to lower combustibility.

It includes rainforests and smaller vegetation areas.

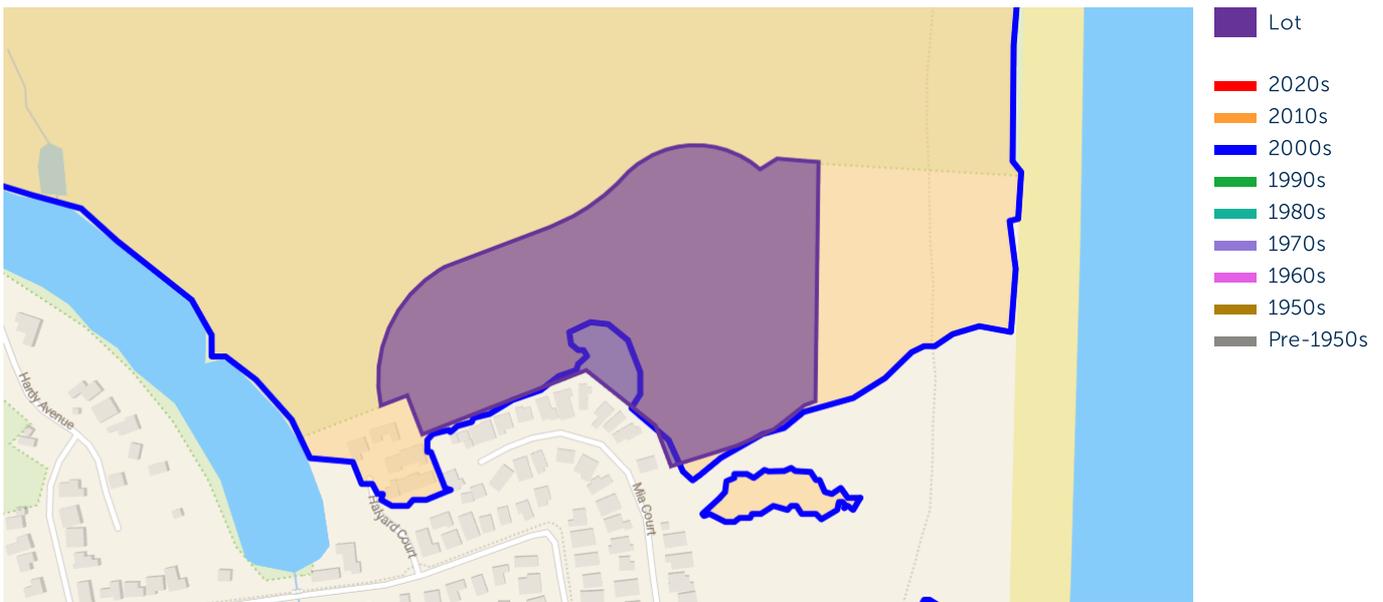
To find out more general information about bushfire prone land please visit [Bush fire prone land](#).



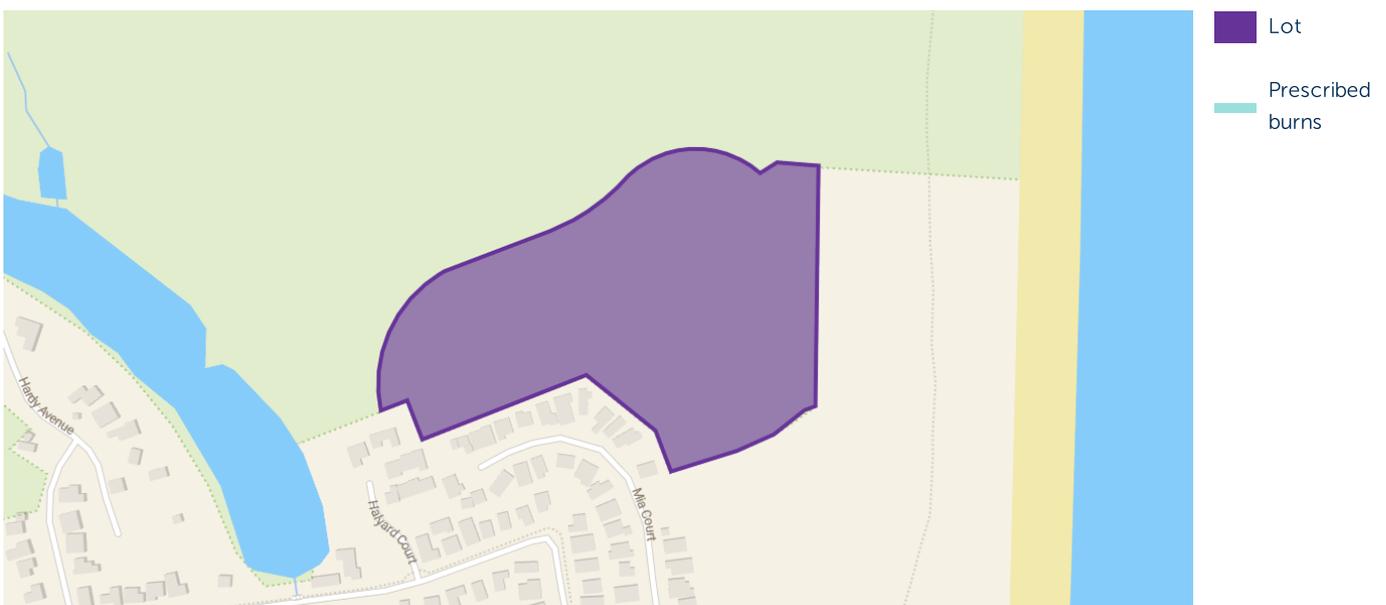
## Fire history

The analysis of historical burns in the area helps us understand how likely it is another wildfire may occur. Below are maps of wildfires and prescribed burns (controlled fires to limit future burns) in proximity to the property boundary.

### Wildfires



### Prescribed burns





## Coastal erosion

Coastal erosion is the breakdown and removal of coastal land, sediment, and rock due to the chemical and abrasive action of water and waves. When erosion rates are high, coastal properties can be at risk of catastrophic cliff collapse.

Our 30 year model looks at the vulnerability of the coastline given the likely impact from climate change factors such as sea level rise and increased storm activity. This could impact the erosion rates observed in the area surrounding your property.

The risk to the property is calculated by analysing multiple risk factors:

Distance to coastline

Historical erosion activity

Shoreline fabric

Shoreline form

Weather

### Today

**Negligible**

The property is not located close enough to the coastline to be vulnerable to coastal erosion.

### 30 years

**Negligible**

The property is not located close enough to the coastline to be vulnerable to coastal erosion.

### Next steps for consideration

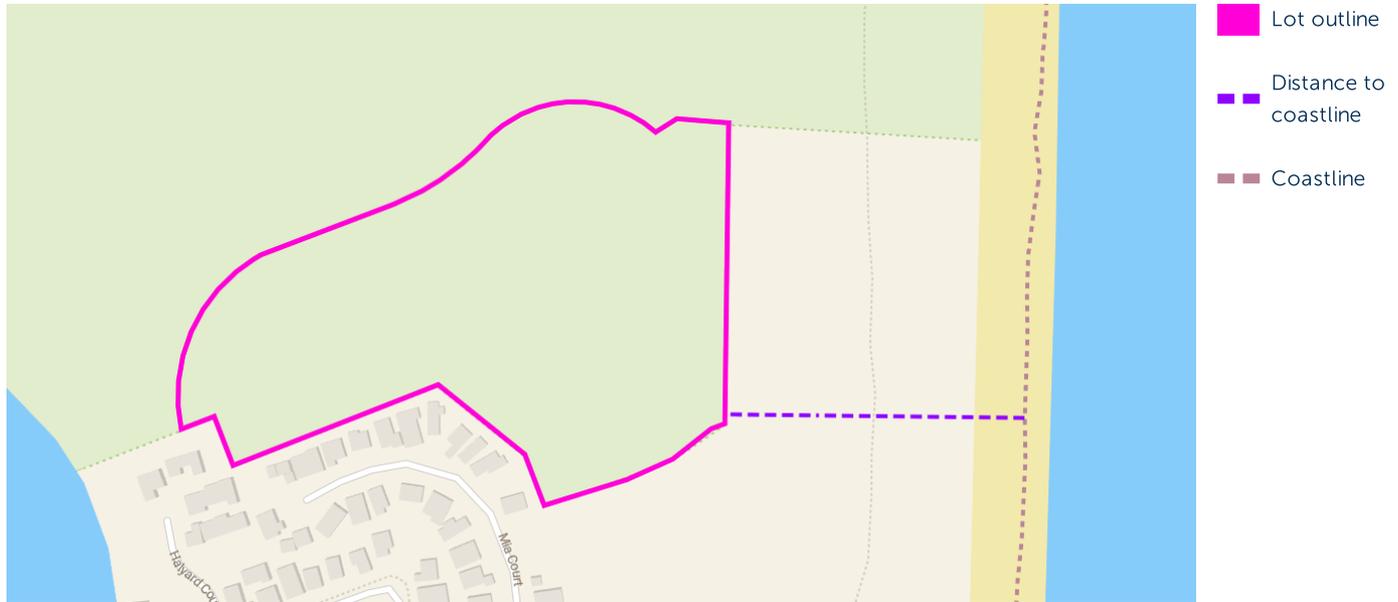
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For recommendations of next steps, please refer to Groundsure's expert analysis on [page 2](#)



## Coastal erosion

Groundsure have measured this property to be **218 metres** from the coastline.



Please note, the coastline is defined by the mean high tide and may not align with the background map.

### Material

The material composition of the local coastline being assessed is considered to be **more vulnerable** to accelerated coastal erosion in the future due to the impacts of ongoing climate change.

### Slope

The slope of the local coastline being assessed is considered to be **more vulnerable** to accelerated coastal erosion in the future due to the impacts of ongoing climate change.

### Climate impact

These impacts include the increased frequency and intensity of storms as well as rising sea levels, which have greater erosive impacts on more vulnerable shorelines.

Considering the relevant local factors of observed historic erosion rates, coastline material, coastline slope, and the property's distance to the coastline, Groundsure considers that coastal erosion presents a **negligible risk** to the property today, and a **negligible risk** to the property in 30 years.

## General information

Our ClimateIndex™ report projects the most likely changes in physical risks from flooding, bushfires, and coastal erosion based on current knowledge. Climate change can have a significant impact on property, which may increasingly be considered by lenders if you are arranging a mortgage, as well as by insurers. ClimateIndex™ provides ratings that indicate potential physical risks (loss and damage to property), which in turn could affect the future resale value of a property.

The modelling of climate change to predict its impact on a specific area is a complex and challenging subject. We utilise market-leading data in our assessments; however, this does not guarantee the manifestation or absence of these risks in the future. The methodology and input parameters will evolve over time, so the forecasted assessment should only be used as an indicator of risk based on the current modelling.

Please note that while we strive to provide accurate and reliable information, the projection of climate change impacts is subject to uncertainties and limitations inherent in such analyses. Consequently, it is important to regularly update your knowledge and consider additional factors when making decisions regarding property investments or insurance.

We recommend consulting with relevant experts and authorities to ensure a comprehensive understanding of the potential risks and their implications for your specific property.

### Data liability statement

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It is important to note the terms and conditions under which the report was sold, and in particular, whilst Groundsure makes every effort to ensure that data is sourced from reliable providers, it is unable to guarantee that the information is accurate, complete or up to date. Groundsure shall not be liable for any losses or damages incurred by the client or beneficiary, including but not limited to any losses or damages that arise as a result of any error, omission or inaccuracy in any part of the Groundsure Materials where such part is based on any Third Party Content or any reasonable interpretation of Third Party Content.

### Groundsure risk assessments

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Groundsure's ClimateIndex™ rating is an assessment of the property's physical risk from hazards that may be exacerbated by climate change. It considers the following hazards only:

- Surface water flooding
- River flooding
- Tidal flooding
- Bushfires
- Coastal erosion

These hazards are assessed using a prudent approach of highlighting the maximum risk present at the property. Assessments are provided for the present day and medium term (c.30 years) only.

The banding applied to a property reflects its current and future risk from the hazards identified above. If a property's banding does not change from the present day to the medium term, the property's risk profile is less likely to be affected by climate change, though risks may still be present. Any increase in the banding of a property indicates that the property has a greater potential to be affected by climate change.

### ClimateIndex™ rating

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We have provided a property-level ClimateIndex™ rating, which best illustrates the level of risk observed at the property:

- A - There is a low risk detected at the property, which should not impact the property transaction.
- B - There is a low to moderate risk detected at the property, which should not impact the property transaction.
- C - There is a moderate risk detected at the property, which could impact the property transaction. There is a risk to the property that you should be aware of.
- D - There is a moderate to high risk detected at the property, which could impact the property transaction. There is a risk to the property that you should be aware of.
- E - There is a high risk detected at the property, which may significantly impact the property transaction. There is a risk to the property that you should be aware of, and further assessment may be required.
- F - There is a very high risk detected at the property, which may significantly impact the property transaction. There is a risk to the property that you should be aware of, and further assessment may be required.

### Risk assessments

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For each of the risks of flooding, bushfires, and coastal erosion, Groundsure has provided an assessment using a 7-tier scale, which should be interpreted as follows:

- Negligible risk - There is a very minor risk detected at the property, which should not impact the property transaction.
- Low risk - There is a low risk detected at the property, which should not impact the property transaction.
- Low to moderate risk - There is a low to moderate risk detected at the property, which should not impact the property transaction.
- Moderate risk - There is a moderate risk detected at the property, which could impact the property transaction. There is a risk to the property that you should be aware of.
- Moderate to high risk - There is a moderate to high risk detected at the property, which could impact the property transaction. There is a risk to the property that you should be aware of.

- High risk - There is a high risk detected at the property, which may significantly impact the property transaction. There is a risk to the property that you should be aware of, and further assessment may be required.
- Very high risk - There is a very high risk detected at the property, which may significantly impact the property transaction. There is a risk to the property that you should be aware of, and further assessment may be required.

## Climate change data

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Representative Concentration Pathways (RCPs) are a set of projections of the impact of climate change under a set of assumptions about the economic, social and physical changes to our environment. These are produced using the latest UKCP18 climate prediction models. All flood models in this report utilise RCP8.5 projections which are the most commonly used and also provide the most prudent assessments based on the greater impacts of climate change.

The Special Report on Emissions Scenarios (SRES) encompasses a previous set of projections that were based on the UKCP09 climate prediction models. All bushfire impacts have been modelled using the SRES A1FI scenario, the SRES scenario most closely aligned with the RCP 8.5 scenario's emissions, atmospheric CO2 concentrations, and temperature changes throughout the 21st century. The A1FI scenario (assuming a high-coal and high-oil-and-gas future) is the most appropriate scenario to utilise in property assessments, and this also allows for the most conservative approach to assessing the risk to a property.

## Limitations

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Address Data - NSW Spatial Services

- Lots (Property)

The Lots NSW Cadastre data has been sourced from the State Government of NSW Department of Spatial Services (DCS) 2023 under the Creative Commons Licence. Copyright is retained by the supplier.

Basemaps - Open Street Map (OSM)

- Open Street Map (OSM)

The background mapping has been sourced from OpenStreetMap® under the Open Data Commons Database Licence. Copyright is retained by the supplier ([OpenStreetMap](https://openstreetmap.org)).

Please visit [groundsure.com/au-climateindex-limitations](https://groundsure.com/au-climateindex-limitations) and [groundsure.com/au-climateindex-methodology](https://groundsure.com/au-climateindex-methodology) for further information.

## Data supplier statements

### Ambiental

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This data is sourced from Ambiental Risk Analytics, who retain copyright over the material.

### Bushfire today

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The NSW Bushfire Prone Land data has been sourced from the NSW Rural Fire Service under the Creative Commons Licence. Copyright is retained by the supplier.

The NSW Fire Extent and Severity Mapping data has been sourced from the NSW Department of Planning and Environment under the Creative Commons Licence. Copyright is retained by the supplier.

The NPWS NSW Fire History data has been sourced from the NSW Department of Planning and Environment under the Creative Commons Licence. Copyright is retained by the supplier.

### Bushfire 30 years

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The Risk Frontiers FireAus Climate data has been sourced from Risk Frontiers Ltd. Copyright is retained by the supplier.

The NARCLiM Forest Fire Danger Index change data has been sourced from the NSW Department of Planning and Environment under the Creative Commons Licence. Copyright is retained by the supplier.

### Coastal erosion today

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The Australia Smartline data has been sourced from Geoscience Australia under the Creative Commons Licence. Copyright is retained by the supplier.

### Coastal erosion 30 years

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The DEA Coastlines data has been sourced from the Digital Earth Australia under the Creative Commons Licence. Copyright is retained by the supplier.

### GNAF

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The GNAF-CORE points data has been sourced from PSMA Australia Limited trading as Geoscape Australia under the Open Licence. Copyright is retained by the supplier.

### Mapping

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The background mapping has been sourced from OpenStreetMap® under the Open Data Commons Database Licence. Copyright is retained by the supplier.

## Glossary

Term	Description
Accretion	Coastline accretion refers to the natural process by which sediments, such as sand, accumulate and build up along the coastline, leading to an expansion of the land area. It occurs through various mechanisms including wave action, tidal currents and sediment deposition, contributing to the gradual widening of the coastal zone.
Bruun rule	A formula developed in the 1950s for estimating the magnitude of retreat of a sandy shoreline in response to changes in sea level. It is commonly used to predict the impacts of sea level rise on coastal erosion rates. However, its validity has been questioned in academic literature as 'several assumptions behind the Bruun Rule are known to be false and nowhere has the Bruun Rule been adequately proven'.
Bushfire	A type of wildfire that burns through wild vegetation like woodland, scrubland, grassland or savannahs. These fires are unpredictable and difficult to control.
Bushfire prone land (BFPL)	Land that has been designated as being able to support a bush fire, or is subject to bush fire attack by the local council.
Coastal erosion	Coastal erosion refers to the gradual or sudden loss of land along a shoreline due to natural processes such as waves, tides and currents. It involves the wearing away of coastal features, such as beaches, cliffs, and dunes, and the retreat of the shoreline. Coastal erosion can result in the loss of valuable coastal ecosystems, infrastructure, and property. It is often influenced by factors like sea level rise and human activities.
Coastal Progradation	Coastal progradation refers to the natural process of landward extension or growth of a coastline over time. It occurs when sediment, such as sand or gravel, is deposited along the shoreline causing the coastline to advance seaward. Coastal progradation can be influenced by factors like sediment supply, wave energy, and sea level changes. It can result in the formation of new land, including beaches, spits, and barrier islands.

DEA	Digital Earth Australia is an initiative that harnesses satellite imagery and geospatial data to provide valuable insights into the Australian landscape. It offers a range of products and tools that enable users to monitor changes in land cover, vegetation health, water resources, and other environmental factors. Digital Earth Australia contributes to informed decision-making in areas such as agriculture, urban planning, natural resource management, and disaster response.
Elevation	In this report elevation relates to the relative height of a feature above (or below) sea level.
Fabric	The dominant material constituents of the coastline. Generally sitting on a continuum from hard to soft constituents, implying differing erodibility or mobility.
Fire history	Fire history, the ecological science of the study of the history of wildfires, is a subdiscipline of fire ecology. Patterns of forest fires in historical and prehistorical time provide information relevant to the pattern of vegetation in modern landscapes.
Flood defences	Structures such as dams and artificial channels, built to protect an area from flooding.
Flooding	Overflow of water that submerges land that is usually dry.
Form	The dominant profile and steepness of the coast, implying differing potential responses to coastal processes. Steeper coastlines are more susceptible to erosion, whereas shallow coastal profiles are more susceptible to inundation from sea-level rise.
Geomorphology	Coastline geomorphology refers to the physical features and landforms that make up the coastal area of a region. It consists of the shape, structure, and evolution of coastlines; including the formation of beaches, cliffs, spits, bays, and other coastal landforms.
Historical erosion activity	Historic loss or displacement of land, or the long-term removal of sediment and rocks along the coastline due to the action of waves, currents, tides, or other weather impacts.

Lightning history	Historic lightning event where an electric discharge took place between the atmosphere and the ground.
Lot	Tract or parcel of land owned or meant to be owned by an owner.
Merged coastline	A combination of the 2021 DEA coastline and the Smartlines coastline.
Prescribed burns	A controlled or prescribed burn, also known as hazard reduction burning, backfire, swailing, or a burn-off, is a fire set intentionally for purposes of forest management, fire suppression, farming, prairie restoration or greenhouse gas abatement.
rate_time	Digital Earth Australia erosion rate points annual rates of change (in metres per year) calculated by linearly regressing annual shoreline distances against time, excluding outliers. Negative values indicate retreat and positive values indicate growth.
Representative Concentration Pathways (RCPs)	A method for capturing those assumptions within a set of scenarios. The conditions of each scenario are used in the process of modelling possible future climate evolution.
Return period	A return period, also known as a recurrence interval or repeat interval, is an average time or an estimated average time between events such as, floods, landslides, or river discharge flows to occur.
River flooding	A fluvial or river flood occurs when the water level in a river, lake or stream rises and overflows onto the neighboring land.
Sediment	Sediment is a naturally occurring material composed of rock that has been broken down by processes of weathering and erosion, and is subsequently transported by the action of wind and water.
Shoreline form	A feature of land which is created by coastal erosion.
sig_time	Significance (p-value) of the linear relationship between annual shoreline distances and time. Small values (e.g. p-value < 0.01 or 0.05) may indicate a coastline is undergoing consistent change through time.

Smartlines	Geoscience Australia dataset containing data on coastlines setting and geomorphology. Smartline is a GIS line map format used for capturing diverse coastal data into a consistently classified map. It enables the creation of a detailed national coastal geomorphic map in Australia, which aids in assessing vulnerability to sea level rise and other climate change-related hazards. Smartline simplifies data assimilation and provides a user-friendly format for extracting required information quickly.
Stability	The susceptibility or sensitivity of coastal landforms to physical change (erosion and/or progradation). The stability of a coastline depends primarily on its fabric (hard or soft constituents) and secondarily on its topography/form (steep, low-lying, etc), whereas its sensitivity to inundation may depend primarily on its topography.
Storm activity	An increase in the intensity and/or frequency of storms relative to a predefined expectation.
Surface water flooding	Surface water flooding is also known as pluvial flooding. It occurs when the volume of rainfall exceeds the capacity of drains and surface water sewers and is unable to drain away through drainage systems or soak into the land, and instead flows over the land.
Tidal flooding	Tidal flooding is the temporary inundation of low-lying areas, especially streets, during exceptionally high tide events.
Urbanity	Urbanity relates to how urbanised an area is.
Wild vegetation	Natural land such as, woodland, scrubland, grassland or savannahs.
Wildfire	A large, destructive fire that spreads quickly over woodland or bush.