DRAFT - FOR CONSULTATION

State-wide Flood Hazard Code Amendment

by the State Planning Commission (the Designated Entity)

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STATE PLANNING COMMISSION

Government of South Australia
Department for Housing and Urban Development

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HAVE YOUR SAY

This Code Amendment is on consultation from 21 May to 13 August 2026.

During this time, you are welcome to lodge a written submission about any of the changes proposed in this Code Amendment.

There are several ways in which you can provide feedback on the Code Amendment. This includes:

- via the YourSAy website at yoursay.sa.gov.au/state-wide-flood-hazard-code-amendment
- completing an online submission via the PlanSA portal plan.sa.gov.au/en/code-amendments
- providing a written submission by email to plansasubmissions@sa.gov.au

  with subject “Submission – State-wide Flood Hazard Code Amendment”
- providing a written submission by post to:

  State Planning Commission

  GPO Box 1815

  ADELAIDE SA 5001

There are public information sessions planned during the consultation period. For further details about the sessions, visit the YourSAy website at yoursay.sa.gov.au/state-wide-flood-hazard-code-amendment.

For more information, contact the Code Amendment team via CodeAmendmentCoordination@sa.gov.au or 1800 752 664.

1. WHAT IS THE PLANNING AND DESIGN CODE?

The Planning and Design Code (the Code) sets out the rules that determine what landowners can do on their land.

For instance, if you want to build a house, the Code rules will tell you how high you can build and how far back from the front of your land your house will need to be positioned. The Code will also tell you if any additional rules apply to the area where your land is located. For example, you might be in a high bushfire risk area or an area with specific rules about protecting native vegetation.

1.1 Planning and Design Code Framework

The Code is based on a framework that contains various elements called overlays, zones, subzones and general development policies. Together these elements provide all the rules that apply to a particular parcel of land. Information about how the Code works is available on the PlanSA website.

1.2 Overlays

Overlays contain policies and maps that show the location and extent of special land features or sensitivities, such as heritage places or areas of bushfire hazard.

They may apply across one or more zones. Overlays are intended to be applied in conjunction with the relevant zone. However, where policy in a zone conflicts with policy in an overlay, the overlay policy trumps the zone policy.

Overlays contain a procedural matters table which sets out any referral required for particular developments in that overlay.

1.3 Zones

Zones are areas that share common land uses and in which specific types of development are permitted. Zones are the main spatial building blocks of the Code and apply to all areas of the state.

The same zone should apply to similar areas. For example, an Urban Activity Centre Zone applying to Marion Shopping Centre also applies to similar centres like Tea Tree Plaza Shopping Centre.

Each zone includes policies which describe the types of development that are envisaged in that zone. Classification tables within the zone assign how particular types of developments are assessed against policies in the Code (calling up policies from overlays, zones, subzones or general development policies) and which assessment pathway they will follow. Procedural matters tables also set out which types of developments need to be publicly notified.

1.4 Subzones

Subzones enable variation to policy within a zone, which may reflect local characteristics. An example is Port Adelaide centre, which has many different characteristics to typical shopping centres due to its maritime activities and uses.

1.5 General Development Policies

General development policies outline functional requirements for development, such as the need for car parking or wastewater management. While zones determine what development can occur in an area, general development policies provide guidance on how development should occur.

Unlike overlays, zones and subzones, general development policies are not applied based on the location of a proposed development, but rather the type or class of development proposed.

1.6 Amending the Planning and Design Code

The Planning, Development and Infrastructure Act 2016 (the Act) provides the legislative framework for undertaking amendments to the Code. The State Planning Commission (the Commission) may initiate an amendment to the Code and undertake a Code Amendment process.

The State-wide Flood Hazard Code Amendment (the Code Amendment) was initiated by the Commission on 12 December 2023.

The approved Proposal to Initiate defined the scope of the Code Amendment and prescribed the investigations which must occur to enable an assessment of whether the Code Amendment should take place and in what form. A copy of the Proposal to Initiate for the Code Amendment can be downloaded from plan.sa.gov.au/en/code-amendments.

The Commission is responsible under the Act for ensuring the Code is maintained, reflects contemporary values relevant to planning, and readily responds to emerging trends and issues.

As designated entity for this Code Amendment, the Commission has undertaken investigations and will run the engagement process. The Commission will also provide a report on the Code Amendment (including compliance with the Community Engagement Charter) at the final stage of the Code Amendment process.

A summary of the Code Amendment process is outlined in **Figure 1.**

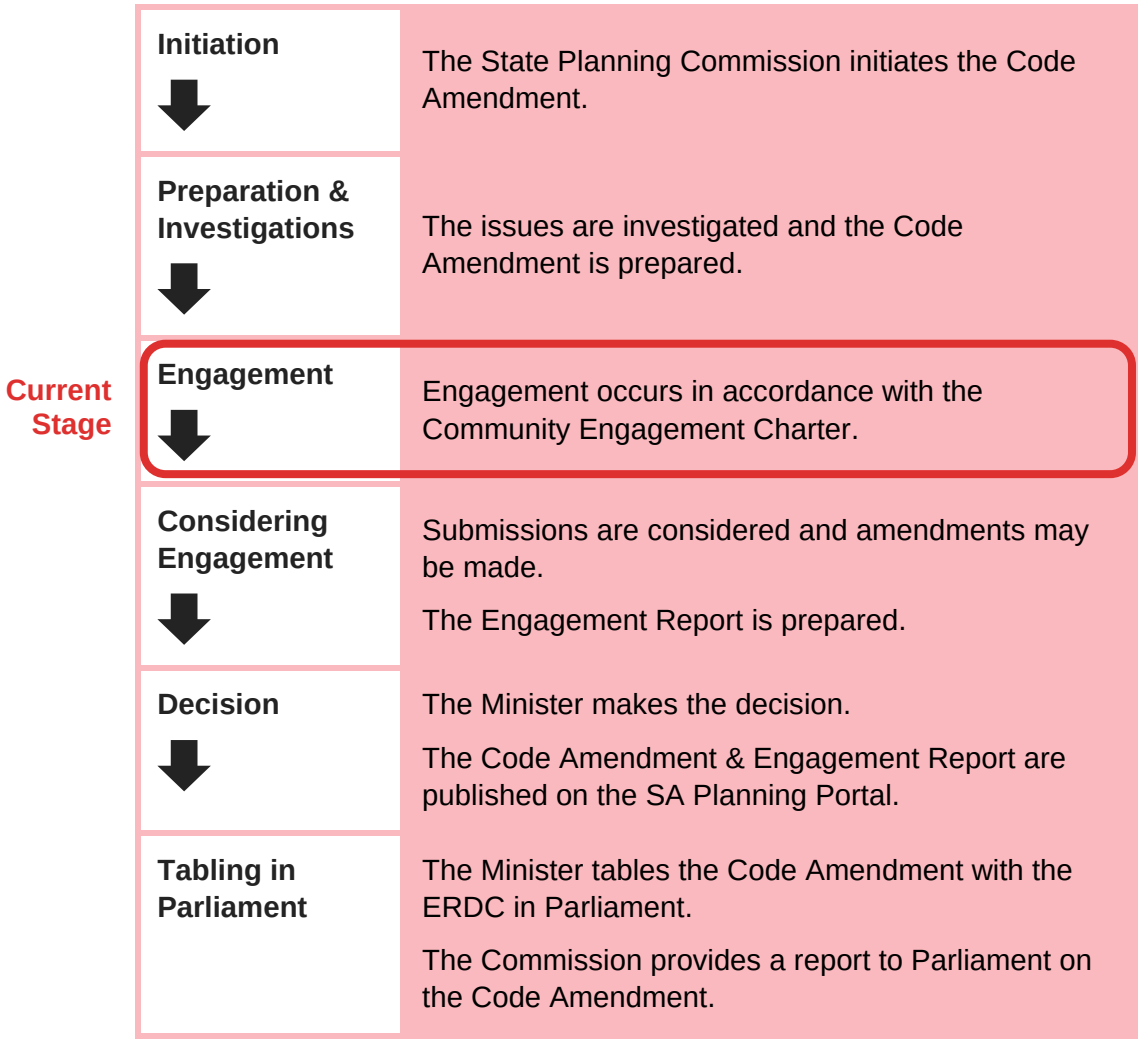

Figure 1. Summary of the Code Amendment process

2. WHAT IS PROPOSED IN THIS CODE AMENDMENT?

2.1 Need for the amendment

Flooding is one of the costliest natural disasters in South Australia[1], affecting people, property, infrastructure and the environment. With rising sea levels and more extreme storms, flooding is predicted to occur more frequently and of a greater intensity. However, through investigating, mapping, and planning using the best available climate science, flood risk arising from flood hazards can be minimised and mitigated.

When the Planning and Design Code was implemented in 2021, flood mapping and data from council development plans were consolidated into a series of flood hazard overlays. This process revealed a variety of approaches to flood hazard modelling across council boundaries, thereby raising the need for greater consistency to underpin the flood hazard mapping.

The Flood Hazard Mapping and Assessment Project (the Project) seeks to improve flood hazard mapping in South Australia for the purposes of assessing new development. The

[1] Australia Business Roundtable for Disaster Resilience and Safer Communities: Building resilience to natural disasters in our states and territories dated 2017

Project seeks to deliver state-wide reform to flood hazard overlay mapping and policy over three stages and two Code amendments.

Stage one of the Project comprised the Flooding Hazards Mapping Update Code Amendment, led by the Chief Executive of the Department for Trade and Investment. This Code Amendment updated the spatial extent of the Hazards (Flooding – Evidence Required) Overlay with flood information that could not be incorporated at commencement of the Code in 2021. Stage one was completed in February 2024.

Stage two of the Project included the procurement of mapping products. The Department for Trade and Investment commissioned 30 new and enhanced flood studies with modelling of projected climate conditions to a 2050 scenario, and coarse-scale fluvial (watercourse) and pluvial (surface water) data to be applied outside of the flood study extents. The mapping products included council flood studies and data that could not be incorporated at commencement of the Code.

Stage three of the Project is this Code Amendment. Led by the Commission, stage three uses the mapping products procured from stage two of the Project, as well as council flood studies from stage one and two of the Project, to update the flood hazard overlays in the Code. In addition, stage three seeks to amend Code policies and provide pathways for overlay mapping to be updated more efficiently in the future.

The draft Code Amendment seeks to incorporate projected climate conditions in South Australia's planning system through the use of more sophisticated flood studies and consideration of best practice approaches to flood hazard policy. As a result, development in South Australia can be better equipped to protect people, property, infrastructure and the environment from flood risk arising from flood hazards.

2.2 Affected Area

The Code Amendment will apply to the whole of South Australia, with changes shown per local government area in the maps at **Attachment A**.

2.3 Summary of proposed policy changes

2.3.1 Existing Code (Mapping and Policy)

The Code includes three state-wide overlays for flood hazard:

1. Hazards (Flooding) Overlay
2. Hazards (Flooding – General) Overlay
3. Hazards (Flooding – Evidence Required) Overlay.

It is noted that these overlays do not include coastal flooding captured by the Coastal Flooding Overlay, nor flooding covered by the River Murray Flood Plain Protection Area Overlay. The mapping and policy of the Coastal Flooding Overlay and the River Murray Flood Plain Protection Area Overlay will continue to apply and are not subject to this Code Amendment.

Mapping

The Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay are spatially applied where potential flood hazard arising from riverine or surface water is known, derived mostly from flood studies and council development plan resources that identified flood prone areas.

The Hazards (Flooding – Evidence Required) Overlay is spatially applied as a precautionary approach where flood risk is unknown or the flood data is insufficient to rule out potential flood risk including over certain zones. This overlay is predominantly outside of urban areas but also applies to some urban areas and townships.

The spatial extent of existing flood hazard overlays can be viewed at https://sappa.plan.sa.gov.au/.

Policies

The Hazards (Flooding) Overlay identifies areas with high flood hazard and seeks to discourage development where subject to a high flood risk (for example, buildings for vulnerable people). The Hazards (Flooding) Overlay includes policies for land division, land use, flood resilience, environmental protection, fill and excavation, and access. The policies include additional outcomes and criteria for buildings containing hazardous materials, as well as buildings for vulnerable people, community facilities, key infrastructure and emergency service facilities. Development within this overlay is generally performance assessed (except for open structures like carports and verandahs).

Policies in the Hazards (Flooding – General) Overlay seek to mitigate risks of low to medium flood hazard. This includes development being sited, designed and constructed to minimise entry of floodwaters, for example, by having a minimum floor level above the projected water level in a flood event. Hazardous materials need to be contained within buildings. Additional policies apply to buildings for vulnerable people, community facilities, key infrastructure and emergency service facilities. There are deemed-to-satisfy pathways available for certain development in this overlay, such as new dwellings and additions, while other development is performance assessed.

The Hazards (Flooding – Evidence Required) Overlay contains policies seeking development to be sited, designed and constructed to minimise entry of potential floodwaters and that hazardous materials are contained within buildings.

The existing policies in the flood hazard overlays can be viewed at code.plan.sa.gov.au/home/browse_the_planning_and_design_code?code=browse.

2.3.2 Proposed Code (Mapping)

The Code Amendment seeks to amend the spatial application of the three state-wide flood hazard overlays:

1. Hazards (Flooding) Overlay
2. Hazards (Flooding – General) Overlay
3. Hazards (Flooding – Evidence Required) Overlay.

The Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay are proposed to be updated where supported by new and enhanced mapping, predominantly in urban areas and townships identified as having high growth or insufficient flood hazard mapping.

Coarse scale data is proposed to inform the spatial application of flood overlays outside of flood study extents, predominantly in regional, outback, and some urban areas.

The Hazards (Flooding – Evidence Required) Overlay is proposed be significantly reduced by being either removed or replaced by the Hazards (Flooding) Overlay,

Hazards (Flooding – General) Overlay, or coarse scale data as supported by the new mapping. The overlay is proposed to be retained in certain zones and areas with insufficient flood data to rule out the potential for flood risk.

Detailed mapping methodology is set out in **Attachment B**.

Proposed changes to spatial application of flood hazard overlays can be viewed via the Map Viewer at plus.geodata.sa.gov.au/floodconsult/index.html. This includes a 'swipe' function to compare the current and proposed flood hazard overlays.

2.3.3 Proposed Code (Policy)

The Code Amendment proposes to update Parts 1, 3, 7 and 8 of the Code, to improve consistency, certainty, and currency of flood hazard information that is used to assess development across the State.

Part 1 – Rules of Interpretation

Changes to Part 1 of the Code are proposed to enable the Minister to update flood hazard overlays from time to time under section 71(e) of the Act. This would enliven a pathway for more efficient updates to the flood hazard overlays in the Code as new flood studies become available, without the need to undergo a Code Amendment under section 73 of the Act. This would allow for more timely and efficient updates to better reflect flood hazard, as it relates to the assessment of development across the state.

Given the technical variables of flood studies, it is intended that a practice direction will be prepared to mandate standard requirements for flood studies that can be incorporated consistently into the flood hazard overlays under section 71(e) of the Act. Practice directions are issued by the Commission to specify procedural requirements, or steps, under the Act. It is intended a practice direction will complement upcoming Flood Study Guidelines for South Australia to be issued by the Department for Environment and Water, to specify the required flood study circumstances, minimum parameters, documentation, submission method and other matters.

Given the Ministerial determinations under section 71(e) of the Act do not involve community engagement, the circumstances under which it could be used are proposed to be limited by the changes to Part 1 of the Code and further prescribed by a practice direction. It is intended that the practice direction will limit this to two scenarios:

1. Changing the spatial extent of flood hazard overlays, informed by information that has been consulted on through a Stormwater Management Plan approved under Schedule 1A of the *Local Government Act 1999*; or
2. Reducing the spatial extent of flood hazard overlays where updated flood hazard information has been obtained but has not been consulted through a legislated process (for example, flood investigations which have informed a development application approved under the Act).

In either scenario, the flood hazard information/investigations would need to satisfy the parameters set out in the practice direction to ensure consistency in its application.

This Code Amendment seeks feedback on the proposed use of section 71(e) of the Act as a mechanism to efficiently update the flood hazard overlays, foremost. Following consultation of the Code Amendment, subject to the feedback received and release of the Flood Study Guidelines by the Department for Environment and Water, the

Commission intends to draft a Practice Direction to set out the technical and procedural parameters to support this process.

Part 3 – Overlays

Changes to Part 3 of the Code are proposed to the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay. This is to account for future hazard to 2050, consideration of extreme events for specific land uses, more consistent terminology, and removal of outdated Technical Numeric Variations (TNVs).

The Hazards (Flooding) Overlay policies seek to avoid development where subject to an intolerable flood risk. This includes policies for development that accounts for a future scenario to 2050. The policies propose consideration of more extreme flood events for vulnerable, community, infrastructure and emergency facilities. Development within this overlay remains performance assessed and the deemed-to-satisfy pathway available for carports and verandahs.

The Hazards (Flooding – General) Overlay policies seek to mitigate flood hazard where subject to a tolerable risk. This includes development being sited, designed and constructed to minimise entry of floodwaters, with hazardous materials contained within buildings, to a 2050 scenario. More extreme flood events are considered for vulnerable, community, infrastructure and emergency facilities. The outdated TNVs are proposed to be removed, to allow the policy to align with the 2050 scenario reflected in the overlay mapping (see more information on TNV removal in section 6.2.5 of this report). The deemed-to-satisfy pathway remains available for development in this overlay and development is otherwise performance assessed.

There are no changes proposed to the Hazards (Flooding – Evidence Required) Overlay policies.

Part 7 – Land Use Definitions

Part 7 is proposed to define ‘buildings for vulnerable people’ as specific Class 9 buildings from the National Construction Code. This definition is proposed support policies in the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay.

Part 8 – Administrative Terms and Definitions

Changes to Part 8 of the Code are proposed to insert new administrative definitions to support policies in the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay.

The Code amendment seeks to define the following new terms:

- defined flood event
- extreme flood event
- flood hazard
- flood hazard classification
- flood hazard overlay
- flood risk
- high flow area
- intolerable flood risk

- tolerable flood risk.

This updated terminology is proposed to better align with international standards for risk and national guidance for flood hazard[2].

The draft code policies for Parts 1, 3, 7 and 8 are set out in **Attachment C**.

3. PROPOSED CHANGES TO SUPPORT THIS CODE AMENDMENT

3.1 Proposed change to the *Planning, Development and Infrastructure (General) Regulations 2017*

Regulation 19 prescribes bodies that have prepared or published a policy or other document that may be referred to in a designated instrument for the purpose of section 71(b) of the Act. In effect, this regulation allows policy in the Code to refer to other documents, such as Australian Standards.

As set out in **Attachment C**, the Administrative Definitions of Code are proposed to refer to the *Australian Disaster Resilience Guideline 7-3 Flood Hazard 2017* by the Australian Institute for Disaster Resilience.

Accordingly, subject to consultation on this Code Amendment, Regulation 19 is intended to be amended to add the Australian Institute for Disaster Resilience as a prescribed body for the purpose of section 71(b) of the Act.

4. WHAT ARE THE NEXT STEPS FOR THIS CODE AMENDMENT?

4.1 Engagement

Engagement on the Code Amendment must comply with the Community Engagement Charter (the Charter), as required under the Act. The Charter sets out the following principles for engagement:

- engagement is genuine
- engagement is inclusive and respectful
- engagement is fit for purpose
- engagement is informed and transparent
- engagement processes are reviewed and improved.

An Engagement Plan has been prepared for this Code Amendment to ensure that engagement will be conducted and measured against the principles of the Charter. For more information on the Charter go to the SA Planning Portal at (www.plan.sa.gov.au).

The Engagement Plan for this Code Amendment can be viewed at plan.sa.gov.au/have_your_say/code-amendments.

[2] *Australian Disaster Resilience Guideline 7-3 Flood Hazard* published by the Australian Institute for Disaster Resilience (AIDR 2017)

4.2 How can I have my say on the Code Amendment?

There are several ways in which you can provide feedback on the Code Amendment. This includes:

- via the YourSAy website at yoursay.sa.gov.au/state-wide-flood-hazard-code-amendment
- completing an online submission via the PlanSA portal plan.sa.gov.au/en/code-amendments
- providing a written submission by email to plansasubmissions@sa.gov.au

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There are public information sessions planned during the consultation period. For further details about the sessions, visit the YourSAy website at yoursay.sa.gov.au/ and search for “State-wide Flood Hazard Code Amendment”.

For more information, contact the Code Amendment team via CodeAmendmentCoordination@sa.gov.au or 1800 752 664.

4.3 What changes to the Code Amendment can my feedback influence?

The aspects of the Code Amendment which you *can* influence are:

- the areas covered by the Hazards (Flooding) Overlay, Hazards (Flooding – General) Overlay and Hazards (Flooding – Evidence Required) Overlay, where there is compelling evidence to make a change
- proposed methodology used to inform the flood hazard overlay mapping, particularly as it relates to use of the flood hazard classification curves
- proposed policy changes and enhancements
- proposed definitions
- proposed pathway for expedited updates to flood hazard overlay mapping without undertaking a full code amendment process.

The aspects of the Code Amendment which you *cannot* influence are:

- data gathered through flood studies
- how development is assessed under the National Construction Code of Australia.

The amendments proposed by the Code Amendment are outlined in **Attachment C**.

4.4 What will happen with my feedback?

The Commission is committed to undertaking consultation in accordance with the principles of the Charter and is genuinely open to considering the issues raised by people in the community.

All formal submissions will be considered by the Commission when determining whether the proposed Code Amendment is suitable and whether any changes should be made.

Each submission will be entered into a register, and you will receive an email acknowledging receipt of your submission.

The Commission will consider the feedback received in finalising the Code Amendment and will prepare an Engagement Report which will outline what was heard during consultation and how the proposed Code Amendment was changed in response to submissions.

The Engagement Report will be forwarded to the Minister and then published on the SA Planning Portal.

Your submission will be published on the SA Planning Portal after the Minister has made a determination on the Code Amendment. Personal addresses, email and phone numbers will not be published, however company details will be.

4.5 Decision on the Code Amendment

Once the Engagement Report is provided to the Minister, the Minister will then either adopt the Code Amendment (with or without changes), divide the Code Amendment into parts and proceed to adopt one or more of those parts, or determine that the Code Amendment should not proceed. The Minister's decision will then be published on the PlanSA portal.

If adopted, the Code Amendment will be referred to the Environment Resources and Development Committee of Parliament (ERDC) for their review.

5. ANALYSIS

5.1 Strategic Planning Outcomes

5.1.1 Summary of Strategic Planning Outcomes

This Code Amendment seeks to enable development assessment to be consistent with the most up to date information available, to achieve three key strategic outcomes:

- Keeping people and property safe from floods
- Consistent planning policies to improve certainty in decision making
- Considering the best available climate science to inform decision making.

5.1.2 Consistency with the State Planning Policies

State Planning Policies define South Australia's planning priorities, goals and interests. They are the overarching umbrella policies that define the state's interests in land use. There are 16 State Planning Policies and six special legislative State Planning Policies.

These policies are given effect through the Code, with referral powers assigned to relevant Government Agencies (for example, the Environmental Protection Agency for contaminated land). The Code (including any Code Amendments) must comply with any principle prescribed by a State Planning Policy.

This Code Amendment is considered to be consistent with the State Planning Policies as shown in **Attachment D**.

5.1.3 Consistency with the Regional Plan

The directions set out in Regional Plans provide the long-term vision and set the spatial patterns for future development within a region. This can include land use integration, transport infrastructure and the public realm.

Where there is conflict between a Regional Plan and the State Planning Policies, the State Planning Policies will prevail.

Given the Code Amendment affects the Code State-wide, all Regional Plans apply:

- Eyre and Western Regional Plan
- Far North Regional Plan
- Greater Adelaide Regional Plan
- Kangaroo Island Regional Plan
- Limestone Coast Regional Plan
- Murray Mallee Regional Plan
- Yorke Peninsula and Mid North Regional Plan.

This Code Amendment is considered to be consistent with the Regional Plans as outlined in **Attachment D**.

5.1.4 Consistency with other key strategic policy documents

This Code Amendment has considered and is considered consistent with the following key strategic policy documents:

- The South Australian State Emergency Management Plan (2025)
- Flood Hazard Risk Reduction Plan (2024)
- State Infrastructure Strategy (2025)
- Stronger Together – South Australia's Disaster Resilience Strategy (2019)
- South Australian Government's Climate Change Resilience and Adaptation Actions (2024)
- National Disaster Risk Reduction Framework (2018)
- Australian Disaster Preparedness Framework (2018)
- Climate Change Science and Knowledge Plan (2022)

- Guide to Climate Projections for Risk Assessment and Planning in South Australia (2022)
- Australian Institute for Disaster Resilience Handbook 7 Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia (AIDR 2017), including companion documents:
  - Guideline 3: Flood hazard
  - Guideline 5: Flood information to support land-use planning.

It is acknowledged that the 2022 commissioned flood studies used Australian Rainfall and Runoff (ARR) 2019 as the best available climate information in place at the time. Since completion of these studies and stage two of the Project, ARR 2024 has been released with updated rainfall and climate scenario modelling. This has not been included in the completed commissioned flood studies. It is proposed to progress an ability to update flood hazard overlay boundaries more efficiently as more contemporary flood studies become available, under section 71(e) of the Act. This is discussed in greater detail under section 6.2.3.

5.2 Infrastructure Planning

The Code Amendment seeks to update flood hazard mapping and policy to reflect flood hazard and provide further protection for key infrastructure. The Code Amendment will indirectly assist with infrastructure planning by enhancing the visibility of flood risk.

6. INVESTIGATIONS

6.1 Preliminary Investigations Undertaken

Preliminary investigations were undertaken to prepare flood hazard mapping products under stage two of the Project, which in turn, were used to inform the draft Code Amendment. The key investigations and outcomes are identified below.

6.1.1 Flood and stormwater study audit

A flood and stormwater study audit was undertaken to identify the suite of flood and stormwater studies that were not previously included in the Code. Desktop research and discussions with councils revealed that many of these flood and stormwater studies were outdated, with very few local government areas having commissioned updated studies.

6.1.2 Analysis of growth projections and land supply

An analysis of growth projection and land supply was undertaken, using the capital value of site value ratios and demolition rates to identify development patterns. The outcome of this analysis revealed the number and location of properties that were anticipated to be developed through infill development, including where land has consolidated ownership.

6.1.3 Review of state-wide and national flood hazard policy

A desktop review was undertaken of the existing flood hazard policies in the Code and interstate flood hazard policies. Compared to interstate models, Code policies were informed by the former Development Plans which in most cases used outdated approaches to expressing flood hazard and flood risk. Another finding determined the need for a precautionary flood policy where flood risk is unknown, however, the broad

and general spatial application across the state would limit capabilities for development to access the streamlined and more affordable, deemed-to-satisfy pathway. Lastly, the review revealed the need to strengthen policies so that buildings for vulnerable land uses (i.e. aged care facilities, hospitals, and schools) avoid areas subject to intolerable flood risk.

6.1.4 Review of Regional Coarse Scale Data

Coarse scale[3] regional fluvial (riverine) and pluvial (surface water) data was purchased where no detailed flood study was available to map flood hazard. This data was purchased at a scale of 5 metres for urban areas and 30 metres for regional and outback areas. Given the scale and accuracy is much broader than that of a detailed flood study, the coarse data was used to identify areas which may require a detailed flood study and areas outside of the coarse data that do not require a detailed flood study.

6.1.5 Light Detection and Ranging Digital Elevation Modelling

Light Detection and Ranging (LiDAR) Digital Elevation Modelling (DEM) was purchased at a 0.5 metre scale to improve the accuracy of flood modelling for areas that did not have LiDAR DEM. LiDAR DEM was purchased for the following areas:

- Clare and Gilbert Valley townships
- Barossa Region, Middle Beach to Barossa
- Upper Torrens River
- Adelaide Hills townships including Mount Barker, Strathalbyn and Nairne
- Upper Onkaparinga catchment area including Bremer Flat and Langhorne Creek
- Goolwa to Port Elliot
- Townships in the Fleurieu Peninsula.

The LiDAR DEM was then used in the preparation of the new and enhanced flood studies, discussed below.

6.1.6 Selection of flood study scenarios considering projected climate conditions to 2050

Stages one and two of the Project investigated the selection of an appropriate time horizon to model future flood hazard, that accounts for projected climate conditions in South Australia, following national and state guidance and strategic documents.

The AIDR 2017 identified that land use planning measures should be informed by a good understanding of future floodplain and catchment conditions, including consideration of predicted climate conditions and land use and development trends.

The *Climate Change Science and Knowledge Plan* prepared by the Department for Environment and Water identified a gap in South Australia's response to climate change in its flood mapping. The plan identified the need to prepare flood studies that included climate scenario modelling to better guide policy, planning, and decision making, and selection of modelling to an appropriate time horizon.

[3] The coarse-scale data identifies flooding over large grid cells (i.e. 30 metres) and is used as a cost-effective method to identify potential flooding over large areas.

Regional plans under the Act plan for a growing South Australia to the year 2050. Based on population and development projections, the regional plans identify where and how reach region will grow, including considerations of climate change adaptation and mitigation to 2050.

The *Guide to Climate Projections for Risk Assessment and Planning in South Australia* prepared by the Department for Environment and Water in 2022, determined that for decisions with a lifetime to 2050 or before, planning according to a high emission scenario to 2050 is a suitably precautionary approach. The selection of a high emission scenario was recommended considering the uncertainty for future emissions and global temperatures.

Given the above, the Project selected a high emission scenario for 2050 as the time horizon for flood studies, accounting for climate and development projections.

6.1.7 New and enhanced flood studies (commissioned flood studies)

During stage two of the Project, 30 new and enhanced flood studies were commissioned to update the spatial application of the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlays.

The Project prioritised expenditure on flood studies for areas that were subject to comparatively higher risk of flooding and would have an impact on development assessment, infrastructure delivery, and emergency services management. The Project did not procure studies for areas that had contemporary flood hazard information, minimal risk of flooding or did not have high growth.

All studies used contemporary hydrological information, consistent methodology, updated LiDAR DEM, and flood modelling using current average data at 2022, and flood modelling to 2050 with the following climate and development assumptions:

- Rainfall intensity

  ARR 2019 predicted an increase in rainfall (intensity and depth) of 5% per °C of local warming.

- Sea-level rise

  The Coast Protection Board recommended a sea-level rise (SLR) of 300mm. SLR is relevant for watercourses or stormwater infrastructure that terminates at the ocean or equivalent.

- Future Development

  Planning policy considerations such as zoning, site area, and frontage were used to identify potential for infill development. The likely timeline of infill development was guided by the capital value to site value ratio, which measures the value of the dwelling and other improvements, relative to the land value. A lower ratio generally indicates that the site is a more likely candidate for redevelopment in the short to medium term.

  For greenfield development it was assumed that land with a land division application proposing lots would be developed. Remaining land was estimated to be developed over time using the following assumptions:

- Privately owned land would be developed at 50% of its full potential (allowing for owners that hold onto their land or would not develop to its full potential)
- Company owned land would be developed at its full potential
- Other greenfield land (community/government) would not be developed.

The commissioned flood studies quantified flood hazard using the flood hazard classification model published in the *Guideline 7-3* from AIDR 2017 (**Figure 1**). This model used flood depth and velocity to classify levels of flood hazard from H1 to H6 and associated vulnerabilities as follows:

- H1 – generally safe for vehicles, people and buildings.
- H2 – unsafe for small vehicles.
- H3 – unsafe for vehicles, children and the elderly.
- H4 – unsafe for vehicles and people.
- H5 – unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure.
- H6 – unsafe for vehicles and people. All building types considered vulnerable to failure.

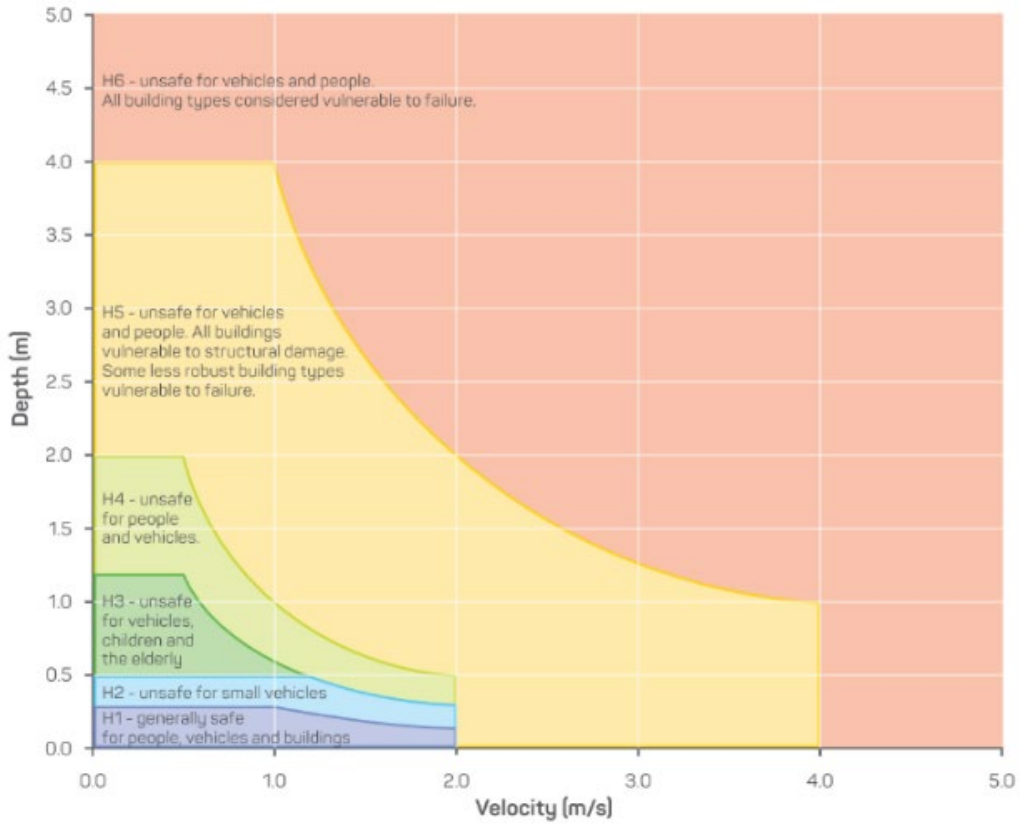


Figure 1: Flood hazard classification from the AIDR Handbook 7-3 dated 2017

All studies produced flood hazard mapping for a variety of Annual Exceedance Probability (AEP) events to better understand flood hazard. This included 5% AEP, 1% AEP and 0.2% AEP for the 2022 scenario and 2050 scenario (refer **Figure 2**). Maps showing flood depth, velocity, and data for water surface elevation were also prepared to supplement the flood hazard modelling.

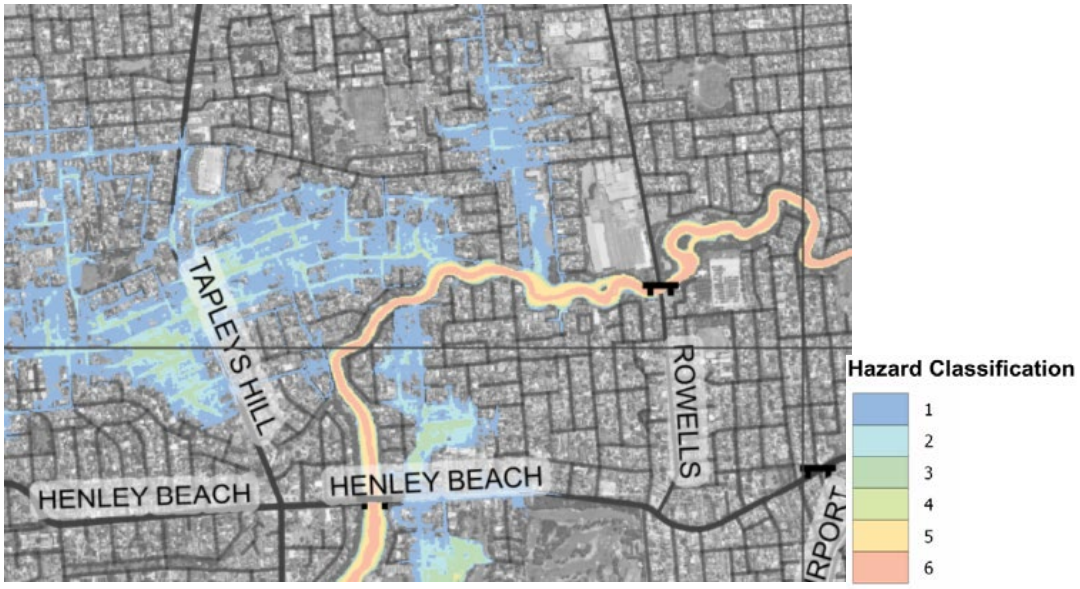


Figure 2: Flood hazard classification for a portion of the Lower Torrens Flood Study for the 2050 1% AEP prepared by HARC and commissioned by the Government of South Australia dated 2022

The flood hazard classification mapping is proposed to inform updates to the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay mapping. The proposed application is discussed under the following sections: Application of flood hazard classification and Application of the 2050 scenario in flood hazard mapping.

The detailed mapping methodology is set out in **Attachment B**. The commissioned flood studies are set out in **Attachment E** and available to view on the PlanSA Portal**.**

6.1.8 Available council flood studies

Council flood studies and flood hazard information that was available during the Project were combined to update the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlays under this Code Amendment, where not updated by the commissioned flood studies. This included flood studies that could not be released at commencement of the Code, and the flood studies used to reduce the Hazards (Flooding – Evidence Required) Overlay in the Flooding Hazards Mapping Update Code Amendment.

Code Amendment Outcome

The draft Code Amendment was informed by modelling based on planning to a 2050 scenario, together with climate and development projections, to align with national and state-level strategic documents and policy.

The data procured from the preliminary investigations informed updates to the proposed spatial application of the flood hazard overlays. This included regional coarse data to update the Hazards (Flooding – Evidence Required Overlay) and commissioned flood studies and available council flood studies to update the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlays.

The proposed spatial application of the flood hazard overlays would result in more consistent and contemporary mapping used in development assessment, to better predict and mitigate risks arising from future flood hazard on development.

6.2 Further Investigations Undertaken

Following initiation of the Code Amendment, further investigations were undertaken to inform the draft Code Amendment. This included the application of flood hazard classification (discussed below) from commissioned flood studies into the proposed overlay mapping, selection of the 2050 scenario to underpin the overlay mapping, and future updates to inform both the proposed mapping and policy updates, and analysis of the policy. The key investigations and outcomes are identified below.

6.2.1 Application of flood hazard classification

Investigations were undertaken to determine how to use the flood hazard classification model in the South Australian context. Specifically, the number of flood hazard overlays, the level of flood risk to be applied to each overlay, including from the commissioned flood studies, and potential policies to apply to development so that flood risk can be appropriately addressed.

As discussed under section 6.1.7 new and enhanced flood studies these flood studies seek to use the flood hazard classification model published in *Guideline 7-3* of AIDR 2017. The flood hazard classifications range from H1 to H6, with H1 being generally safe due to the low flood depth and velocity, H3 and above unsafe for vehicles, children and elderly, with H6 unsafe for all people, vehicles and buildings.

The existing Code has three flood hazard overlays. The Hazards (Flooding) Overlay seeks to address development that may be subject to an intolerable flood risk and Hazards (Flooding – General) Overlay seeks to address development that may be subject to a tolerable flood risk. The Hazards (Flooding – Evidence Required) Overlay applies where flood hazard is unknown or there is insufficient data to rule out flood risk and accordingly, is not subject to this investigation.

AIDR 2017 identifies flood risk as depending on the likelihood and the consequence of a flood occurring. Interstate models have used a potential hydraulic risk matrix based on AEP (likelihood) and flood hazard classification (consequence) to determine flood risk. It is noted that AIDR 2017 categorises risk as intolerable, tolerable or acceptable risk per the International Organisation for Standardization (ISO) *ISO 31000:2009*.

In the South Australian context, flood risk has been modelled and spatially applied based on AEP and hazard classification levels published by AIDR and categorised into tolerable and intolerable flood risks shown in **Table 1**. H1-2 for 1% AEP and H1 for 5% AEP is categorised as a potential for tolerable flood risk, subject to the risks being reduced as low as reasonably practicable. H3-6 for a 1% AEP and H2-6 for 5% AEP is categorised as potential for an intolerable flood risk with actions being required to avoid or reduce the risk. H2 has been included in the 5% AEP given this is subject to more frequent flood events. Acceptable risk is considered outside the scope of the flood hazard overlays, as each overlay requires some level of consideration of risk.

		Flood hazard classification			
		H1	H2	H3	H4-6
Likelihood	1% AEP				
	5% AEP				

Legend	
	Tolerable flood risk
	Intolerable flood risk

Table 1: Matrix showing flood hazard classiciation level and liklihood to draft flood hazard overlays

Tolerable flood risk has been spatially applied under the Hazards (Flooding – General) Overlay and potential for intolerable risk under the Hazards (Flooding) Overlay as shown on **Figure 3**.

Figure 3: Draft flood hazard overlays in West Adelaide using commissioned studies proposed by the Code Amendment

The existing Code does not define the level of flood hazard or flood risk. The Code Amendment proposes to use the flood hazard classification model (AIDR 2017) to define flood hazard, flood risk, and high flow areas within the Code, to better align with the spatial application of a flood hazard overlay. In addition, the definitions seek to provide more consistency in the interpretation of what is considered to be a flood hazard or flood risk to keep people, property and infrastructure more safe from potential flood impacts.

The proposed mapping changes are shown in **Attachment A** and detailed policy changes are identified in **Attachment C**.

Code Amendment Outcome

The Code Amendment seeks to use the flood hazard classification model (AIDR 2017) together with the likelihood of a flood event to categorise and spatially

apply tolerable risk under the Hazards (Flooding – General) Overlay and potential for intolerable risk under the Hazards (Flooding) Overlay.

The Code Amendment proposes new/amended policy as follows:

- New administrative definitions for flood hazard and flood hazard classification levels, linking back to new definitions for flood risk, tolerable flood risk and intolerable flood risk using the flood hazard classification model (AIDR 2017).
- Amended Designated Performance Feature (DPF) 3.4 of the Hazards (Flooding) Overlay to avoid development in a 'high flow area' which will also be defined in the Administrative Definitions of the Code as having a flood hazard classification H5 or H6 for flood events up to and including the 5% AEP at 2050 flood event.

As a result, the Code Amendment uses a more consistent approach to the mapping and assessment of flood hazard and flood risk, that is reflective of commissioned flood studies and national guidance.

6.2.2 Application of the 2050 scenario in flood hazard overlay mapping

The *Guide to Climate Projections for Risk Assessment and Planning in South Australia* prepared by the Department for Environment and Water in 2022 determines that although rainfall overall is expected to decline, there is likely to be an increase in rainfall intensity and sea level rise, which is expected to result in increased flooding. As discussed under section 6.1.6, best practice advises the use of a future scenario for flood hazard modelling.

Notwithstanding the above, the investigations recognised the challenge in applying a 'one size fits all' approach to flood hazard mapping, given flooding is often dealt with at a catchment-level and subject to a variety of contexts. For example, urban areas that are already subject to flood risk (legacy environments) to greenfield or undeveloped areas that subject to a future risk.

In the first instance, greenfield sites and large strategic infill sites were considered appropriate to use the 2050 scenario to coordinate flood mitigation over a large scale and to account for future development. However, further investigation was required for legacy/urban infill environments dealing with existing flood risk.

It is acknowledged that the 2050 scenario does not consider potential stormwater mitigation measures required by the Code or broader infrastructure planning that might occur in the meantime, and by consequence, potentially lessen the flood risk from future development infill projections. However, installation of risk mitigation infrastructure is undertaken on a case-by-case and often tied to funding security, particularly at the catchment-wide-scale for Stormwater Management Plans. Accordingly, the level of stormwater management intervention remains variable in different catchments and cannot be confidently relied on to occur.

Together with advice from the Department for Environment and Water, the Stormwater Management Authority, Greenhill, and Hydrology and Risk Consulting (HARC), the Code Amendment investigated the suitability of using either the 2022 or 2050 scenario from the commissioned flood studies, or a combination of both, as the basis of the flood hazard overlay mapping, and potentially, future amendments to this mapping.

The Department for Housing and Urban Development and the Department for Environment and Water prepared maps comparing the spatial extent, flood depth, and assessment pathway differences between the 2022 and 2050 scenarios relating to the following flood studies, incorporated into the proposed flood hazard overlays of the Code Amendment:

1. Barker Inlet by Southfront
2. Lefevre Peninsula by Southfront
3. River Torrens (Lower) by HARC
4. Sturt River (Lower) by HARC
5. First to Fifth Creeks by Tonkin
6. Gawler River by Water Technology.

The flood studies were selected due to their location in established urban areas where residential growth targets had been identified under the Greater Adelaide Regional Plan. The investigations considered the 1% AEP and 5% AEP, given these are proposed to inform the basis of the flood hazard overlay modelling. It is noted that the Gawler River study had not included 5% AEP modelling or hazard comparison, with modelling being sourced from the consultant.

The comparative maps revealed that for the most part, minor differences between the use of 2022 to 2050 scenarios. Where an increase in flood depth was shown, this was typically in the range of 0 to 250mm, and up to 500mm within small portions of the Gawler and River Torrens (Lower) study area for 1% AEP flood events. Larger increases were primarily located within watercourses, detention basins, and open spaces.

Procedurally, the use of the 2050 scenario presented minor increases in the potential for development to require performance assessment rather than following a deemed-to-satisfy pathway. The most prominent increase was within the River Torrens (Lower) 1% AEP, however the deemed-to-satisfy pathways remained possible under the Hazard (Flooding – General) Overlay where the required finished floor level (FFL) could be met.

Whether using the 2022 or 2050 scenario mapping, the material increase in flood depth and assessment pathway was considered minor. Considering government guidance on the use of climate change projections, 2050 was considered a suitable scenario to use as a basis for flood hazard overlays in the Code.

The comparative maps are contained in **Attachment E**.

Code Amendment Outcome

The Code Amendment proposes to use the 2050 scenario as the basis for the commissioned flood studies to transition into the flood hazard overlay mapping, irrespective of being within urban or greenfield areas, aligning with national guidance.

It's noted the 2050 scenario had minor increases in flood depth and relatively little impact on the development assessment process and pathways.

Acknowledging that a 2050 scenario would not account for stormwater infrastructure or mitigation measures implemented in the meantime, the Code Amendment proposes to enable a streamlined pathway to update the Code's flood hazard overlays as further flood studies are undertaken (see following section on the use of section 71(e) of the Act).

6.2.3 Use of section 71(e) of the Act to update spatial layers in the Code more efficiently

The spatial extent of flood hazard can be influenced by development and installation of stormwater management infrastructure, amongst other factors. As new flood studies become available, updating the spatial extent of the flood hazard overlays, subject to appropriate conditions, would assist in maintaining the currency of the Code. The Proposal to Initiate this Code Amendment provided scope for investigating the use of section 71(e) of the Act to enable more efficient updates of overlay boundaries.

Investigations were carried out to consider thresholds for updating the spatial layers of the flood hazard overlays in the Code, allowing the Minister to determine suitable updates to flood hazard overlay under section 71(e) of the Act. The use of this mechanism to amend the Code would only occur where the Minister is satisfied that the proposed change has met a specific set of criteria referred to in Part 1 – Rules of Interpretation of the Code.

Part 1 of the Code currently lists the nature of the spatial updates to overlays, generally where an overlay change aligns with another process or authority. For example, the Aircraft Noise Exposure Overlay may be updated where in accordance with an Australian Noise Exposure Forecast endorsed under the *Air Services Act 1995* or by the Department of Defence. Accordingly, it is considered that the spatial updates would need to complement an existing process determined by an appropriate authority, as relevant to the overlay.

Secondly, it is acknowledged that updates under section 71(e) of the Act do not involve a public consultation process. Accordingly, should the spatial update impact on the ability for a person to carry out development on land, there should be meaningful engagement with impacted landowners before a decision is made. Circumstances for such updates are therefore proposed to be limited to where there is either:

a) an increase or change to the spatial extent of flood hazard that has already been consulted on under a different process, or
b) a reduction to the spatial extent of flood hazard.

Stormwater management plans (which include flood mapping) that are consulted on and approved by the Stormwater Management Authority under the *Local Government Act 1999* were identified as a ‘product’ of an existing process considered by a suitable authority that could underpin use of section 71(e). Further, master planned development with a stormwater management plan which evidences a reduction in the spatial extent of flood hazard, approved by the relevant authority under the Act, was also identified as having an existing process and authority that could underpin use of section 71(e).

Flood studies have historically used a variety of approaches to identify flood hazard as national and state guidance have evolved. To ensure that the future flood studies consistently inform Code policy/mapping, a practice direction under section 42 of the Act could mandate minimum flood study requirements and parameters. It is intended the practice direction will complement upcoming Flood Study Guidelines for South Australia to be issued by the Department for Environment and Water, including specifying the flood study circumstances, minimum flood study parameters, documentation, and submission method, amongst other matters.

Following consultation of the Code Amendment and release of the Flood Study Guidelines for South Australia to be issued by the Department for Environment and

Water, subject to the feedback received, the Commission intends to draft a practice direction to set out technical and procedural parameters to support this process.

Code Amendment Outcome

The Code Amendment proposes to update Part 1 – Rules of Interpretation of the Code to allow the Minister to alter the spatial application of a flood hazard overlay under section 71(e) of the Act where in accordance with a practice direction issued by the State Planning Commission under section 42 of the Act. This would enable more efficient and consistent updates to flood hazard overlays in the Code as new flood studies become available.

6.2.4 Review of supporting spatial layers

The Code Amendment investigated opportunities to use other mechanisms, such as reference layers or similar mapping within the South Australian Property and Planning Atlas (SAPPA), to provide flood hazard risk data such as detail of the flood hazard modelling study underpinning spatial application of flood hazard overlays in a particular catchment.

This included the potential for the spatial application of Technical Numeric Variation (TNV) layers to be updated to include the minimum ground and floor level 300mm above the water surface elevation (height of flood water in Australian Height Datum) of areas covered by the commissioned flood studies, similar to the TNVs applied under the River Murray Flood Plain Protection Area Overlay.

However, it was found that the complexity of the data required to underpin these layers at a state-wide scale and across multiple flood study sources could be supported within the existing parameters of SAPPA.

Code Amendment Outcome

The Code Amendment does not propose to update or include additional spatial or reference layers with flood study data.

The commissioned flood studies will be made available to councils to assist in assessment and advice on minimum finished ground and floor levels for development in the Hazards (Flooding – General) Overlay. Furthermore, the Department for Environment and Water is preparing a new and enhanced flood awareness map, providing information about flood studies (including the commissioned flood studies), which is expected to be available by mid-2026.

6.2.5 Improvement to flood hazard overlay policies

Investigations were undertaken to review the flood hazard overlay policies to improve certainty and response to flood hazard to help keep people and property safe from floods. This included a review of the overlay structure, alignment with the spatial updates, more refined policies based on AEP, stronger protections for vulnerable land uses, deemed-to-satisfy opportunities, enhanced definitions and review of general policies. Proposed updates to the Code are set out below.

Overlay structure

The flood hazard overlay structure was reviewed together with the policies, considering whether they were aligned with the level of potential flood risk. As discussed under section 2.3.1 Existing Code (Mapping and Policy), the Code includes three state-wide overlays for flood hazard with policies that seek to avoid development with a high flood risk (Hazards (Flooding) Overlay), mitigate development subject to a general risk unless a vulnerable land use (Hazards (Flooding – General) Overlay), and mitigate development subject to a unknown risk (Hazards (Flooding – Evidence Required) Overlay). The three overlay structure is considered to achieve the hierarchy of risk to avoid, accommodate and adapt development subject to potential flood risk.

Definitions

Investigations reviewed Code definitions related to flood hazard for consistency, interpretation and alignment with national guidance and interstate models.

The Code currently refers to flood risk as 'high' or 'general' and does not include definitions for these terms. AIDR 2017 refers to the international standard *ISO 31000:2009* to categorise risk as 'intolerable', 'tolerable' and 'acceptable'. Flood risk and intolerable flood risk are also defined under the AIDR 2017. The Code Amendment seeks to define flood risk, intolerable flood risk and tolerable risk adapted from the AIDR 2017 and aligned with flood hazard classification modelling. The 'high flood risk' and 'unacceptable impacts' terminology is proposed to be replaced with a defined term for 'intolerable flood risk'. The 'general flood risk' or 'low' terminology is proposed to be replaced with a defined term for 'tolerable flood risk'. This is to bring flood risk terminology into alignment with AIDR and for greater consistency and interpretation in the Code.

The Code does not include a definition for flood hazard. The AIDR 2017 quantifies flood hazard to the flood hazard vulnerability curves. It is proposed to provide and adapt the definitions for 'flood hazard' and 'flood hazard classification' to the South Australian context for greater clarity and consistency with commissioned flood studies, whilst ensuring flood hazard other supporting studies underpinning the overlays are captured.

The Code refers to flood events throughout policy (i.e. AEP 1%) rather than having a defined a term. AIDR 2017 *Guideline 7-3* suggests that at a minimum, flood hazard mapping should include the design flood event (DFE), a smaller flood event than the DFE, and the probable maximum flood or a representative extreme event. The Code Amendment seeks to include definitions for 'defined flood event', 'high flow area' and 'extreme flood event' to be used throughout the policy. These events are consistent with the spatial application of commissioned flood studies that have used 1% AEP, 5% AEP and 0.2% AEP. The high flow area definition also refers to the intolerable levels of flood hazard classification for a 5% AEP at 2050, adapting wording from interstate models (2025 update to the Logan City Council Plan 2015).

The Code does not currently specify land uses that house vulnerable people. The National Construction Code includes class 9 buildings that house children, the elderly and people seeking health care services who are more vulnerable to flood hazard, which aligns with the flood hazard classification model. The Code Amendment proposes to include a land use definition for 'buildings for vulnerable communities' to ensure these uses are captured and assessed consistently.

Vulnerable land uses and more refined policy using AEP

Review of AIDR 2017 *Guideline 7-3* seeks that key community facilities and buildings for vulnerable communities effectively manage safety of the occupants and maintain continuity of service during an extreme flood event. Investigations were undertaken to consider policies that avoid the development of land uses such as aged care facilities, hospitals, prisons and schools in areas where there is an intolerable flood risk.

The existing Hazards (Flooding) Overlay policies (DPF 2.2 and PO 2.2) seek that these uses are outside of the overlay and sited away from flood prone areas to maintain operation of services and reduce entrapment. The policy does not consider an extreme flood event and the term 'flood prone areas' can be ambiguous.

The Code Amendment seeks to strengthen the PO such that these uses are not to be located within this overlay unless there is an overriding need, there is no alternative site, and that operation and safety is provided during an extreme flood event. This also aligns with the use of H3-6 for a 1% AEP and H2-6 for 5% AEP underpinning the overlay from the commissioned flood studies, whereby the flood hazard classification is unsafe for children and the elderly. The 'area' referenced in DTS/DPF 2.2 will be removed given the overlay is the spatial extent.

The existing Hazards (Flooding – General) Overlay seeks that these uses are located outside of a 1% AEP (DTS/DPF 1.1) and that these uses are sited away from flood prone areas to maintain operation of services and reduce entrapment (PO 1.1). Similar to the above, the policy does not consider an extreme flood event and terminology for the 'flood prone areas' is potentially ambiguous.

The Code Amendment seeks to remove DTS/DPF 1.1 because, if land is in the overlay, it would already be within the 1% AEP. It is noted the overlay will be supported by the commissioned flood studies H1-2 for 1% AEP and H1 for 5% AEP. The removal of this policy is not considered to impact on deemed-to-satisfy opportunities given these vulnerable land uses do not have a deemed-to-satisfy pathway in any case.

The Code Amendment seeks to refine the outcome sought by PO 1.1 such that these uses can occur but only when sited, designed and operated to withstand the extreme flood event. This also aligns with the use of H1-2 for 1% AEP and H1 for 5% AEP whereby the flood hazard classification does not deem these uses unsafe.

Deemed-to-Satisfy (DTS)/Designated Performance Feature (DPF) opportunities

The Code Amendment investigated greater opportunities for DTS/DPF policies for the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay.

It is noted that a deemed-to-satisfy pathway is currently only available in the Hazards (Flooding) Overlay for open structures (carports and verandahs) as prescribed in Table 2 of the relevant zone. No additional opportunities for deemed-to-satisfy pathways were identified, as enclosed structures are considered to benefit from performance assessment against the overlay policies.

PO 6.2 of the Hazards (Flooding) Overlay specifies that access driveways and tracks to significant development (i.e. dwellings, places of work, etc.) consist of a safe, all-weather trafficable surface that is accessible during a 1% AEP flood event. Within this policy, there is no DTS/DPF criteria applicable.

There was an opportunity to better refine and align the policy with the flood risk and address the ambiguous wording of 'significant development'. It is noted that flood hazard is different from flood risk: flood hazard exists whether or not based on flood behaviour (i.e. flood depth or velocity) and flood risk considers what would be lost or damaged based on an area's exposure and vulnerability to the flood hazard (**Figure 4**).

The Code Amendment proposes a new DTS/DPF 6.2 criteria for development that is a Class 10, non-habitable building or structure, and amendment to PO 6.2 to refer to a Class 1 to 9 building during a defined flood event. As a result, the terms are more consistent with existing National Construction Code and provides a clear DPF criteria for uses with a more tolerable flood risk (e.g. outbuildings, sheds).

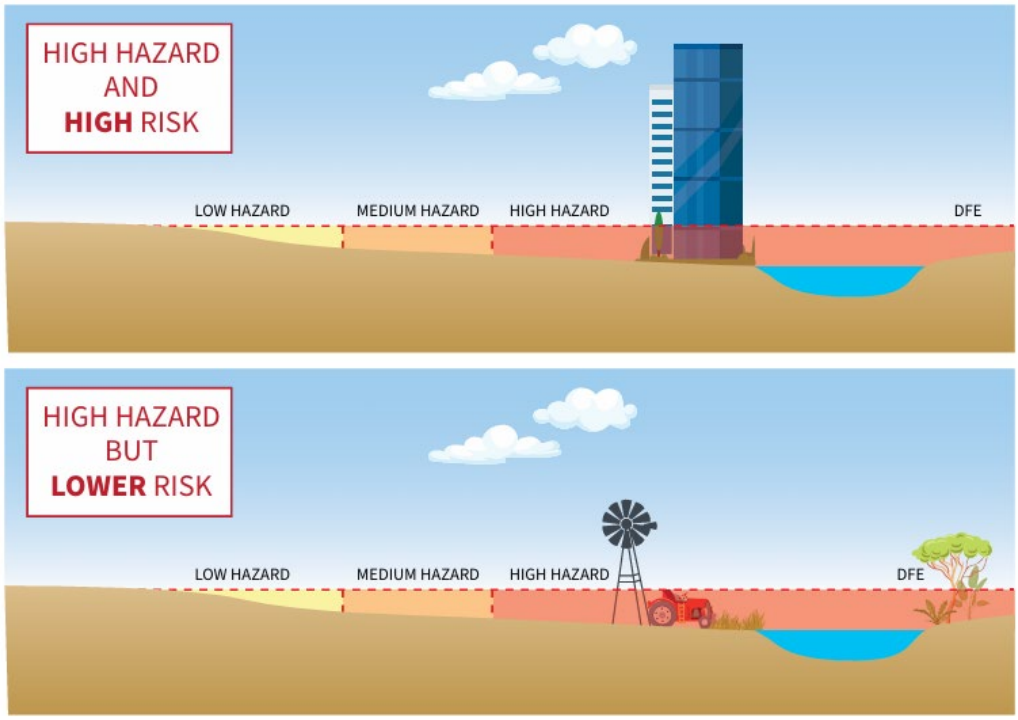


Figure 4: Difference between flood hazard and risk from Queensland Reconstruction Authority, Planning for Stronger, More Resilient Floodplains dated 2012

Deemed-to-satisfy pathways are available in the Hazards (Flooding – General) Overlay for buildings (i.e. ancillary accommodation, dwelling addition and dwellings) where achieving the minimum finished ground and floor level as prescribed in Table 2 of the relevant zone. No additional opportunities for deemed-to-satisfy pathways were identified with finished ground and floor level considered sufficient to address tolerable flood risk for these buildings.

General development policies

The investigations reviewed the general development policies of the Code referring to flood hazard. Part 4 of the Code include flood policies depending on the development type, including for animal keeping and horse keeping, aquaculture, beverage production in rural areas, design (non-urban areas), intensive animal husbandry and dairies, land division, and waste treatment and management facilities.

The policies in the above sections seek to manage water quality by siting the relevant development outside of a flood hazard, apart from DTS/DPF 18.2 of Design which seeks a common driveway for five or more dwellings to manage stormwater run-off up to and including 1% AEP. However, this policy seeks to manage stormwater within the site such

as detention rather than managing external risks from riverine or surface water, as considered by the flood hazard overlays.

Given the above, the general policies are not considered necessary to update as they deal with separate matters pertaining to water quality and on-site stormwater management, with flood water behaviour and risk assessed under the flood hazard overlays.

Effective policies and alignment with spatial application

Investigations were undertaken to review the effectiveness of policies in addressing flood impacts on people, property and environment and its alignment with the spatial application of flood hazard overlays in SAPPA.

As discussed under section 6.1.6 and section 6.2.2, national and state guidance for best practice advises to use future flood hazard scenarios within the mapping and policies. A 2050 scenario was selected align with the regional plan and has been proposed as the basis for the flood hazard overlay mapping.

The Code Amendment proposes definitions for intolerable flood risk, tolerable flood risk, defined flood event, extreme flood event and high flow area and corresponding policies in the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay policies to refer to the 2050 flood event.

This is to better protect people, property and environment from projected climate conditions and increased flooding impacts and brings South Australian policies in line with national and state guidance.

Review of TNVs

With new and enhanced commissioned flood studies updating the spatial application of the Hazards (Flooding – General) Overlay, this required a review of how this would impact on the TNVs prescribing minimum ground and floor levels in DTS/DPF 2.1 of the overlay.

As discussed under section 6.2.4, the TNVs spatially apply as a reference layer and is enabled through policy in the Code. DTS/DPF 2.1 of the Hazards (Flooding – General) Overlay prescribes that habitable buildings, commercial and industrial buildings, and buildings used for animal keeping incorporate a finished ground and floor level not less than minimum ground and floor levels at AHD (listed by a TNV), or where not specified, 300mm above the height of a 1% AEP flood event.

A review of the spatial application of TNVs state-wide, revealed that the majority of areas contained the same TNV field in its policy for the Coastal Areas Overlay, Coastal Flooding Overlay, or River Murray Flood Plain Protection Area Overlay. The removal of the TNV field from the Hazards (Flooding – General) Overlay in these areas will not interfere with the existing TNV, which will continue to apply as it relates to coastal or River Murray impacts.

The areas which only applied the TNV field within the Hazards (Flooding – General) Overlay were in the City of Holdfast Bay, Town of Playford, and City of Port Adelaide Enfield. A second analysis was carried out to determine potential implications on the existing finished ground and floor level on these properties with the new and enhanced flood studies from this Code Amendment. 300mm was added to the water surface

elevation to determine the minimum floor and ground level at AHD and compare with the existing TNV AHD heights.

The second analysis revealed one property (630 Victoria Road, Outer Harbour) would reduce the minimum floor level by 0.22 metres from the existing TNV. All other properties included higher minimum floor and ground levels than the existing TNV. This revealed that all existing TNVs would be outdated with introduction of the proposed policy for 1% AEP at 2050 and associated spatial application using the commissioned flood studies.

Given the above, DTS/DPF 2.1 of the Hazards (Flooding – General) Overlay is proposed to be amended to remove the TNV field so that the minimum ground and floor level can be applied according to the latest flood studies. As discussed in section 6.2.4 Review of supporting spatial layers, commissioned flood studies will be made available to councils to assist in assessment of development against this policy.

Code Amendment Outcome

The Code Amendment proposes to:

- retain the three-overlay structure as it relates to flood risk
- introduce new definitions related to buildings for vulnerable communities, defined flood event, extreme flood event, flood hazard, flood hazard classification, flood hazard overlay, flood risk, high flow area, intolerable flood risk, and tolerable flood risk
- strengthen policies to protect community facilities and buildings for vulnerable communities from more extreme flood events
- refine policies to reflect flood hazard classification and AEP flood events
- change terminology in the flood hazard overlays to reference ‘tolerable’ or ‘intolerable’ risk instead of ‘high’, ‘unacceptable’ or ‘general’ risk
- introduce a new DTS/DPF policy for more streamlined assessment of non-habitable buildings and structures in the Hazards (Flooding) Overlay
- maintain existing general development policies
- update policy to account for flood hazard to 2050
- remove outdated TNVs superseded by new flood studies.

As a result of the proposed amendments, Code policy will be more consistent, contemporary and aligned with national guidance to better protect people, property and environment from flooding impacts resulting from projected climate conditions.

7. RECOMMENDED POLICY CHANGES

Following is a list of the recommended policy changes which are proposed in response to the investigations undertaken in support of this Code Amendment:

Spatial application of flood hazard overlays

- Amend the spatial application of Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay with updated flood studies, including commissioned flood studies accounting for flood hazard to 2050 and using the AIDR 2017 flood hazard classification model.
- Reduce the Hazards (Flooding – Evidence Required) Overlay with updated coarse-scale data to refine areas that require a precautionary approach.
- Proposed spatial application of flood hazard overlays can be viewed via the Map Viewer: plus.geodata.sa.gov.au/floodconsult/index.html.

Spatial application rules

- Amend *Part 1 – Rules of Interpretation* to enable more efficient updates the spatial application of the Hazards (Flooding) Overlay, Hazards (Flooding – General) Overlay, Hazards (Flooding – Evidence Required) Overlay in the future (supported by procedures to be set out in a practice direction).

Flood hazard overlay definitions

- Insert a new definition in *Part 7 – Land Use Definitions* for 'buildings for vulnerable communities' to provide greater consistency and clarity in the assessment of these land uses on the flood hazard overlays.
- Insert new definitions in *Part 8 – Administrative Terms and Definitions* for 'defined flood event', 'extreme flood event', 'flood hazard', 'flood hazard classification', 'flood hazard overlay', 'flood risk', 'high flow area', 'intolerable flood risk' and 'tolerable flood risk' to provide greater consistency and clarity in the assessment of development against the flood hazard overlays and to align with national guidance.

Flood hazard overlay policies

- Amend policies in the flood hazard overlays (Part 3 of the Code) to align with the new definitions for greater consistency, clarity, and alignment with national guidance, as follows:
    - Replace 'low risk' with 'tolerable flood risk' in PO 1.1 of Hazards (Flooding) Overlay
    - Replace 'general flood risk' with 'tolerable flood risk' in DO 1 of Hazards (Flooding – General) Overlay
    - Replace 'unacceptable' with 'intolerable flood risk' in PO 2.1 of Hazards (Flooding) Overlay
    - Replace 'buildings housing vulnerable people' with the defined term for 'buildings for vulnerable communities' under PO 2.2 Hazards

(Flooding) Overlay and PO 1.1 of Hazards (Flooding – General) Overlay
    - Replace ‘flood prone areas’ under PO 2.2 of Hazards (Flooding) Overlay and ‘flood areas’ under PO 1.1 of Hazards (Flooding – General) Overlay with ‘extreme flood event’ to account for more extreme flood events to 2050
    - Remove ‘area’ from reference to the overlay under DTS/DPF 2.2 of Hazards (Flooding) Overlay
    - Replace ‘unacceptable’ with ‘adverse’ under PO 3.2 of Hazards (Flooding) Overlay
    - Replace ‘5% AEP principal flow path’ under PO 3.4 and ‘frequently flooded or high velocity’ under DTS/DPF 3.4 with ‘high flow area’ in the Hazards (Flooding) Overlay
    - Replace ‘a 1% AEP event’ or ‘1% AEP flood plain or flow path’ with ‘defined flood event’ to account for flood events to 2050 under PO 3.5, DTS/DPF 3.5, PO 4.1, DTS/DPF 4.1, PO 6.1, PO 6.2 of the Hazards (Flooding) Overlay, DTS/DPF 2.1, PO 3.1 and DTS/DPF 3.1 of Hazards (Flooding – General) Overlay.

- Amend policies in for buildings for vulnerable communities, community facilities, key infrastructure and emergency services facilities to align with national guidance, as follows:

    - Strengthen PO 2.2 of Hazards (Flooding) Overlay so that the assessment of buildings for vulnerable communities, community facilities, key infrastructure and emergency services facilities are not located in the overlay, unless there is an overriding need for the planning use, there is no alternative site outside of the overlay that would address the identified need, and that the development enables the uninterrupted operation of services and reduces the likelihood of entrapment during the extreme flood event.
    - Enhance PO 1.1 of Hazards (Flooding – General) Overlay so that the assessment of buildings for vulnerable communities, community facilities, key infrastructure and emergency services facilities take into account not just the siting but also the design and operation of the use in the extreme flood event.
    - Remove DTS/DPF 1.1 in Hazards (Flooding – General) Overlay following enhancements to the policy under PO 1.1 of Hazards (Flooding – General) Overlay.

- Amend PO 6.2 of the Hazards (Flooding) Overlay to better align the policy with the flood risk for access driveway and tracks, seeking to replace ‘significant development (i.e. dwellings, places of work, etc)’ with ‘Class 1 to 9 building’. Create new DTS/DPF 6.2, making clear the policy doesn’t apply to development that comprises a Class 10 non-habitable building or structure.

- Amend policies of the Hazards (Flooding – General) Overlay following the updated flood hazard mapping from commissioned flood studies, including:

- Amend DPF 3.1 so that development incorporates a finished ground and floor level not less than 300mm above the height of a defined flood event.
- Remove TNV field in DPF 3.1 as 300mm above the finished ground and floor level are superseded by a defined flood event in these areas.

Further details of the proposed policy changes are set out in **Attachment C**.

8. REFERENCES

- Eyre and Western Regional Plan
- Far North Regional Plan
- Greater Adelaide Regional Plan
- Kangaroo Island Regional Plan
- Limestone Coast Regional Plan
- Murray Mallee Regional Plan
- Yorke Peninsula and Mid North Regional Plan
- The South Australian State Emergency Management Plan (2025)
- Flood Hazard Risk Reduction Plan (2024)
- State Infrastructure Strategy (2025)
- Stronger Together – South Australia's Disaster Resilience Strategy (2019)
- South Australian Government's Climate Change Resilience and Adaptation Actions (2024)
- National Disaster Risk Reduction Framework (2018)
- Australian Disaster Preparedness Framework (2018)
- Climate Change Science and Knowledge Plan (2022)
- Guide to Climate Projections for Risk Assessment and Planning in South Australia (2022)
- AIDR Handbook 7 Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia (2017)
- AIDR Handbook 7 Guideline 3: Flood hazard
- AIDR Handbook 7 Guideline 5: Flood information to support land-use planning
- South Australia's Net Zero Strategy
- Australia Business Roundtable for Disaster Resilience and Safer Communities: Building resilience to natural disasters in our states and territories (2017)

ATTACHMENT A – AFFECTED AREA MAPPING

A1 State-wide

Figure 5: State-wide amendment to flood hazard overlay mapping (Map Viewer)

Draft changes to the spatial application of the flood hazard overlays can be viewed via the Map Viewer: plus.geodata.sa.gov.au/floodconsult/index.html.

A2 Local Government Area Changes

ATTACHMENT B – MAPPING METHODOLOGY

The methodology used to apply the proposed flood hazard overlays based on each flood study data is listed below. This includes the commissioned flood studies, commissioned coarse-scale data, available council flood data from the project and otherwise, the retention of existing overlays.

B1 Commissioned flood studies

- Applied to the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay
- Updated LiDAR DEM
- Flood modelling to 2050 with the climate change and development assumptions:
  - ARR 2019 relevant at the time increase in rainfall (intensity and depth) of 5% per °C of local warming
  - Sea-level rise of 300mm relevant for watercourses or stormwater infrastructure that terminates at the ocean or equivalent as recommended by the Coast Protection Board
  - Future infill development projections identified by zoning, site area and frontage and likely timeline of infill development was guided by the capital value to site value ratio
  - Future greenfield development assumed that land with a land division application proposing lots will be developed, privately owned land will be developed at 50% of full potential, company owned land will be developed at its full potential, and other greenfield land will not be developed
- 30 new and enhanced flood studies (refer to flood study boundary extents below) prepared in 2022 using 1% and 5% AEP climate change modelling to 2050 against the flood hazard classification levels to the following overlays:
  - Hazards (Flooding) Overlay
    - 1% AEP - Define Flooding Value as H3, H4, H5 & H6
    - 5% AEP - Define Flooding Value as H2, H3, H4, H5 & H6
  - Hazards (Flooding – General) Overlay
    - 1% AEP – Define Flooding – General Value as H1 & H2
    - 5% AEP - Define Flooding – General Value as H1
- Flood hazard classification H1 filtered to remove depths below 50mm
- Where overlapping commissioned studies apply the highest flood risk is placed as the top level
- Commissioned flood study extents replaced flood studies in the same geographical area
- Commissioned flood study data used to clip:
  - regional coarse scale 5 metre and 30 metre pluvial and fluvial data
  - existing and introduced flood studies.

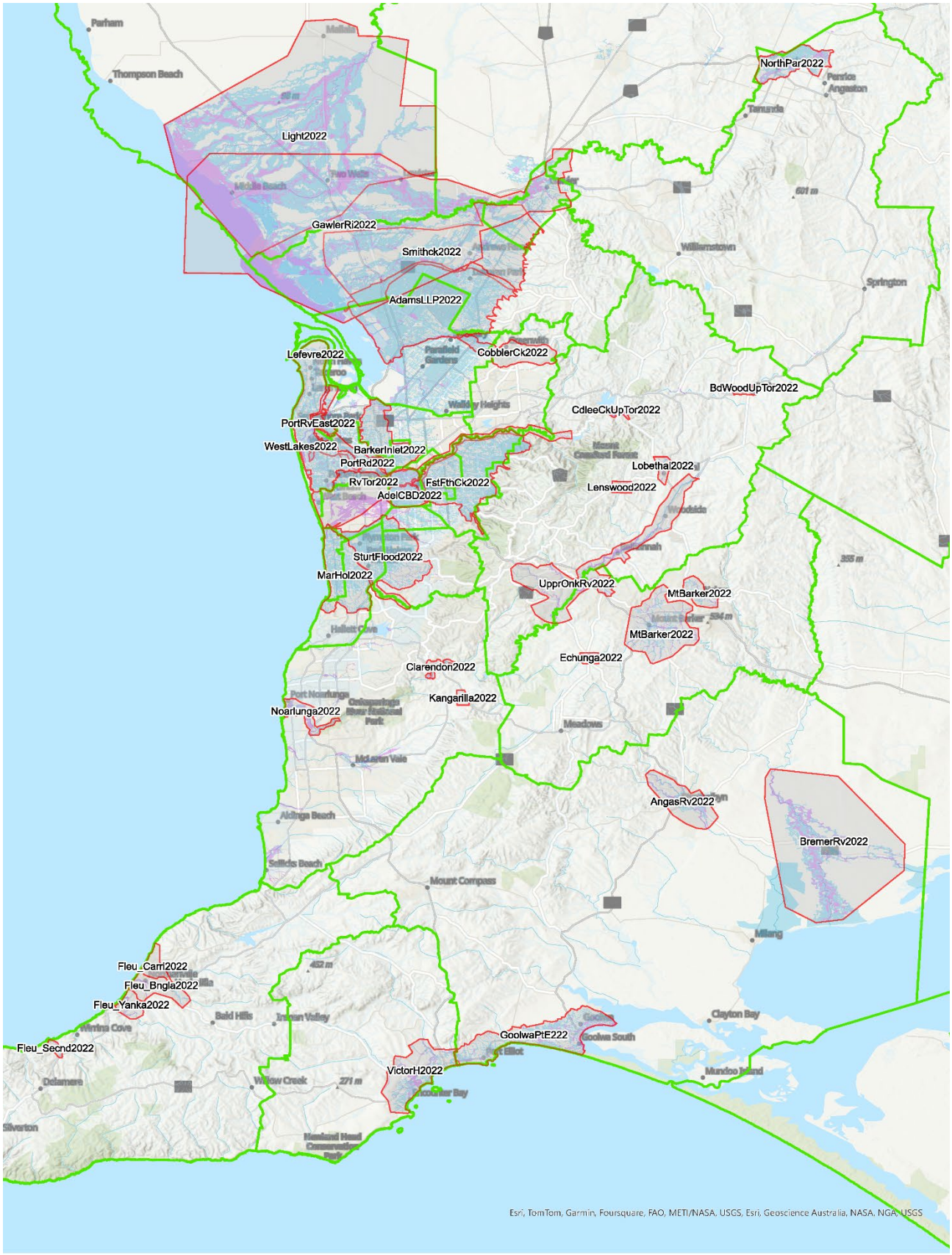


Figure 6: Commissioned flood study extents part 1 of 2

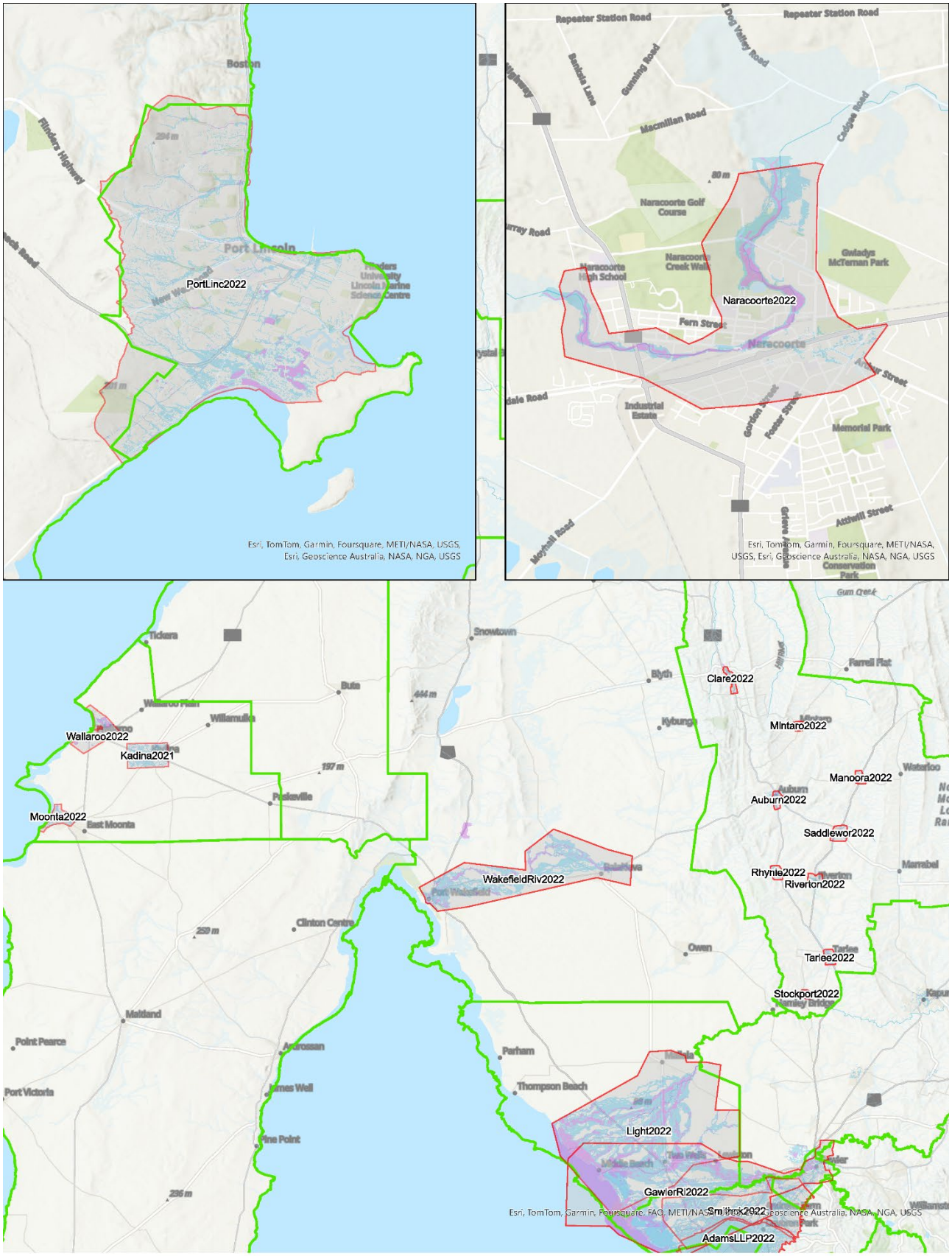


Figure 7: Commissioned flood study extents part 2 of 2

B2 Regional coarse-scale data

- Applied to the Hazards (Flooding – Evidence Required) Overlay
- Regional coarse-scale purchased at 5 metre scale 1 in 100 year pluvial and fluvial data from Ambiental for greater Adelaide as follows:
  - Watercourses buffered 5 metres each side (10 metres total) and used to select pluvial and fluvial 1 in 100 year regional data at a 5 metre scale
  - Where not selected by the buffered watercourse, 1 in 100 year regional data at a 5 metre scale for surface water that exceeded 1 metre in depth
  - Buffered watercourses and selected 5 metre flood data combined with waterbodies, rivers and reservoirs.
- Regional coarse-scale purchased 30 metre scale 1 in 200 year pluvial and fluvial data from Ambiental from far north, regional and remote areas as follows:
  - Watercourses buffered 15 metres each side (30 metres total) and used to select pluvial and fluvial 1 in 200 year regional data at a 30 metre scale
  - Where not selected by the buffered watercourse, 1 in 200 year regional data at a 30 metre scale for surface water that exceeded 1 metre in depth
  - Buffered watercourses and selected 30 metre flood data combined with waterbodies, rivers and reservoirs.
- Regional coarse-scale data has been overlapped with existing flood studies where a clear flood study extent is not available.

B3 Stage 1 council flood studies

- Applied to the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay
- Currently applied as Hazards (Flooding – Evidence Required) Overlay under the Stage 1 of the Project as Flood Hazards Mapping Update Code Amendment
- Council flood studies available under Stage 1 of the Project as follows:
  - Burnside Floodplain Mapping 2019 (1st to 3rd Creeks Catchment)
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
    - 1% AEP
    - Existing development
    - Flood hazard classification
  - Auburn Stormwater Management Plan 2019
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
    - 1% AEP
    - Existing development

        - Flood hazard classification
    - Brown Hill Creek Urban Catchment Stormwater Management Plan (2017)
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - 1% AEP
        - Existing Infrastructure
        - Flood depth classification
    - Dry Creek Stormwater Management Plan 2021
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - 1% AEP
        - Existing Development
        - Flood depth classification
        - Noted this was draft at Stage 1 and completed by Stage 2.
- Refer to commissioned flood studies Naracoorte Flood Study 2022 and Port Lincoln Flood Study 2022 used in the Flood Hazards Mapping Update Code Amendment referred to in section B1.
- Council studies replaced by commissioned flood study extents where in the same geographical area.

B3 Stage 1 zone-based flood mapping

- Retained in the Hazards (Flooding – Evidence Required) Overlay
- Currently applied as Hazards (Flooding – Evidence Required) Overlay under the Stage 1 of the Project as Flood Hazards Mapping Update Code Amendment
- Zone-based parcels applied under Stage 1 (refer to flood study boundary extents below) as follows:
    - Within a residential or neighbourhood zone (snapped to zone boundaries)
    - Where there is no detailed flood study or insufficient mapping for the area
    - In the following greater Adelaide councils:
        - City of Playford
            - Hills Neighbourhood
        - City of Burnside
            - Hills Neighbourhood
        - City of Mitcham
            - Established Neighbourhood

        - General Neighbourhood
        - Hills Neighbourhood
        - Local Activity Centre
        - Strategic Innovation
        - Suburban Activity Centre
        - Suburban Business
        - Suburban Neighbourhood
        - Urban Corridor (Living)
    - City of Marion
        - General Neighbourhood
        - Hills Neighbourhood
        - Local Activity Centre
        - Rural Neighbourhood
        - Suburban Activity Centre
        - Suburban Neighbourhood
    - City of Onkaparinga zones
        - Caravan and Tourist Park
        - Deferred Urban
        - Established Neighbourhood
        - General Neighbourhood
        - Hills Neighbourhood
        - Home Industry
        - Housing Diversity Neighbourhood
        - Local Activity Centre
        - Master Planned Neighbourhood
        - Master Planned Township
        - Residential Park
        - Rural Neighbourhood
        - Suburban Activity Centre
        - Suburban Business
        - Suburban Main Street
        - Suburban Neighbourhood
        - Tourism Development
        - Township Neighbourhood
        - Urban Activity Centre
        - Urban Neighbourhood
- Clipped to prioritise commissioned and council flood study data and extents
- Stage 1 zone-based flood mapping to overwrite regional coarse-scale flood data.

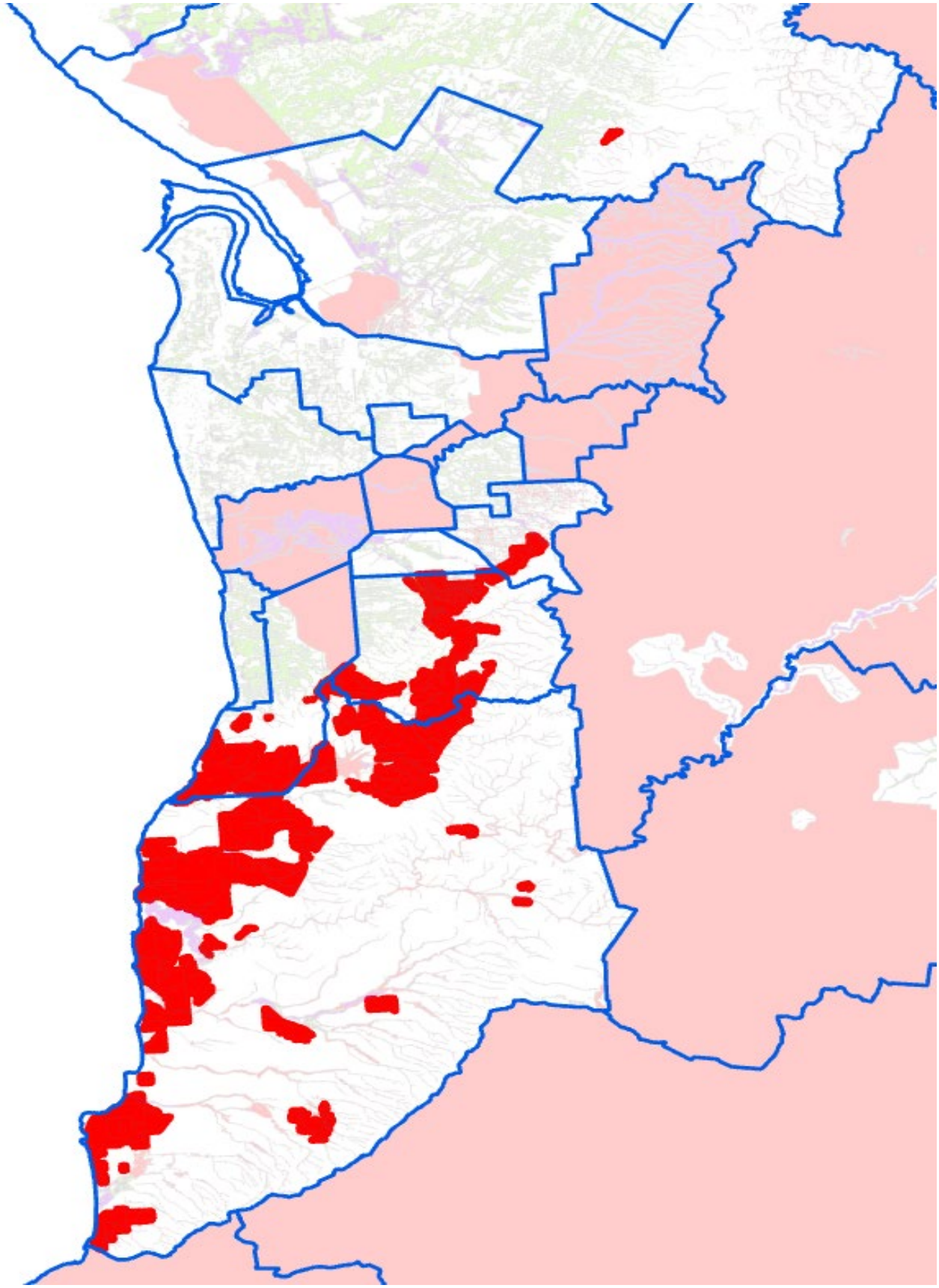


Figure 8: Stage 1 zone-based flood mapping extent in red

B6 Precautionary flood mapping within council areas

- Retained in the Hazards (Flooding – Evidence Required) Overlay.
- Flood hazard data retained from existing Code in a portion of the following local government areas:
  - City of West Torrens
  - City of Port Adelaide Enfield
  - Corporation of the Town of Walkerville.
- To account for potential surface water flooding until the area is updated with a more detailed flood study.
- Clipped to prioritise commissioned and council flood study data and extents.

B4 Stage 2 council flood studies

- Applied to the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay
- Council flood studies and flood hazard data available under Stage 2 of the Project as follows:
  - Anderson avenue
    - Hazards (Flooding) Overlay values introduced
    - 1% AEP
    - Australian Height Datum (AHD) area of interest
  - Barker Inlet Central Stormwater Management Plan 2021
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
    - 1% AEP
    - Ultimate future development
    - Existing infrastructure
    - Flood depth classification
    - Limited data incorporated due to overlapping commissioned studies
  - Dry Creek Stormwater Management Plan 2021
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
    - 1% AEP
    - Existing development
    - Flood depth classification
  - Combined Longterm Litle Para Helps Road, Adams Creek 2011

        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - 1% AEP
        - Existing development
        - Flood depth classification
    - Naracoorte Hazard 2018
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - 1% AEP
        - Naracoorte Flood Warning
        - Flood hazard classification
        - Majority removed by commissioned study, areas retained for continuity
    - Old Dry Creek 2008
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - 1% AEP
    - Sturt Creek Urban Catchment 2017
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - Current scenario
        - Flood hazard classification at allotment level
        - Majority removed by commissioned study, areas retained for continuity
    - Torrens Road Drainage Authority 2015
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - Overlapped by commissioned flood study
    - Unley Urban Floodplain Mapping 2019
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values introduced
        - Current scenario
        - Flood hazard classification at allotment level
- Council studies replaced by commissioned flood study extents where in the same geographical area.

B5 Existing flood studies

- Retained in the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay.
- Where no changes occurred from Stage 1 or required from Stage 2 flood studies.
- Flood hazard data retained from initiation of the Code as follows:
  - Alexandrina Zoning Change Submission
    - Hazards (Flooding – General) Overlay value retained
    - Overlapped by commissioned flood study
  - Barossa Subject to Flooding Concept Plan
    - Hazards (Flooding) Overlay retained
    - Retained in Stockwell, overlapped by commissioned flood study
  - Barossa - Flood Hazard Extent
    - Hazards (Flooding) Overlay retained
  - Brownhill Creek 1% AEP Flood & Inundation 2011 and Brownhill Creek Channel 1% AEP flood & Inundation 2011
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Overlaps parcel-based City of Mitcham in the Hazards (Flooding – Evidence Required) Overlay
  - Combine Long Term Little Para Helps Rd Adams Creek Greater Edinburgh Parks
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Combined 1% AEP studies retained for gaps in commissioned studies
    - Overlapped by commissioned flood study and Dry Creek Study, incorporated into commissioned study area, Dry Creek and regional data retained for continuity
  - Charles Sturt 100yr Longterm Flood Contours 2012
    - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - 1% AEP studies retained for gaps in commissioned studies
    - Overlaps with commissioned data and Torrens Road Drainage data retained for continuity
  - Development Plan Flood source
    - Hazards (Flooding) Overlay value retained
    - Retained in Elliston, Edithburgh, Beaufort, Clare, Jamestown and Tatiara

- Gawler Surrounds Stormwater Management Plan 1% Annual Exceedance Probability (AEP)
  - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
  - 1% AEP
  - Existing Scenario
  - Overlaps with commissioned and regional coarse-scale data
- Hindmarsh-Enfield-Prospect (HEP) Flood Contours 100yrARI Longterm
  - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
  - Overlaps with commissioned data, limited area retained
- Kangaroo Island Annual Exceedance Probability (AEP) 1% Storm Tide Inundation Existing
  - Hazards (Flooding) Overlay value retained
  - Existing Scenario
- Kersbrook 100 yr ARI event 1992
  - Hazards (Flooding) Overlay value retained
- Light Freeling, Greenock, Kapunda 100yr Max
  - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
- Light River 1in100 Hazard Pre Dev
  - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
  - Clipped to commissioned study area
- Mitcham Minno Creek 100 yr ARI
  - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
  - Overlaps with Onkaparinga ARI flood study
- Mitcham Development Plan Residential Parcels
  - Hazards (Flooding) Overlay value retained
- Onkaparinga - ARI Flood Study
  - Hazards (Flooding) Overlay value retained
- Onkaparinga 1 in 100-year ARI 6 catchments

        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Port Adelaide Enfield North Arm East Flood Contours 100yr ARI Longterm
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Port Adelaide Enfield Torrens Road Drainage Authority 2015
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Port Augusta - ARI Flood Event Concept Plan
        - Hazards (Flooding) Overlay value retained
    - Port Pirie - ARI flood
        - Hazards (Flooding) Overlay value retained
    - River Torrens Flood Inundation 1999
        - Hazards (Flooding) Overlay value retained
    - Tea Tree Gully Development Plan – Creek Buffers
        - Hazards (Flooding) Overlay value retained
    - Unley Southfront Property Flood Category 2018
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Upper Onkaparinga River Floodplain Study 2004
        - Hazards (Flooding) Overlay value retained
        - Clipped to commissioned study area
    - Victor Harbor Port Elliott 1% AEP Hazard
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
        - Clipped to commissioned study area
    - West Torrens- ARI Flood
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
    - Whyalla - ARI flood study 2013
        - Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay values retained
- Existing studies replaced by commissioned and council flood study extents where in the same geographical area.

Notes on process

- Where multiple studies overlap, the highest value flood risk takes precedence and no data is removed.
- Where data existed prior to the release of Stage 1 – and no updated studies have been introduced, retain this data and its values.
- Zoning based flood hazard as the Hazards (Flooding – Evidence Required) Overlay is retained.

ATTACHMENT C – PROPOSED AMENDMENTS

C1 Amendment to the Spatial Application (SAPPA)

(1) Amend the spatial application of the Hazards (Flooding) Overlay, Hazards (Flooding – General) Overlay and Hazards (Flooding – Evidence Required) Overlay in SAPPA, in accordance with the 'Flood Hazard – Proposed' layers shown in the online map viewer titled 'State-wide Flood Hazard Overlay Code Amendment – Draft Mapping for Consultation' at: plus.geodata.sa.gov.au/floodconsult/index.html

C2 Amendment to Part 1 – Rules of Interpretation

In **Part 1 – Rules of Interpretation**, Spatial Information and Electronic Databases and Files, include, in alphabetical order, the following additional 'Overlays' and associated 'Nature of Updates' in the 'Table' applying to Ministerial Determinations:

Drafting note:

Green text = New text

Overlay or Concept Plan	Nature of Updates
Hazards (Flooding) Overlay	The overlay may be updated in accordance with a practice direction issued by the State Planning Commission under section 42 of the *Planning, Development and Infrastructure Act 2016*.
Hazards (Flooding – General) Overlay	The overlay may be updated in accordance with a practice direction issued by the State Planning Commission under section 42 of the *Planning, Development and Infrastructure Act 2016*.
Hazards (Flooding – Evidence Required) Overlay	The overlay may be updated in accordance with a practice direction issued by the State Planning Commission under section 42 of the *Planning, Development and Infrastructure Act 2016*.

C3 Amendment to Part 3 – Overlays

In **Part 3 – Overlays** amendment to the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay of the Code as follows.

Drafting notes:

Black text = existing text

Green text = New text

~~Strikethrough = deleted text~~

Hazards (Flooding) Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Impacts on people, property, infrastructure and the environment from ~~high~~ intolerable flood risk are minimised by retaining areas free from development, and minimising intensification where development has occurred.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Division	
PO 1.1 Land division is limited to areas where the consequences to buildings and safety ~~are low and~~ can be readily managed or overcome to a tolerable flood risk.	DTS/DPF 1.1 None are applicable.
Land Use	
PO 2.1 Development sited and designed to minimise exposure of people and property to ~~unacceptable~~ intolerable flood risk.	DTS/DPF 2.1 None are applicable.
PO 2.2 Development including buildings for vulnerable communities ~~Buildings housing vulnerable people~~, community ~~services~~ facilities, key infrastructure and emergency services facilities are not located in the overlay unless: (a) there is an overriding planning need for the use	DTS/DPF 2.2 Child care facilities, educational facilities, retirement and supported accommodation, emergency services facilities, hospitals and prisons are not located within the Overlay ~~area~~.

(b) there is no alternative site outside of the overlay that would address the identified need (c) development ~~sited away from flood prone areas to~~ enables the uninterrupted operation of services during an extreme flood event and (d) development reduces the likelihood of entrapment during an extreme flood event.	

Flood Resilience	
PO 3.1 Development avoids the need for flood protection works.	DTS/DPF 3.1 None are applicable.
PO 3.2 Development does not cause ~~unacceptable~~ adverse impacts on any adjoining property by the diversion of flood waters or an increase in flood velocity or flood level.	DTS/DPF 3.2 None are applicable.
PO 3.3 Development does not impede the flow of floodwaters through the allotment or the surrounding land, or cause an unacceptable loss of flood storage.	DTS/DPF 3.3 None are applicable.
PO 3.4 Development avoids ~~frequently flooded or high velocity~~ high flow areas, other than where it is part of a flood mitigation scheme to reduce flood impact.	DTS/DPF 3.4 Other than a recreation area, development is located outside of a ~~5% AEP principal flow path~~ high flow area.

PO 3.5 Buildings are sited, designed and constructed to prevent the entry of floodwaters in a ~~1% AEP~~ defined flood event where the entry of floodwaters is likely to result in undue damage to, or compromise ongoing activities within, buildings.	DTS/DPF 3.5 Buildings comprise one of the following: (a) a porch or portico with at least 2 open sides (b) a verandah with at least 3 open sides (c) a carport or outbuilding with at least 2 open sides (whichever elevations face the direction of the flow) (d) any post construction with open sides (e) a building with a finished floor level that is at least 300mm above the height of a ~~1% AEP~~ defined flood event.
PO 3.6 Fences do not unreasonably impede floodwaters.	DTS/DPF 3.6 A post and wire fence (other than a chain mesh fence).
Environmental Protection	
PO 4.1 Buildings and structures used either partly or wholly to contain or store hazardous materials are designed to prevent spills or leaks leaving the confines of the building during the ~~1% AEP~~ defined flood event to avoid potential environmental harm.	DTS/DPF 4.1 Development involving the storage or disposal of hazardous materials is wholly located outside of the ~~1% AEP flood plain or flow path~~ defined flood event.
PO 4.2 Development does not create or aggravate the potential for erosion or siltation or lead to the destruction of vegetation during a flood.	DTS/DPF 4.2 None are applicable.
Site Earthworks	
PO 5.2 Driveways, access tracks and parking areas are designed and constructed to minimise excavation and filling.	DTS/DPF 5.2 Filling for ancillary purposes:

	(a) does not exceed 300mm above existing ground level and (b) is no more than 5m wide.
Access	
PO 6.1 Development does not occur on land: (a) from which evacuation to areas not vulnerable to flood risk is not possible during a ~~1% AEP~~ defined flood event (b) which cannot be accessed by emergency services vehicles or essential utility service vehicles during a ~~1% AEP~~ defined flood event.	DTS/DPF 6.1 None are applicable.
PO 6.2 Access driveways and tracks to a Class 1 to 9 building ~~significant development (i.e. dwellings, places of work, etc.) consist of~~ comprises a safe, all-weather trafficable surface that is accessible during a ~~1% AEP~~ defined flood event.	DTS/DPF 6.2 ~~None are applicable.~~ Development comprises a Class 10 non-habitable building or structure.

Hazards (Flooding – General) Overlay

Assessment Provisions (AP)

Desired Outcome (DO)

Desired Outcome	
DO 1	Impacts on people, property, infrastructure and the environment from ~~general~~ tolerable flood risk are minimised through the appropriate siting and design of development.

Performance Outcomes (PO) and Deemed-to-Satisfy (DTS) Criteria / Designated Performance Feature (DPF)

Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
Land Use	
PO 1.1 Development including buildings for vulnerable communities ~~Buildings housing vulnerable people~~, community ~~services~~ facilities, key infrastructure and emergency services facilities are sited ~~away from flood areas~~, designed and operated to enable uninterrupted operation of services and reduce likelihood of entrapment in an extreme flood event.	DTS/DPF 1.1 ~~Child care facilities, educational facilities, retirement and supported accommodation, emergency services facilities, hospitals and prisons located outside the 1% AEP flood event.~~ None are applicable.
Flood Resilience	
PO 2.1 Development is sited, designed and constructed to prevent the entry of floodwaters where the entry of flood waters is likely to result in undue damage to or compromise ongoing activities within buildings.	DTS/DPF 2.1 Habitable buildings, commercial and industrial buildings, and buildings used for animal keeping incorporate a finished ground and floor level not less than 300mm above the height of a defined flood event. ~~Finished Ground and Floor Levels~~

	[Drafting note: remove the 'Finished Ground and Floor Levels' Technical and Numeric Variations field from DTS/DPF 2.1] ~~In instances where no finished floor level value is specified, a building incorporates a finished floor level at least 300mm above the height of a 1% AEP flood event.~~
Environmental Protection	
PO 3.1 Buildings and structures used either partly or wholly to contain or store hazardous materials are designed to prevent spills or leaks leaving the confines of the building during a ~~1% AEP~~ defined flood event to avoid potential environmental harm.	DTS/DPF 3.1 Development involving the storage or disposal of hazardous materials is wholly located outside of the ~~1% AEP flood plain or flow path~~ defined flood event.

C4 Amendment to Part 7 – Land Use Definitions

In **Part 7**, in the Table of **Land Use Definitions**, insert, in alphabetical order, the following new land use definition:

Drafting note:

Green text = New text

Land Use Term (Column A)	Definition (Column B)	Includes (Column C)	Excludes (Column D)
Buildings for vulnerable communities	In relation to a flood hazard overlay, means a Class 9 building containing any one or more of the following: (a) health-care building; (b) child care centre; (c) primary or secondary school; (d) residential care building.	Child care facility; Hospital; Nursing home.	

C5 Amendment to Part 8 – Administrative Terms and Definitions

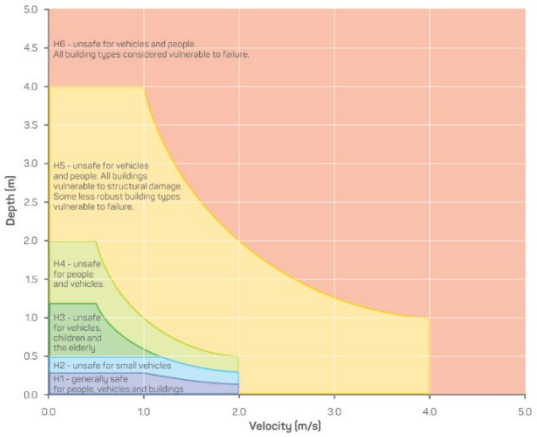
In **Part 8**, in the Table of **Administrative Terms and Definitions**, insert, in alphabetical order, the following new definitions:

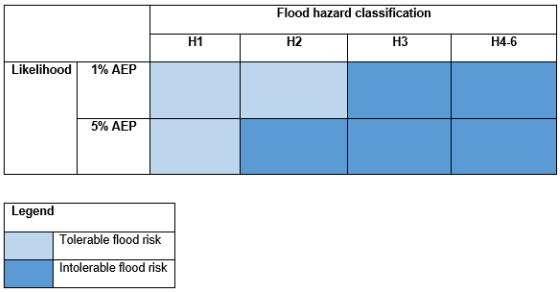
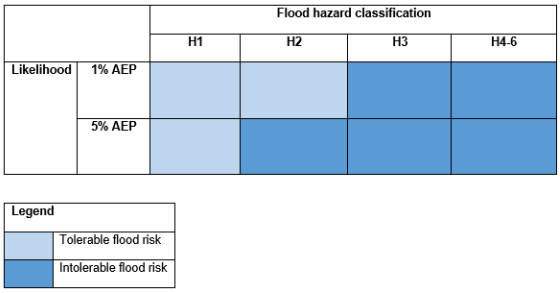
Drafting notes:

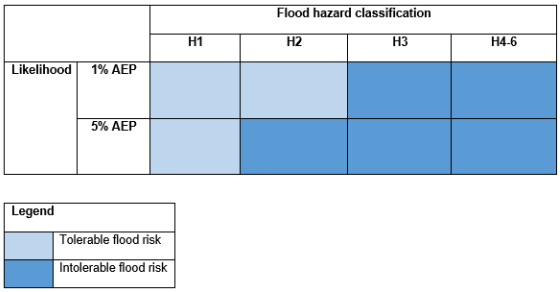
Black text = existing text

Green text = New text

Term (Column A)	Definition (Column B)	Illustrations (Column C)
AEP	Means annual exceedance probability	
Defined flood event	Means a 1 percent annual exceedance probability (AEP) at a 2050 flood event.	
Extreme flood event	Means a 0.2 percent annual exceedance probability (AEP) at a 2050 flood event.	
FFL	Means finished floor level.	
Flood hazard	In relation to a flood hazard overlay, means the potential loss of life, injury and economic loss cause by future flood events. The degree of hazard varies with the severity of flooding and is affected by topography and flood behaviour (extent, depth, velocity).	

Term (Column A)	Definition (Column B)	Illustrations (Column C)
Flood hazard classification	In relation to a flood hazard overlay, means the classification of flood hazard from H1 to H6 based on depth and velocity with vulnerability thresholds as follows: H1 – generally safe for vehicles, people and buildings. H2 – unsafe for small vehicles. H3 – unsafe for vehicles, children and the elderly. H4 – unsafe for vehicles and people. H5 – unsafe for vehicles and people. All building types vulnerable to structural damage. Some less robust building types vulnerable to failure. H6 – unsafe for vehicles and people. All building types considered vulnerable to failure. As published by the Australian Institute for Disaster Resilience in the *Australian Disaster Resilience Guideline 7-3 Flood Hazard 2017* and illustrated in Column C of this term.	 Source: Australian Disaster Resilience Guideline 7-3 Flood Hazard published by the Australian Institute for Disaster Resilience dated 2017 and referred to the Flood Hazard, Technical Report 2014/07, prepared by Smith GP, Davey EK and Cox RJ at the Water Research Laboratory, University of New South Wales, Sydney dated 2014 (aidr.org.au)
Flood hazard overlay	Means any of the following: Flooding (Hazards) Overlay Flooding (Hazards – General) Overlay Hazards (Flooding – Evidence Required) Overlay	

Term (Column A)	Definition (Column B)	Illustrations (Column C)
Flood risk	In relation to a flood hazard overlay, means the potential risk of flooding to people, their social setting, and their built and natural environment. Flood risk varies from tolerable flood risk to intolerable flood risk depending on the likelihood of a flood event occurring (AEP) and the consequence (flood hazard classification).	
High flow area	In relation to a flood hazard overlay, means the area in which a building is vulnerable to structural damage or failure from floodwater in the flood hazard classification H5 or H6 for flood events up to and including the 5 percent annual exceedance probability (AEP) at a 2050 flood event.	
Intolerable flood risk	In relation to a flood hazard overlay, means a risk that, following understanding of the likelihood and consequences of flooding is so high that it requires consideration of implementation of treatments or actions to improve understanding, avoid, transfer or reduce the risk. Intolerable flood risk is quantified as: H3-6 flood hazard classification for a one per cent annual exceedance probability (AEP) at 2050 flood event H2-6 flood hazard classification for a five per cent AEP at 2050 flood event And illustrated in Column B of this term.	

Term (Column A)	Definition (Column B)	Illustrations (Column C)
Tolerable flood risk	In relation to a flood hazard overlay, means a risk that, following understanding of the likelihood and consequences of flooding are tolerated provided the risk is reduced as low as reasonably practicable. Tolerable flood risk is quantified as: H1-2 flood hazard classification for a one per cent annual exceedance probability (AEP) at 2050 flood event H1 flood hazard classification for a five per cent AEP at 2050 flood event As illustrated in Column B of this term.	

ATTACHMENT D – STRATEGIC PLANNING OUTCOMES

D1 State Planning Policies

The State Planning Policies (SPPs) require that the Principles of Good Planning are considered in the preparation of any designated instrument, including a Code Amendment.

The Principles of Good Planning are set out under section 14 of the Act and have been taken into consideration in preparation of this Code Amendment, with the key relevant principles noted below.

Principles of Good Planning	Relevance to Code Amendment
Long-term focus principles Policy frameworks should be based around long-term priorities, be ecologically sound, and seek to promote equity between present and future generations. Policy frameworks should be able to respond to emerging challenges and cumulative impacts identified by monitoring, benchmarking and evaluation programs.	The Code Amendment proposes flood hazard mapping and policy so that development considers longer-term flood risk on people, property, infrastructure and the environment to a 2050 scenario.
Sustainability principles Cities and towns should be planned, designed and developed to be sustainable. Particular effort should be focused on achieving energy efficient urban environments that address the implications of climate change. Policies and practices should promote sustainable resource use, reuse and renewal and minimise the impact of human activities on natural systems that support life and biodiversity.	The Code Amendment proposes to incorporate climate modelling to 2050 within the flood hazard mapping so that development addresses the implications of projected climate conditions including rising temperatures, sea level rise and rainfall projections.
Investment facilitation principles Planning and design should be undertaken with a view to strengthening the economic prosperity of the state and facilitating proposals that foster employment growth. The achievement of good planning outcomes should be facilitated by coordinated approaches that promote public and private investment towards common goals.	The Code Amendment seeks to improve certainty and consistency in flood hazard mapping and policy so that public or private entities carrying out development, including for employment generating development, can better understand where flood hazard is identified so that risks can be appropriately avoided, mitigated or minimised.

Principles of Good Planning	Relevance to Code Amendment
Integrated delivery principles Policies, including those arising outside the planning system, should be coordinated to ensure the efficient and effective achievement of planning outcomes. Planning, design and development should promote integrated transport connections and ensure equitable access to services and amenities. Any upgrade of, or improvement to, infrastructure or public spaces or facilities should be coordinated with related development.	The Code Amendment seeks to align with policies outside of the planning system as discussed under **D3 – Other Strategic Plans** in the coordination and response to flood risk across South Australia.

SPP Key Principles

There are 16 SPPs that include Objectives, Policies and Principles for Statutory Instruments (including the Planning and Design Code). The most critical SPPs in the context of this Code Amendment are:

State Planning Policy	Code Amendment Outcome
SPP 5: Climate Change **Objective:** Provide for development that is climate ready so that our economy, communities and environment will be resilient to climate change impacts. **SPP 5.5** Avoid development in hazard-prone areas or, where unavoidable, ensure risks to people and property are mitigated to an acceptable or tolerable level through cost-effective measures. **SPP 5.8** Encourage decision-making that considers the impacts of climate change and that draws on the best available information. **SPP 5.9** Encourage development that does not increase our vulnerability to, or exacerbate the impacts of climate change and which makes the fullest possible contribution to mitigation.	The Code Amendment proposes to incorporate new and enhanced flood hazard mapping that used the best available climate change information at the time of preparation. Proposed new administrative definitions improve consistency and enhance policies to avoid development subject to an intolerable flood risk, accommodate development where risks can be mitigated to a tolerable flood risk, and strengthen policies for more vulnerable land uses in the Hazards (Flooding) Overlay and Hazards (Flooding – General) Overlay. The Code Amendment and maintains the Hazards (Flooding – Evidence Required) Overlay where flood data is insufficient, to not exacerbate the impacts of projected climate conditions. The proposed change under Part 1 of the Code seeks to enable a pathway to

State Planning Policy	Code Amendment Outcome
	update the flood hazard overlays more efficiently, so that decisions on development can draw on the best available flood hazard information. Given the above, the Code Amendment is considered to achieve the relevant climate change policies.
SPP 15: Natural Hazards **Objective:** To build the resilience of communities, development and infrastructure from the adverse impacts of natural hazards. **SPP 15.1**: Identify and minimise the risk to people, property and the environment from exposure to natural hazards including extreme heat events; bushfire; terrestrial and coastal flooding; soil erosion; drought; dune drift; acid sulfate soils; including taking into account the impacts of climate change **SPP 15.2**: Locate and design development in accordance with a risk hierarchy of 'avoid', 'accommodate' and 'adapt'. **SPP 15.3** Avoid locating sensitive developments and communities in areas at high risk of hazards – namely hospitals, telecommunication towers, major transport infrastructure, energy base stations and water services – or ensure that these developments are subject to a higher level of assessment.	The Code Amendment seeks to better identify terrestrial flood hazard through more contemporary and consistent mapping with projected climate conditions to 2050. The Code Amendment proposes to better identify flood risk with enhanced definitions on what is considered flood risk and flood hazard, including consideration of AEP flood events and the flood hazard classification model (AIDR 2017). Lastly, the Code Amendment proposes to enhance the policies within the hierarchy to avoid development subject to an intolerable risk and accommodate development where subject to a tolerable flood risk and where risks can be appropriately mitigated. Further changes seek to strengthen policies for land uses vulnerable to intolerable flood risk such as hospitals or key infrastructure. The above is considered to achieve the relevant natural hazards policies.

D2 Regional Plans

Being a state-wide Code Amendment, all Regional Plans are relevant to this Code Amendment as listed below:

- Greater Adelaide Regional Plan
- Eyre and Western Regional Plan
- Far North Regional Plan
- Kangaroo Island Regional Plan
- Limestone Coast Regional Plan

- Murray Mallee Regional Plan
- Yorke Peninsula and Mid North Regional Plan.

The investigations undertaken to date and outlined in this Code Amendment will ensure that the proposed policy changes are largely consistent with the key policies and targets of the Regional Plans described below.

Regional Plan (Greater Adelaide)	Code Amendment Outcome
Theme: Natural resources, environment and landscapes **Outcome 4: A greener, wilder and more climate-resilient environment** <u>Climate change</u> Long-term strategic objectives: #6 Monitor and review the impact of climate change on hazard risk and update hazard overlays within the Code to manage these risks. <u>Natural Hazards</u> Long-term strategic objectives: #1 Avoid locating future growth and sensitive developments (such as hospitals, major transport infrastructure and critical services) in areas of high natural hazard risk where the mitigation strategies are unable to bring risks to an acceptable level. #2 Maintain contemporary data and mapping for areas that are at risk of natural hazards including bushfire, flooding, acid sulphate soils, erosion and other hazards. #3 Provide a risk-based approach to policies within the Planning and Design Code with consistent application of state interest overlays. Action: Flood Hazard Mapping Finalise the State-Wide Flood Hazard Code Amendment, and update floodwater mapping in the Greater Adelaide Regional Plan to align with the	The Code Amendment has investigated the impact of projected climate conditions on flood hazard across South Australia (refer sections 6.1.6, 6.2.2 and 6.2.5). This has informed the proposed updates to policy and spatial application of the flood hazard overlays of the Code to better manage potential flood risks. This is considered to achieve the long-term objective 6 of climate change. The Code Amendment has investigated policies that better protect land uses vulnerable to intolerable flood risk (i.e. hospitals, key infrastructure and emergency services facilities) (refer section 6.2.5). This has informed stronger and clearer policies including consideration of more extreme flood events to 0.2% AEP, avoiding development subject to intolerable flood risk, and defining buildings for vulnerable communities. This is considered to meet long-term objective 1 of natural hazards. The Code Amendment has investigated the use of more contemporary mapping and data to identify areas at risk of flood hazard. This included the preparation of commissioned flood studies with a consistent methodology to quantify flood hazard per the flood hazard classification (AIDR 2017), available council studies, and coarse scale mapping (refer sections 6.1 and 6.2.2) to update the flood hazard overlays. Investigations reviewed Part 1 of the Code and the use of section 71(e) of the Act (section 6.2.3) to enable more efficient updates to the flood hazard overlays. This is considered to achieve long-term objectives 2 and 3 from natural hazards and Action: Flood Hazard Mapping in providing more contemporary and consistent data for these overlays.

Regional Plan (Greater Adelaide)	Code Amendment Outcome
finalisation and publication of the Code amendment.	Lastly, the Code Amendment has investigated policies to be consistent and proportionate to the level of flood risk (section 6.2.5). This includes enhancement of policies that seeks to avoid development subject to an intolerable risk, accommodate development where subject to a tolerable flood risk where risks can be mitigated, and definitions related to flood hazard and flood risk. This is considered to achieve long-term objective 3 for natural hazards. This Code Amendment directly progresses the action Flood Hazard Mapping.

Regional Plans (Eyre and Western, Far North, Kangaroo Island, Limestone Coast, Murray Mallee, Yorke Peninsula and Mid North).	Code Amendment Outcome
Theme: Natural resources, environment and landscapes **Outcome 3: A more climate-resilient and sustainable environment** <u>Climate change</u> Long-term strategic objectives: #6 Actively investigate, as well as monitor and review the impact of climate change on hazard risk, and update hazard overlays and other measures within the Code to manage these risks[4]. <u>Natural Hazards</u> Long-term strategic objectives: #1 Avoid locating future growth and sensitive developments (such as hospitals, major transport infrastructure and critical services) in areas of high natural hazard risk where the mitigation	The Code Amendment has investigated the impact of projected climate conditions on flood hazard across the South Australia (refer sections 6.1.6, 6.2.2 and 6.2.5). This has informed the proposed updated policy and spatial application of the flood hazard overlays of the Code to better manage these potential flood risks. This is considered to achieve long-term objective 6 of climate change. The Code Amendment has investigated policies that better protect land uses vulnerable to intolerable flood risk (i.e. hospitals, key infrastructure and emergency services facilities) (refer section 6.2.5). This has informed stronger policies including avoiding development subject to intolerable flood risk, in more extreme events and with a definition for buildings for vulnerable communities to better capture these land uses. This is considered to meet long-term objective 1 of natural hazards. The Code Amendment has investigated the use of more contemporary mapping and data to identify areas at risk of flood hazard and

[4] Regional Plans for Kangaroo Island, Far North and Murray Mallee have varied wording in objective 6: *Actively investigate, monitor and review the impact of climate change on hazard risk, and update hazard overlays and other measures within the Code.*

Regional Plans (Eyre and Western, Far North, Kangaroo Island, Limestone Coast, Murray Mallee, Yorke Peninsula and Mid North).	Code Amendment Outcome
strategies are unable to bring risks to an acceptable level. #2 Maintain contemporary data and mapping for areas that are at risk of natural hazards including bushfire, flooding, acid sulphate soils, erosion and other hazards. Action: Flood Hazard Mapping Finalise the State-Wide Flood Hazard Code Amendment, and update floodwater mapping in the Regional Plan to align with the finalisation and publication of the Code amendment.	future updates to this mapping. This included the preparation of commissioned flood studies using a consistent methodology to quantify flood hazard per the flood hazard classification (AIDR 2017), available council studies, and coarse scale mapping (refer sections 6.1 and 6.2.2) to update the flood hazard overlays. Investigations reviewed Part 1 of the Code and the use of section 71(e) of the Act (section 6.2.3) to enable more efficient updates to the flood hazard overlays. This is considered to achieve long-term objective 2 of natural hazards and Action: Flood Hazard Mapping in providing more contemporary data and mapping for these overlays. This Code Amendment directly progresses the action Flood Hazard Mapping.

D3 Other Strategic Plans

Additional documents may relate to the broader intent within the scope of this proposed Code Amendment (or directly to the Affected Area) and therefore are identified for consideration in the preparation of the Code Amendment.

The following table identifies other documents relevant to the proposed Code Amendment.

Other Relevant Document	Code Amendment Outcomes
The South Australian State Emergency Management Plan (2025)	The State Emergency Management Plan sets out the State's comprehensive emergency management arrangements. It includes a clear set of principles that define the responsibilities of government agencies in emergency management activities. The Code Amendment will provide more accurate mapping of flood hazard and provide relevant policy to facilitate appropriate development while mitigating flood hazard.
Flood Hazard Risk Reduction Plan (2024)	The purpose of the Flood Hazard Risk Reduction Plan is to set out arrangements and provide information for effective, efficient and coordinated flood management in South Australia. It includes State government flood management priorities for the coming years. The spatial application of the flood hazard overlays will be used to inform future

Other Relevant Document	Code Amendment Outcomes
	South Australian Flood Hazard Risk Reduction Plans. The primary audience for the Flood Hazard Plan is the State Emergency Management Committee (SEMC), the emergency management sector, other relevant State Agencies, local councils, local government authorities and boards as well as the broader public.
State Infrastructure Strategy (2025)	The State Infrastructure Strategy sets out the assessment and advice of Infrastructure South Australia relating to the current state and projected needs and challenges in addition to key priorities for 20 years for the state's infrastructure. *Outcome 3 shaping a sustainable future: infrastructure decisions advance climate readiness, safeguard nature and culture and promote a circular economy* is of relevance to the Code Amendment, specifically item 3.3.2.3 community and planning. The spatial application of the flood hazard overlays will enable more accurate knowledge of flood risk and location of flood hazards. This information can be used to build infrastructure in places that are less exposed to threats and hazards supports overall community resilience.
Stronger Together – South Australia's Disaster Resilience Strategy (2019)	The Stronger Together – South Australia's Disaster Resilience Strategy (led by South Australian Fire and Emergency Services Commission (SAFECOM)) provides a foundation upon which State and local governments, non-government organisations, businesses, and communities can work together to build resilience and make South Australia a safer place. The Stronger Together – South Australia's Disaster Resilience Strategy also focusses on building the capability of emergency services and other emergency management organisations. The Code Amendment will provide more accurate mapping of flood hazard which may be used by emergency services agencies to establish appropriate management strategies for disaster resilience.

Other Relevant Document	Code Amendment Outcomes
South Australian Government's Climate Change Resilience and Adaptation Actions (2024)	South Australian Government's Climate Change Resilience and Adaptation Actions provide a range of foundational actions to respond to climate change. Updated flood hazard policy and the spatial application of the hazard flood overlays with projected climate conditions align with the following actions in: • Part 3 – Built and Urban Environments: Action 3.1 – Strengthen climate smart planning, building and design policies and their implementation in the planning systems; and • Part 4 – Communities: Action 4.7 – Integrate future climate change risk into hazard mapping and information.
National Disaster Risk Reduction Framework (2018)	The National Disaster Risk Reduction Framework is a multisector collaboration led by the National Resilience Taskforce within the Australian Government Department of Home Affairs. The Framework guides national, whole-of-society efforts to proactively reduce disaster risk to minimise the loss and suffering caused by disasters from natural hazards. The overall intent of the Code Amendment aligns with the framework in mitigating flood hazards and protecting people and property.
Australian Disaster Preparedness Framework (2018)	This document describes the Australian Disaster Preparedness Framework and its seven components. It outlines the principles that underpin national preparedness and defines what constitutes preparedness capabilities for severe to catastrophic disasters. Importantly, the document provides guidelines that can be used by all jurisdictions to inform the development of capability across Australia to prepare for and manage severe to catastrophic disasters. Introducing more accurate flood hazard mapping in the Code will enable better preparedness for future flood events.
Climate Change Science and Knowledge Plan (2022)	The Climate Change Science and Knowledge Plan seek to improve the evidence base supporting climate change response for South Australia. This plan identified a gap in South Australia's response to climate change through its flood mapping. The Code Amendment proposes

Other Relevant Document	Code Amendment Outcomes
	to include flood studies with climate scenario modelling to better guide policy, planning and decision making.
Guide to Climate Projections for Risk Assessment and Planning in South Australia (2022)	The Guide to Climate Projections for Risk Assessment and Planning in South Australia describes state-wide climate trends for the state projected to 2050 and beyond. The guide described that for decisions with a lifetime to 2050 or before, planning according to a high emission scenario to 2050 is a suitably precautionary approach. The Code Amendment has included flood hazard modelling to a high emission scenario to 2050.
AIDR Handbook 7 Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia (2017), including companion documents: Guideline 3: Flood hazard Guideline 5: Flood information to support land-use planning.	The AIDR Handbook 7 and companion documents provide a framework for best practice management of flood risk including how to assess flood hazard, how to use flood information to inform land use planning decisions and references the International Organisation for Standardization (ISO) *ISO 31000:2009* providing principles on risk management. The Code Amendment seeks to incorporate mapping and policy accounting for future flood hazard, use of the Flood Hazard Classification model to quantify flood hazard, refined policy for buildings for vulnerable communities, and enhancement of definitions related to flood hazard and flood risk, in accordance with this handbook and guidelines.

ATTACHMENT E – INVESTIGATIONS

E1 Residential Development Potential Analysis (RDPA)

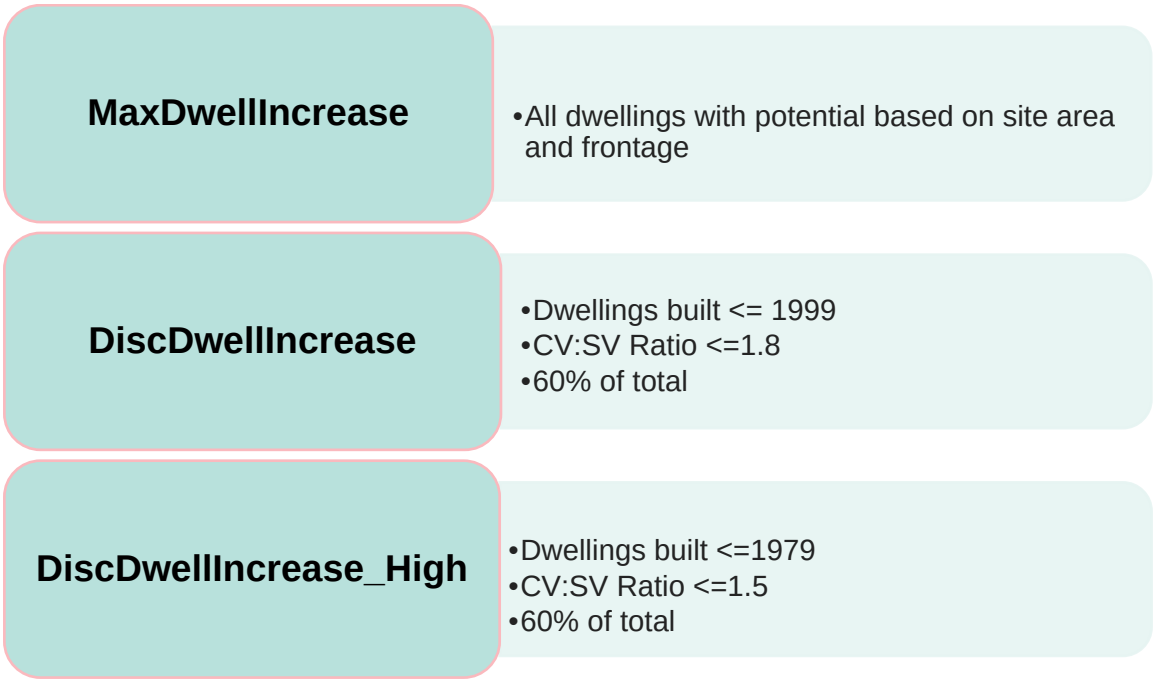
The commissioned flood studies modelled a 2050 scenario with future development projections using a RDPA to determine the development infill projections as follows.

Table identifying key fields

Field	Description
Dwell2020	Number of dwellings at June 2020 (including Non-private dwellings)
NPD2020	Number of non-private dwellings at June 2020
Dwell-w-Pot (Dwell-w-Po)	Number of dwellings with potential for development (dwelling increase >=1)
The following fields are for the maximum dwelling potential. This number considers that all dwellings with potential are demolished and replaced with the maximum dwelling increase allowed for that site	
MaxNewDwell (MaxNewDwel)	New dwellings that could be built on demolition sites
MaxDwellIncrease (MaxDwellIn)	Net increase in dwellings (new dwellings minus demolitions)
MaxDwellFuture (MaxDwellFu)	Total number of dwellings (including those that have not been developed) in the future following development of all parcels with potential
The following fields provide a more realistic dwelling potential. This number considers that only dwellings built <=1999 and that currently have a CV:SV Ratio <=1.8 will be developed. It assumes that of the selected sites with potential, only 60% of max potential will be achieved	
DiscDwell-w-Pot (DiscDwell_)	Number of dwellings with potential for development (dwelling increase >=1)
DiscNewDwell (DiscNewDwe)	New dwellings that could be built on demolition sites
DiscDwellIncrease (DiscDwellI)	Net increase in dwellings (new dwellings minus demolitions)
DiscDwellFuture (DiscDwellF)	Total number of dwellings (including those that have not been developed) in the future following development of all parcels with potential
The following fields provide a more realistic dwelling potential, highlighting the stock that has a higher probability of being developed. This number considers that dwellings built <=1979 and that currently have a CV:SV Ratio <=1.5 are more likely to be developed first. It assumes that of the selected sites with potential, only 60% of max potential will be achieved	
DiscNewDwell_High (DiscNewD_1)	New dwellings that could be built on demolition sites

Field	Description
DiscDwellIncrease_High (DiscDwel_1)	Net increase in dwellings (new dwellings minus demolitions)
DiscDwellFuture_High (DiscDwel_2)	Total number of dwellings (including those that have not been developed) in the future following development of all parcels with potential

Figure: Process of determining likely development potential



Each output was put into each local government area with the realistic potential for urban areas based on zoning, site area and frontage, with the RDPA provided to the flood study consultants for preparation of the relevant flood study. The summary of each local government area part of the RDPA is provided below.

Residential Development Potential Analysis, 2015 - Summary of Output by LGA

	Theoretical maximum development potential		
LGA	**1_TO_1_3**	**1_3_TO_2**	**GT2**
BURNSIDE	1,565	1,330	307
CAMPBELLTOWN	17,012	6,384	795
CHARLES	10,457	6,820	466
GAWLER	782	4,694	1,574
HOLDFAST	3,146	1,738	130
MARION	10,660	4,587	1,530
MITCHAM	3,566	3,300	988
NPSP	3,537	1,626	158
ONKAPARINGA	4,655	51,165	24,923
PLAYFORD	2,744	21,456	2,865
PROSPECT	1,458	979	28
PTAD	13,311	8,707	917
SALISBURY	9,390	17,050	1,120
TEA TREE GULLY	20,797	35,269	3,157
UNLEY	1,285	880	43
WALKERVILLE	1,052	202	15
WEST TORRENS	7,191	1,784	205
TOTAL	112,608	167,971	39,221

CV/SV ratio	Theoretical maximum development potential	Availability Assumption	Realistic Potential
1_TO_1_3	112,608	40%	45,043
1_3_TO_2	167,971	30%	50,391
GT2	39,221	30%	11,766
TOTAL	**319,800**	**100%**	**107,201**

E2 Commissioned Flood Studies

The 2022 flood studies commissioned by the Attorney General's Department include the following:

1. Fleurieu Peninsula Townships by HARC
2. Onkaparinga River Lower by HARC
3. River Torrens (Lower) and River Torrens (Upper) Townships by HARC
4. Sturt River (Lower) by HARC
5. Clare Gilbert Valleys by WaterTech
6. Light River by WaterTech
7. Naracoorte by WaterTech
8. Smith Creek by WaterTech
9. Gawler extended Model by WaterTech
10. Adams Creek and Greater Edinburgh Park, Little Para River by Tonkin
11. First to Fifth Creek by Tonkin
12. Marion Holdfast Bay by Tonkin
13. Nuriootpa by Tonkin
14. Port Lincoln by Tonkin
15. West Lakes by Tonkin
16. Goolwa to Port Elliot by Stantec
17. Balaklava to Wakefield by Southfront
18. Barker Inlet by Southfront
19. Bremer River at Langhorne Creek by Southfront
20. Cobbler Creek by Southfront
21. Lefevre Peninsula by Southfront
22. Moonta Area by Southfront
23. Mount Barker by Southfront
24. Port River East by Southfront
25. Port Road by Southfront
26. Strathalbyn by Southfront
27. Upper Onkaparinga River Townships by Southfront
28. Victor Harbor by Southfront
29. Wallaroo by Southfront
30. Kadina by WGA.

Documents available to view at: plan.sa.gov.au/have_your_say/code-amendments/view_consultation_item?catsid=10042

E3 Comparative Maps

DHUD and DEW prepared maps comparing the spatial extent, flood depth, and assessment pathway differences between the 2022 and 2050 scenarios relating to the following flood studies to be incorporated within the Code Amendment:

- Barker Inlet by Southfront
- Lefevre Peninsula by Southfront
- River Torrens (Lower) by HARC
- Sturt River (Lower) by HARC
- First to Fifth Creeks by Tonkin
- Gawler River by Water Technology (spatial extent only).

The comparative maps are below.

E4 Technical and Numeric Variation (TNV) and Water Surface Elevation (WSE) Maps

DHUD prepared maps to evaluate the spatial application of the existing where subject to only the Hazards (Flooding – General) Overlay and proposed WSE (flood level at AHD) for the 1% AEP at 2050 flood event provided in the commissioned flood studies.

The maps show areas in City of Holdfast Bay, Town of Playford, and Port Adelaide Enfield. It is noted that 300mm was added to the water surface elevation to determine the minimum floor and ground level at AHD and compare with the existing TNV AHD heights.

The TNV and WSE maps are below.