

# Dundee City Council

## Strategic Flood Risk Assessment 2025

October 2025

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## 1. Introduction

### What is an SFRA and how does it inform Local Development Planning?

Dundee City Council (DCC) is reviewing the Dundee Local Development Plan 2019. This Strategic Flood Risk Assessment (SFRA) will support the new Local Development Plan to ensure that future development does not increase overall flood risk by avoiding areas of flood hazard. It is a high-level overview of the scope and nature of all sources of existing and future flood risk within the local development plan area. This SFRA has been prepared by the planning authority in consultation with colleagues with expertise in flooding, Scottish Environment Protection Agency (SEPA), and Scottish Water.

The main objectives are to:

- Identify where flood risk exists in the plan area and any significant cross boundary issues at the Evidence Report stage, and therefore where new development should be located or avoided at the Proposed Plan stage, in accordance with Policy 22 of National Planning Framework 4 (NPF4).
- Identify areas where more detailed analysis of flood risk is required beyond the Evidence Report stage in the form of site-specific flood risk assessment.
- Identify areas where climate change is resulting in unmanageable flood exposure, and so where alternative land use is needed, in accordance with NPF4.
- Identify where and how actions contained in the local flood risk management plan (including future flood protection schemes) and Coastal Change Adaptation Plans affect the location of new development.
- Inform blue and green infrastructure audits and/or strategies in support of [NPF4 Policy 20](#).
- Inform the Strategic Environmental Assessment (SEA) of the Local Development Plan.

As well as informing the Local Development Plan, the Strategic Flood Risk Assessment outputs can also be used to support a place-based approach to development and service delivery. For example, the Strategic Flood Risk Assessment could also be used:

- by developers, communities (including for their Local Place Plans), individual applicants
- to support wider infrastructure planning and delivery
- to support the local authorities' services such as emergency planning and resilience

One limitation of this SFRA is that flood risk information is ever evolving, and therefore a snapshot in time used for an SFRA will become out of date.

This document presents Stage 1 of the SFRA, collating the available information relating to all aspects of flood risk, gap analysis and preparation of a map-based assessment. An accompanying GIS map of the scope and nature of all sources of existing and future flood risk across the Dundee local development plan area will be made available on the Dundee City Council Open Data Portal prior to Call for Sites/Ideas. Stage 2 will assess potential development sites against all relevant evidence in line with the NPF4 Policy 22 framework. Detailed site assessment will not be appropriate at the Evidence Report stage, but the planning authority has established a [Site Assessment Methodology](#) that it will use to appraise sites and inform allocations for the proposed plan. The Site Assessment Methodology includes criteria related to water issues including known flood risk, drainage issues and any known mitigation requirements.

#### What geographic area does the SFRA cover?

The SFRA area is the Local Development Plan and DCC boundary area (shown in red below). It lies within the Tay Estuary and Montrose Basin Local Plan District where Angus Council is the lead authority.

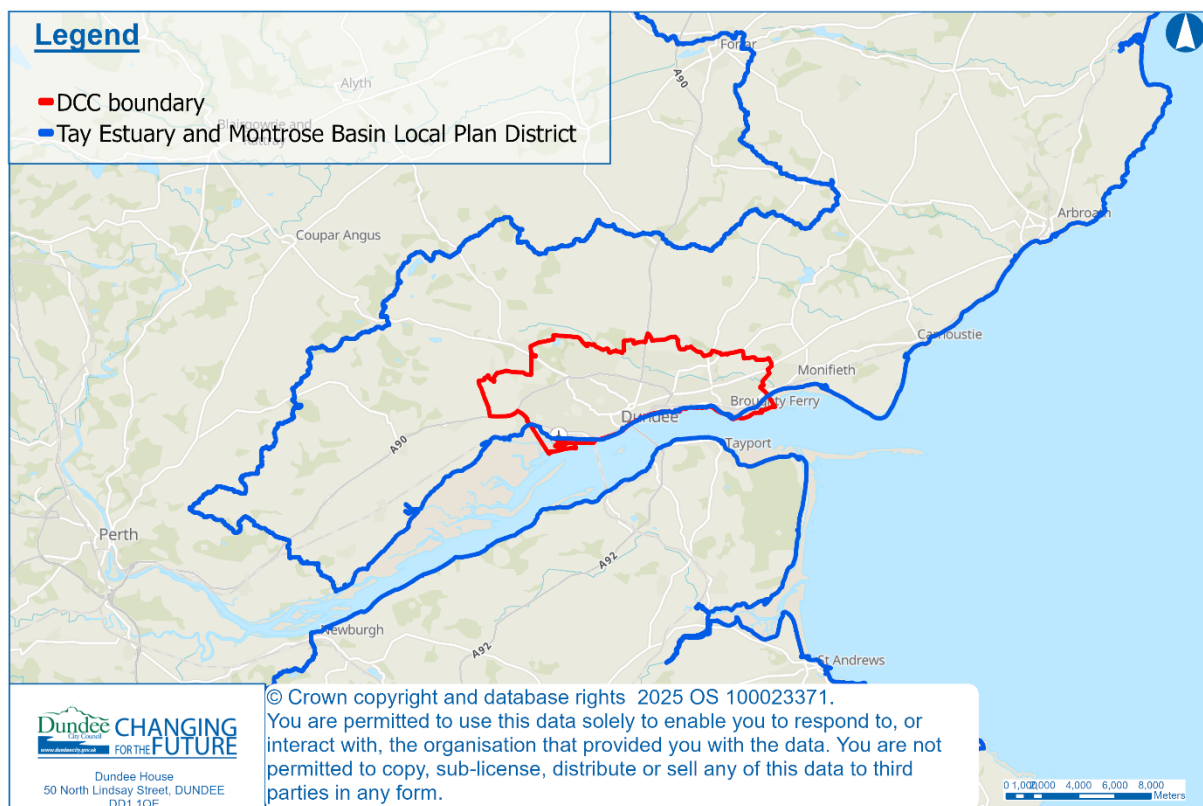


Figure 1: SFRA geographic area

## 2. Policy Context

### National Policy Context

[National Planning Framework 4 \(NPF4\)](#) is a long-term spatial strategy and a statutory component of the development plan. Policy 22 Flood risk and water management promotes a precautionary approach to flood risk, prioritizing avoidance as the first principle. It seeks to reduce the vulnerability of both existing and future development to flooding and enhance community resilience to climate change. Local Development Plans (LDPs) should enhance community resilience to the impacts of climate change by avoiding development in flood-prone areas. This resilience should be supported by managing the reuse of previously developed sites, planning for adaptation measures, and identifying opportunities to improve the water environment through natural flood risk management and blue-green infrastructure. Plans should consider the probability of flooding from all sources and utilize relevant flood risk and river basin management plans. Development in flood risk areas will only be supported if it involves essential infrastructure, water-compatible uses, redevelopment for less vulnerable uses, or repurposing previously used sites identified by the LDP for positive use. The evidence set out in this Strategic Flood Risk Assessment also supports the delivery of other NPF4 policies including Policy 2 Climate mitigation and adaptation, and Policy 20 Blue and green infrastructure.

The [Flood Risk Management \(Scotland\) Act 2009](#) establishes a coordinated approach to flood risk management and designates SEPA, local authorities, Scottish Water, and Scottish Ministers as responsible authorities to develop and implement Flood Risk Management Plans and Local Flood Risk Management Plans. These contain a significant amount of information on potential flood hazards and risks which can be drawn upon to inform the SFRA.

### SEPA Guidance and Technical Resources

This SFRA is informed by the following SEPA guidance documents:

- [\*Strategic Flood Risk Assessment Guidance for Planning Authorities \(Version 2\)\*](#)
- [\*Flood Risk and Land Use Vulnerability Guidance\*](#)
- [\*Climate Change Allowances for Flood Risk Assessment\*](#)
- [\*Flood Risk Standing Advice for Planning Authorities and Developers\*](#)
- [\*Position Statement on Development Protected by Formal Flood Protection Schemes\*](#)
- [\*SEPA's Approach to NPF4 Policy 22 Exceptions\*](#)

- [\*Planning Advice Notes for Local Development Plan Evidence Gathering\*](#)
- [\*Position Statement: Elevated buildings in areas of flood risk\*](#)

These documents provide the technical foundation for assessing flood risk, incorporating climate change, and ensuring that development is appropriately located and designed.

## Local Context

Policies 36 and 37 of the [\*Dundee Local Development Plan 2019\*](#) together establish a framework for managing flood risk and surface water in new developments. Development in high flood risk areas is generally discouraged, especially on undeveloped land or for essential infrastructure, unless strong flood defences are in place and maintained without increasing risk elsewhere. Medium-risk areas are more flexible but still require careful assessment. Both policies emphasize the critical role of Sustainable Drainage Systems (SuDS) in managing surface water sustainably. Their primary function is to manage water quantity and quality, support biodiversity, and contribute to green infrastructure—not to serve as flood protection measures to facilitate new development.

In line with SEPA’s guidance and Dundee City Council’s technical standards, SuDS in the Dundee area are generally designed to accommodate the 1:200 year storm event with an allowance for climate change and urban creep, particularly where discharge to the water environment occurs. This approach exceeds the traditional 1:30 year design standard referenced in *Sewers for Scotland v4*, which does not explicitly include a climate change uplift. It is important to clarify that while SuDS may help manage exceedance flows and reduce surface water flood risk, they are not intended to mitigate fluvial or coastal flood risk nor to justify development in areas at flood risk. SuDS should also deliver ecological benefits, such as habitat creation, and align with the principles of placemaking and environmental enhancement.

The [\*2017 Dundee SFRA\*](#) supported the Local Development Plan 2019 by identifying flood risks from all sources and guiding sustainable land use. It focused on four Potentially Vulnerable Areas (PVAs) and highlighted key flood-prone locations such as Central Dundee, Broughty Ferry, and the Dighty Water corridor. The assessment emphasized integrating flood risk management with green infrastructure and identified opportunities for water environment enhancements, including de-culverting and riparian buffers. This SFRA builds on the 2017 assessment by incorporating new flood risk data and updated policy and guidance.

Dundee City Council works in partnership with neighbouring local authorities, Scottish Water, SEPA, and other partners to improve our understanding of flood risk and mitigate the

impacts of flood risk through the Water Resilient Dundee Partnership (WRD) and the Tay Estuary and Montrose Basin Local Plan District Partnership.

### 3. Information Gathering

This chapter summarises the data and information collated to inform the SFRA, proportionate to the flood risk issues in Dundee. Known datasets that were reviewed and not used are also documented including the reason why they have not been considered in the SFRA process.

Table 1 lists the data and information reviewed and used to inform all stages of the SFRA.

Dataset/Information	Description	Data Holders
<b>Flood Hazard Maps (version 3.0)</b>	Flood hazard/extent maps for the 0.5% AEP (1 in 200 yr) return period for the primary sources of flooding (river, coastal and surface water) including ‘future’ flood maps incorporating climate change allowances where available. See output maps in Appendix A and the guidance on the <a href="#">SEPA website</a> for further clarification and explanatory notes on these and the Future Flood Maps.	SEPA
<b>Climate Change Allowances</b>	SEPA’s climate change allowances are designed to help planning authorities and developers assess future flood risk under changing climate conditions. The key regional uplift values for the Tay Estuary region for peak river flow, peak rainfall intensity, and sea level rise are provided in a table format (see Appendix B). See <a href="#">SEPA guidance</a> for more information.	SEPA
<b>Detailed Flood Modelling</b>	Mapping has been carried out of Dundee’s sewers and watercourses to provide a model of the city’s existing drainage infrastructure. This network has been overlaid with known areas of pluvial flooding and sewer flooding. A full 2Di model of the city’s drainage has been produced including foul water, surface water, road drainage and watercourses. This allows rainfall scenarios to be simulated to identify areas of flooding caused by over capacity	DCC/Scottish Water

	pipe networks and then overland conveyance routes. Further information including the outputs of this mapping can be found in Chapter 6.	
<b>Downfield and Dundee/Monifieth and Sidlaws Flood Protection Study (2019)</b>	<p>Whilst this strategic study was carried out to inform the design of a flood protection scheme and not to inform planning matters, it remains the most robust source of fluvial flood risk information currently available for Dundee and will be used to inform the assessment of potential development sites during Stage 2.</p> <p>Fluvial flood hazard/extent maps were prepared for the 0.5% AEP (1:200 yr) return period and 0.1% AEP (1:1,000 yr) return period as part of this study.</p> <p>This study will not be published due to implications for land sale negotiations with private landowners.</p>	DCC
<b>Previous Flood Events</b>	SEPA Observed Flood Event data and Historic Flood Extents (including past fluvial flooding) is available internally. The Council also maintains internal data on Flood Events by Year and has access to a Flooding Media Map created by Scottish Water for the Dundee area. While these layers will not be published, they will be used to inform site screening.	SEPA/Scottish Water/DCC
<b>Tay Estuary and Montrose Basin Flood Risk Management Plan (Cycle 2: 2022-2028)</b>	<p>Provides an overview of areas at significant flood risk (Potentially Vulnerable Areas) and sets objectives and actions for managing and reducing flood risk.</p> <p><a href="#">Flood Risk Management Plans   SEPA</a> (see LPD 7)</p>	SEPA
<b><a href="#">Local Flood Risk Management Plan- Dundee (Cycle 2: 2022-2028)- Draft</a></b>	Outlines how Dundee City Council and its partners will manage and reduce flood risk over a six-year period. There are two objective target areas within Dundee's boundary (Broughty Ferry and Dundee).	DCC

	Includes information on flood protection schemes, surface water drainage strategies, and natural flood management.	
<b>Flood Defence and Flood Protection Schemes</b>	<p>Understanding residual risk of overtopping, breach or failure is important. Completed schemes include:</p> <ul style="list-style-type: none"> <li>• Dundee (coastal) Flood Protection Scheme</li> <li>• Broughty Ferry Flood Protection Scheme</li> <li>• Dune Restoration and Management Plan (Broughty Ferry)</li> </ul> <p>Proposed projects (subject to funding) include:</p> <ul style="list-style-type: none"> <li>• Phase 2 of the Dundee Flood Protection Scheme to include City Quay, Docks, and Airport.</li> <li>• Dighty and Fithie Burns River Flood Scheme</li> </ul>	DCC
<b>Dynamic Coast 2</b>	Provides information on historical and projected coastal change, erosion risk, asset and infrastructure risk, and social vulnerability. Can be accessed <a href="#">here</a> .	NatureScot
<b>Natural Flood Management opportunities layer</b>	Strategic mapping tool that identifies areas across Scotland where natural processes can be used to reduce flood risk. Includes runoff reduction, floodplain storage, sediment management, estuarine surge attenuation and wave energy dissipation.	SEPA
<b>Surface Water Drainage Planning Guidance 2020</b>	This guidance sets out DCC's policy and technical expectations for surface water drainage in planning applications. It specifies how SuDS should be designed and consultation procedures with Scottish Water and SEPA.	DCC
<b>Section 16 Assessment of risk from the sewer network</b>	This data will be used where appropriate but will be largely superseded by the outputs from the Dundee 2Di drainage model simulations. DCC does not have permission to make this information	DCC/Scottish Water



	publicly available and therefore it will be excluded from the published SFRA dataset.	
<b>Coastal Adaptation Plan</b>	Currently in production and expected before Stage 2 of the SFRA. More information on this can be found in Chapter 6.	DCC
<b>Climate Risk and Vulnerability Assessment</b>	Dundee City Councils CRVA highlights the financial risk incumbent on not taking measures to adapt people and places to climate change. This report considers four key sectors, Business and Industry, Nature, Infrastructure, Health, Communities and Buildings. Each Sector is assessed at a high level in terms of Climate change vulnerability including Flood Vulnerability and Flood Risk.	DCC

Table 2 lists the data and information which was considered but ultimately disregarded from this assessment.

<b>Dataset/Information</b>	<b>Reason for not using</b>
<b>Flood Hazard Maps for other return periods</b>	NPF4 Policy 22: Flood Risk and Water Management defines 'at risk of flooding' as an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change. The 1 in 10 year flood extent is not used for planning decisions under NPF4.
<b>SEPA Reservoir Inundation Maps</b>	These maps are used internally by planning authorities for awareness and emergency planning but are not made publicly available due to sensitivity and data-sharing restrictions.

## 4. Gap Analysis

The analysis of the information collated to inform the SFRA has identified the following gaps:

Gap	Description
<b>Understanding of fluvial flood risk</b>	Up-to-date river modelling requires to be completed, since the original “Downfield and Dundee/Monifieth and Sidlaws Flood Protection Study” was undertaken approximately 6 years ago and before significant storm events in recent years resulting in some significant erosion affecting river channels, banks etc. Further Dighty fluvial modelling is to be undertaken as part of the Dighty Regeneration Water Environment Fund Project. Joint discussions with Angus Council will determine modelling work to be undertaken out with the Dundee Council area.
<b>Revenue Funding for Flood and Blue Green Infrastructure Maintenance</b>	With council revenue maintenance budgets being reduced, any capital investment in new flooding Infrastructure will carefully consider future maintenance costs. This may affect the long-term effectiveness of flood protection measures.
<b>Understanding of existing culverted watercourses</b>	Although there is a good understanding of many culverted watercourses through significant survey work completed in recent years, there are other culverted watercourses being uncovered where further investigation/survey work is required.
<b>Downfield and Dundee/Monifieth and Sidlaws Flood Protection Study/Scheme</b>	Changing rainfall datasets and climate change allowances along with rising construction costs will all impact the development of the Downfield and Dundee/Monifieth and Sidlaws Flood Protection Study/Scheme.

## 5. Actions for SFRA Stage 2

The following key actions will form part of the SFRA Stage 2 screening process during the assessment of candidate sites:

- A. Consideration will be given to all the data listed in Table 1
- B. All sites will be screened against the collated evidence from various sources including the 0.5% AEP (1 in 200 yr) + climate change flood extent dataset, and detailed flood modelling.
- C. In line with Policy 22 of NPF4, the ‘most vulnerable’ uses should be screened using the same level of risk as all other developments plus climate change allowances. The level

of vulnerability may come into play when considering if a site meets relevant exception criteria in Policy 22a).

- D. Identifying sites where the maintenance of an existing formal flood protection scheme is required for the site to have the appropriate level of protection.
- E. The data used in the site screening process will be kept under review as our understanding of flood risk continues to improve.
- F. Data on sewer and surface water network capacity will guide decisions on use, with robust infrastructure areas potentially earmarked for higher-density development.
- G. Sites which contribute to flood resilience, for example through natural flood risk management, will be identified as well as opportunities for their enhancement.
- H. Following the initial sifting process, SEPA will be consulted on sites where further bespoke advice is required to support delivery. They may review all sites due to potential cumulative effects and will advise the planning authority accordingly.

## 6. Further Information

This chapter explores in detail some of the evidence sources listed in Table 1 to provide a high-level overview of flood risk in the city and ongoing efforts to manage it.

### Fluvial (river) flooding

The **Downfield and Dundee, Monifieth and Sidlaws Flood Protection Study (2019)** commissioned by Dundee City Council and Angus Council identifies flood risk areas along the Dighty Water, Gelly Burn and Fithie Burn in the Downfield and Dundee/Monifieth and Sidlaws area and assesses options (including economic viability) for flood protection measures that can be introduced to reduce flood risk to residential and non-residential properties. With there continuing to be uncertainty on Scottish Government funding for proposed Cycle 2 Flood Protection Schemes and no proposed Cycle 2 Flood Protection Schemes having received confirmation of Scottish Government funding, at present this project cannot be developed further. However, Dundee City Council intend to take forward small interventions stated within the report in locations at significant flood risk and where funding allows. It is intended that the project will be taken forward to Cycle 3 if necessary.

Photos evidenced below highlight flooding on the Dighty Water during Storm Babet on 20<sup>th</sup> October 2023. Although the magnitude of the Storm Babet event does not directly match any of the simulated storm events and associated flood mapping prepared as part of the Downfield and Dundee, Monifieth and Sidlaws Flood Protection Study or the mapped flood extents contain on the SEPA Flood Maps, the locations flooded during this storm event and the information recorded helps to verify the areas at fluvial flood risk in the Dundee City Council area.



*Figure 2: Finlathen Park*



*Figure 3: Heron Rise*



*Figure 4: Drumgeith Park*

## Dighty Regeneration Project

Dundee City council and SEPA are working together on a Water Environment Fund (WEF) project on the Dighty Water course in Dundee. This project is to primarily improve the health and natural environment of the river but will deliver potential flooding reductions within the catchment as the river is more capable to deal with increased rainfall and flood events. The Dighty Water has been extensively impacted by engineering activities including channel realignment, straightening, embanking, culverting, reinforcement and impoundments. Consequently, the natural character has been significantly compromised and the morphological and ecological condition heavily damaged. This has resulted in the river being poorly equipped to deal with high levels of flow and an increased reliance on it by Dundee Surface Water management strategies, using the Dighty to reduce flood risk across the city.

## Coastal flooding

As a result of the Flood Risk Management Plan, Coastal Flood Protection Schemes have been completed in Central Dundee and Broughty Ferry in 2019 and 2023 respectively. Further projects at Dundee Airport and Dock Gate/City Quay are proposed for future funding cycles.

Since 2019 a programme of dune restoration works have been implemented. The implementation of a dune management plan is ongoing, and regular inspections are undertaken to identify further works to protect and enhance the area. These works have been undertaken to complement the natural coastal flood protection that the dunes provide to Broughty Ferry.



*Figure 5: Broughty Ferry Flood Protection Scheme*





*Figure 6: Dundee Flood Protection Scheme*

Dundee has protected most of its coastline from coastal flooding and the threat of sea level rise. However, if climate change continues to accelerate and sea levels continue to rise there may be a point in the future where the coastal flood defenses do not continue to work as designed. A coastal adaptation plan is being prepared for Dundee Coastline with the aim of being published in 2025. This will consider at which point this is likely and predict what further interventions are required and what would trigger these.

## Pluvial (rainfall/surface water) flooding

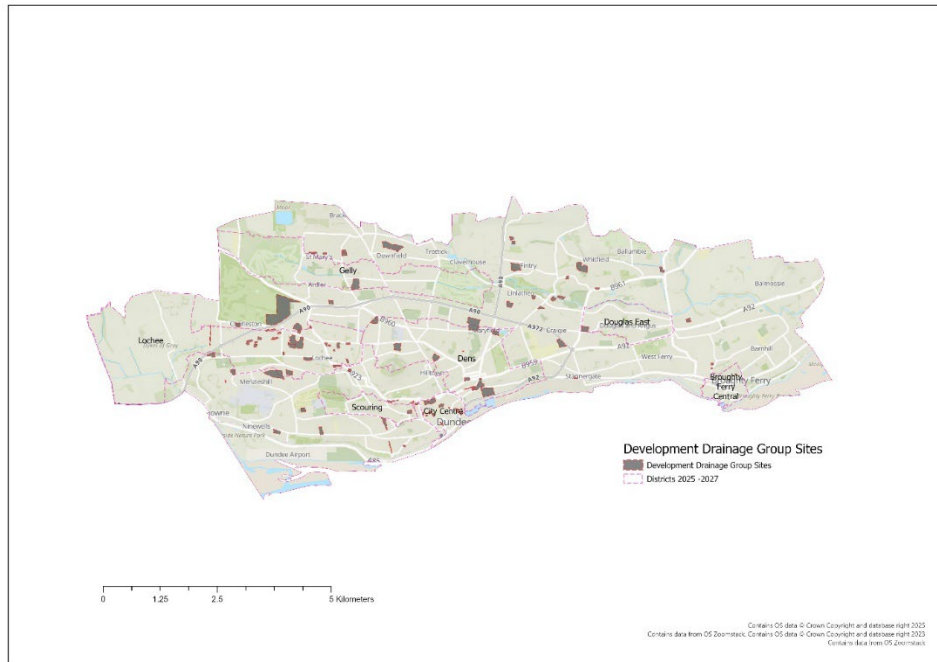
### Water Resilient Dundee

The Water Resilient Dundee Partnership (WRDP) is a strategic partnership between Dundee City Council (DCC) and Scottish Water (SW), with the objective to jointly and sustainably manage water in the city of Dundee to help the city respond to climate change now and for future generations, while delivering wider benefits.

Working with Scottish Water's asset planners, Dundee's drainage infrastructure (including sewers, road drainage and watercourses) have been mapped to create a 2Di drainage model. This network has been overlaid with known areas of pluvial flooding and sewer flooding. Mapping of the city's piped network has allowed the team to focus on strategies where improvements to the drainage infrastructure would have multiple benefits, such as flooding, biodiversity, development, active travel, discharge rates, community and tie into existing projects.

SW and DCC now have a full 2Di model of the city's drainage including, foul water, surface water, road drainage and watercourses. This allows rainfall scenarios to be simulated to identify areas of flooding caused by over capacity pipe networks and then overland

conveyance routes. From this information Flood Risk areas have been identified across the city and cross referenced with the anecdotal evidence from previous flood events. These have been prioritised for action by the partnership by considering the flooding severity and any additional benefits for either of the partners.



*Figure 7: Development Sites Map*

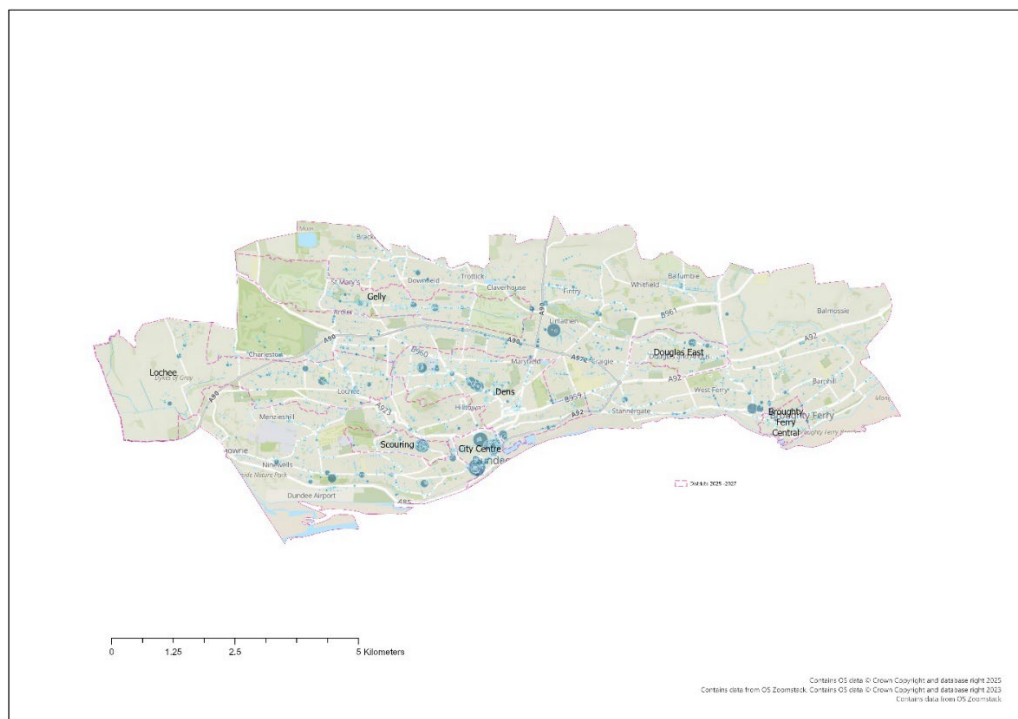


Figure 8: Flooding locations map

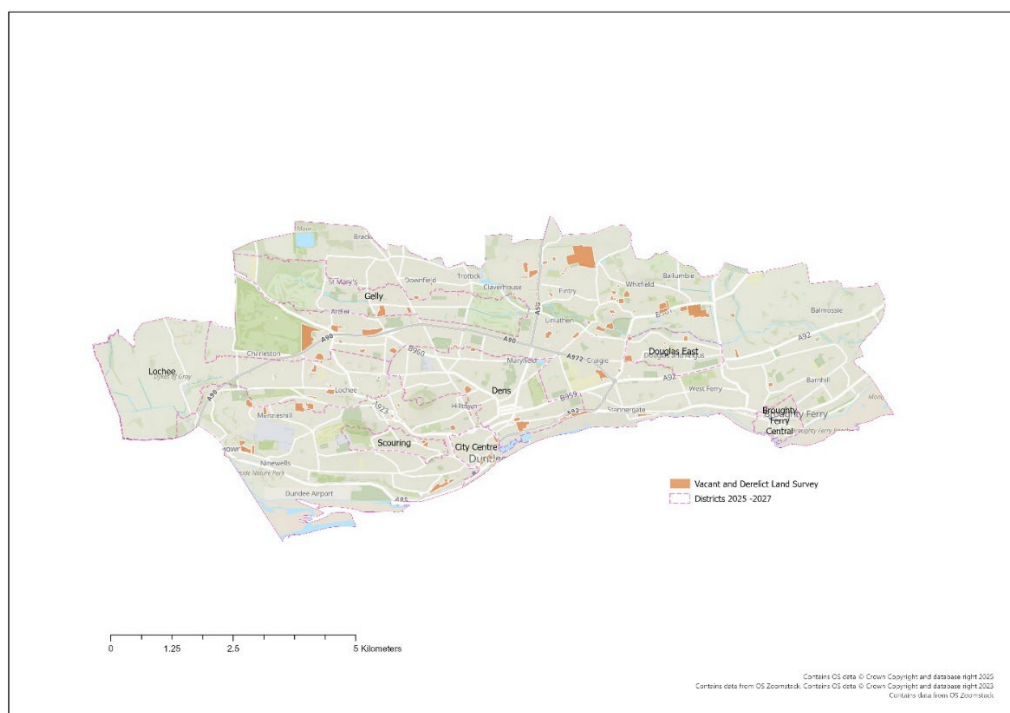


Figure 9: Vacant and Derelict Land



Seven strategies are now being developed across the city to minimise sewer and surface water flood risk, protect and improve water quality, improve the natural capital by using blue green infrastructure, reducing spills to the environment, enable growth and development by freeing capacity within sewer network and proving surface water drainage solutions.

The strategy areas are shown below with the additional benefits of each:



















































District Strategies	Matters Influenced							
	Flooding	Biodiversity	Development	Active Travel	Discharges	Community	Monitoring	Existing Projects
Camperdown District Strategy								
Dens District Strategy								
City Centre District Strategy								
Gelly Burn District Strategy								
Douglas Detailed Design								
Strathmartine (St Mary's)								
Scouring District Strategy								

Figure 10: Strategic Area Benefits in Delivery of Projects



## Dundee Development Drainage Group

This group is a joint monthly meeting with DCC planners, Engineers and Scottish Water. Any proposed or existing planning applications can tabled and discussed with the group to provide developers and planners clear direction on how Surface Water is to be managed on the site. Dundee City council already have guidance published on-line for developers to understand what will be expected and accepted on each development site. Any issues or proposed solutions can be raised to the group and guidance provided accordingly. This allows the council and Scottish Water to influence new drainage being delivered as part of new developments and use of SUDS and Blue Green Infrastructure to align with the drainage strategies that are being developed across the city.

[https://www.dundee.gov.uk/sites/default/files/publications/cd\\_technical\\_guidance.pdf](https://www.dundee.gov.uk/sites/default/files/publications/cd_technical_guidance.pdf)



*Figure 122: City Centre, Trades Lane flooding*



*Figure 133: Craigie Street Pocket Park- Blue and Green Infrastructure*

## Other sources of flooding

### **Clatto Reservoir**

Clatto Reservoir is Dundee City’s only reservoir located in the North West of the city. Clatto Reservoir is designated as a “high” risk reservoir by SEPA under the Reservoirs (Scotland) Act 2011. The “high” risk designation is based on the potential adverse consequences to human health, the environment, cultural heritage and economic activity when considering an uncontrolled release of water from the reservoir and the possibility of such a release.

While Dundee City Council has undertaken assessments of potential flood scenarios (including control valve failure, overtopping, and dam breach), SEPA no longer recommends including reservoir inundation maps in published Strategic Flood Risk Assessments. These maps are retained for internal use only to support emergency planning and resilience.

The Council’s Flood Emergency Plan includes detailed mapping and response protocols for reservoir-related incidents. These internal resources ensure that appropriate contingency measures are in place but are not published in the SFRA due to data sensitivity and licensing restrictions.

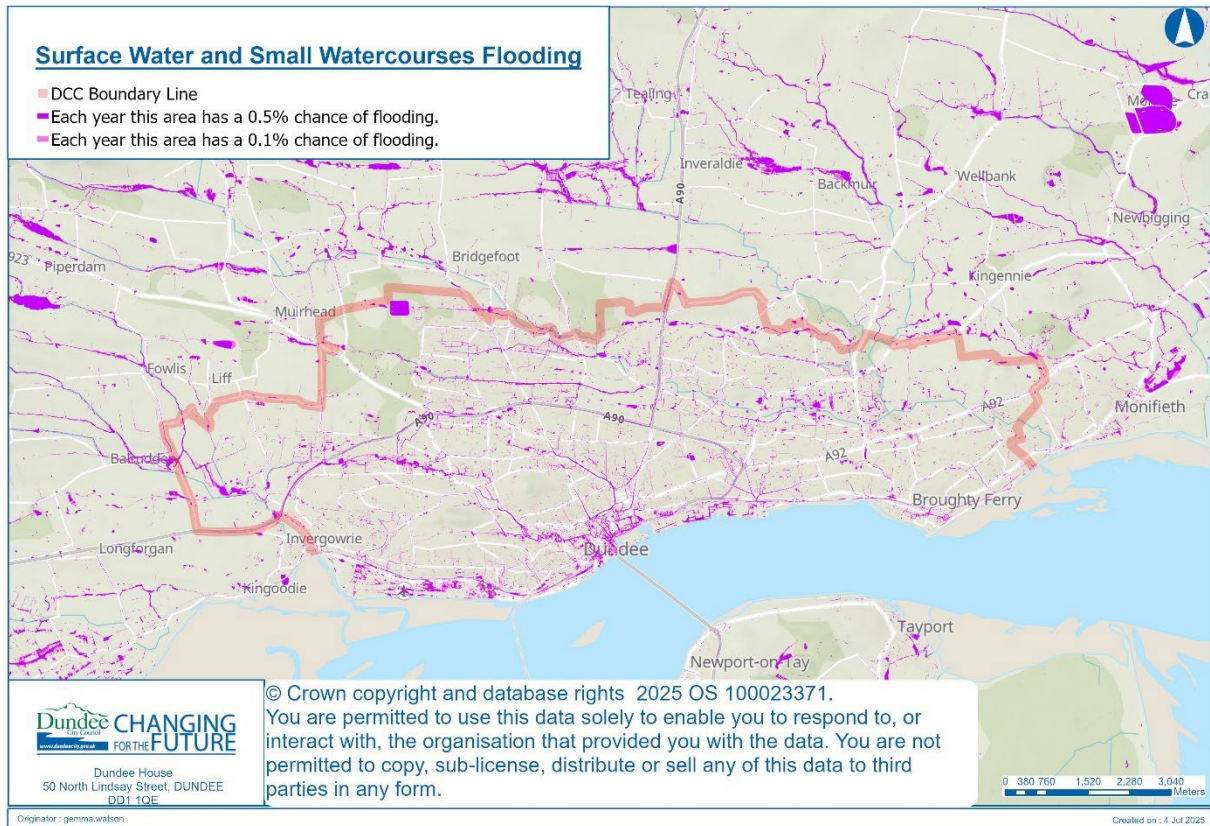
## Appendix A- SEPA Flood Maps for DCC Boundary

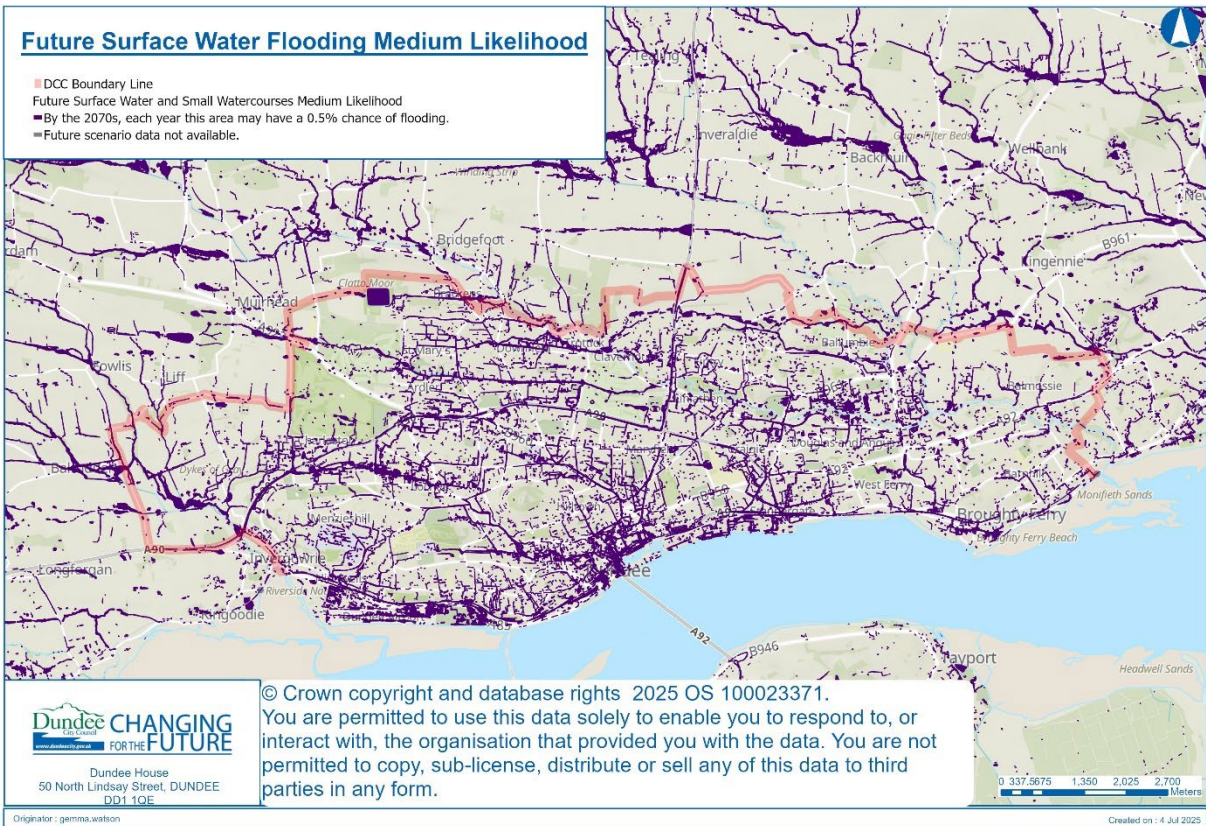
Static maps are provided below of some selected areas of evidence. Prior to Call for Ideas stage of plan preparation, an interactive GIS version will be available to gain an overview of all publicly available flood risk evidence for the Dundee City Council area.



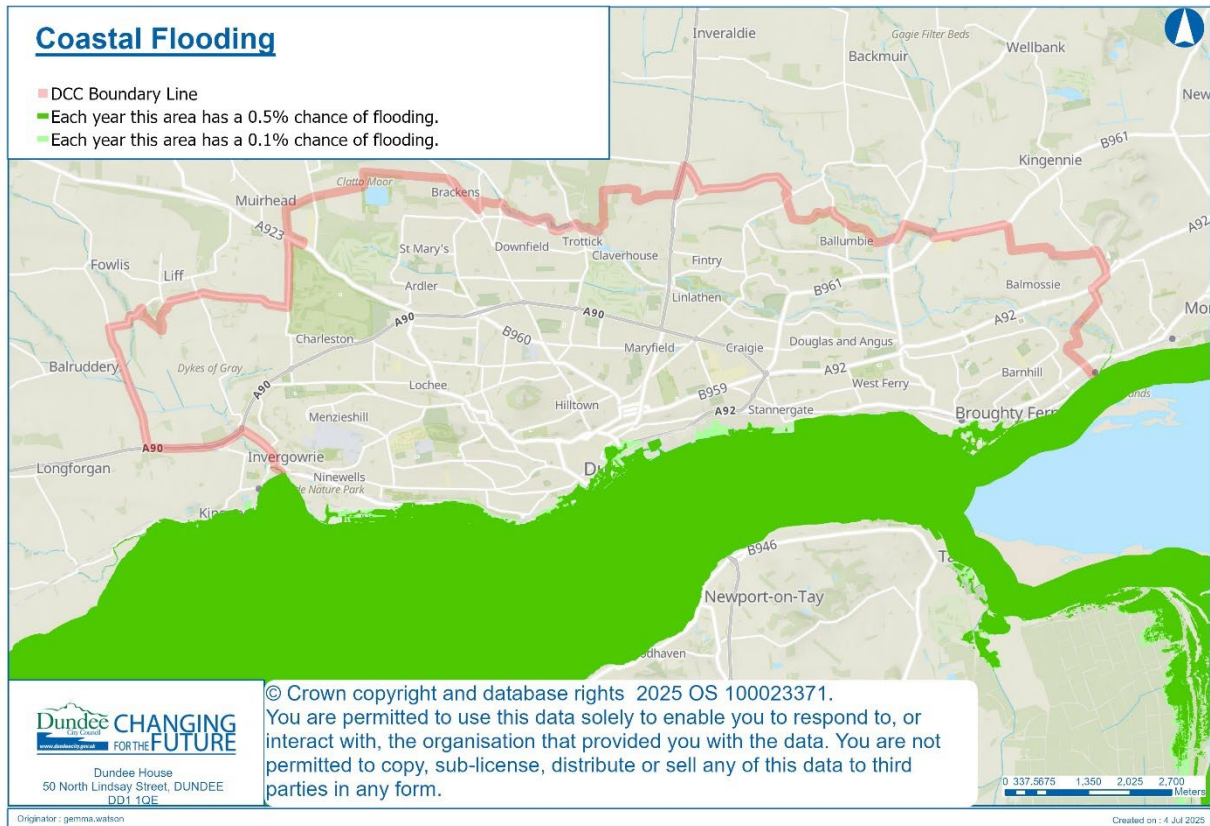


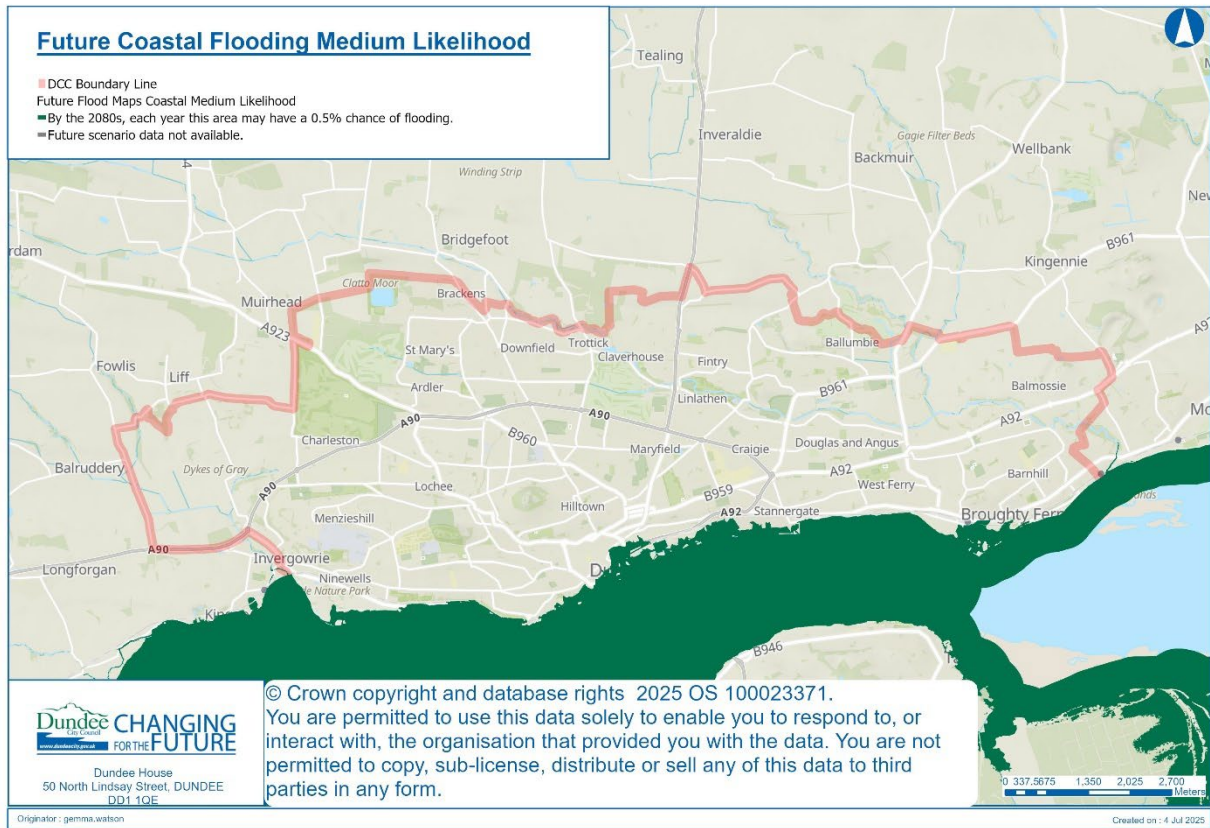












## Appendix B

**Table: Climate Change Allowances for the Tay River Basin Region (taken from SEPA guidance, 2025)**

Allowance Type	Value	Time Horizon	Application Notes
Peak River Flow	+53%	To 2100	For catchments >50 km <sup>2</sup> or 30–50 km <sup>2</sup> if greater than rainfall uplift
Peak Rainfall Intensity	+39%	To 2080	For catchments <30 km <sup>2</sup> or where rainfall uplift > river flow uplift
Sea Level Rise	+0.85 m	2017–2100	Add 0.15 m per decade beyond 2100 for developments with longer design life
Rainfall Intensity (2050s)	+30%	To 2050	For developments with shorter design life
Rainfall Intensity (95th percentile)	+55%	To 2080	For sensitivity testing of vulnerable or long-lifespan developments