Anna Wilson

Manager | Stormwater and Waterways City of Hobart

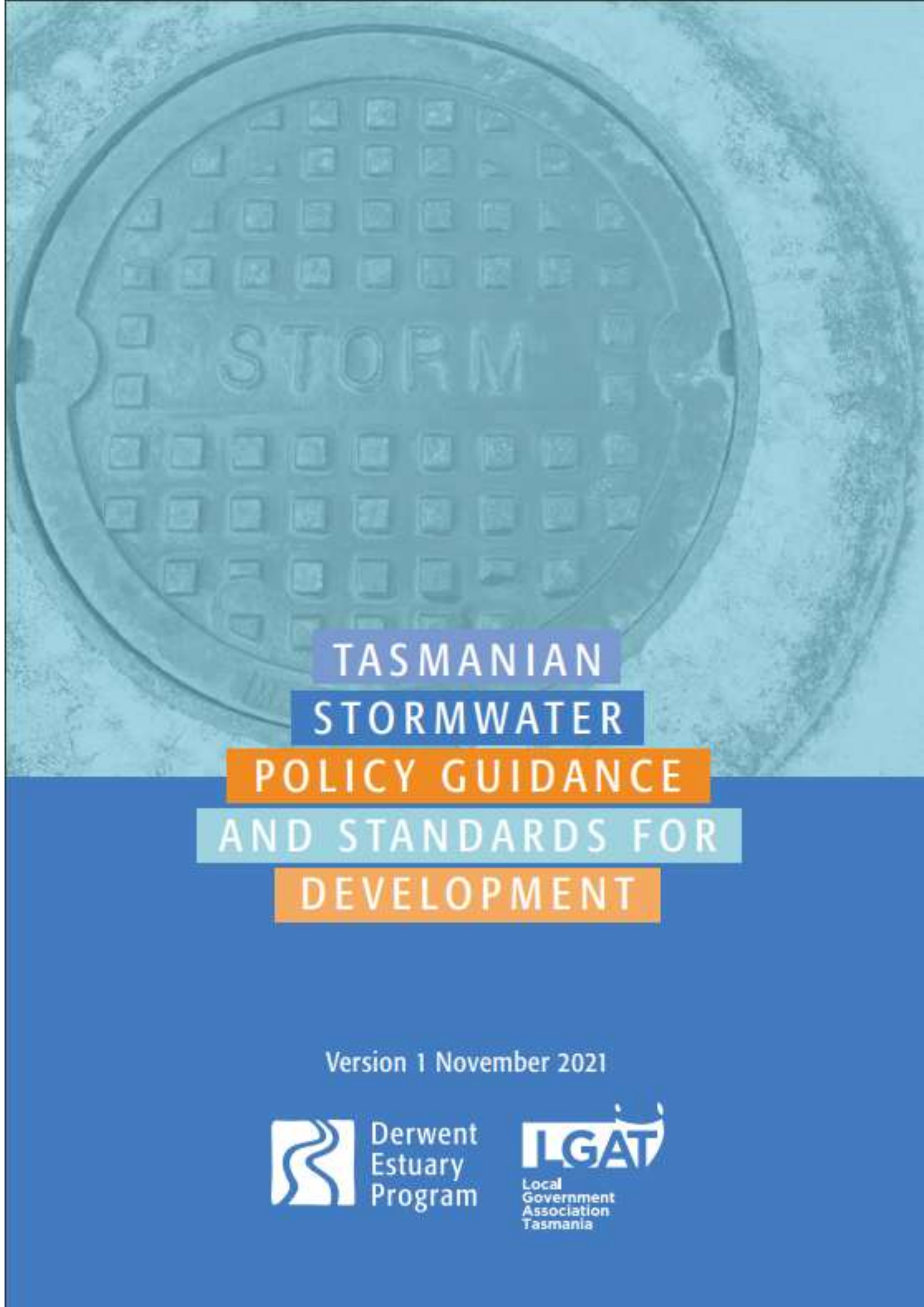
City of HOBART

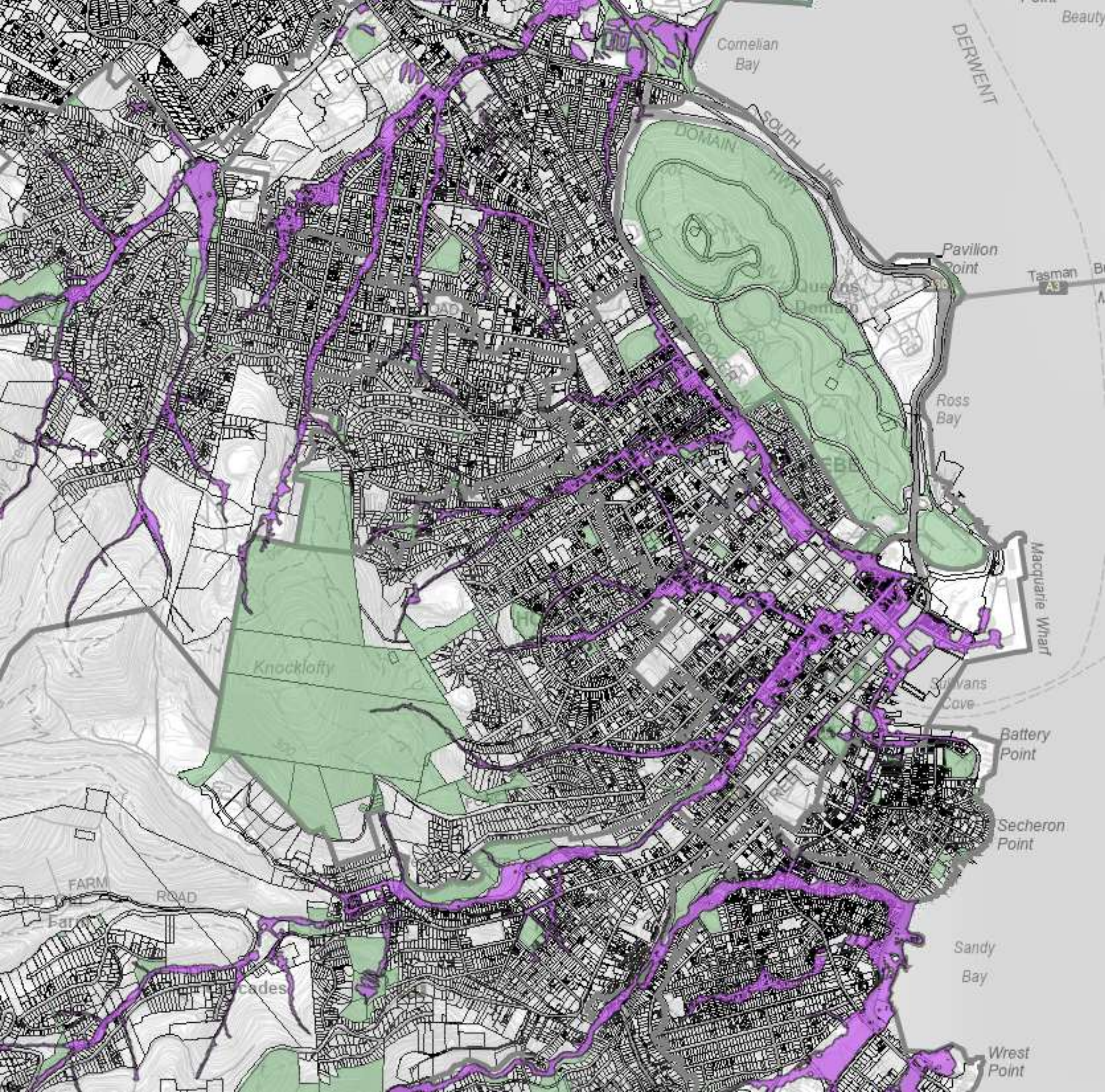
Who am I?

- Engineer
- Experience in Local Gov, consultancy and Catchment authority.
- Flood models and management plans
- Asset management
- Communities and the environment.

Why am I here...

- In the thick of the decision making process.






Why are we here?

- New climate change factors
- Consideration of risk and investment
- Decisions need to be made at Council level

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# Risk Management Framework

## What is an acceptable level of risk to community??

| Risk Categories | Consequence Scale | | | | |
|---|---|---|---|---|---|
| | **Insignificant**<br>Issue that is managed as part of Business as Usual. | **Minor**<br>An event, the consequence of which can be absorbed but management effort is required to minimise the impact. Localised impact for a Group or Network | **Moderate**<br>A significant event, which can be managed under normal circumstances. Impact requiring Executive oversight and Director-level action | **Major**<br>A critical event. Impact requiring ELT management and oversight and notification to Council | **Catastrophic**<br>A disaster. Long-term or widespread impact requiring ELT and Council time and effort over multiple months and deviation from strategic plan |
| **Customer and Community**<br>The impact on the City's customers including ratepayer and its communities. | Insignificant impact on customers and the community.<br><br>Essential communication systems unavailable for up to 2 hours.<br><br>Decline of economic activity and/or loss of asset value <0.004% of gross area product (~<$350,000). | Affected community can continue to function without unreasonable impact.<br><br>Essential communication systems unavailable for 4 hours.<br><br>Decline of economic activity and/or loss of asset value >0.004% of gross area product (~>$350,000). | Standard community function likely to be affected. Costs may be incurred by individuals and businesses whilst services are reinstated.<br><br>Inability to resume essential communication systems for 1-2 days.<br><br>Decline of economic activity and/or loss of asset value >0.04% of gross area product (~>$3.5 mil). | Standard community function will to be affected. Significant costs may be incurred by individuals and businesses whilst services are reinstated.<br><br>Essential communication systems unavailable for 2-5 days.<br><br>Decline of economic activity and/or loss of asset value >0.4% of gross area product (~>$35 mil). | Significant and ongoing impact to community function. Significant community costs incurred.<br><br>Essential communication systems unavailable for more than 5 days.<br><br>Decline of economic activity and/or loss of asset value >4% of gross area product (~>$350 mil). |

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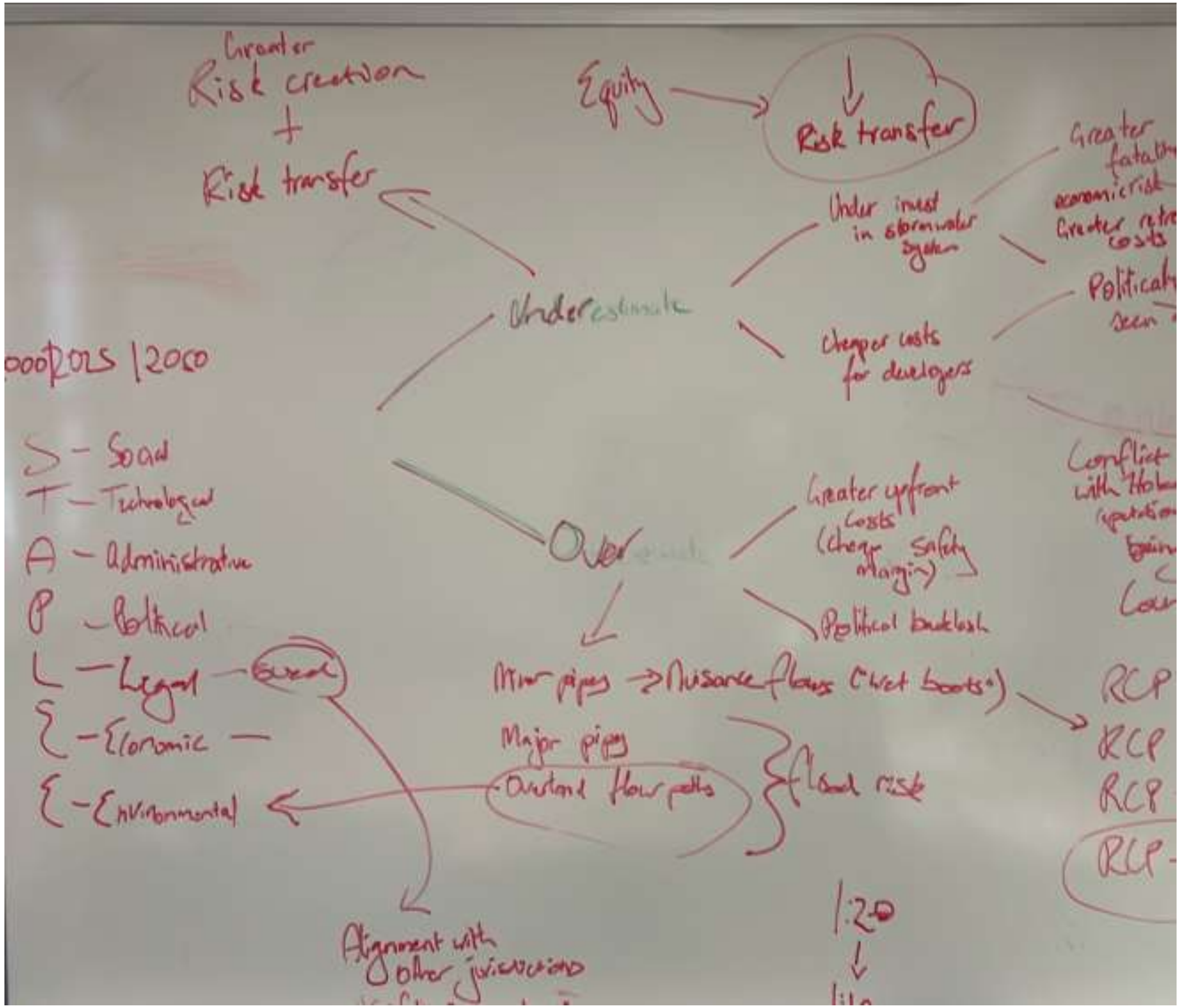
# Risk based approach - process




Minor Pipes
Overland Flow Paths
Trunk Mains*
Rivulets

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| Asset type | Estimation of climate scenarios | Hazard / Risk | Effect | Current Controls | Risk category | Likelihood | Consequence | Risk Rating | Risk Mitigation options | Ranking of importance | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rivulets | (SSP1-2.6) | | residents/developers | | Regulatory and legal | Likley | Moderate | High | early warning systems, legal review, insurance strategy | | evidence of a council being successfully sued for flood damage when the Council could demonstrate they acted in good faith |
| | | Increased risk to people from rivulets overtopping and unmanaged high volume, high velocity flood paths | Possible death, injury, and property damage | | Customer and community | LIkley | Catastrophic | Extreme | Invest in risk mitigation infrastructure | | |
| | | Risk transfer from Council to property owners | Cost of managing flood impacts borne by property owners | | Customer and community | Likely | Moderate<br><br>cost impact of being affected by minor flooding through some homes and businesses. | High | Adopt easements over overland flow paths to provide certainty and protection. | | |
| | | Advice does not align with community expectations and broader Council strategies to develop community resilience | Reputational damage - saying one thing, doing another | Community engagement on their expectations and risk tolerance | Brand and reputation | Unlikely | Moderate | Medium | Strategic planning alignment | | |
| | | | | | | | | | | | |
| | SSP2-4.5 | Legal liability from flooding | Litigation from residents/developers | Insurance | Regulatory and legal | Unlikely | Moderate | Medium | Catchment modelling, early warning systems, legal review, insurance strategy | | Based on a broad literature review, have found no evidence of a council being successfully sued for flood damage when the Council could demonstrate they acted in good faith |
| | | Increased risk to people from rivulets overtopping and unmanaged high volume, high velocity flood paths | Possible death, injury, and property damage | | Customer and community | Unlikely | Catastrophic | High | Invest in risk mitigation infrastructure | | |
| | | Risk transfer from Council to property owners | Cost of managing flood impacts borne by property owners | | Customer and community | Unlikely | Moderate | Medium | Adopt easements over overland flow paths to provide certainty and protection. | | |
| | | Advice does not align with community expectations and broader Council strategies to develop community resilience | Reputational damage - saying one thing, doing another | Community engagement on their expectations and risk tolerance | Brand and reputation | Rare | Moderate | Low | Strategic planning alignment | | |
| | | Development is constricted by and required to put aside land for overland flood paths | Legal action is taken against Council from developers/residents | Flood overlays<br>Flood Code | Regulatory and legal | Unlikely | Moderate | Medium | Periodic legal review; warning systems; land buy-backs | | |
| | | | | | | | | | | | |
| | 3 - 7.0 / 5- 8.5 | Infrastructure harms natural systems | Environmental degradation | Natural Assets Code | Environment and sustainability | Unlikely | Moderate | Medium | Easements; managed retreat | | |
| | | Development is constricted by and required to put aside land for overland flood paths | Legal action is taken against Council from developers/residents | Flood overlays<br>Flood Code | Regulatory and legal | Unlikely | Moderate | Medium | Periodic legal review; warning systems; land buy-backs | | |
| | | Legal liability from flooding | Litigation from residents/developers | Insurance | Regulatory and legal | Rare | Moderate | Low | Catchment modelling, early warning systems, | | Based on a broad literature review, have found no evidence of a council being successfully sued for |

# Overland flow paths

**Affected parties:** Developers, residents, Council

**Possible risks:**
- More frequent flooding
- Increased cost – short vs long term
- Under/over investment in capacity
- Legal action taken against Council – constricted development
- Reputational damage

**Recommended climate change scenario: SSP3-7.0**

**Risk matrix settings**

| Consequence | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 5 | *Catastrophic* | **M** 5 | **H** 10 | **H** 15 | **E** 20 | **E** 25 |
| | 4 | *Major* | **M** 4 | **M** 8 | **H** 12 | **H** 16 | **E** 20 |
| | 3 | *Moderate* | **L** 3 | **M** 6 | **M** 9 | **H** 12 | **H** 15 |
| | 2 | *Minor* | **L** 2 | **M** 4 | **M** 6 | [illegible] 8 | **H** [illegible] |
| | 1 | *Insignificant* | **L** 1 | **L** 2 | **L** 3 | **M** 4 | **M** 5 |
| | | | *Rare* | *Unlikely* | *Possible* | *Likely* | *Almost Certain* |
| | | | *1* | *2* | *3* | *4* | *5* |
| | | | Likelihood | | | | |

**SSP1-2.6**

**SSP2-4.5**

**SSP3-7.0**

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# Recommendations

1. Endorse that Council undertakes work to formalise Councils approach to management of overland flow paths in private property.

2. Adopt SSP1-2.6 with 5% AEP events as an interim climate change factor for the management of minor pipes.

3. Adopt SSP3-7.0 with a 1% AEP as an interim climate change factor for the management and mapping of overland flow paths.

4. Adopt SSP3-7.0 with a 1% AEP as an interim climate change factor for trunk main management and modelling.

5. Adopt SSP3-7.0 with a 1% AEP as an interim climate change factor for the management of Rivulets

6. Endorse a project funded through the current Integrated Hazard Vulnerability Assessment project to investigate:

- Financial impact of adopting different climate factors to Council
- Risk and liability impact to council of adopting different climate factors to Council and to the community
- Community engagement to assist in determining acceptable or expected levels of service and risk tolerance
- Development of a flood related risk statement or level of service guidelines to support consistent decision making and investment.

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