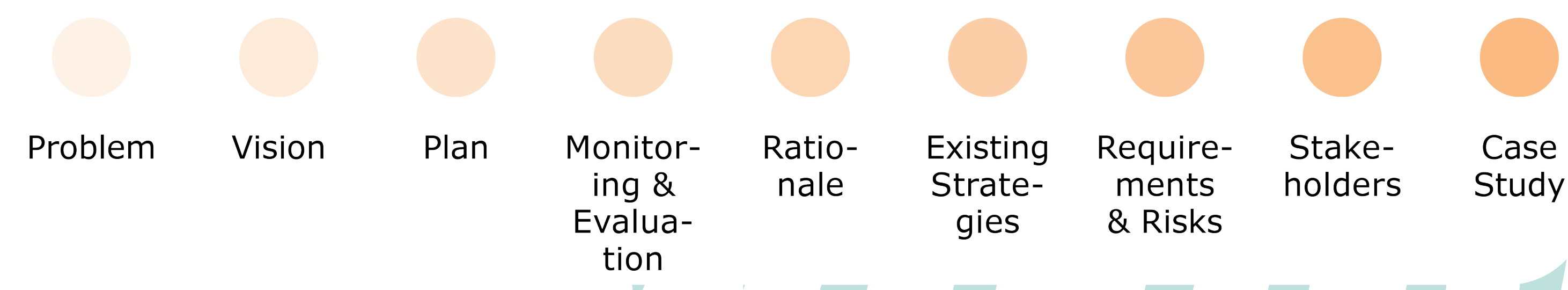


Water Sensitive Design



Problem

- High levels of impervious surface leading to runoff.¹
- Urban growth pressures reinforcing flooding.¹
- Increasing frequency and severity of extreme weather events.¹

Vision

- Restore and improve natural systems.
- Increase retention capacity.
- Reduce impervious surfaces.
- Reduce carbon emissions.
- Aid implementation & address equity.

Plan

- Short Term**
 - Promote riparian buffer planting.
 - Strengthen AUP to require WSD provisions in flood-prone areas.
 - Strengthen AUP to require a clustered development approach.
 - Engage community organisations to build capacity for implementation.
 - Work with developers to better understand implementation of WSD.
- Medium Term**
 - Encourage the use of living roofs in industrial areas.
 - Retrofit existing urban areas with retention ponds & gardens.
 - Set up a co-funding scheme to assist implementation.
- Long Term**
 - Increase riparian buffer distances.
 - Retrofit Council owned open spaces to include WSD features.
 - Require the implementation of WSD features into roads.

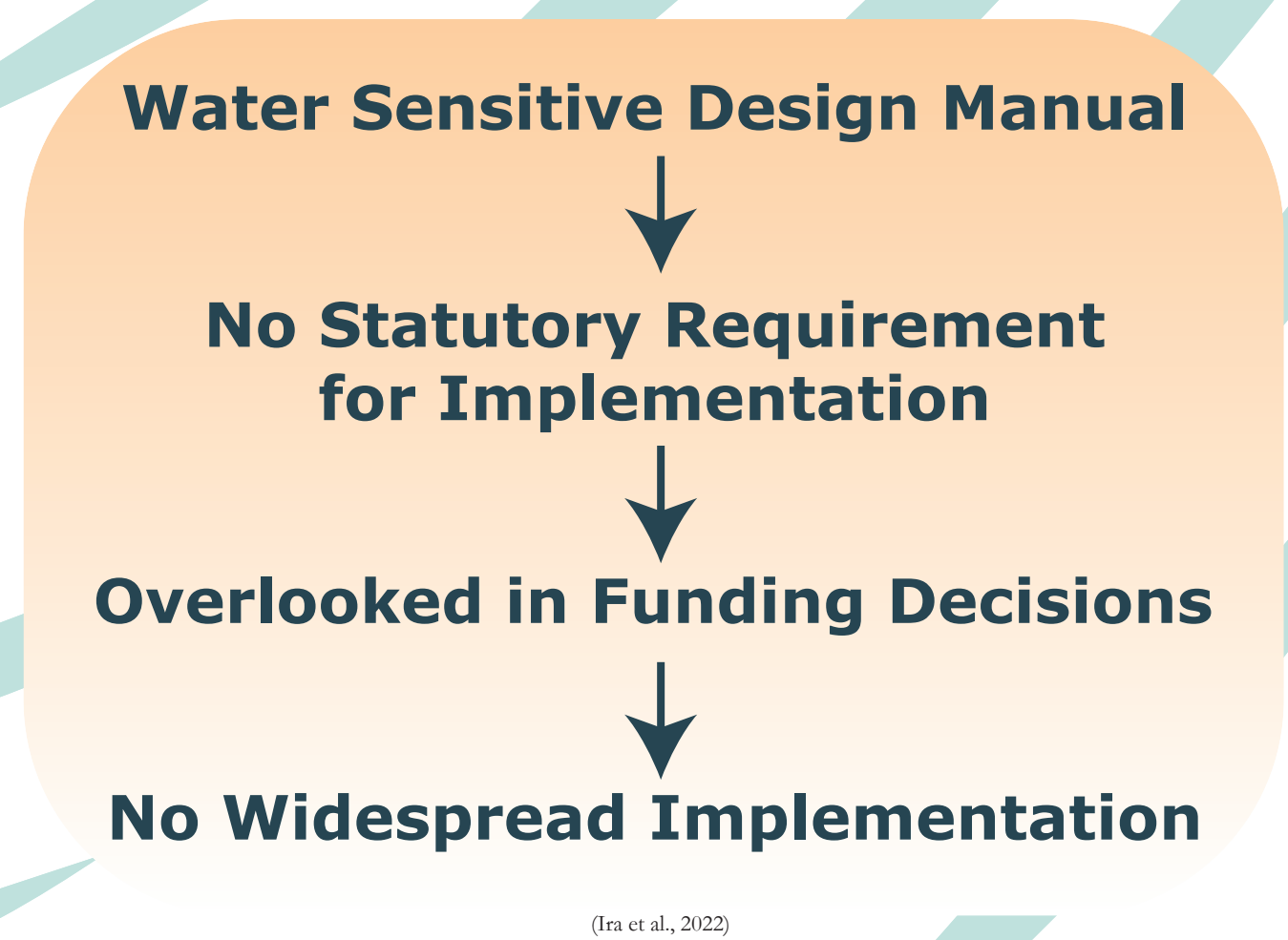
Evaluation

- Improve water quality in receiving catchments, measured by testing water before and after flood events.
- Decrease the frequency of combined sewer overflow events by 50% by 2040, monitored by Watercare.
- Achieve 50% implementation of WSD in new buildings by 2030 and 100% by 2035.
- Increase on-site water retention by 10% over the next five years, monitored through discharge data.
- Increase carbon sequestration through green infrastructure, tracked using emissions modelling.
- Achieve 100% of council properties with WSD features by 2040.
- Reduce community impacts of flooding, tracked through emergency call-outs and categorisations.
- Retrofit 50% of existing properties by 2040 and 100% by 2050 with WSD features.
- Achieve zero areas classified as severe flooding zones tracked through hydrological surveys and GIS.

Rationale



Existing Strategies



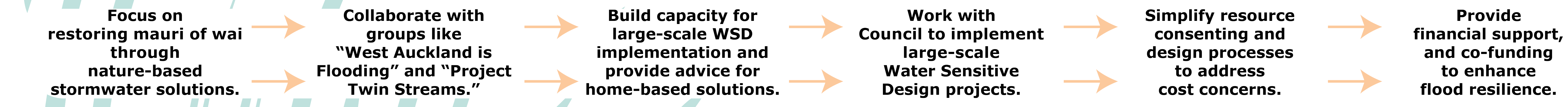
Requirements & Risk

- Traditional business case process overlooks WSD's long-term benefits. Including WSD's benefits in business case templates is required to secure funding and adoption.¹
- Interest in WSD implementation is low, advertising campaigns can be used to boost interest in WSD and boost implementation.
- Implementing WSD can lead to increased housing costs and heightened social deprivation.

Case Study

Copenhagen Cloudburst Plan created following historic 1 in 1000 floods in 2011¹

- Use of WSD to redesign parks and roads to retain water
- Goal of max 10cm flooding during 100 year storm.
- On-going implementation²



References

Auckland Council. (2015). Water Sensitive Design for Stormwater. <https://knowledgeauckland.org.nz/media/1701/pd2015-004-water-sensitive-design-for-stormwater.pdf>

Henderson-Massey Local Board. (2023). Henderson-Massey Local Board Plan 2023. <https://www.aucklandcouncil.govt.nz/about-auckland-council/how-auckland-council-works/local-boards/all-local-boards/henderson-massey-local-board/Documents/henderson-massey-local-board-plan-2023.pdf>

Ira, S., Kuru Environmental Consultants Ltd, & Auckland Council. (2022). Auckland Water Strategy Supplementary Document Investigation of barriers and opportunities to further implement Water Sensitive Design in Auckland. <https://www.knowledgeauckland.org.nz/media/2501/investigation-barriers-opportunities-to-further-implement-water-sensitive-design-in-auckland-sue-ira-koru-feb-2022.pdf>

Irish Construction News. (n.d.). Copenhagen Cloudburst Flood Management Plan. Retrieved October 9, 2024, from <https://constructionnews.ie/copenhagen-cloudburst-plan/#:~:text=Copenhagen%20had%20neither%20the%20capacity,the%20Copenhagen%20Climate%20Adaptation%20Plan>

National Institute of Water and Atmospheric Research, Lorey, A. M., Pearce, P. R., Barkus, C., Anderson, S. J., & Clement-Jones, A. (2017). Auckland Region climate change projections and impacts: Summary Report. https://niwa.co.nz/sites/default/files/AC_CC_Summary_Low_30Jan18.pdf

Otago Regional Council. (2024, September 3). Nature-based solutions study. [https://www.orc.govt.nz/environment/biodiversity/nature-based-solutions-study/#:~:text=Nature%20based%20solutions%20\(NBS\)%20are%20practical%2C%20cost%2Dproviding%20habitat%20for%20threatened%20species](https://www.orc.govt.nz/environment/biodiversity/nature-based-solutions-study/#:~:text=Nature%20based%20solutions%20(NBS)%20are%20practical%2C%20cost%2Dproviding%20habitat%20for%20threatened%20species)

Vilhelmsen, M. (2016, April 28). Cloudburst mitigation in Copenhagen. Stormwater Solutions. <https://www.stormwater.com/home/article/1302350/cloudburst-mitigation-in-copenhagen>