Large Scale Stormwater Harvesting

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WESTERN WATER

Melbourne Water

Enhancing Life and Liveability

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Business Case: Challenges

Technical

- Volumes, storage, transfer, land
- Environmental value
- Quality for end use

Economics & Funding

- Economic benefit v Business Value
- Costs > BAU
- Key assumptions

What will help ?

- *High value uses*
- *Land for storage within urban landscape*
- *Waterway strategy and scientific modelling*
- *Community support (mandate), willingness to pay.*
- *Offset schemes for stormwater management*
- *Co-funding (demonstrating local or broader value)*

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Stormwater harvesting (typical)

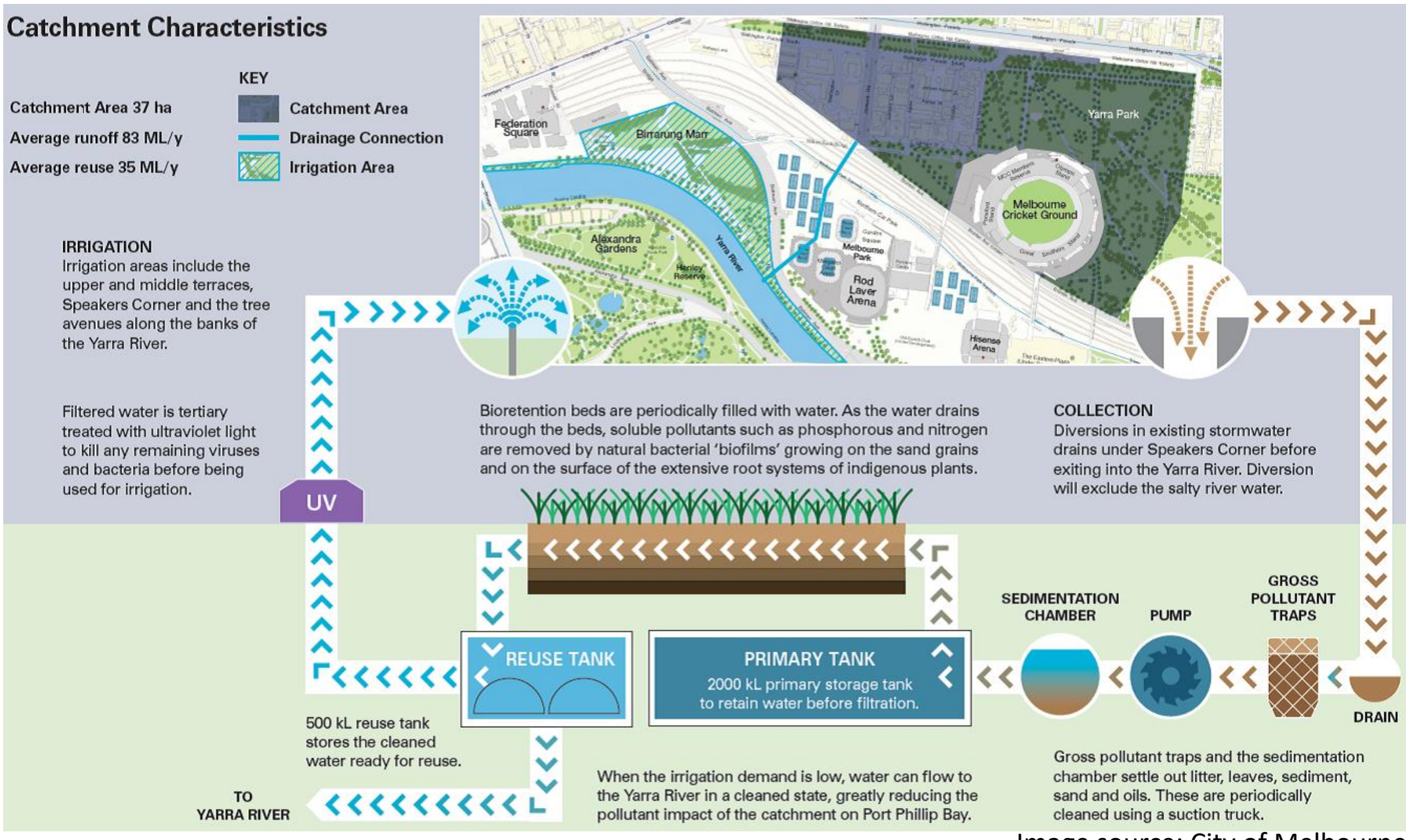
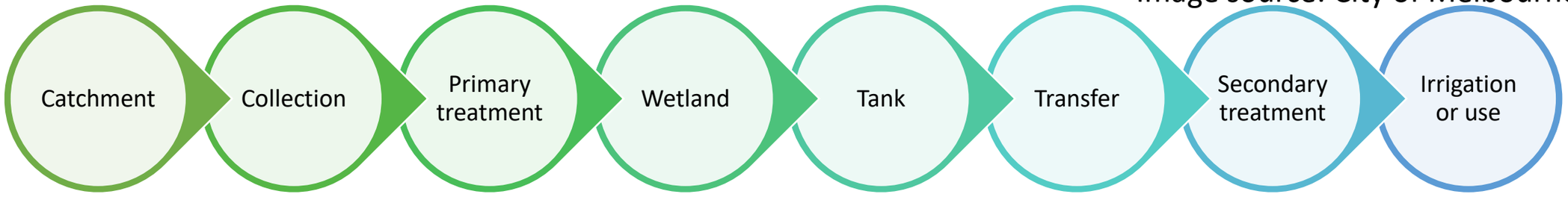
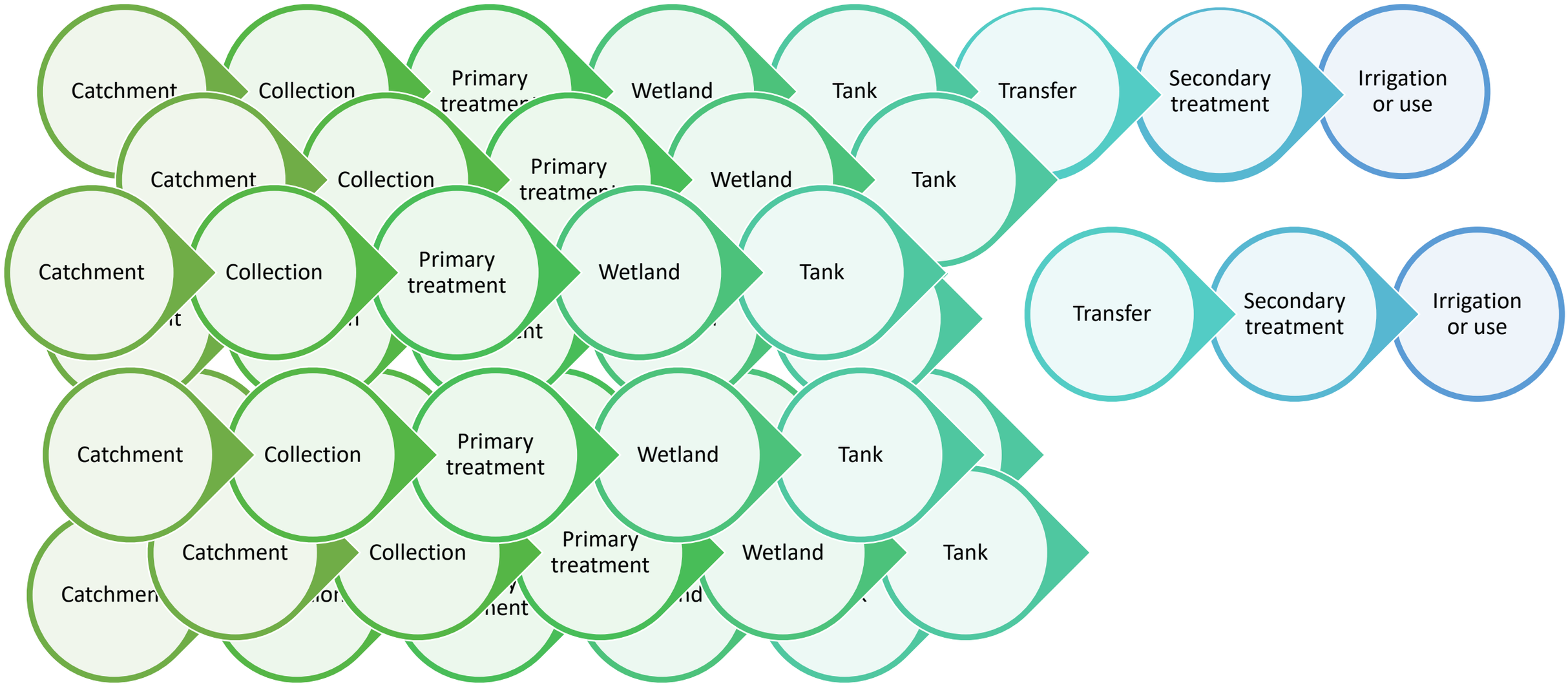


Image source: City of Melbourne



How do we model a network of stormwater harvesting systems?



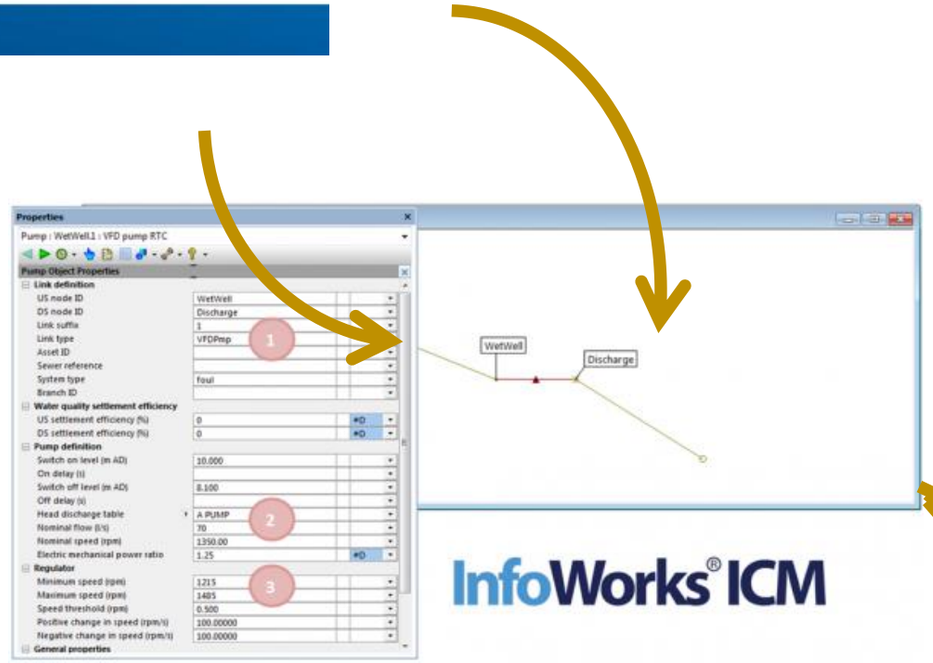
Modelling approach

1. MUSIC model of drainage schemes (wetlands) to generate catchment runoff and wetland fluxes
2. ~~Import MUSIC outputs (csv) to InfoWorks model~~
3. ~~Model many (30) pumps operating simultaneously to size balance storages, pumps, pipes~~
4. Model wetlands in InfoWorks, and re-run your model to optimise network
5. Source catchment model to understand creek flow regime

- 6 minute timestep (any time series)
- Model at 6 second timestep (max 1 year time series)
- To do multiple years, need to run in series with boundary condition
- 27 year time series

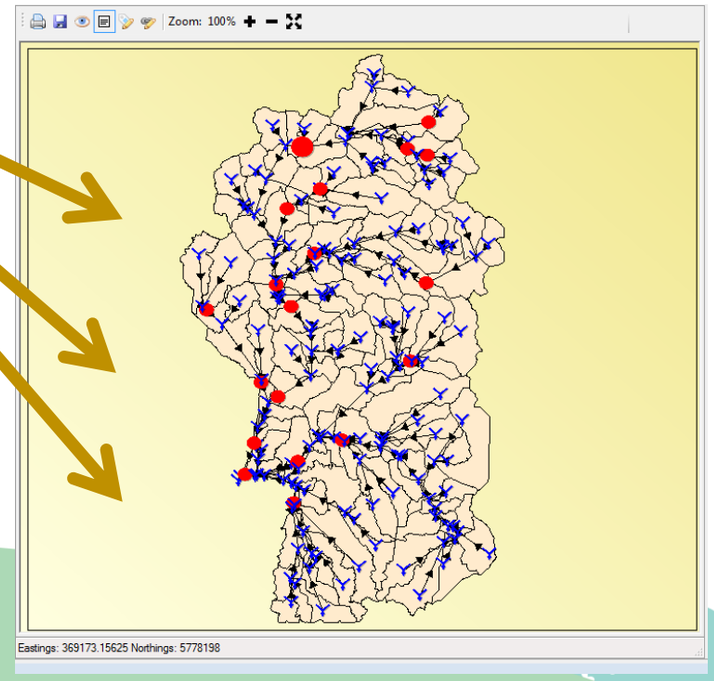
Modelling approach

music BY eWater



InfoWorks® ICM

eWater Source



Technical challenges and lessons

1. Use the right tool for the job
2. Get your data talking
   - Rainfall data
   - Timestep, time series length, climate change
3. Iterate, iterate, iterate

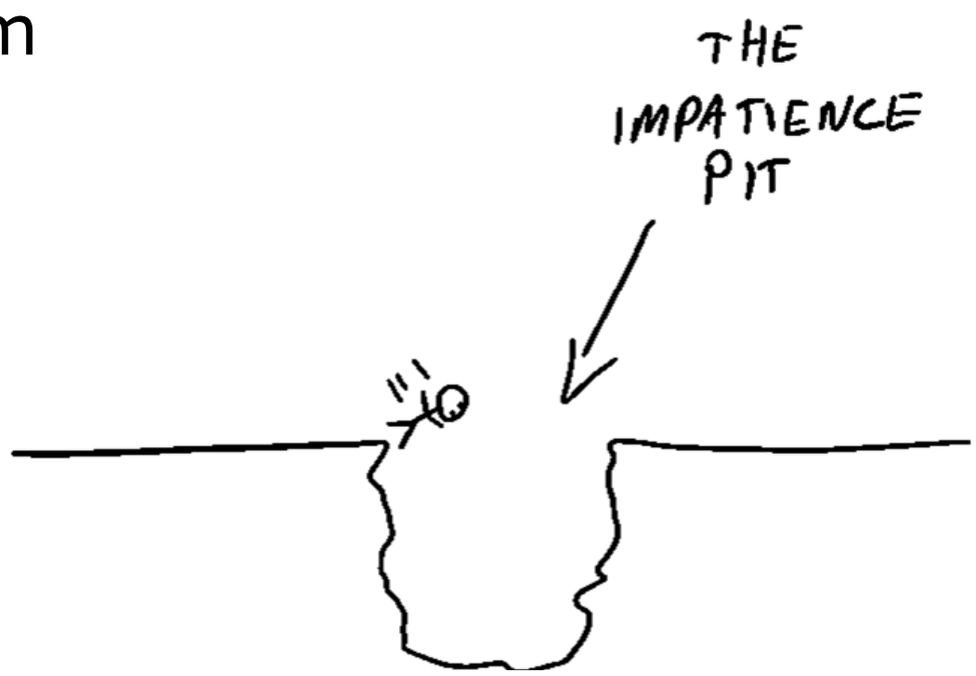
Learnings

Modelling a large scale, networked harvesting scheme that achieves high yield is possible, but requires careful consideration

- Make assumptions

  …and then strategically test them

- Take your time, do it well



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Collaboration & Community/Stakeholders

Collaboration

- No single organisation is responsible for all aspects of the urban water cycle
- Collaborative effort between
  - Western Water (Water Supply and Sewage Management)
  - Melbourne water (Waterway Manager and Drainage)
  - Hume City Council (Drainage, Open Space, Streetscapes)
  - DELWP (Policy, IWM Forums)
- Collaborative effort involves a commitment to buy into the values of other organisations and aim for a best community outcome solution

Community and Stakeholder Input

- Initially a technical feasibility exercise, now a community engagement exercise
- Community Engagement
  - Online Survey to explore values
  - Local Community Group Presentations (10+ Sessions)
  - Deliberative Panel (35 Participants, 5 x Full day sessions)

Challenges and Learnings

Challenges

- Growth is happening, and fast (WW is growing ~5%/yr)
- Collaboration is not easy, it takes time
- Science is evolving, the is a lag time before Policy catches up
- Staying open-minded

Learnings to Date

- Water cycle values are place based, however it is not just the local community who benefits from protecting these values
- There are technical solutions that can achieve multiple benefits
- Don’t focus on the costs, focus on the outcomes, we can work on the funding later
- The community may be more forward thinking than we give them credit for

Thank you