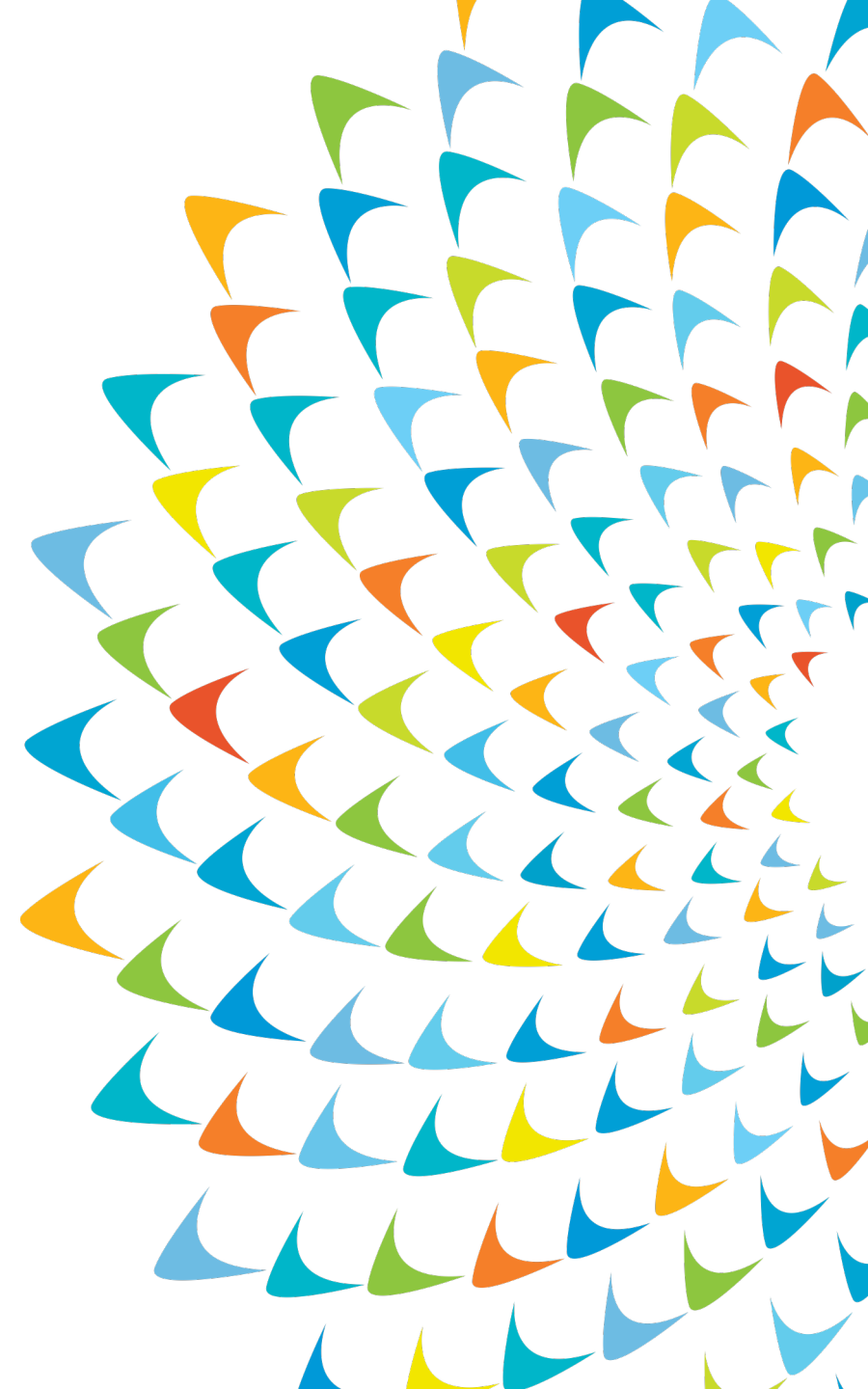




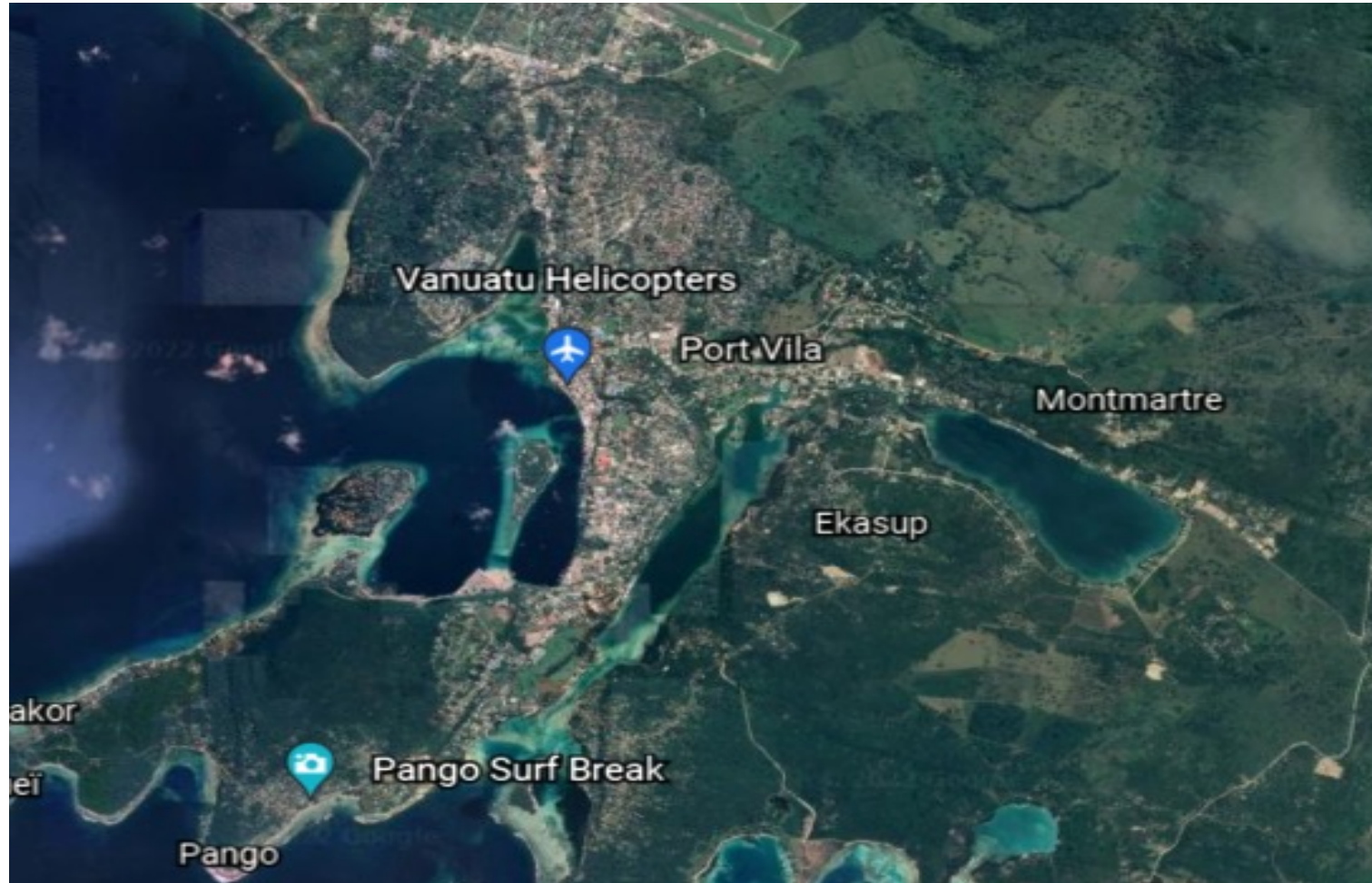
Citywide Inclusive Sanitation in Vanuatu

Hilson Toaliu

The views expressed in this presentation are the views of the author/s and do not necessarily reflect the views or policies of the Asian Development Bank, or its Board of Governors, or the governments they represent. ADB does not guarantee the accuracy of the data included in this presentation and accepts no responsibility for any consequence of their use. The countries listed in this presentation do not imply any view on ADB's part as to sovereignty or independent status or necessarily conform to ADB's terminology.



Map of Port Vila



Port Vila Water Front





Monitoring of Port Vila Bay against Enterococci levels

- Water Quality Vanuatu Monitoring Program, supported by the Department Water Resources conducts water quality testing of the Port Vila Bay and Erakor 1st and 2nd Lagoons against a draft Microbial Classification of Recreational Waters.
- In 2020, the Department of Water Resources closed recreational access to Port Vila Bay due to Enterococci found to have exceeded threshold levels.
- This is primarily from effluent discharge into the bay from commercial establishment STPs and septic tanks, rather than discharge into the soil.



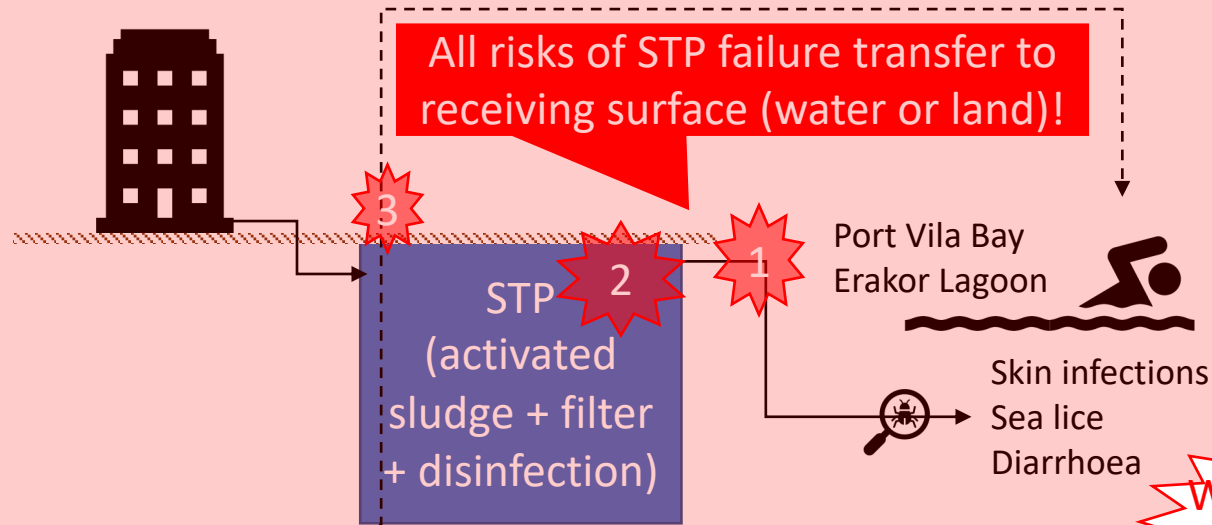
Faecal Contamination Risk Overview

- **In Port Vila, the contamination risk is from effluent discharge to open (land or water) rather than discharge into the soil**
- 1. **Sewage Treatment Plants (STPs):** The primary risk occurs from poorly maintained commercial STPs that either routinely (or occasionally) release pathogens via effluent to the surface water or land.
- 2. **Septic Tanks:** The secondary risk occurs from domestic septic tanks with inadequate soakaways that overflow to the open, or discharge effluent to drains, or have their effluent emptied and dumped in the open.
- 3. **Pit Toilets:** The tertiary risk occurs from bush toilets (VIP or pit toilets) in storm surge, flood prone and high-water table areas where water intrusion discharges pathogens to the surface.

#1 Faecal Risk = Poor O&M of STPs but only 15 STPs

Highest Risk: 3 STPs (discharge to open)

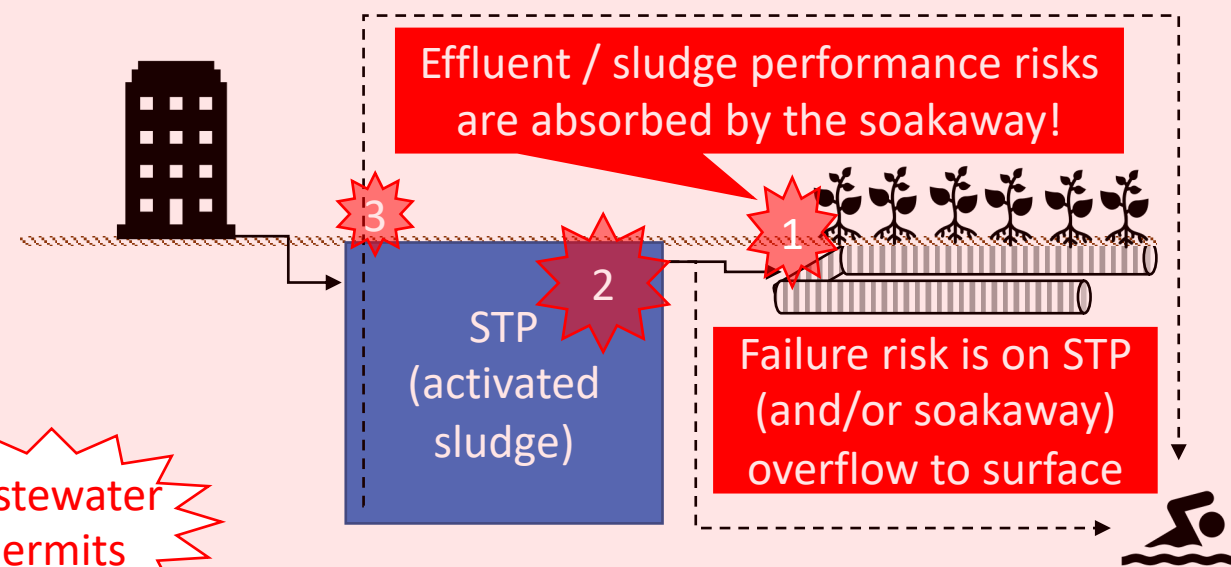
- Central Hospital (200 beds)
- Iririki Resort (139 rooms)
- Grand Hotel (74 rooms)



1. Likelihood of effluent failure (to outfall)
 - All STPs failing although Grand Hotel tests effluent monthly
2. Likelihood of STP failure (to outfall)
 - All STPs failing although Grand Hotel has a maintenance contract
3. Likelihood of sludge failure (to outfall)
 - Iririki & Central Hospital have sludge drying beds that have failed

High Risk: 12 STPs (discharge to soakaway)

- Market House, Bred Bank, Reserve Bank, Holiday Inn
Mama Handicraft, Children's playground, Lapetasi Wharf, Ramada, Tanna Russet
Warwick Le-Lagon, University of South Pacific, Vanuatu Club, Airport

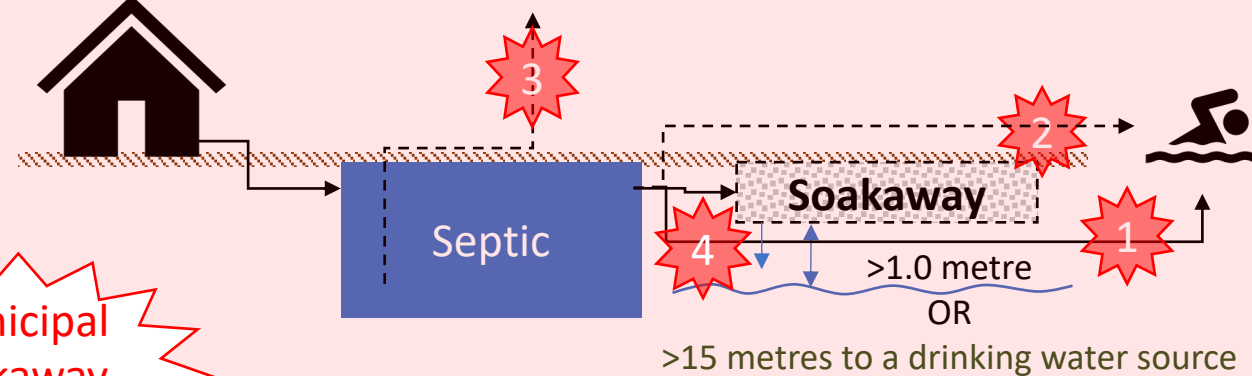


Wastewater permits

1. Likelihood of effluent failure (soakaway overflow to surface)
 - All STPs at risk. Warwick Le-lagon, USP, Airport, Vanuatu Club failed
2. Likelihood of STP failure (bypassing of soakaway to surface)
 - Mama handicraft, Children's playground, Ramada, Tanna Russet failed
3. Likelihood of sludge failure (on backing-up of system)
 - All STPs at risk. Market House has sludge thickening

Separate Soakaway

Required for sandy soil & ground water table <3 metres deep

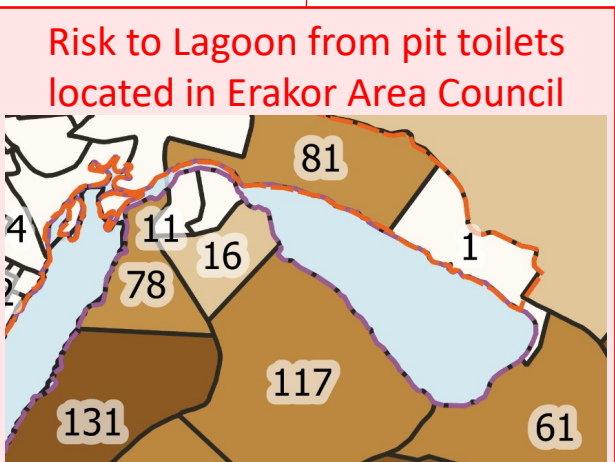
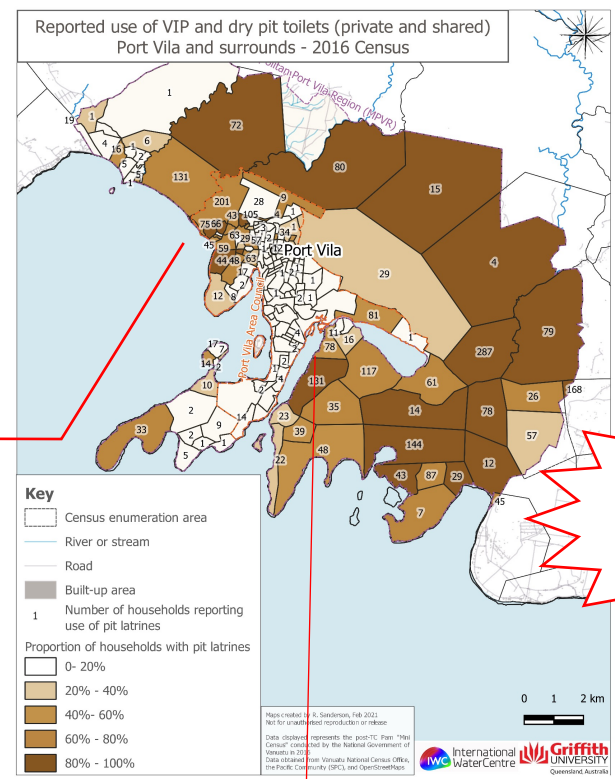
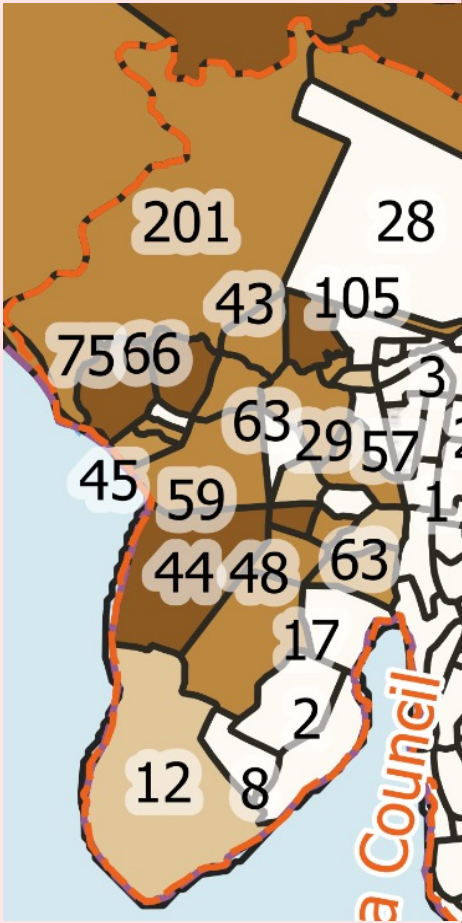


Municipal Soakaway By-Law

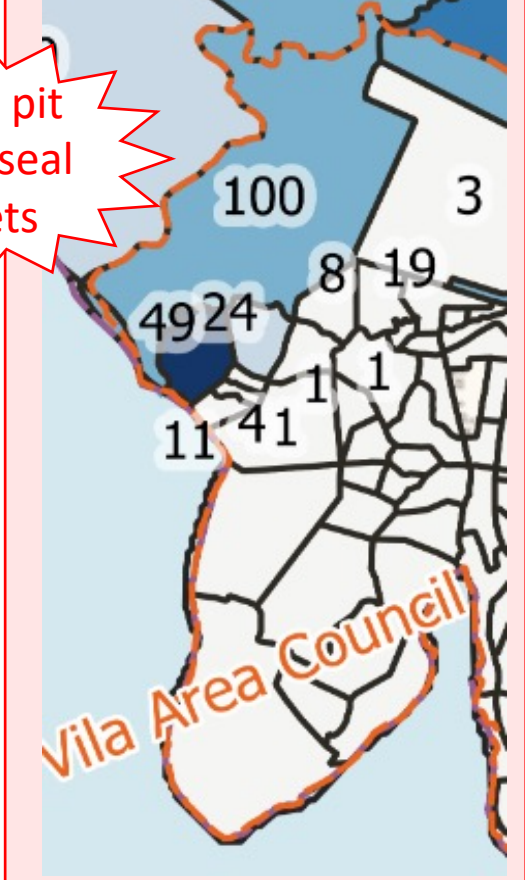
CAUSE	CONSEQUENCE	LIKLIHOOD
1. Septic tanks routinely discharging blackwater to surface / stormwater	Continuous pathogen risk	Cameras in CBD stormwater pipes found no continuous discharge of blackwater, however this may occur in waterfront houses / hotels on the Lagoon / Bay.
2. Septic tanks occasionally discharging blackwater to surface / stormwater	Occasional pathogen risk	Cameras in CBD stormwater pipes found very few likely blackwater overflow pipes. Higher enterococci in Bay & Lagoon after rain confirms some blackwater overflow. Overloading of soakaways occurs routinely (i.e. soakaway too small, soakaway full of sand, overloaded with greywater and FOGs, rainwater/ stormwater ingress).
3. Septic tanks emptied (sometimes too often) and dumped indiscriminately	Possible pathogen risk	Data from the Bouffa STP gate is consistent with the faecal sludge load for Port Vila, but some septic tanks are emptied too often (i.e. soakaways too small).
4. Integrated / separate soakaways at risk of polluting the groundwater table	Low pathogen risk	There are very few occasions where a soakaway is less than 1 metre above the groundwater table AND less than 15 metres from a drinking water source.

#3 Risk = Dry Pit Latrines but the risks are localised

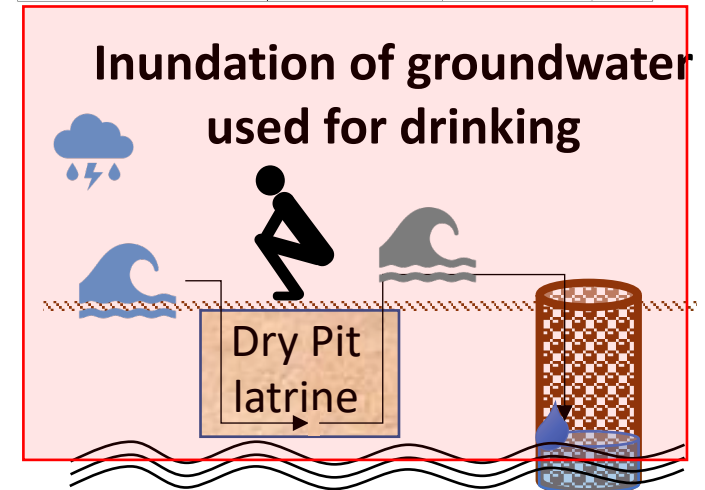
While <15% of HH's in Port Vila Area Council rely on pit latrines, they are primarily located in the Blacksands area (where >900 HH have pit latrines)



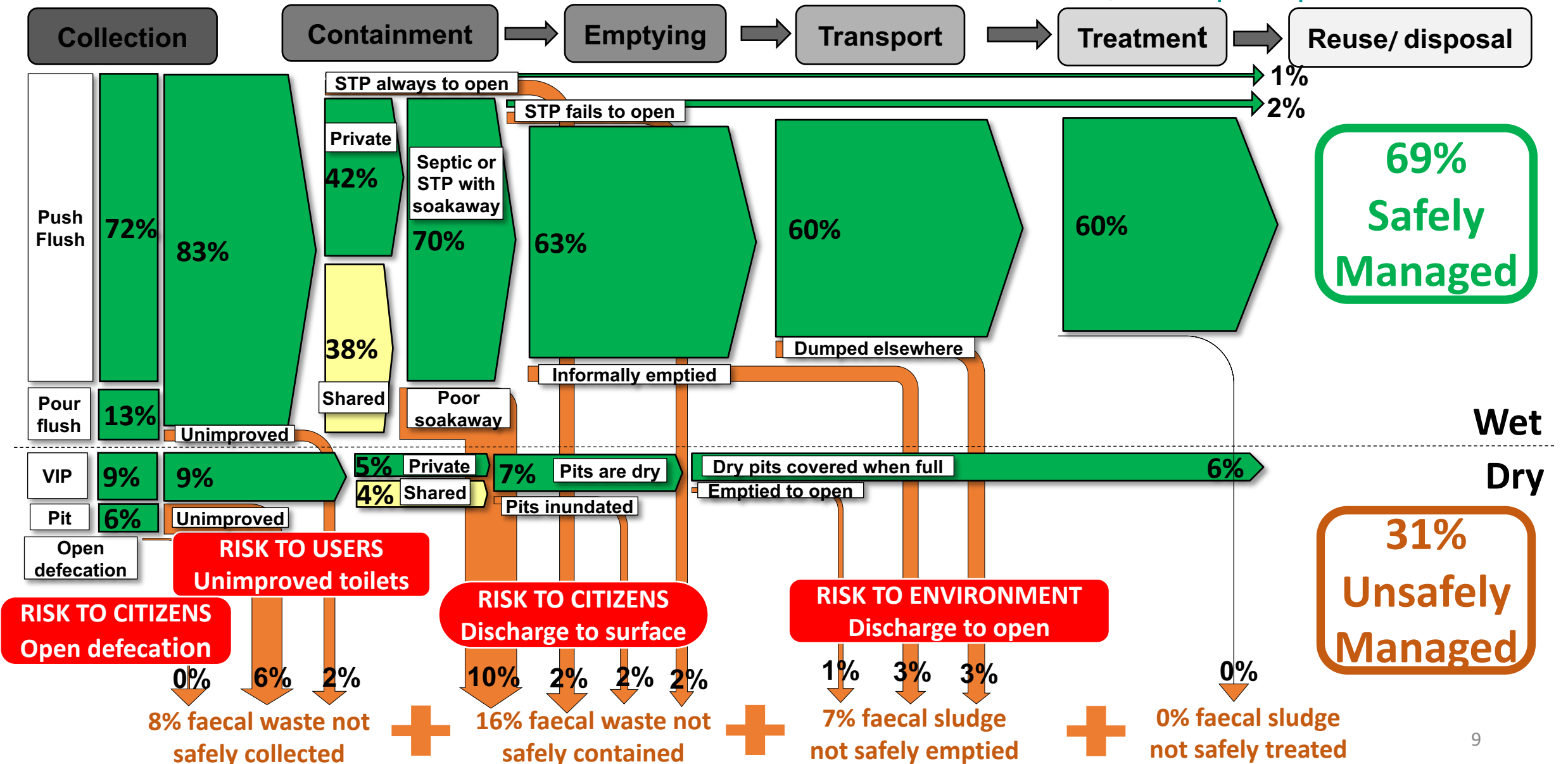
While <2.3% of HH's in Port Vila Area Council access ground/river water for drinking, they are primarily located in Blacksands (where >100 HH rely on ground/river water for



Offset pit water-seal toilets

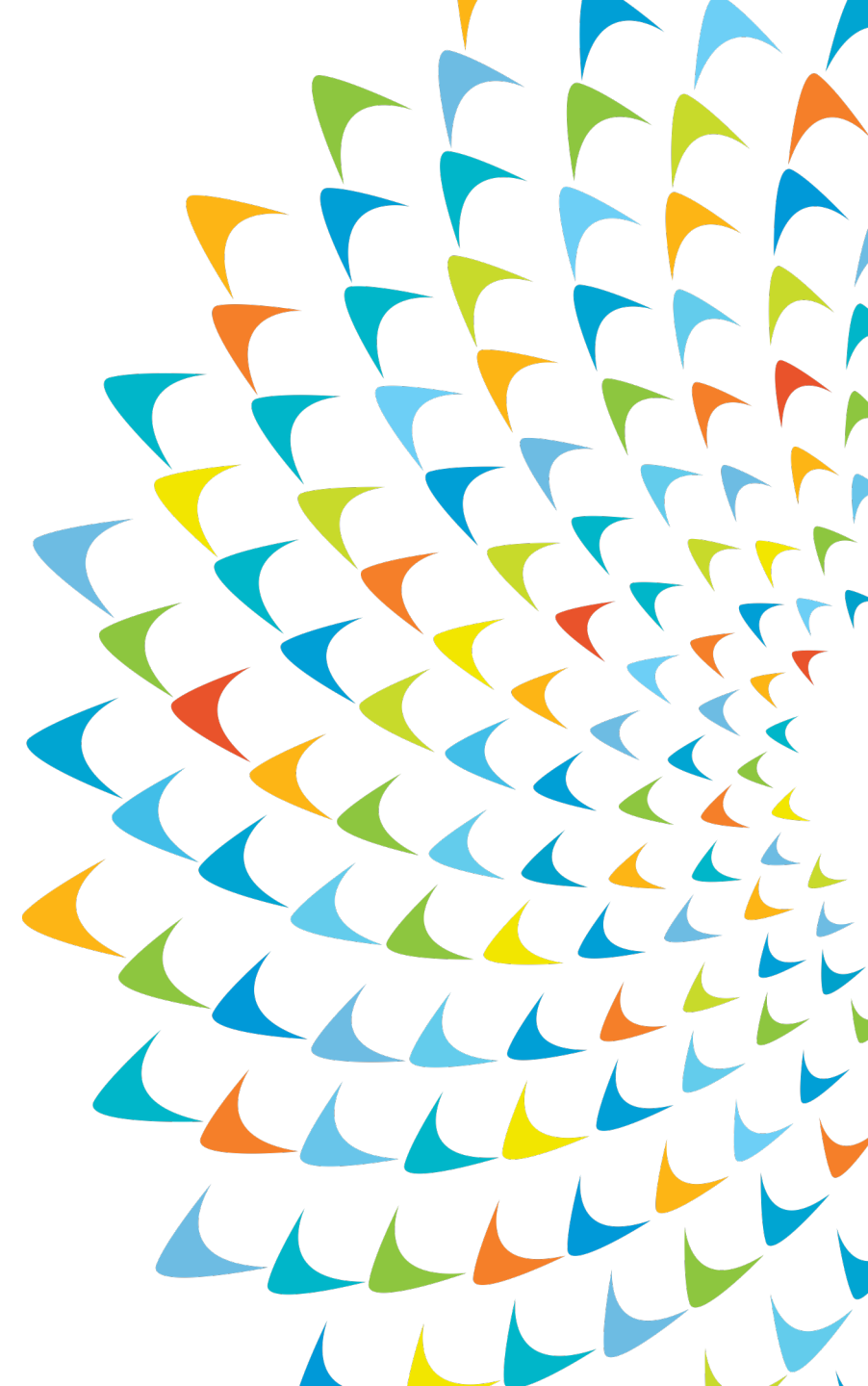


Faecal Flow Diagram for Port Vila 53,000 people





Question and answer session





Key messages

1. **Evidence-based sanitation planning and implementation** – what works and what doesn't
2. **Application of practical tools** – which options and interventions to prioritize
3. **Conventional infrastructure versus innovative solutions** – how to meet all users and contexts, leaving nobody behind
4. **Sanitation service chain** from containment to disposal – completing the system
5. **Broadening the “menu” for onsite sanitation** – well managed options
6. **Sustainable services** - building institutional capacity, accountability and financing mechanisms



Thank you.

