Thimphu Structure Plan

Water Utilities

Royal Commission for Urban Development and IAC

PRIOR + PTNRS

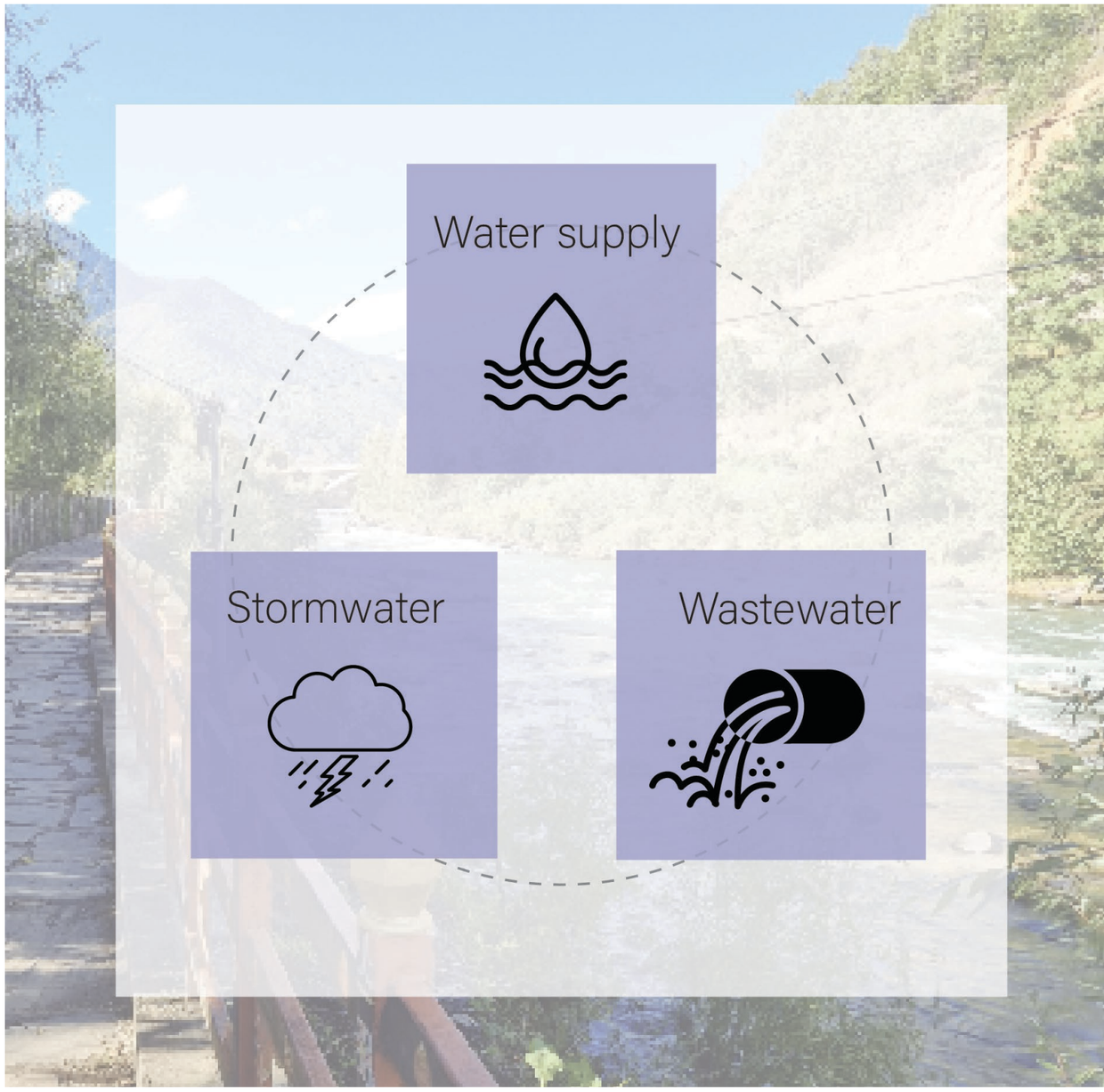
ARUP

GERALDEVE

Water Utilities

"Provide an equitable, reliable and resilient network"

Thimphu's water strategy aims to provide an equitable, reliable and resilient network of **water supply, wastewater, and stormwater systems' infrastructure** within the city. The main improvement projects identified in the Plan seek to provide a 24/7 water supply to all properties; reduce water losses; achieve water quality standards; and provide firefighting demand. For wastewater and stormwater, the objectives include connecting all wastewater to the sewer network, achieving water quality standards at treatment plants, reducing stormwater runoff, and enhancing stormwater quality.



Thimphu Water Strategy | Source: Arup

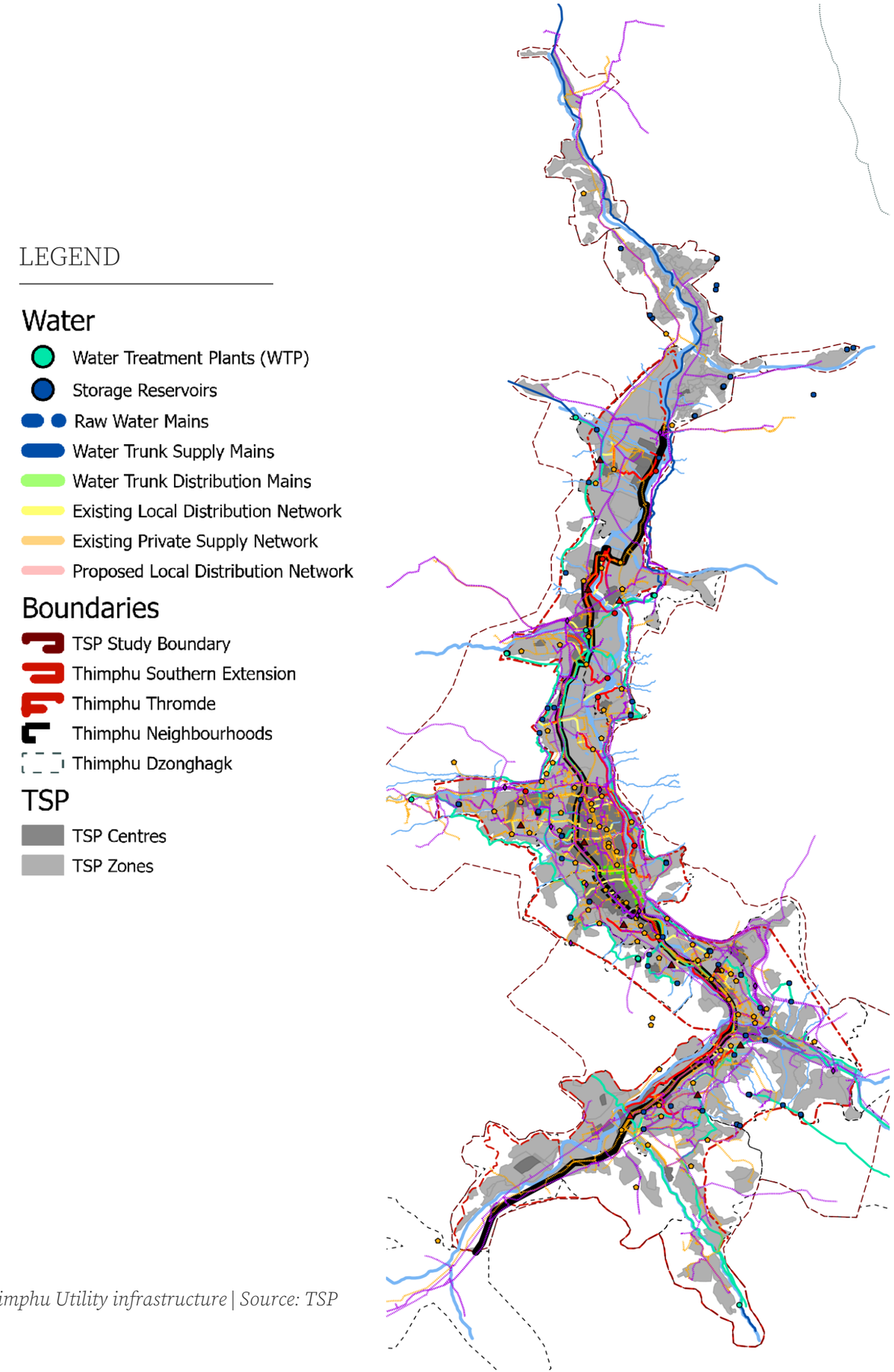
Key Proposals

1. **Water Supply:** Increase Water Storage, Reduce Water Losses, Water Demand Management, Upgrade Existing Network to Cater for Firefighting, Protect Watermains

2. **Waste Water:** Upgrade Capacity of Existing Waste Water Treatment Plants, Sludge Management, Upgrade Existing Wastewater Network

3. **Stormwater:** Sustainable Drainage Systems, Daylighting Culverted Watercourses

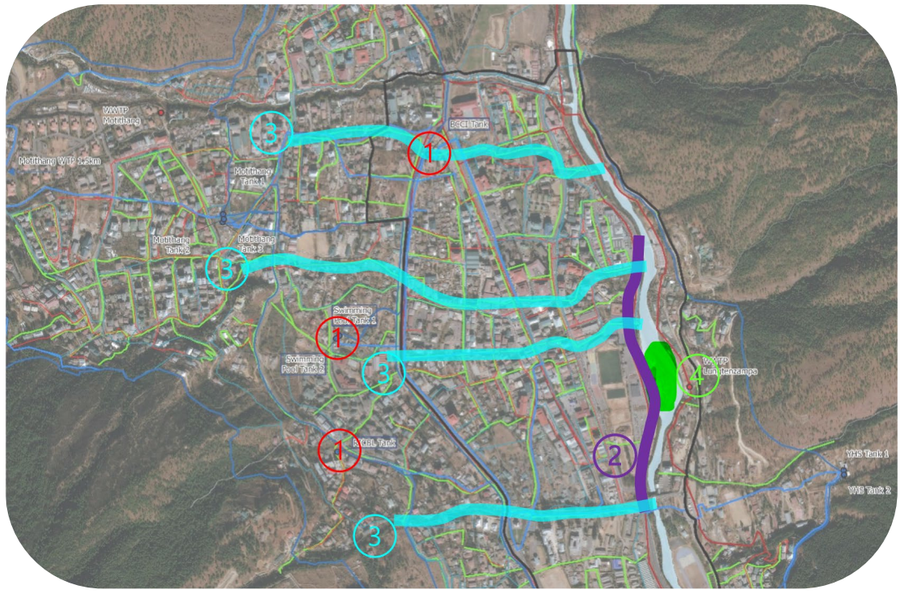
4. **Resource and Waste Management:** Deliver waste hubs at local and neighbourhood centres, Deliver material recovery facilities, industrial transfer stations and construction and demolition hubs away from residential areas, associated with industrial areas.



Thimphu Utility infrastructure | Source: TSP

Focus | City Core Strategy

- **1**: Increase local water storage through additional or consolidated tanks;
- **2 & 5**: Improve the capacity of water mains and install fire hydrants for firefighting to protect buildings and residents in emergencies;
- **3**: Daylight existing culverted streams to enhance the biodiversity and amenity in coordination with new pedestrian routes and Green Infrastructure;
- **4 & 6**: Improve stormwater management, including Sustainable Urban Drainage Systems in partnership with Green Infrastructure into parks;
- **7**: Upgrade the water storage tanks at the hospital to ensure critical facilities maintain



The figures on the right include a depiction of several interventions which would improve the resilience and performance of the water, wastewater, and stormwater systems. The City Core is depicted, but the interventions would apply throughout the network.
Source: TSP

Key topic 1 | Water Demand Management

The Plan aims to **enhance the water demand management** to be resilient to future shocks and stresses, reduce the quantity of water required, provide adequate water supply and wastewater drainage for all properties, and improve water quality for the well-being, amenity and biodiversity of Thimphu.

The proposed interventions include:

- Instalment of **water saving devices** and enhancement of water efficiently
- Promotion of **efficient water reuse** and circularity.
- Implementation of **smart metering** and **pressure management** in the water supply system.

Retention Ponds - Example of sustainable Drainage System (SUD)

Source: TSP

Sidewalk rain gardens - Example of sustainable Drainage System (SUD)

Source: bluegreenbldg.org/

Raw water storage tanks - Example of sustainable Drainage System (SUD)

Source: Arup

Key topic 2 | Water and Wastewater Networks

The Plan aims to improve the water and wastewater networks to **increase system capacity and efficiency, and promote public safety**. The proposed interventions include:

- Implementation of **flow and pressure monitoring network** to assist in leakage detection and system operation.
- Detection of **locations of leakage**, and implementation of solutions to repair the system to reduce water losses and infiltration in the networks, reduce operational costs, and prevent water shortages.

Identifying leakage points and implementing solutions to repair the system will ensure there is enough water for the future population.

Source: TSP