ADB’s 2nd e-MarketPlace for a Water-Secure and Resilient Asia and the Pacific

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NetCreate

Using NetCreate to accelerate Water, Wastewater and TSE Master Planning

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Agenda

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2. What is NetCreate?
3. Developing, testing and applying
4. Case Studies
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   - Pontianak, Indonesia
   - Development site, Kingdom of Saudi Arabia
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Global Infrastructure Hub

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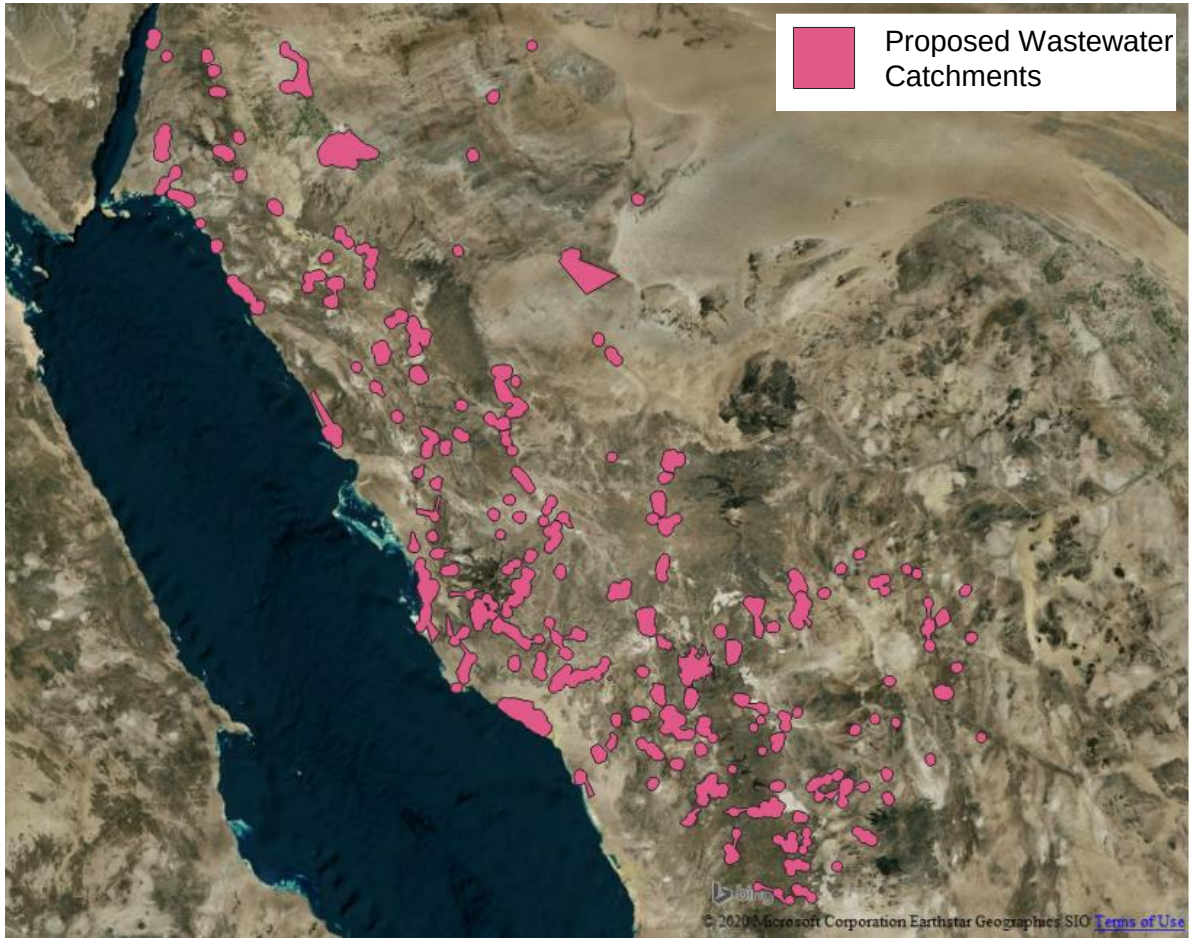
1. The Problem



We needed to understand the sanitation provision required for 150 catchments in the Medina and Tabuk region of Saudi Arabia which will serve a population of 4.8M by 2050.

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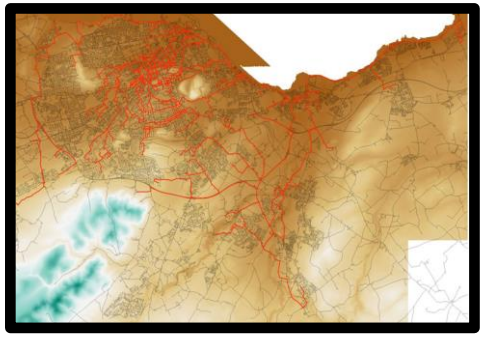
2. What is NetCreate ?

NetCreate is a digital process using global open source GIS datasets to automatically create an outline wastewater network on a repeatable basis.



Digital Terrain Model

Population data

Road layout

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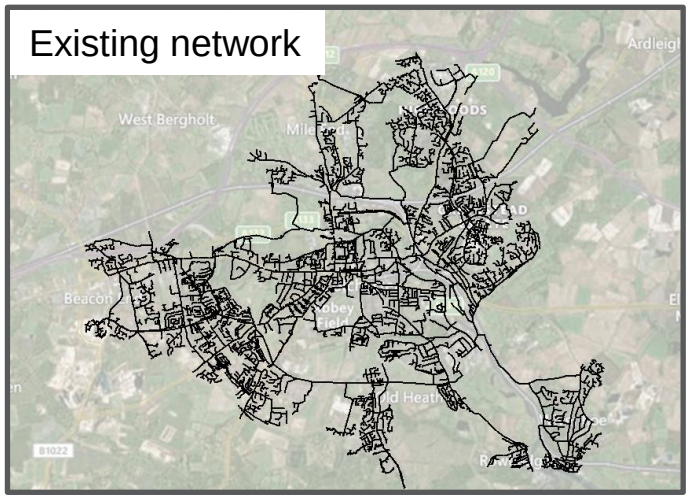
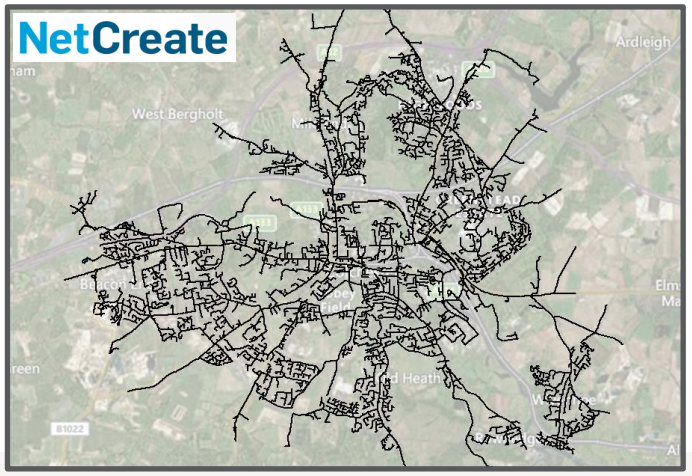
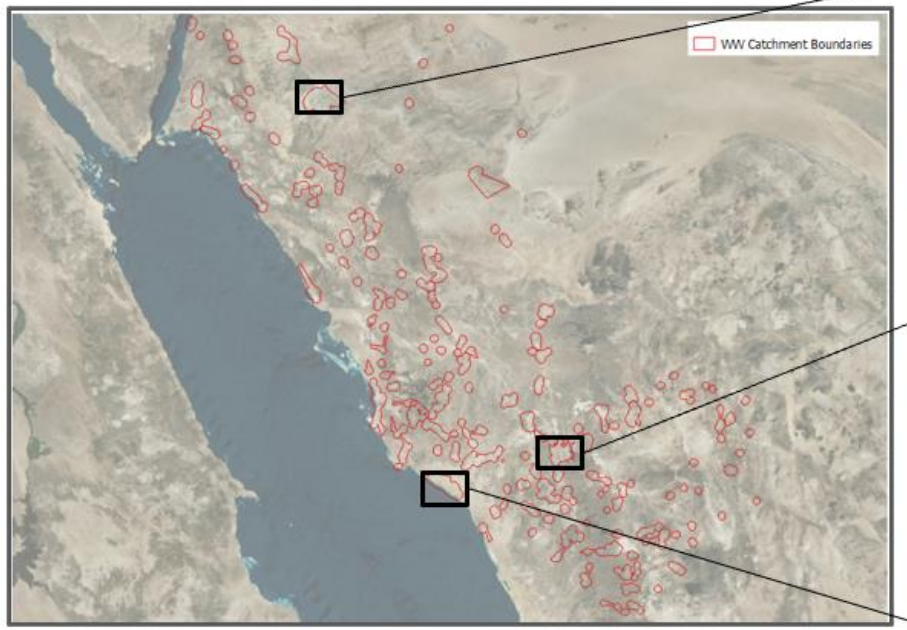
3. Developing, Testing and Applying

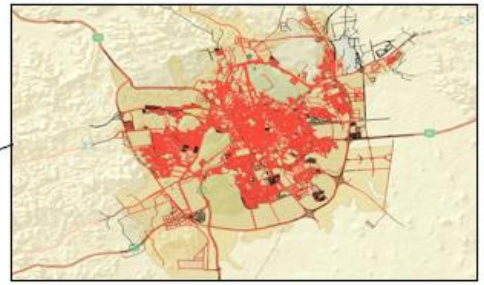




Network generated within **5%** of the actual network length



Tabuk City



Madinah City

Yanbu City

Outline wastewater networks generated for 150 catchments which will serve a population of 4.8M by 2050.

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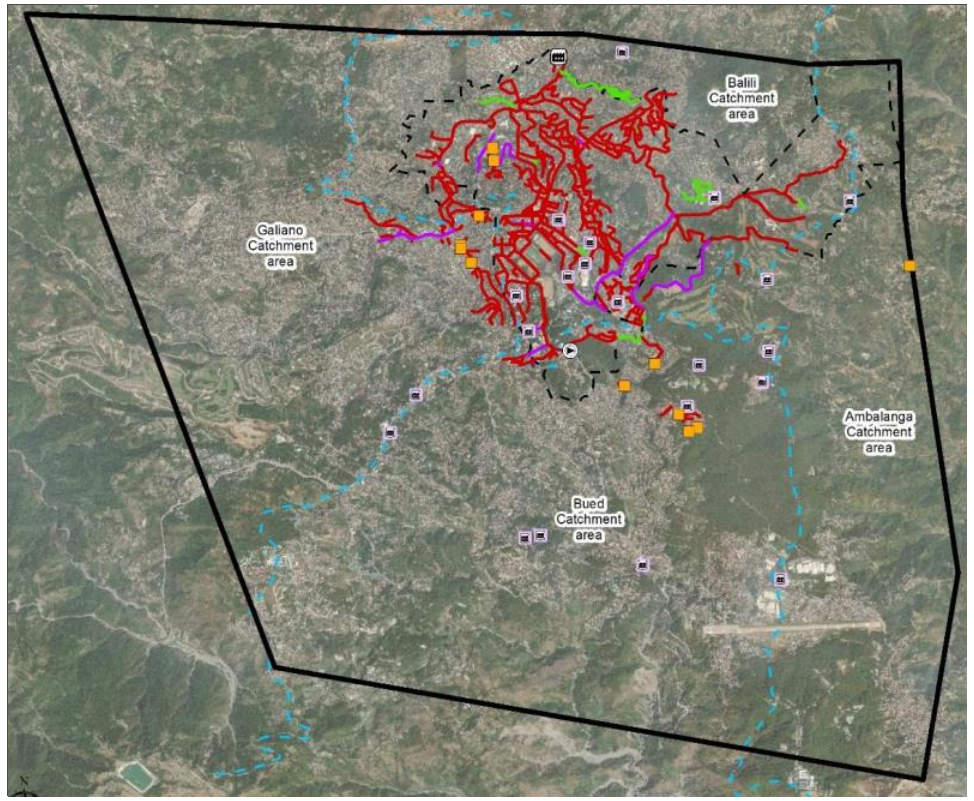
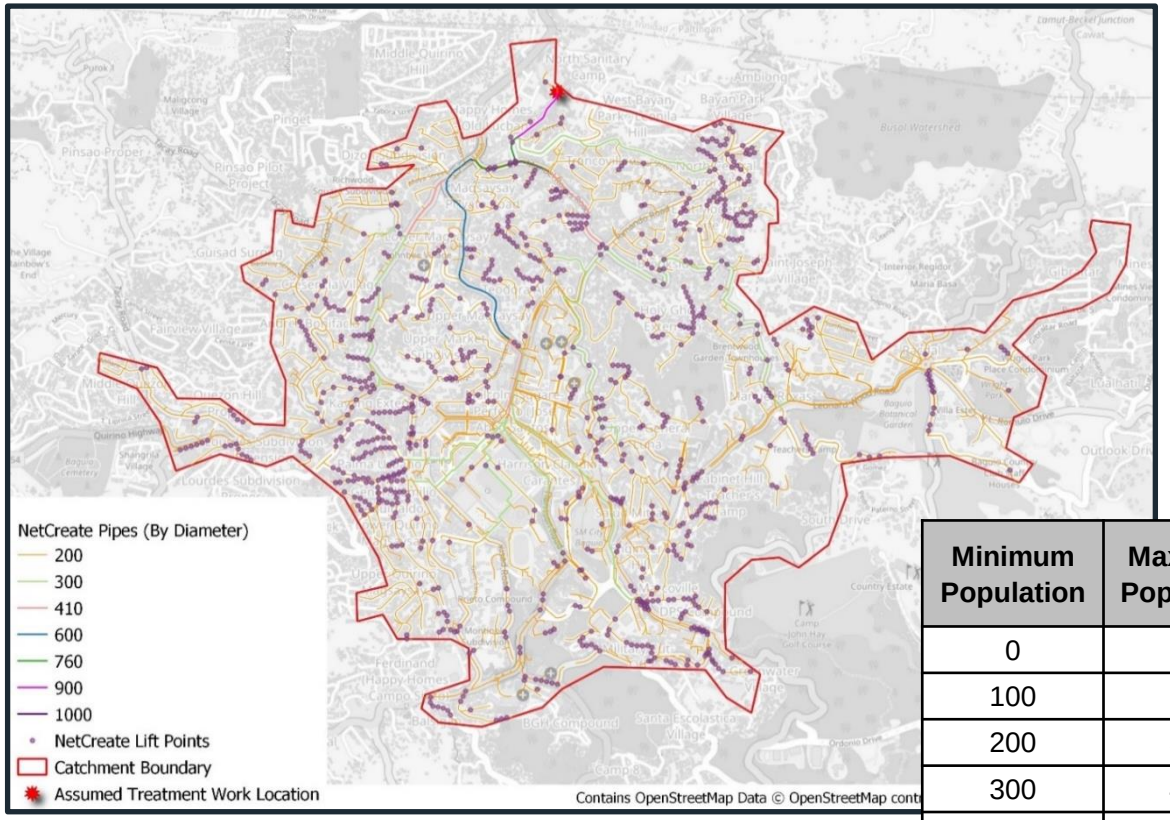
Case Study 1 - Baguio, Philippines





Minimum Population	Maximum Population	No. of Pumping Stations
0	100	60
100	200	28
200	300	10
300	400	7
400	500	6
500	2000	20
2000	10000	7
10000	-	2
	Total	**140**

Original NetCreate run (full population connectivity)

- 128km of pipe is needed to serve a population of 96,984
- 397 lifting points > 140 local pumping stations.
- Of the 140 pumping stations 111 have an upstream population less than 500.

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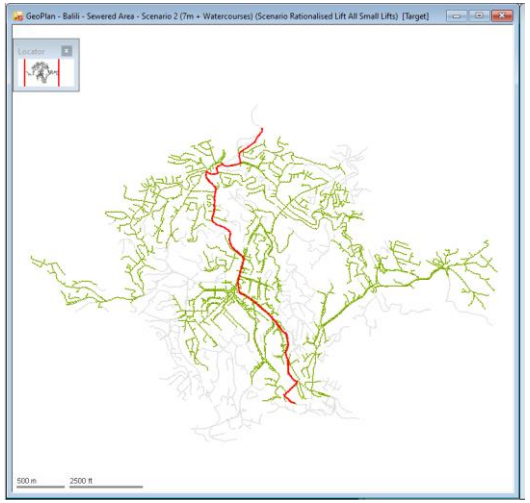
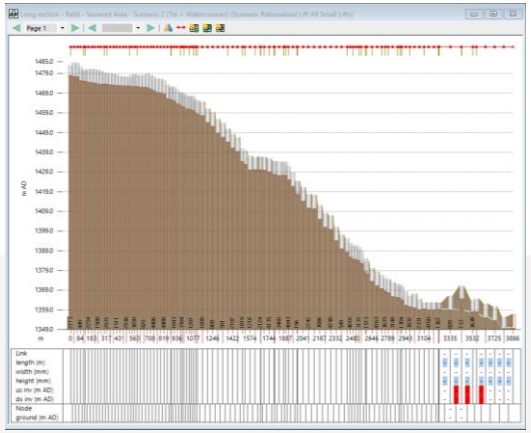
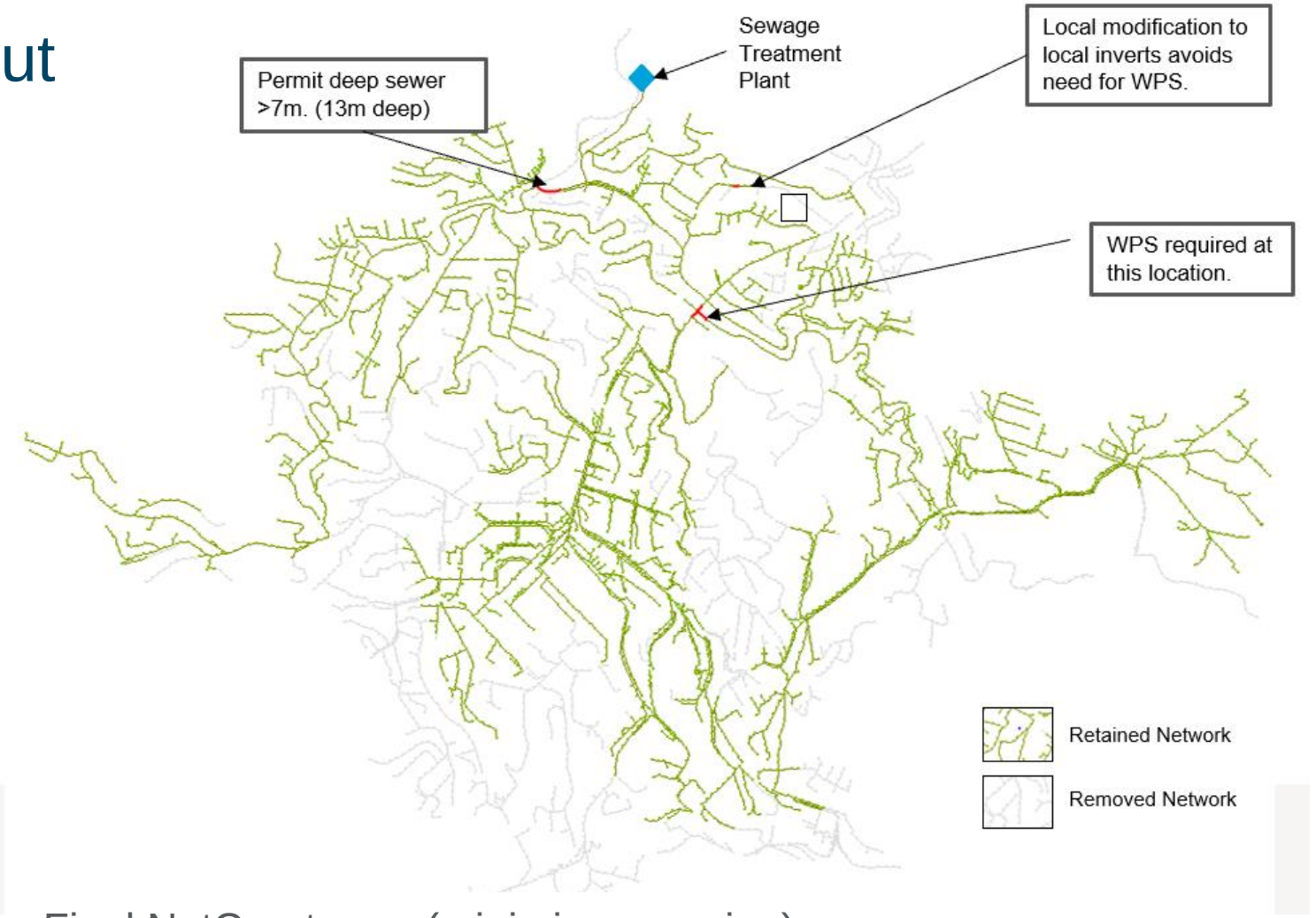
Refined network layout

Imported into InfoWorks ICM for hydraulic refinement







Final NetCreate run (minimise pumping)

- 83km of pipe is needed to serve a population of 71,556
- A single pumping station is required (50l/s)

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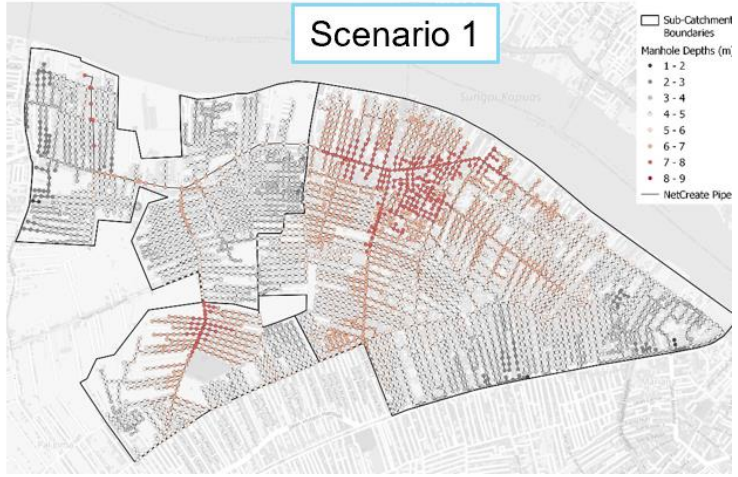
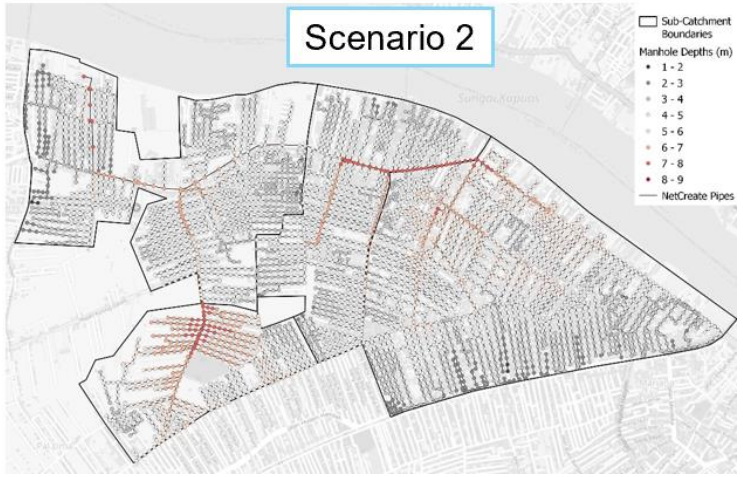
Case Study 2 - Pontianak, Indonesia

Pipe Diameter (mm)	No. of Manholes	Length (m)
200	3,778	152,291
250	81	2,821
300	52	1,587
400	107	2,823
500	86	2,364
600	21	697
700	5	145
900	4	131
1000	9	286
1100	21	1,368
1200	4	308
1300	16	1,119
Total	4,184	165,942

- 184,086 population
- 165km of pipe
- 0.9m of pipe per population served





Scenario	No. of Pumping Stations	Average Depth (m)*	Energy consumption (KW/yr)	Carbon Emissions (tCO2)
1	2	5.1	339,694	105
2	3	4.6	421,556	130

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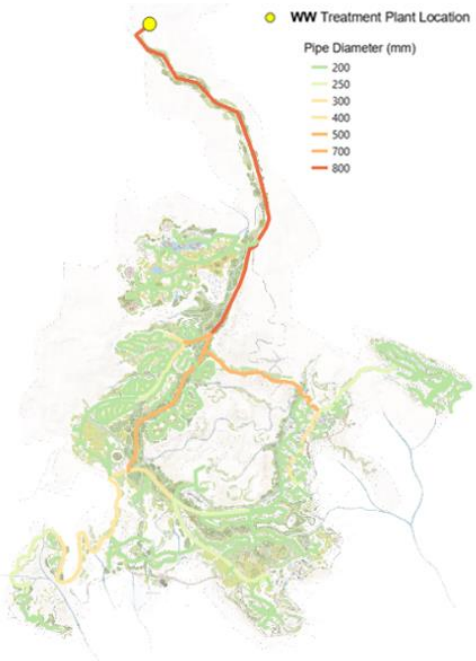
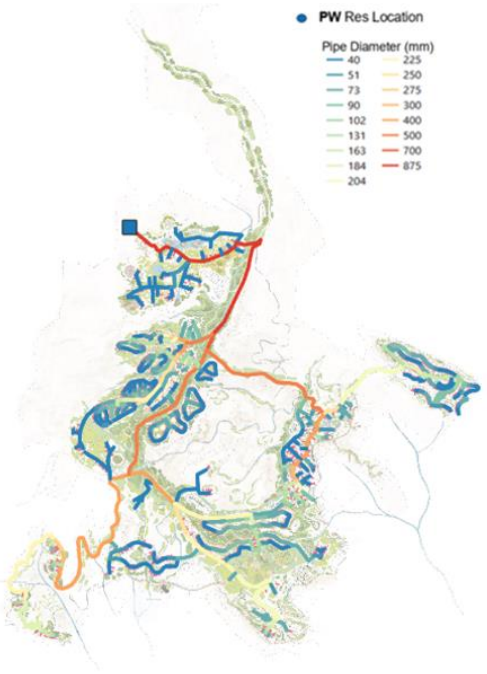
Case Study 3 - New Development, Kingdom of Saudi Arabia

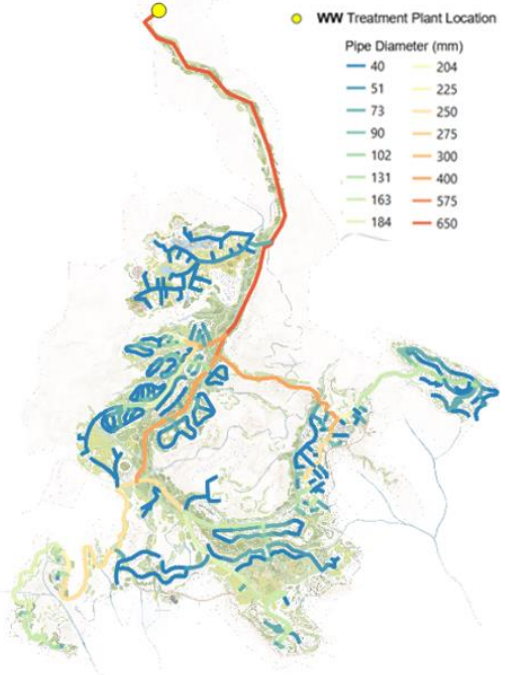
Wastewater



Potable Water



Treated Sewage Effluent



- Initial high level wet utilities layouts were generated quickly for client feedback.
- This facilitated scenario testing eg centralised versus decentralised wastewater treatment and pumping versus storage for potable water.
- Over 250km of wet utility network, were scoped in just two months.

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In Summary

- NetCreate offers significant time and cost benefits compared with the traditional, manual approach for wet utility master planning.
- The standardised approach accelerates master planning to allow early scope definition for client engagement.
- The approach adopted is easily configurable for scenario planning to inform large scale capital investment programmes.

Any Questions ?

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