

Status of Water and Sanitation Infrastructure, Challenges and Opportunities

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SALGA / NBI Municipal Water Infrastructure Investment Dialogue
Development Bank of Southern Africa

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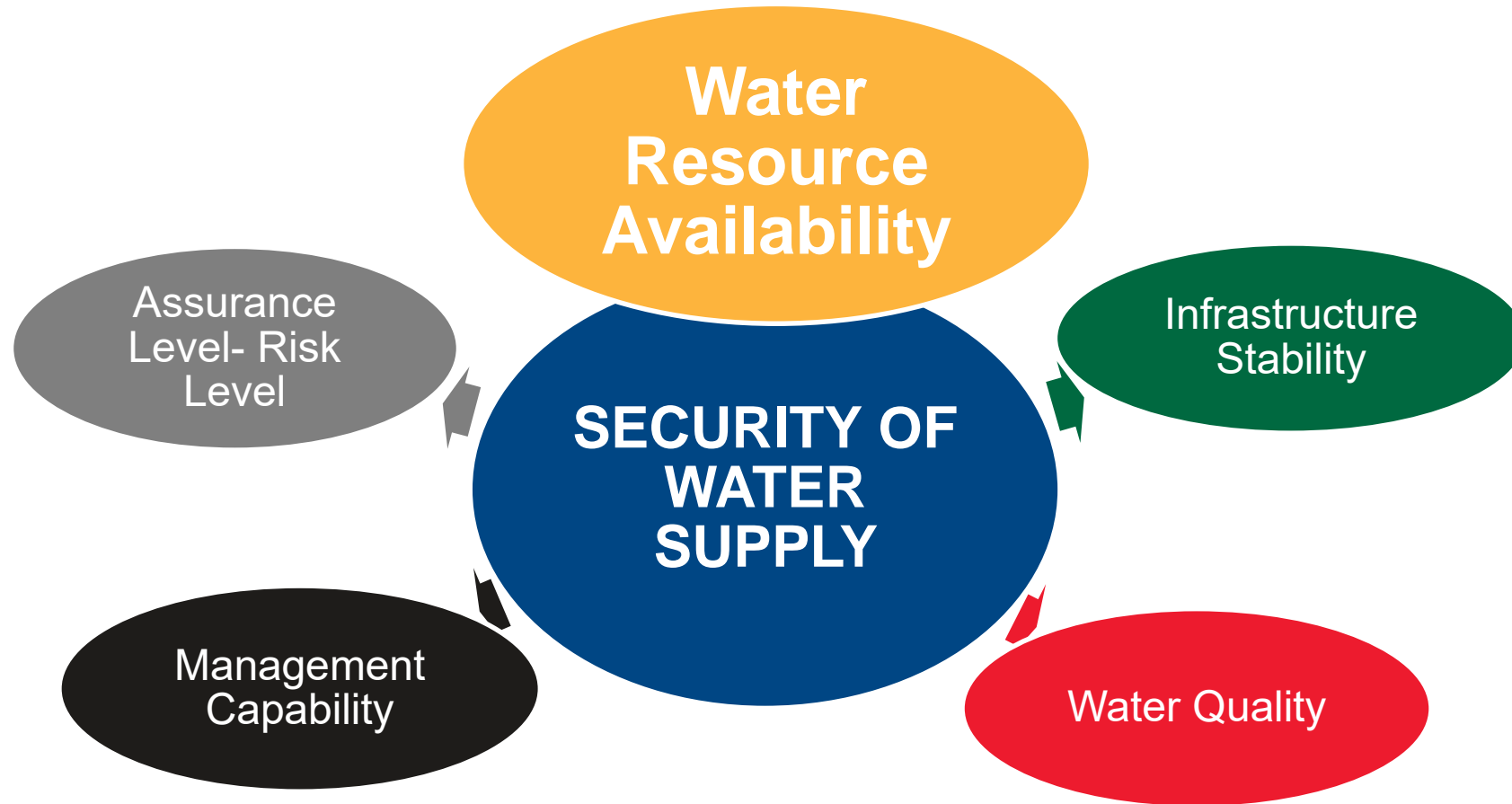


**City of
Ekurhuleni**

About Ekurhuleni



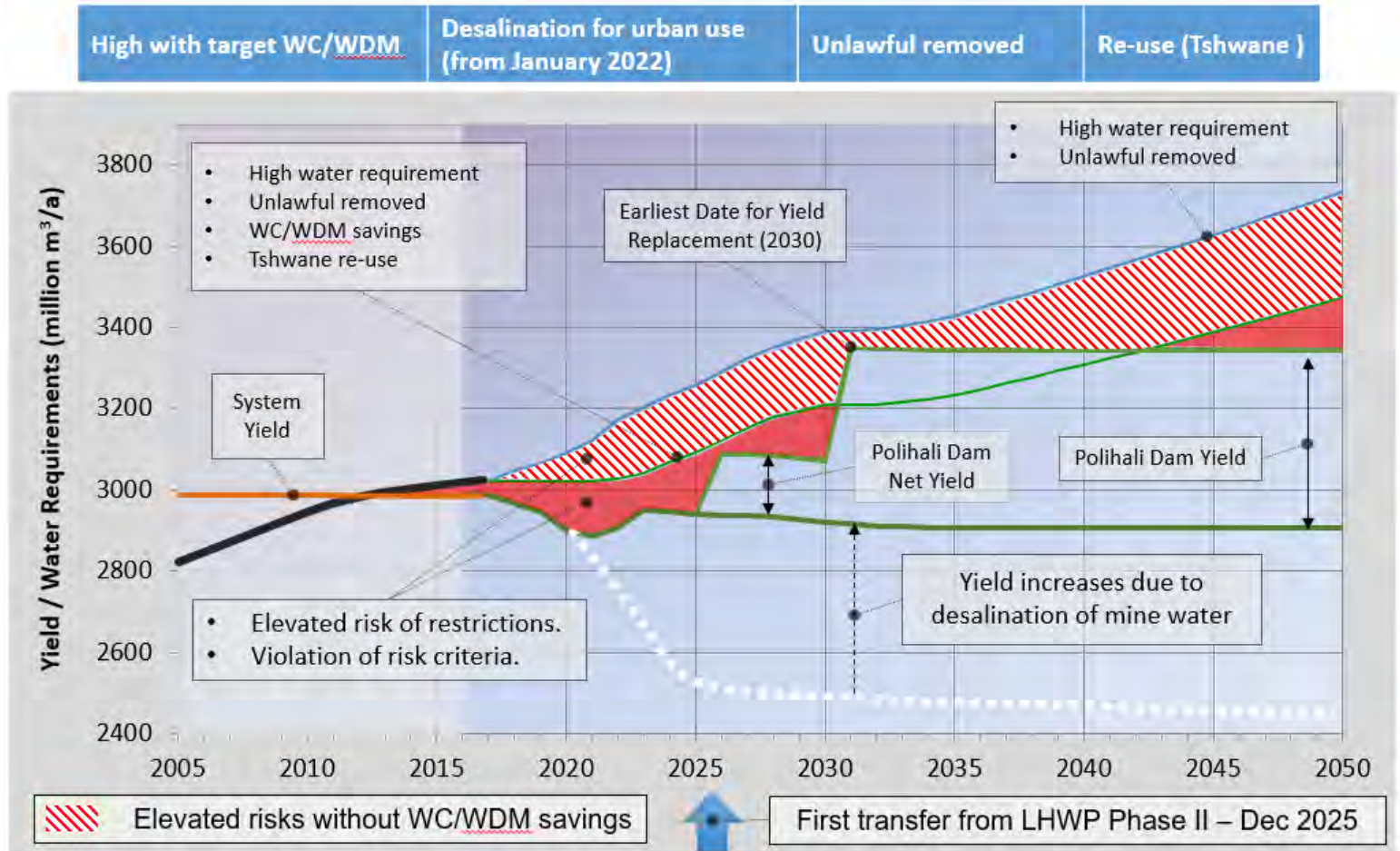
Factors that Contribute to Security of Water Supply



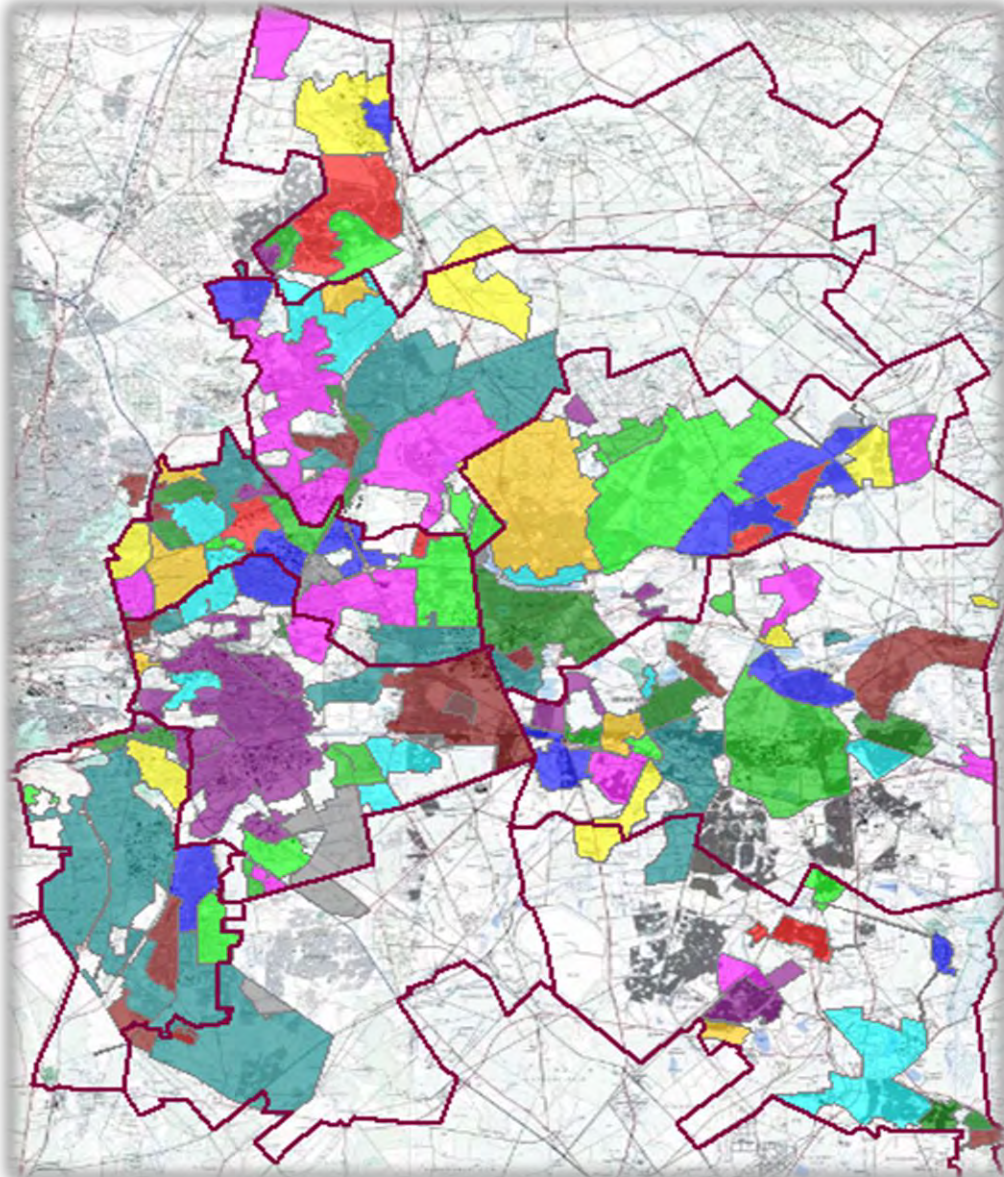
Background: National Water Resources

South Africa is classified as a semi-arid country

- SA average annual rainfall is 497mm vs global average of 860mm per annum
- Water requirement in half of SA's Water Management Areas exceeds availability

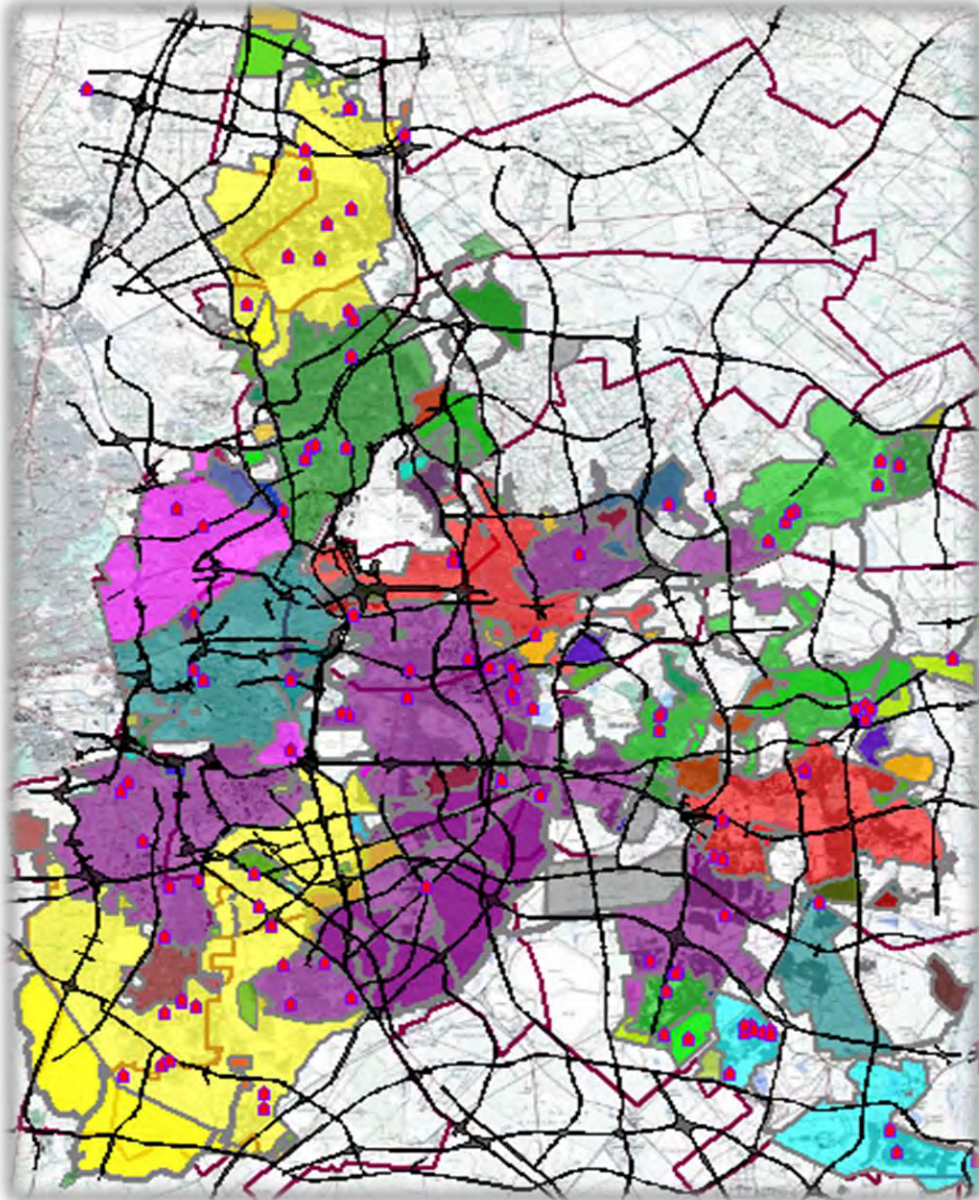


Water Attributes



AADD (ML/d)	927ML (2016/17 FY)
Est. demand growth	1.88%
Storage Reservoirs	72
Pressure Towers	32
Current Storage	958.9ML
PRVs	183
Supply Zones	87
RW Bulk Connections	187
Pipe length (km)	11,177
W&S Dept. Staff	1,100
Staff / pipe Ratio	9 staff / km
Replacement value	R12,027m

Sewer Attributes



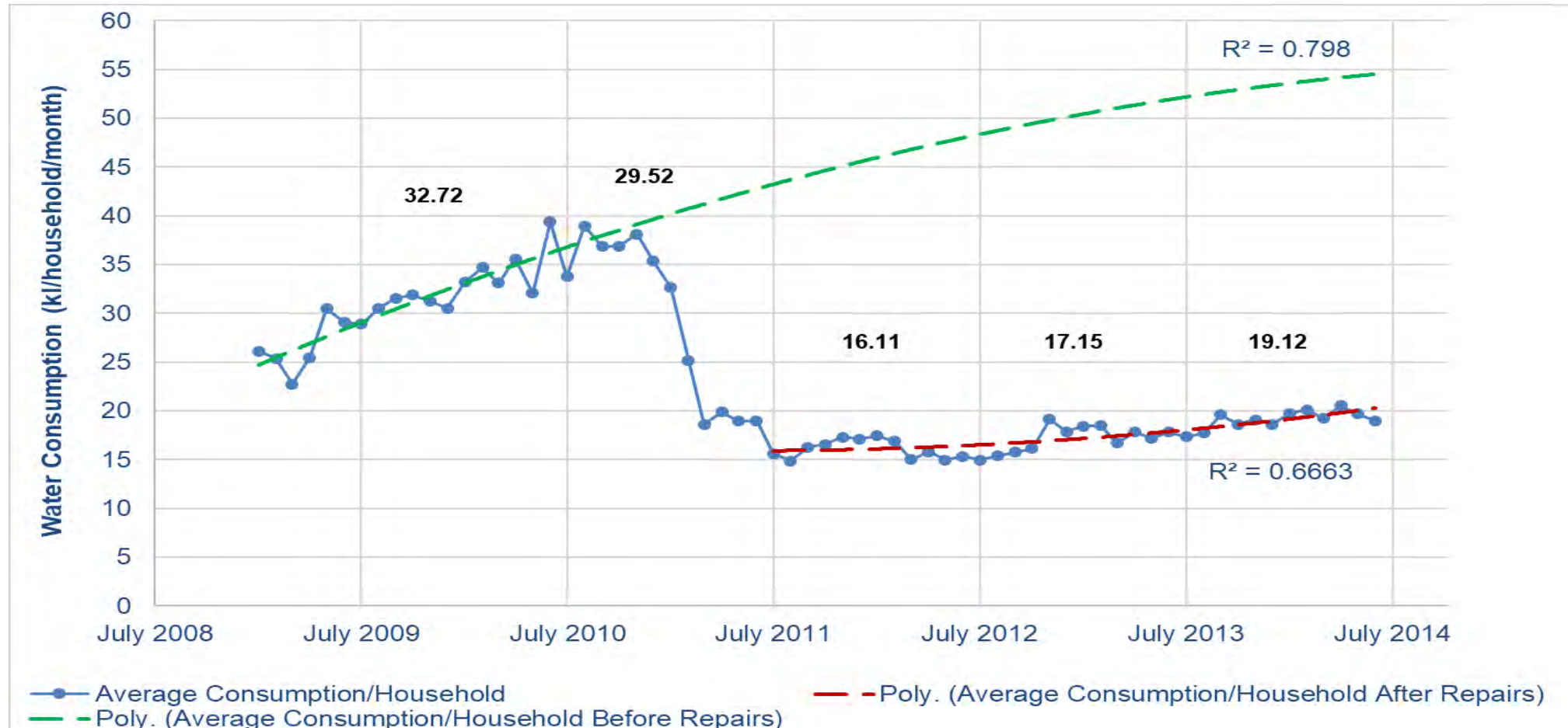
WWTW treatment capacity (MI/d)	641.65
WWTW Inflow (MI/d)	649.87
ERWAT WWTWs	17
Pipe length (km)	9,456
Rising mains (km)	101
Pump Stations	152
Drainage Zones	12
MH Structures	169,463
W&S Dept. Staff	1,100
Staff/pipe Ratio	8 staff / km
Replacement value	R18,837m

Consumer Data

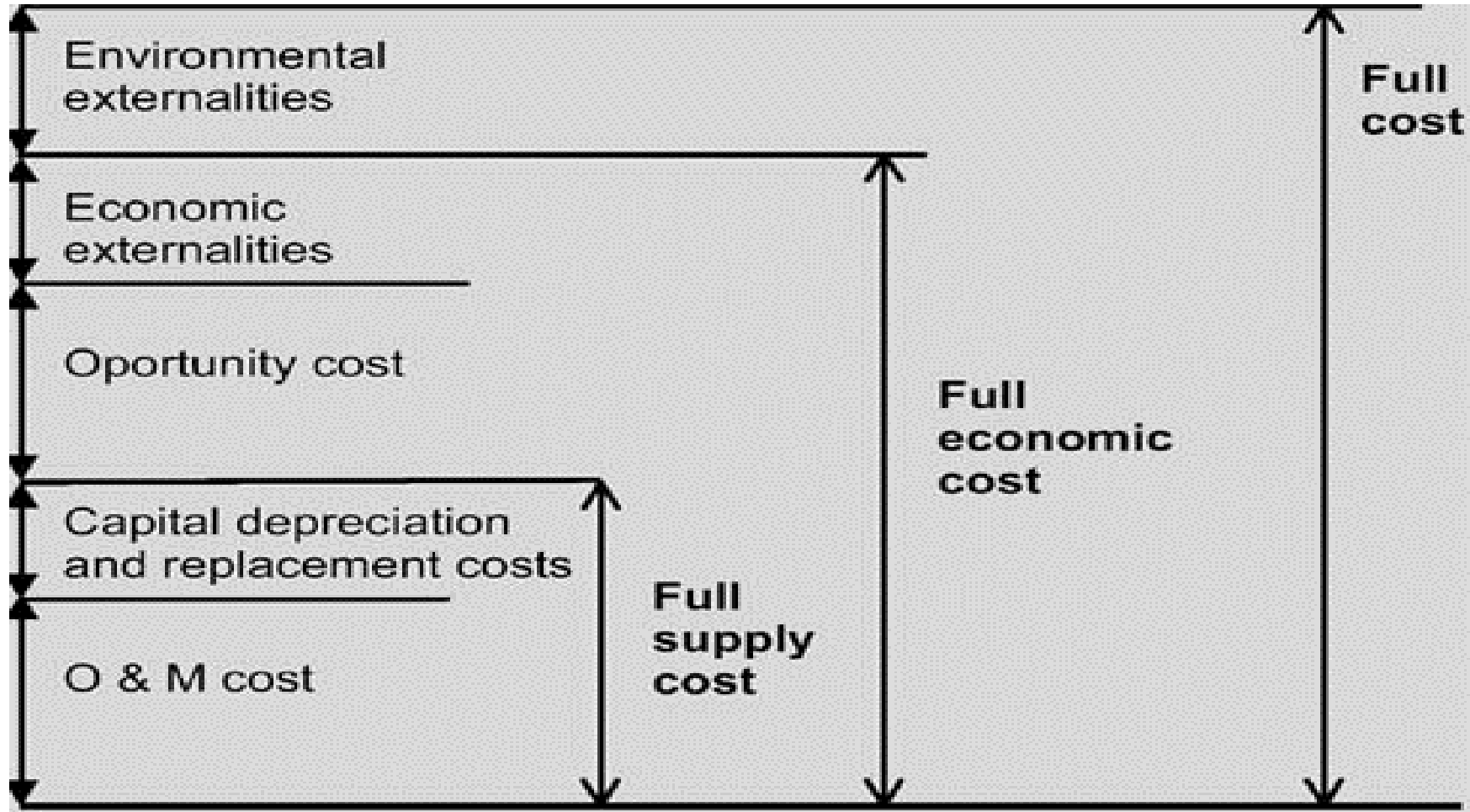


Category	Units	%
Domestic	582 626	59%
Informal	211 420	22%
Indigent	42 040	4%
Backyard	62 031	6%
Total households	898 117	92%
Business	21 208	2%
Industrial/Commercial	12 865	1%
Institutional	43 563	4%
Other	4 118	0%
Total consumers	979 872	100%

Indigent Leak Repair Project

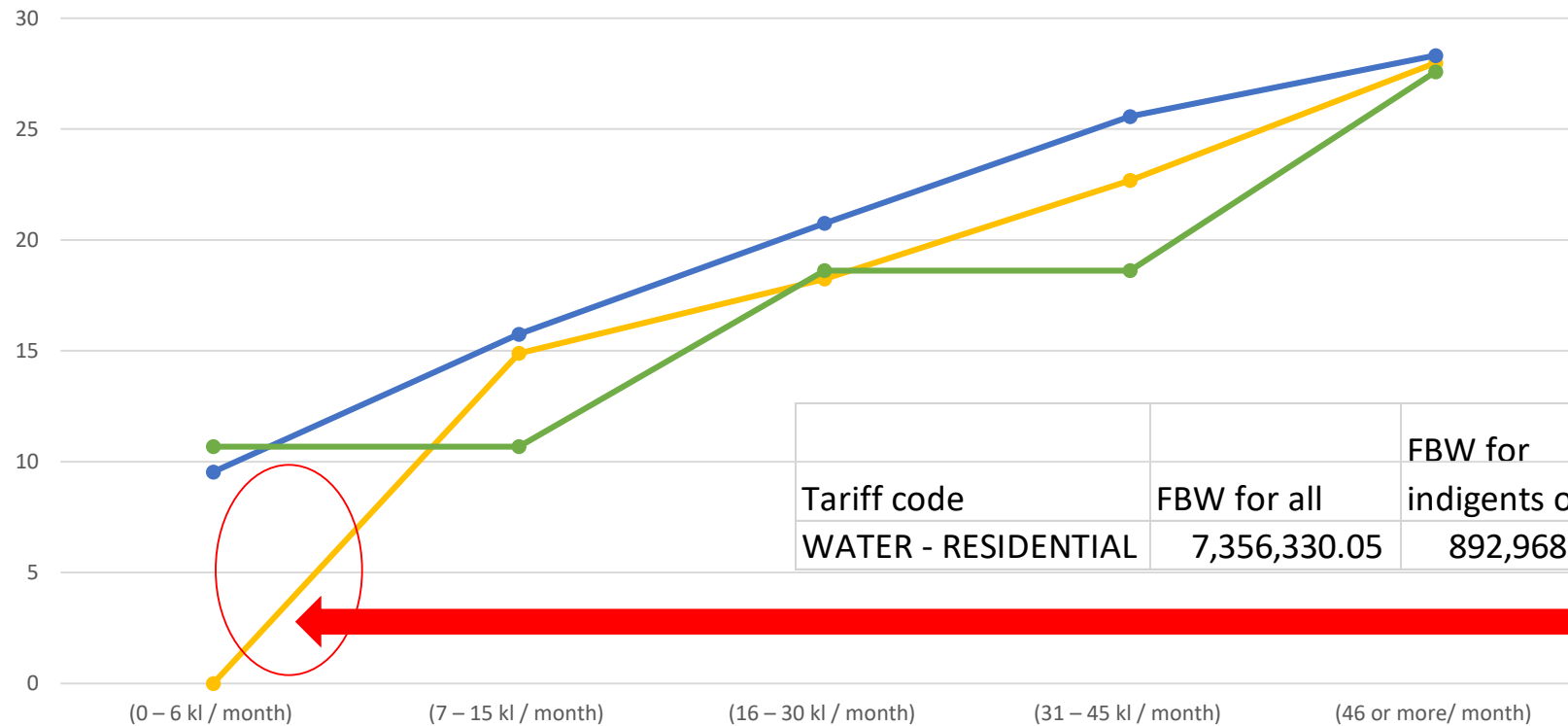


Water Pricing

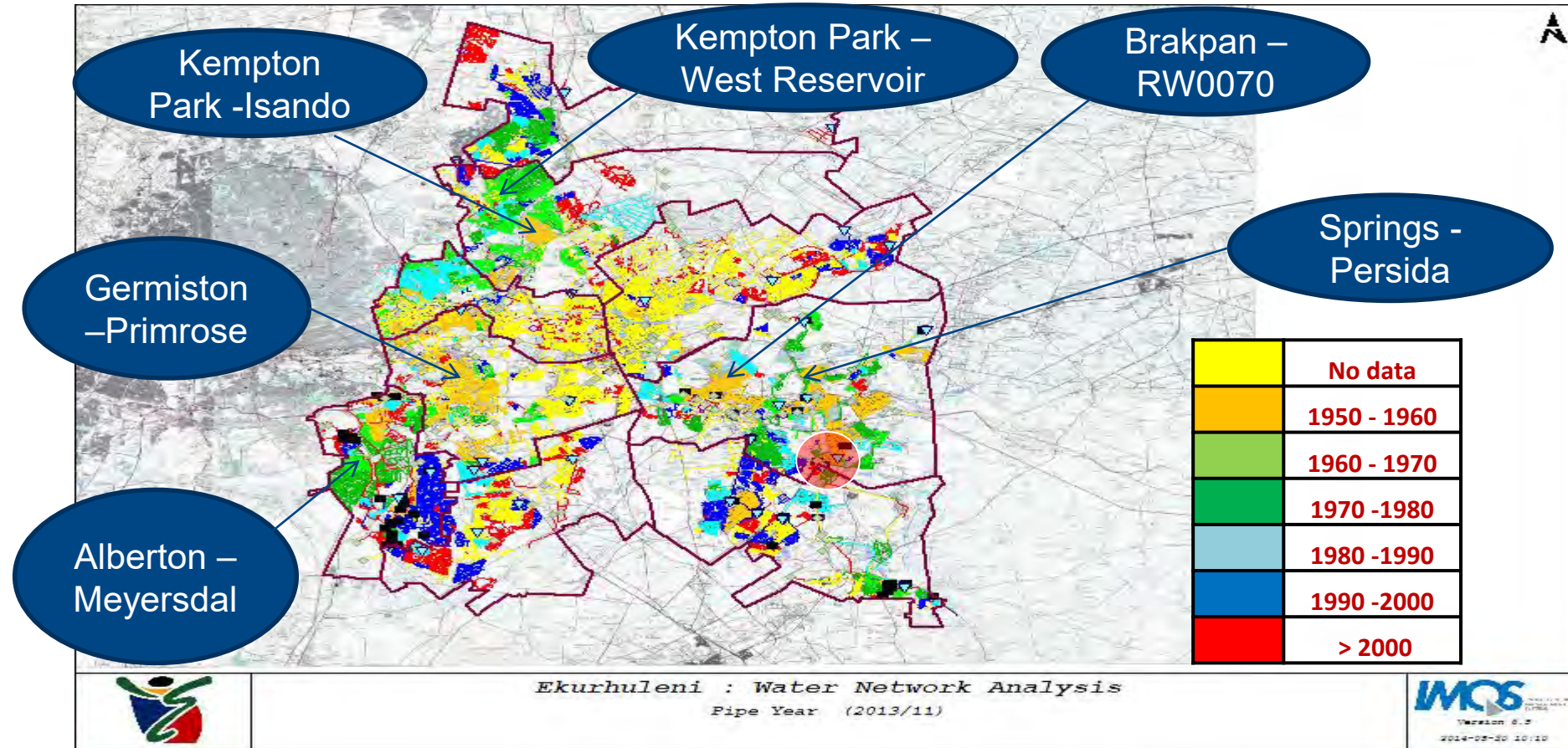


FBW allocation

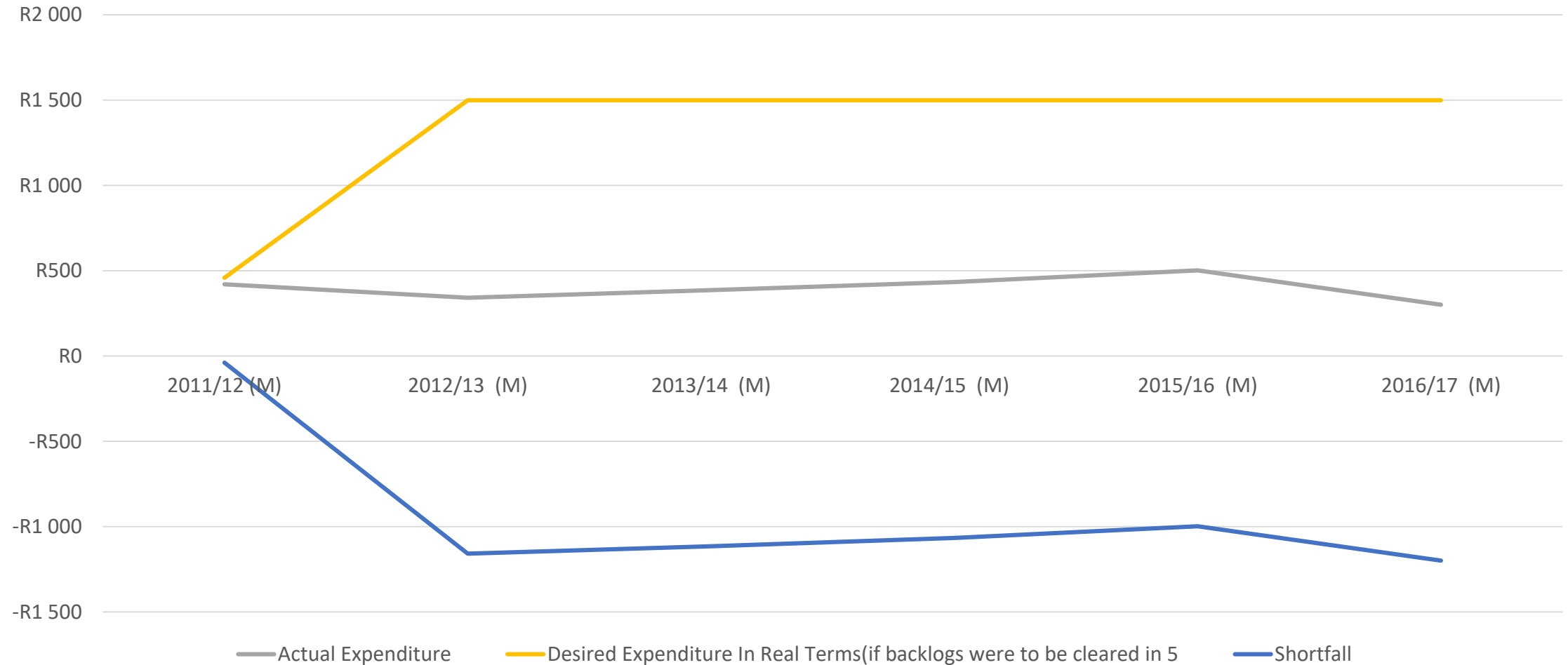
Tariff comparison per Metro



Water Infrastructure Old Hotspots



Investment in Water & Sewer Infrastructure



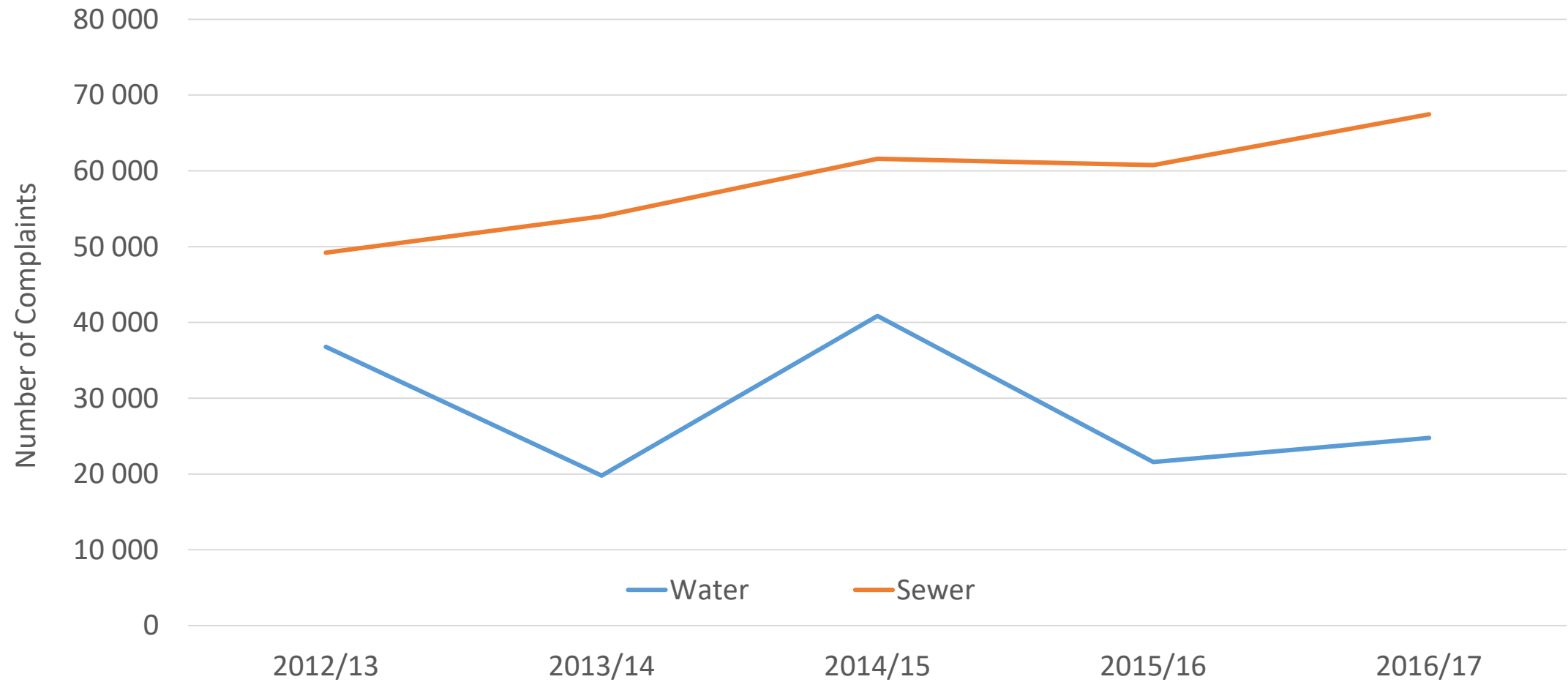
Budget Allocation for Water Projects

Source of funding	Type of projects	17/18FY Capex	% of 17/18FY
External Loans	New infrastructure	R459.3	76.6%
Internal Revenue	ICT, equipment, vehicles, facilities	R22.5	3.8%
Capital Replacement Reserve	Revenue generating projects	R0.0	0.0%
Urban Settlement Development Grant (USDG)	Basic services provision and upgrades	R117.5	19.6%
WATER AND SANITATION	Total budget (million)	R599.3	
CITY-WIDE	Total budget (million)	R6,399	9.37%

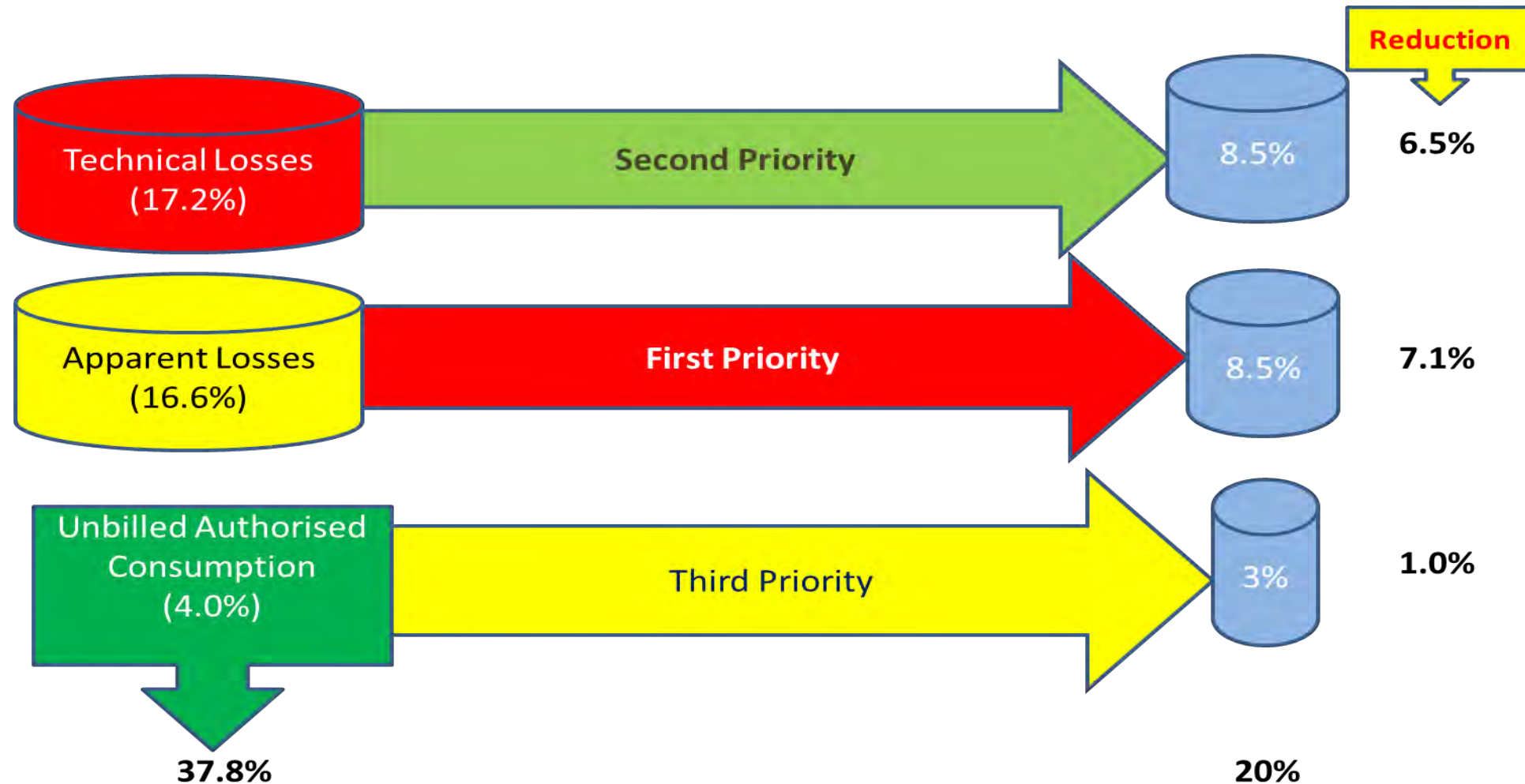
Repair vs Refurbish



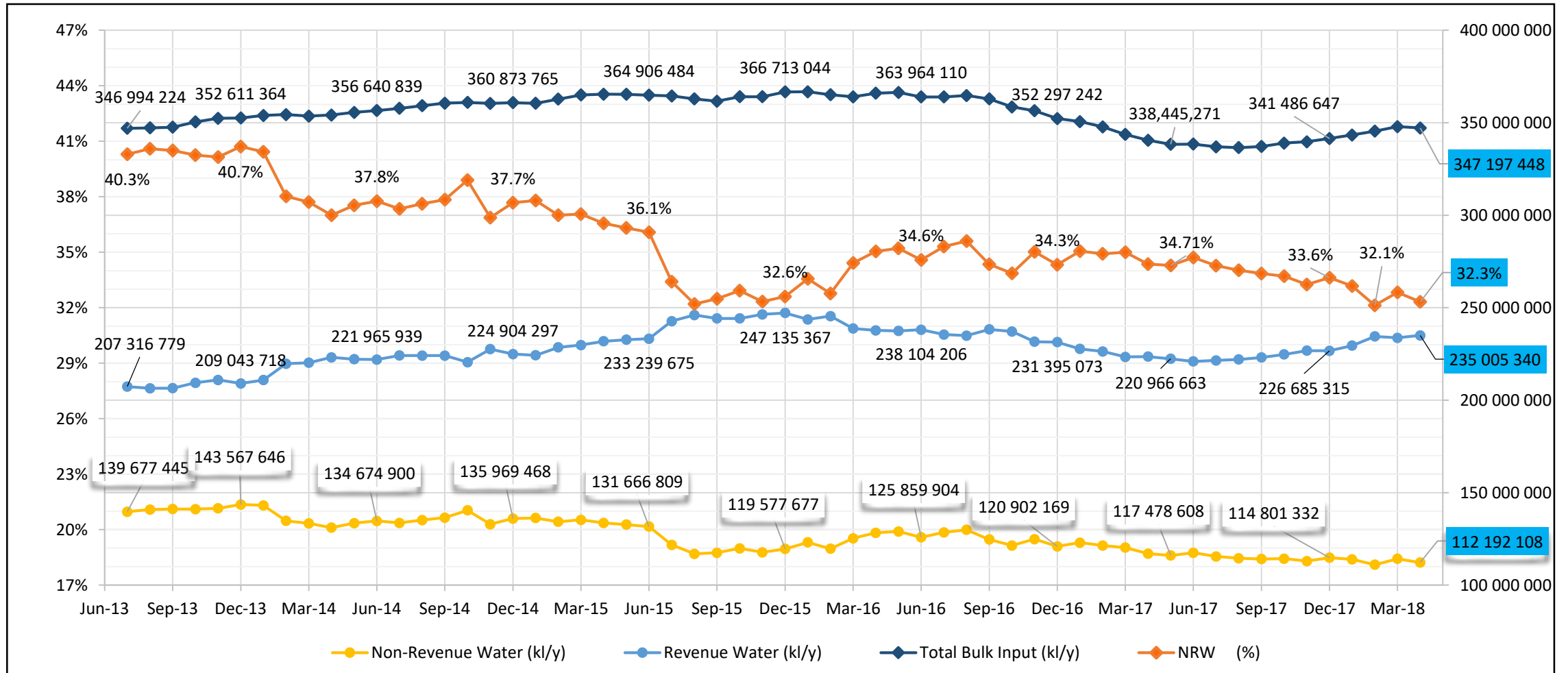
Water & Sewer Complaints



2015 Strategy: NRW Reduction Roadmap



2015 Strategy: NRW Reduction Progress



2015 Strategy: NRW Reduction Projections vs Actuals



YEAR	Base Year 2012/13	1 2013/14	2 2014/15	3 2015/16	4 2016/17	5 2017/18	6 2018/19	7 2019/20	8 2020/21	9 2021/22	10 2022/23
Budget Required	-	R150m	R360m	R410m	R330m	R320m	R300m	R250m	R240m	R230m	R200m
Budget Allocation		R150m	R190m	R145m	R102m						
Estimated % NRW Reduction	0%	1.0%	1.7%	2.2%	2.4%	2.4%	2.4%	2.4%	2.2%	1.9%	1.7%
Estimated % NRW	40.3%	39.3%	37.6%	35.4%	33.0%	30.6%	28.2%	25.8%	23.6%	21.7%	20.0%
Actual % NRW	40.3%	37.8%	36.1%	34.6%	34.7%						

Challenges Faced by Municipalities



- Reduction of Non-Revenue Water
- Security of water supply
- Aging infrastructure
- Budget constraints
- Free Basic Water
- Midblock systems
- Indigent Management
- Supply Chain Management issues
- By-Laws enforcement
- Lack of technical skill
- Billing and credit control



Current and Future Projects

Aqua Leap Programme Deliverables

ASSET -PROGRAM	SIZE/CAPACITY
Water Pipes Upgrade	200km
Water Pipes Extension (New)	200km
Water Pipes Replacement	1,000km
Additional Reservoirs Capacity (35 Reservoirs)	476MI
Water Pump-stations	20
Properties Metered	40 000
Meters Replaced	104 000
Sewer Upgrade	500km
Sewer Extension (New)	150km
Sewer Replacement	500km
Sewage Pump-stations phasing out (43 pump stations)	184km of sewer pipes
Waste Water Treatment Works Additional Capacity	159MI

Implementation: Water Demand Management Measures

		DESCRIPTION	2013/14	2014/15	2015/16	2016/17	2017/18
	1	Pipeline and Valve Assessment and Replacement	X	X	X	X	X
	2	Replacement of Mid-Block Pipelines	X	X	X	X	X
	3	Pro-Active Leak Detection and Repairs	X	X	-	X	X
	4	Cathodic Protection of Steel Pipelines	-	-	-	X	X
	5	Sectorisation of Distribution Areas	X	X	-	-	X
	6	Telemetry System	-	-	-	X	X
	7	Indigent Properties Leak Fixing	X	X	X	X	X
	8	Leak Fixing & Meter Installation Project in Tsakane	X	X	-	X	X
	9	Metering of all Informal Settlements	X	X	-	-	X
	10	Pressure Management	- X	- X	X	X	X
	11	Metering of all Unmetered Areas	X	X	X	-	X
	12	Replacement of all aged Domestic Water Meters	X	X	X	X	X
	13	Consolidation & Replacement of Large Water Consumer Meters	X	X	X	-	X
	21	Installation, Replacement & Maintenance of Meters	-	X	X	X	X
	14	Integration of IMQS, EMIS, Asset Management & Venus			X	X	X
	15	Communication, Awareness and Education Programme	X	X	X	X	X
	16	Water Tariffs as an instrument to reduce NRW	X	X	X	X	X
	17	Training	X	X	X	-	X
	18	Document and Information Management System	-	-	-	X	X
	19	Risk Register: Monitoring and Mitigation Plan	-	X	X	X	X
	20	“War on Leaks” Rapid Responses	-	-	X	X	X

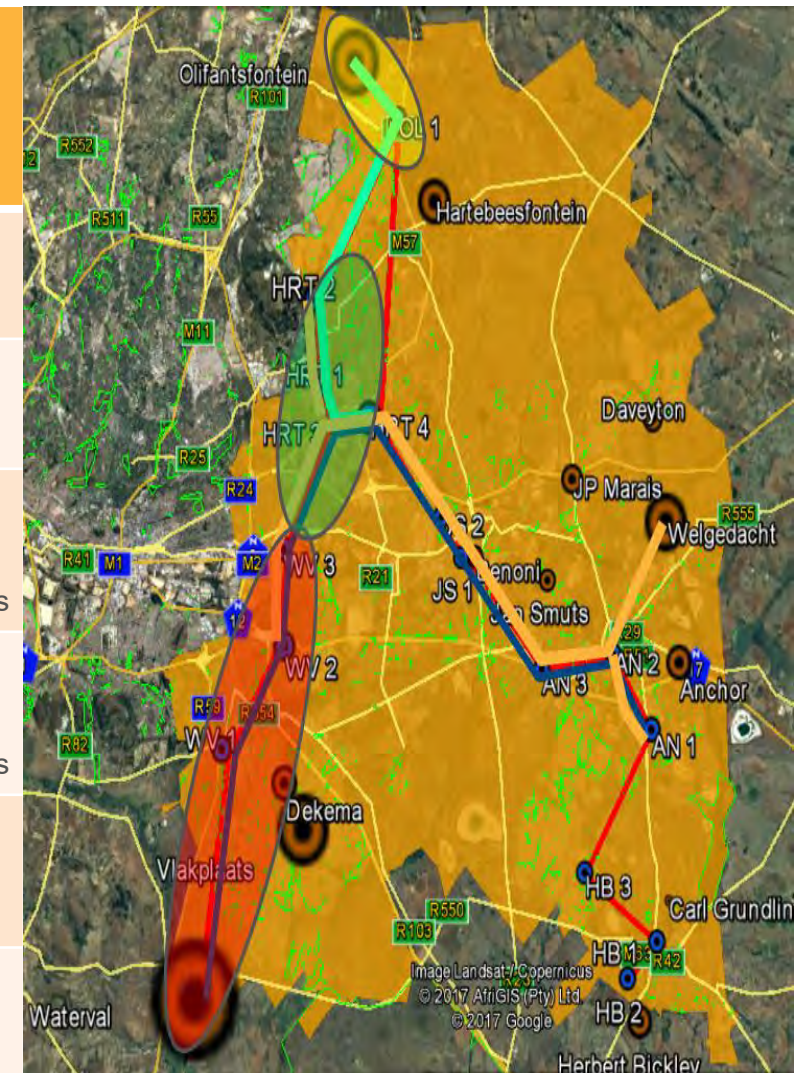
Implementation: Rain Water Harvesting



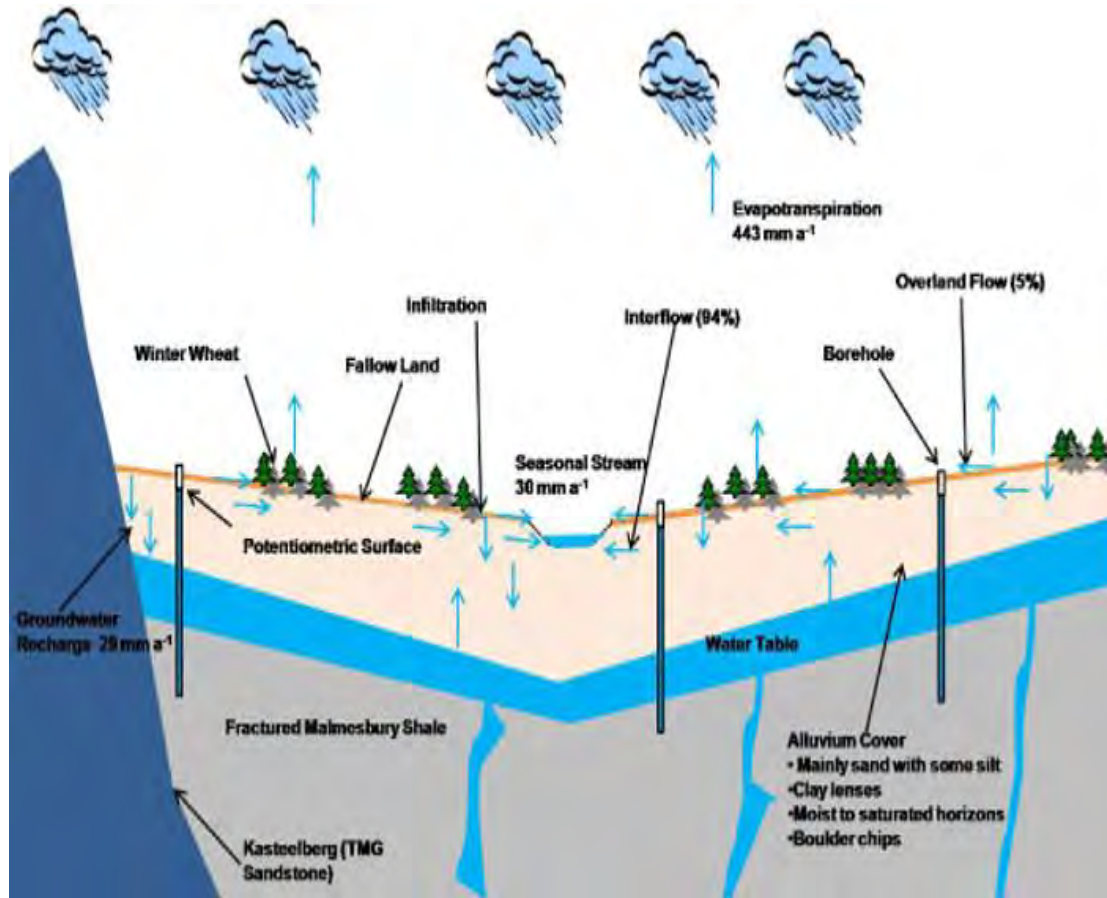
Implementation: Treated Effluent Reuse



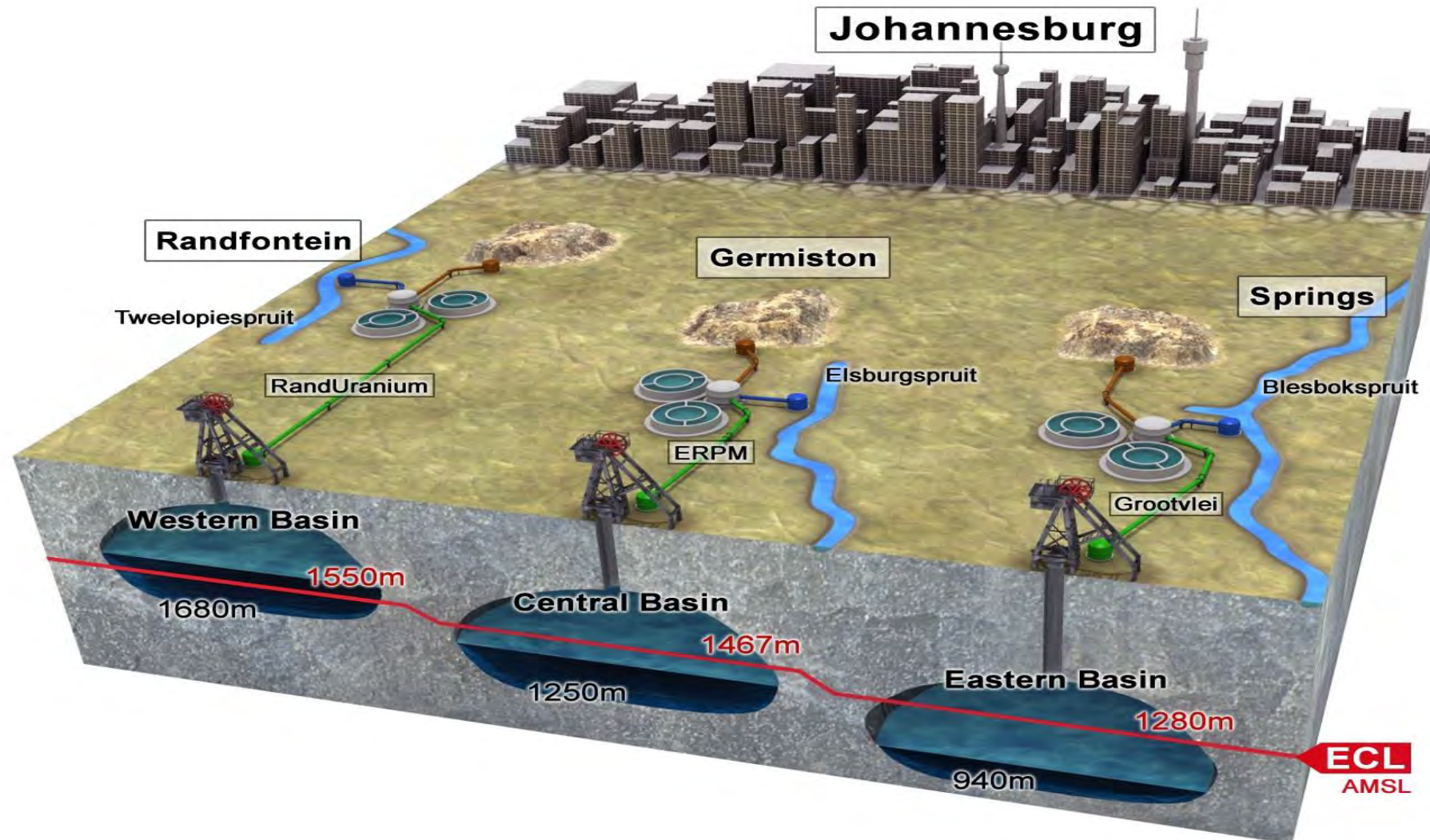
Plant	Discharge per day	Effluent reused per day	% of reused water to total discharge	Receiving Entity	Purpose
Hartebeestfontein	45 000 m ³	3 000 m ³	7%	Serengeti Golf Estate	Irrigation of Golf Course
Ancor	34 760 m ³	17 760 m ³	51%	Sappi	Production
JP Marais	15 000 m ³	430 m ³	3%	Department of Correctional Services	Irrigation of agricultural lands
Herbert Bickley	12 500 m ³	270 m ³	2%	Department of Correctional Services	Irrigation of agricultural lands
		150 m ³	1%	Instant Lawn	Irrigation of Instant lawn
Rondebult	36 000 m ³	10 000 m ³	28%	Rondebult Bird Sanctuary	Nature reserve



Implementation: Ground Water Use



Implementation: Acid Mine Drainage



Way Forward



- Municipalities have challenges
- Industry seeks to collaborate / fund / finance
- Framework for collaboration???

