a world class African city

STATISTICAL BRIEF ON THE IMPACT OF LAND COVER GROWTH ON THE COJ

M Weimers June 2025

Group Strategy Policy Coordination and Relations

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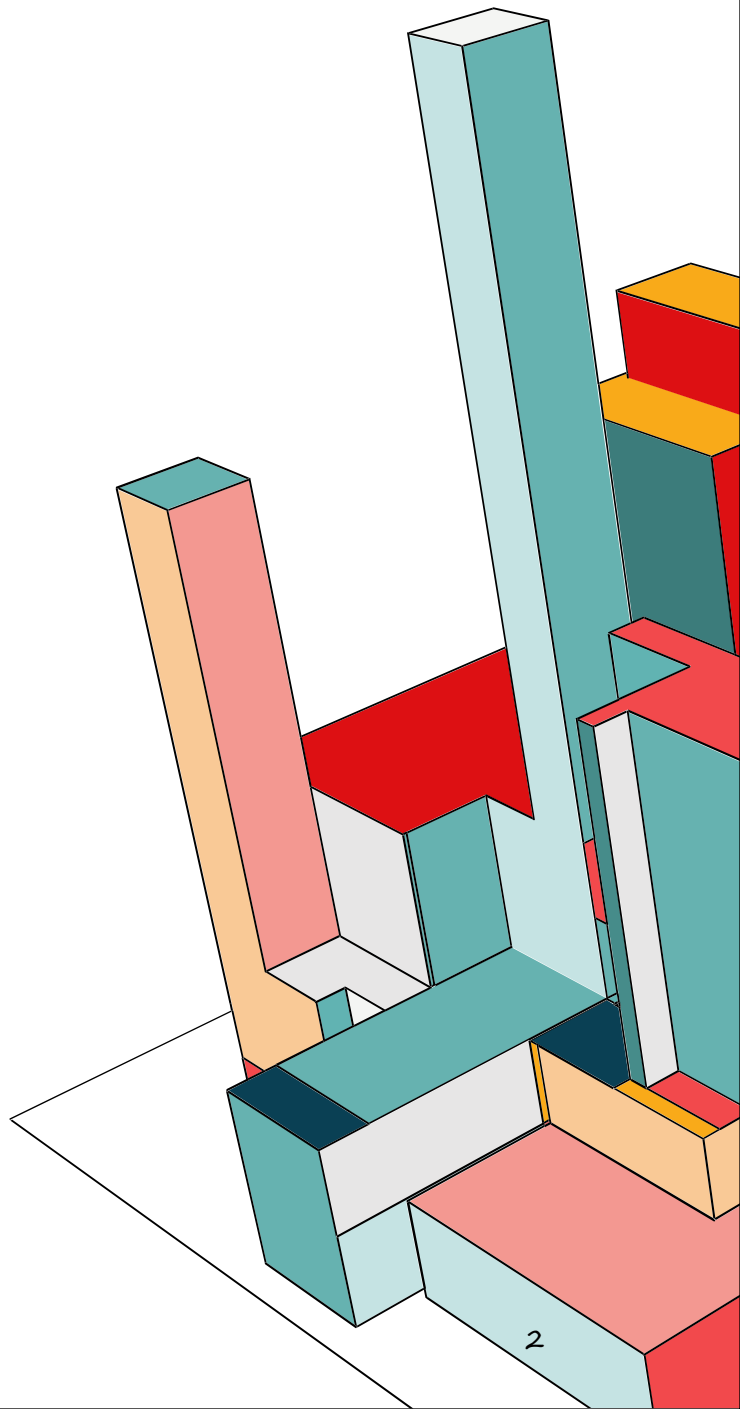
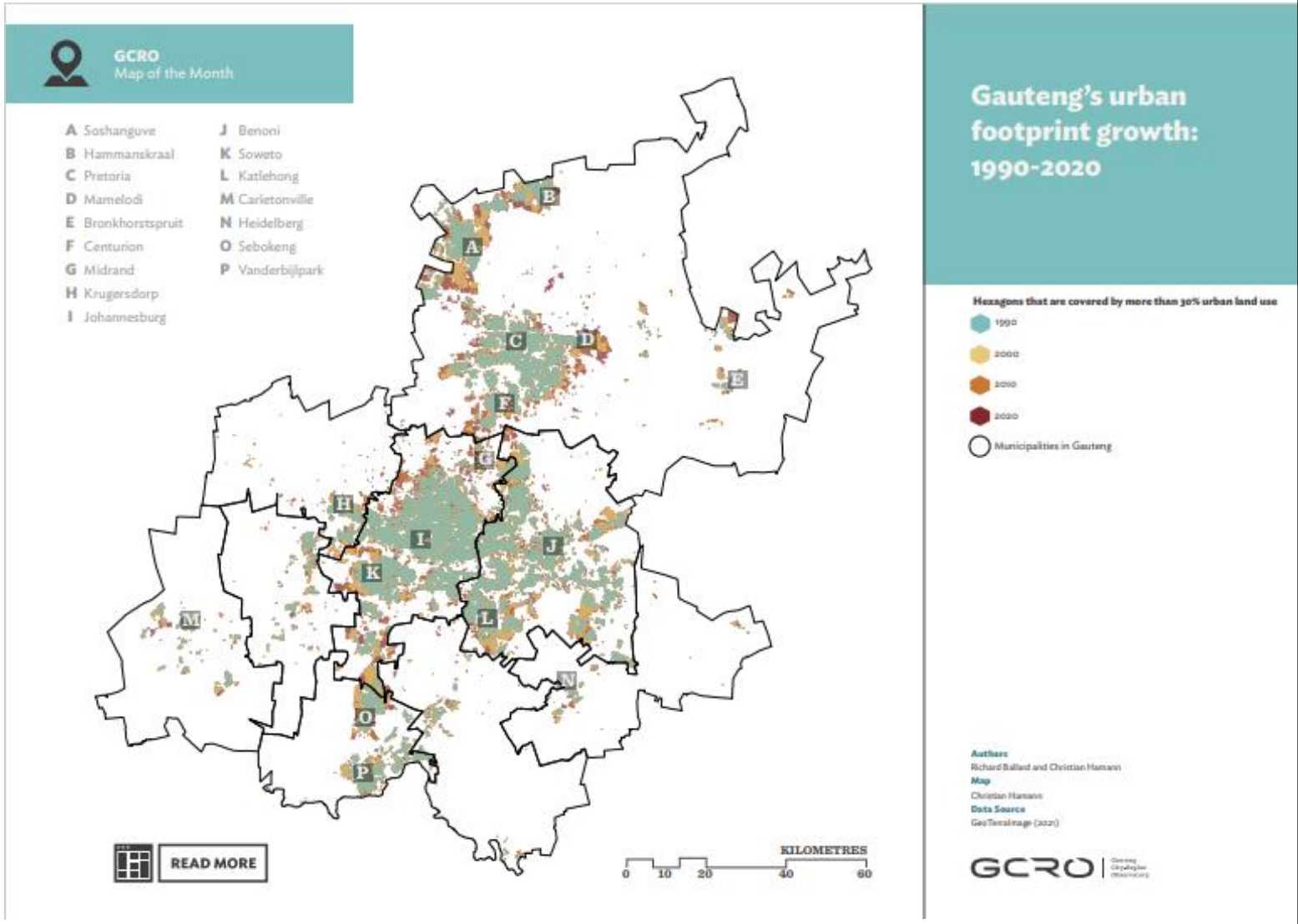


WHAT IS THE STATUS OF LAND COVER GROWTH IN THE CITY?

The GCRO map titled: Gauteng's urban footprint growth: 1990–2020 highlights the substantial expansion of urban land cover in Gauteng over the past 30 years.

Understanding land cover growth helps to understand the taxbase of the city.

- Light blue - earlier urban footprints (1990) indicate older, established urban areas. Yellow – indicates progressive infill and outward expansion (2000)
- Orange (2010) and Red (2020) indicates urban growth concentrated around major nodes
- City of Johannesburg: shows a dense and expanding urban core

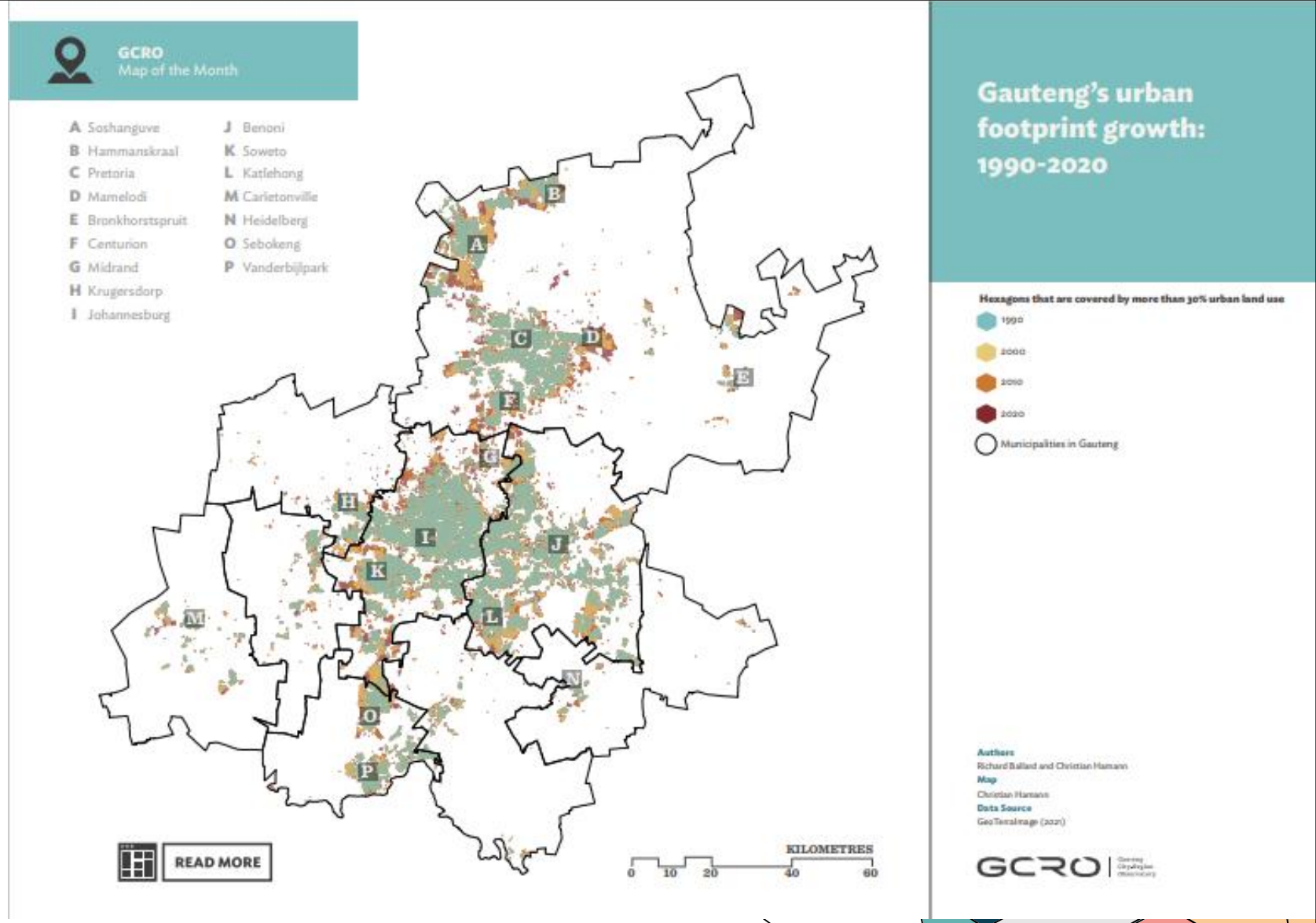


- Johannesburg shows a very dense early urban footprint (1990s), with considerable outward expansion by 2020.
- The **newer urban growth** (orange and red hexagons) is concentrated around the **existing core**, indicating ongoing densification and sprawl.

WHAT IS THE STATUS OF LAND COVER GROWTH IN THE CITY? (CONTIN)

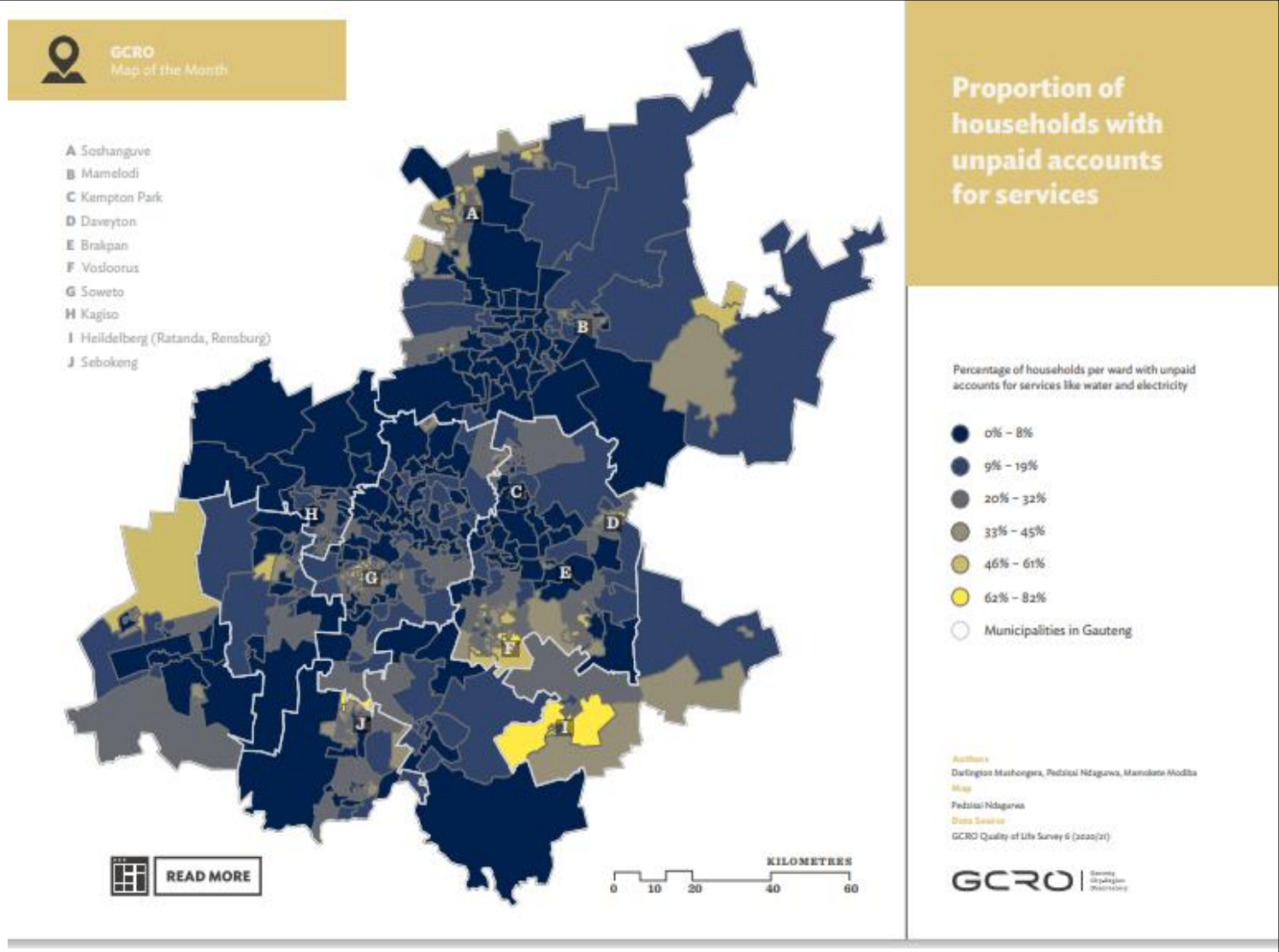
Key Findings

- The map indicates a **highly urbanised core by 1990**, with noticeable densification and outward growth
- **Expansion of informal and formal developments post-2000**, aligning with trends in backyard and informal dwelling growth.
- **Spillover of growth** into neighbouring suburbs such as Soweto, Midrand, and City of Ekurhuleni, forming a continuous urban belt.
- The map confirms Johannesburg as an economic hub, with layered urban growth driven by population increases, housing demand, and infrastructure development.
- Modest outwards growth has occurred post 1990, in an already sprawled city, thus contributing to further sprawl
- Significant growth has been experienced in Diepsloot, Cosmo City, Braamfischerville, Lenasia South and surrounds, as well as the east of the Inner-City



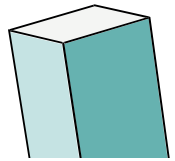
LAND COVER GROWTH VERSUS PAYMENT OF SERVICES

- The GCRO map titled “Proportion of households with unpaid accounts for services” provides insights into the **spatial distribution of unpaid service accounts** (like water and electricity) across Gauteng Province, including the City of Johannesburg.
- **Dark blue areas** (0%–8%) and light blue (9%–19%) cover most wards, indicating **good levels of service account payments.**
- A notable number of wards, especially on the outskirts of Gauteng, show high non-payment rates.
- **Beige to Gold** (33% to 61%) show **moderate to high non-payment** areas including Soweto; while low non-payment is shown in northern and central suburbs within the CoJ and surrounding municipalities (including parts of Sandton, Randburg, and Centurion)
- Central Johannesburg shows lower rates of unpaid accounts, suggesting better compliance and potentially stronger infrastructure and enforcement.

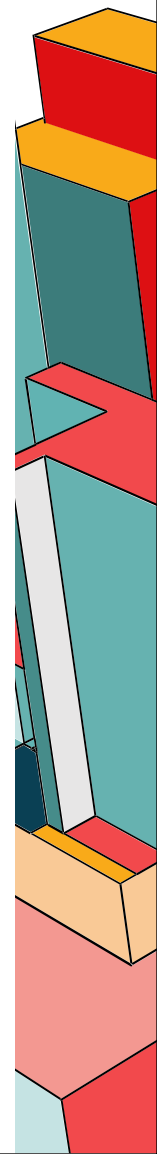


- However, peripheral and **historically disadvantaged areas** like parts of Soweto and Alexandra show moderate to **high levels of unpaid accounts.**
- Inner-City suburbs and more affluent neighbourhoods display much lower proportions of unpaid accounts, consistent with economic disparities.
- Payment of services correlates with poorer communities, including Diepsloot, Ivory Park, Alexandra, Soweto, Eldorado Park, Lenasia South, East Inner City

PREVALENCE: MUNICIPAL ACCOUNT ARREARS - AFFORDABILITY VERSUS REFUSAL TO PAY



- The City has a **mandate** and key role to play in terms of **growing the economy**. **Increased growth and wealth** will result in **improved rates collection and rates payments.**
- **Soweto, Alexandra, southern/ northern periphery of the CoJ** has been identified as **hotspots** regarding poor to non-payment of municipal accounts. .
- **Inability to pay** the municipal account contributes to this **challenge** - 72% of respondents in arrears cited **financial hardship as the main reason for non-payment,** including billing disputes (11%); not receiving bills (5%); service dissatisfaction (4%); and unclear payment responsibility (1%)
- **Structural and systemic billing challenges** issues like faulty metering and inaccurate billing have triggered resident protests and disputes - contributing to a lack of trust in the billing system and further hampering payment compliance.
- Widespread use of Prepaid Systems or Non-Metered Access - many households do not have unpaid accounts because they use prepaid meters or are not formally connected to municipal infrastructure.

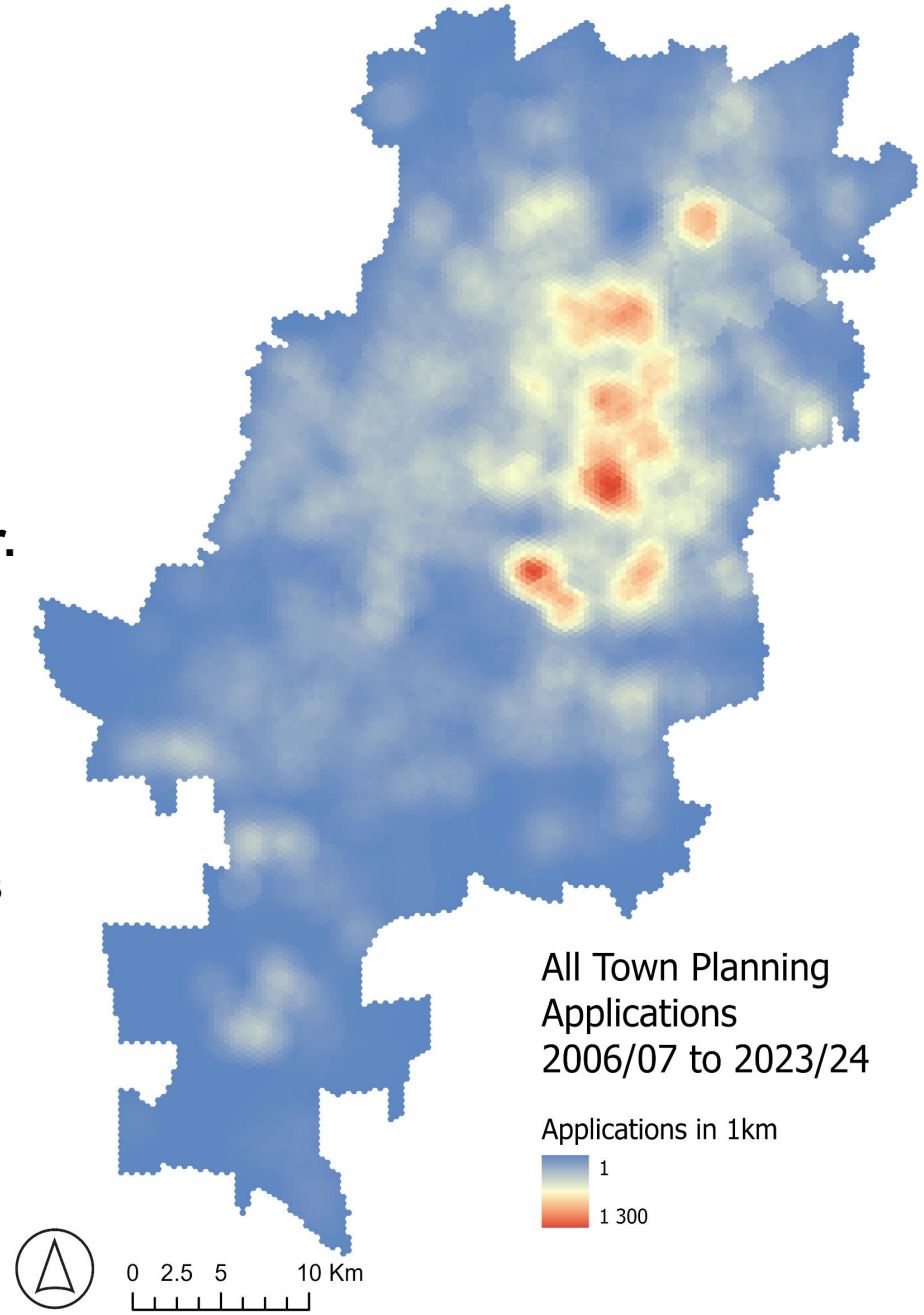


Implications for the City of Johannesburg

- Revenue instability and service delivery increase the risk non-payment, especially in high-density areas like Soweto, **erodes the revenue base of the municipality** - jeopardizing infrastructure maintenance, service quality, and long-term financial health of service entities.
- Need for **Billing System Reform** - the high incidence of billing disputes and errors underscores the need accurate metering technologies; improved communication and customer service; installment-based payment plans, may help indebted households avoid disconnection; Debt restructuring options; data-driven targeting of high-arrears areas for intervention etc.
- **Affordability, not refusal, is the primary driver of unpaid service accounts in Johannesburg**. If left unaddressed, non-payment threatens both residents' access to basic services and municipal financial sustainability. A multi-pronged response that combines payment flexibility, improved billing accuracy, and expanded access to prepaid options where appropriate.

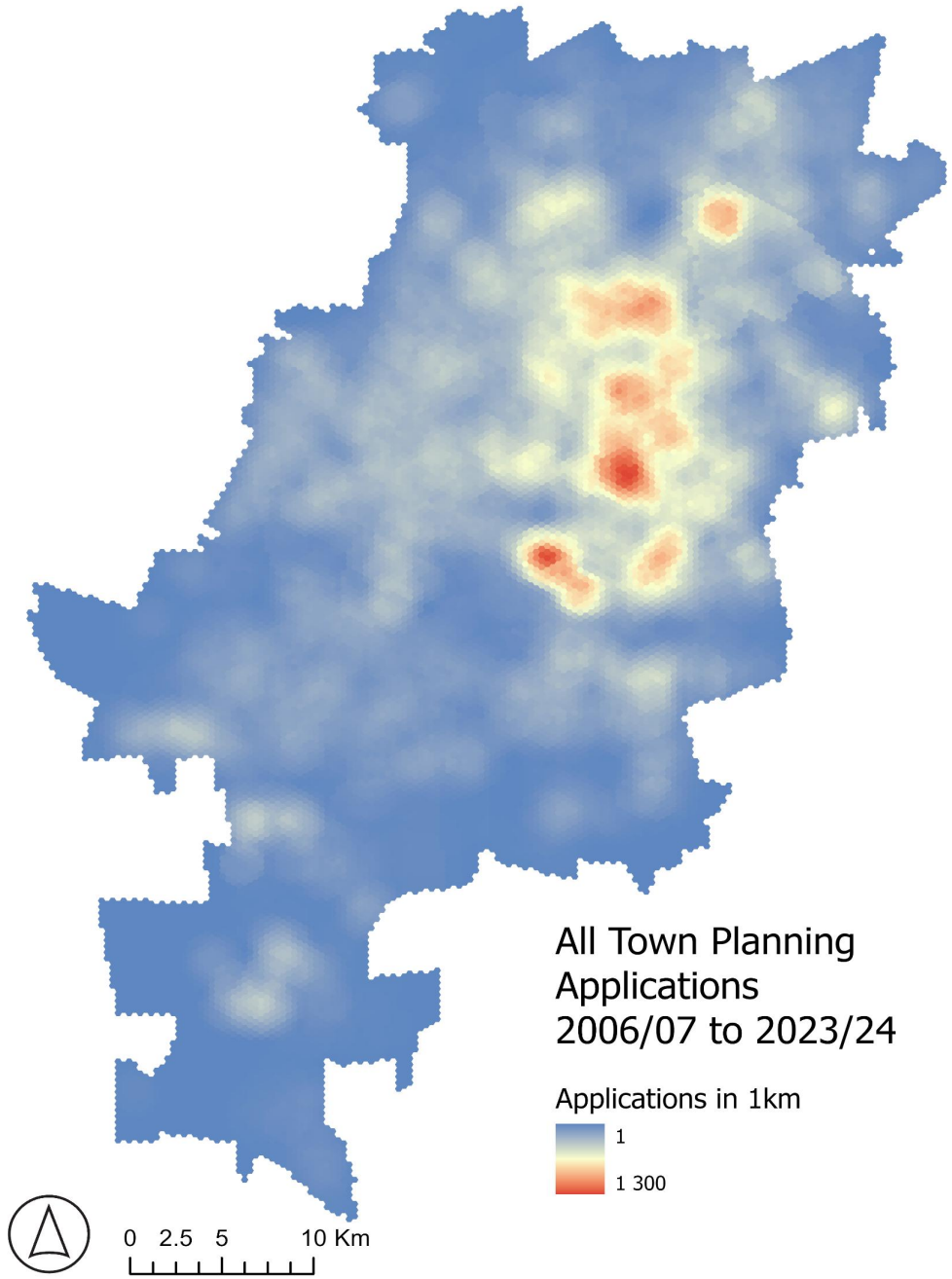
TOWN PLANNING APPLICATIONS AND LAND COVER GROWTH IN THE CITY

- The map titled: “All Town Planning Applications 2006/07 to 2023/24” shows the location and growth of formal development applications over the prescribed time-period, concentrated predominantly in the north-eastern part of the city.
- The map confirms that development/ growth in the built form remains in the key nodes and Central Business Districts (CBDs) in the city
- **Formal applications do not provide a reflection of land cover/ growth in the rest of the city, particularly within the informal sector.**
- Light Yellow includes formal township establishment, thus contributing to the expansion of the footprint of the city.
- Red to Orange Zones indicates **High-Intensity Growth Areas** – (300 to 1300 applications per km²) includes central and northern Johannesburg showing the highest density of town planning applications. These include **Sandton, Rosebank, Randburg**, and parts of **Midrand**, reflecting their roles as commercial and mixed-use growth hubs.
- This suggests significant investment in densification, mixed-use developments, and commercial infrastructure.
- A concentrated Red Zone in the southern central area could represent **Soweto** or surrounding suburbs where urban infill and housing projects may be driving planning activity.



TOWN PLANNING APPLICATIONS AND LAND COVER GROWTH IN THE CITY

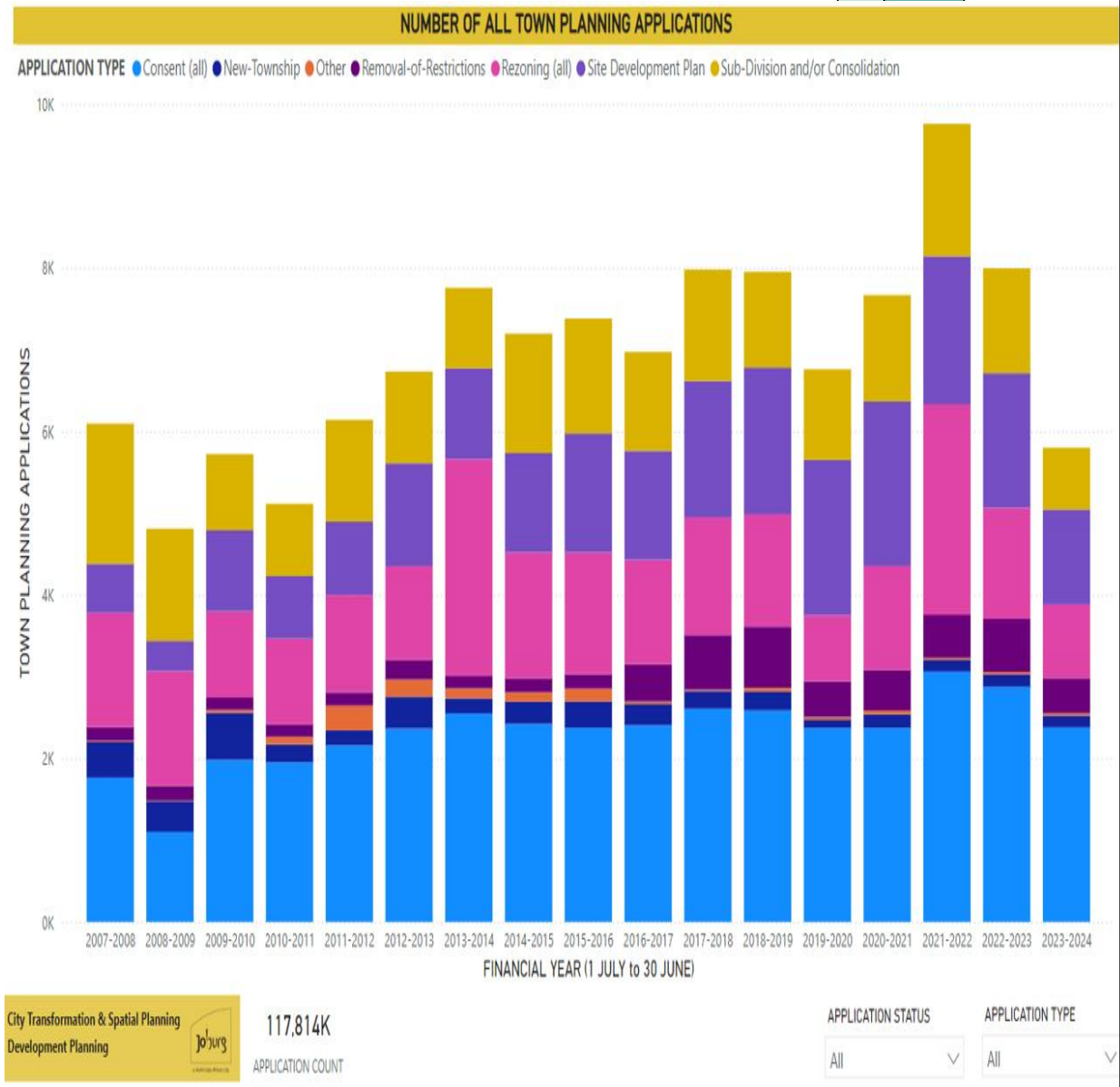
- Yellow Zones indicate formal **Moderate Growth Areas** - found in expanding suburban areas and secondary economic nodes. This suggests suburban residential development, targeting middle-income households. These likely include **Fourways, Roodepoort**, and areas around **Ekurhuleni** fringe zones.
- However, informal development has also taken place in other parts of the city, including Soweto and other peripheral lower income areas
- Blue Zones indicating **Low to Minimal Growth Areas** – (1 application or fewer per km²) in and around peripheral areas of the metro show **minimal town planning activity.** This reflects less development pressure or stringent land-use controls, or may relate to protected land, industrial zones, or historically underdeveloped areas.
- The pattern on the map suggests a **dual-city development model with a high-growth urban core and economic zones**, including significant private and public investment. Whilst the **peripheral and historically marginalized areas, show slow to little development** highlighting persistent developmental divides.



TOWN PLANNING APPLICATIONS AND LAND COVER GROWTH IN THE CITY

This section looks at development data from the Town Planning Application System (TAS) to assess broad trends over time. The TAS is used to capture and manage land development applications through their life cycles. TAS can also analyse how the market is taking up and implementing development.
The number of all town planning applications shows a growth trend, particularly in the consent and rezoning from 2007/08 – 2023/24, with the following findings:

- The town applications by type highlights a **trend with more development within the existing built form**/ expansion of the existing built form. **Very little greenfields development** takes place in the form of new townships i.e. formally established, promulgated townships.
- The **relaxation of building lines applications increase from 2010 and tapers off around 2015/16**; whilst **new/ revised site development plans increase from around 2011/12 and dips significantly in 2019/20 during covid-19**; increases slightly thereafter and dips again in 2022/23 in line with the economic slump experienced across various sectors within the province and nationally. **A similar picture emerges with rezonings, consent uses, sub-divisions and consolidations.**
- **Overall formal development applications have decreased in number sharply since 2021/22 to 2022/23 and then significantly again in 2023/24.**

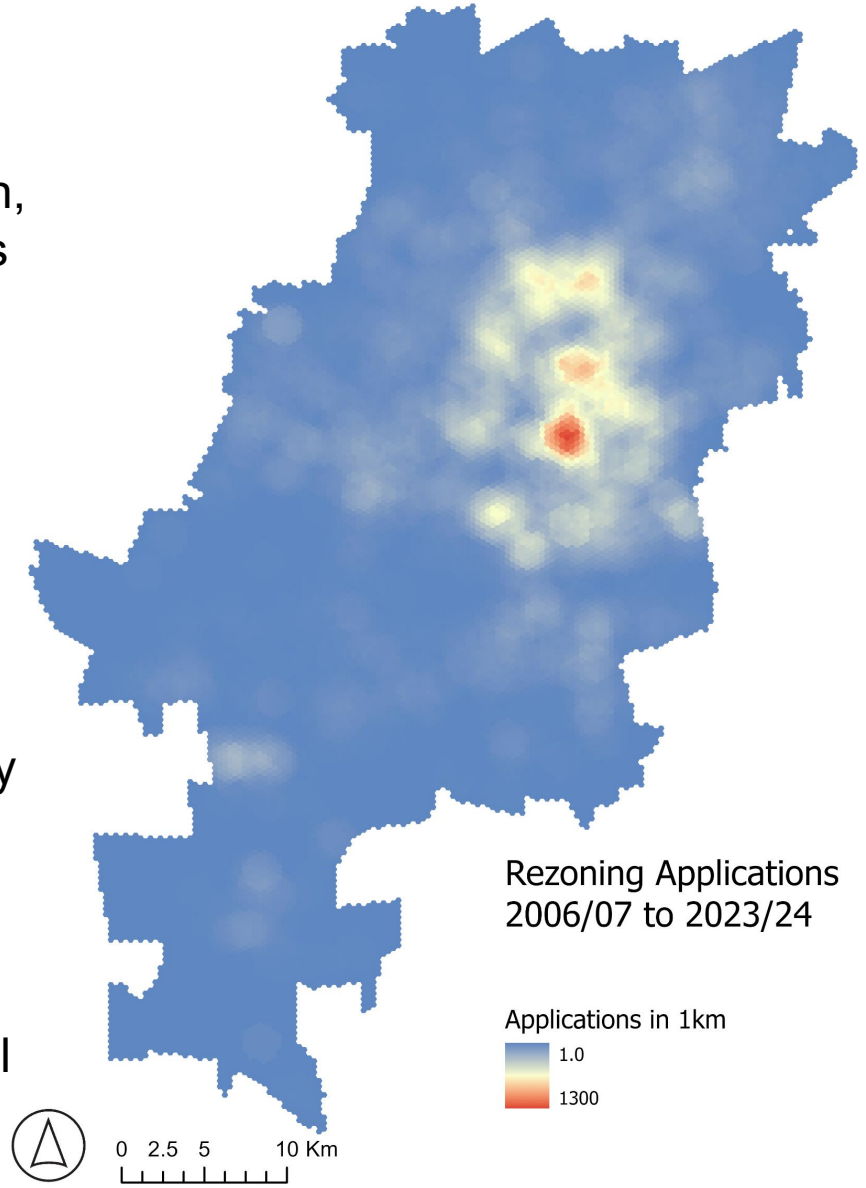


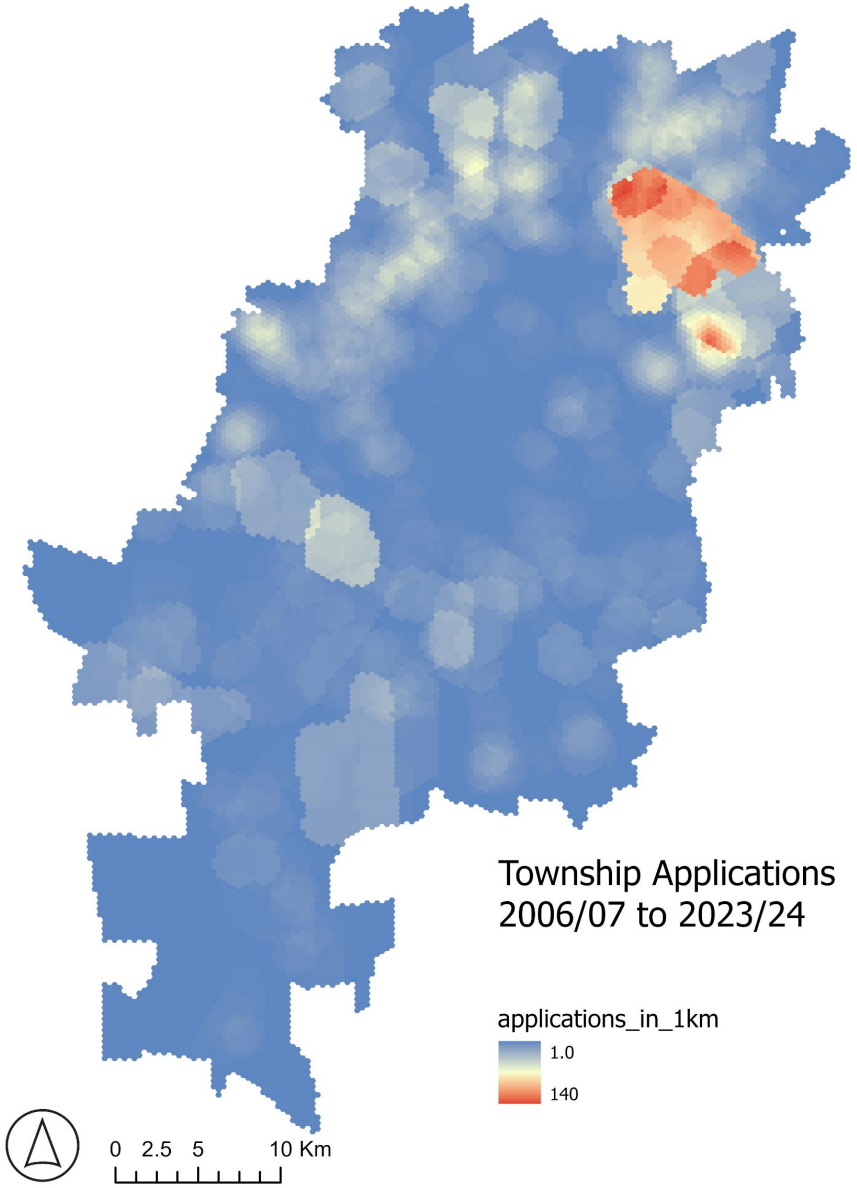
REZONING AND TOWN PLANNING APPLICATIONS

Rezoning applications remain **concentrated in the north of the city,** predominantly Sandton, Rosebank, Randburg, and parts of Midrand

Most growth in terms of township applications has occurred in the **north-eastern part of the city,** most likely private townhouse developments. Slight growth in the north-western part of the city is likely also private township establlishments - Lonehill, Fourways etc.

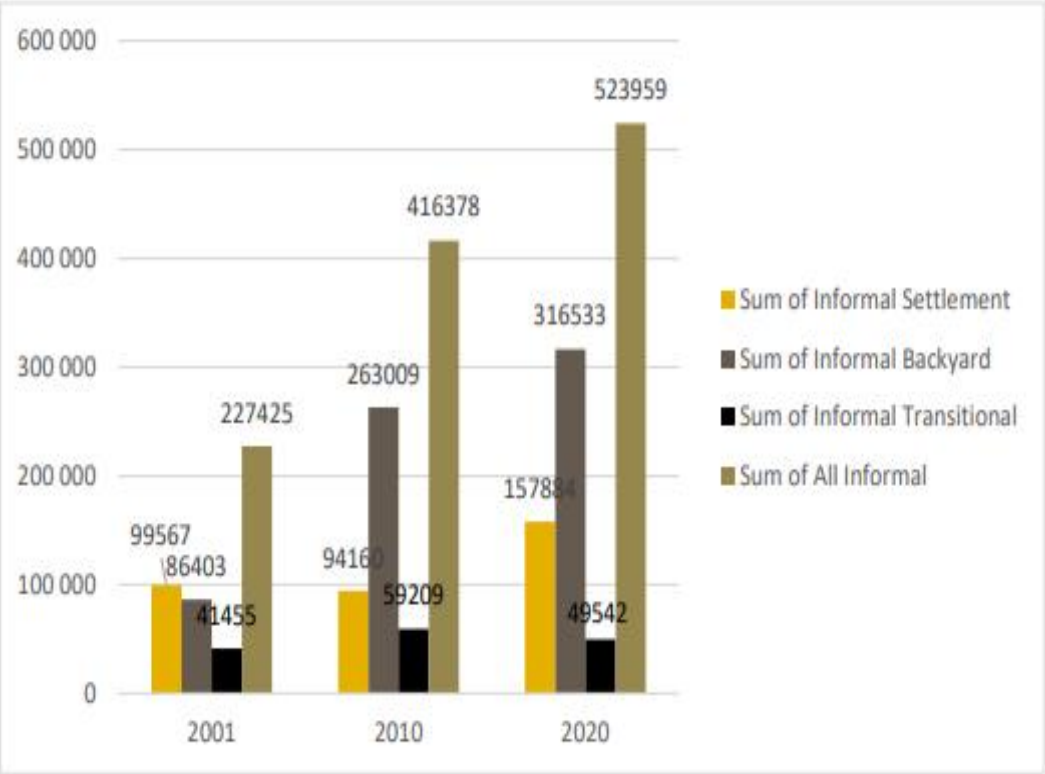
However more public residential development has occured in thr western part of the city - Fleurhoff, Braamfischerville





INFORMAL LAND COVER GROWTH

- Township areas in Gauteng have become relatively poorer between 2001 and 2011, with **slower income growth** and a **rise in informal and backyard dwellings**. Rapid urbanisation and household growth have driven spatial transformation, **increasing housing demand** which is **unmet by the the formal market supply**.
- Between 2001 and 2016, backyard dwellings grew by **205%**, surpassing informal settlements in number, with significant expansion in areas like Tshwane. The distribution of these dwellings is uneven, with dense growth in places like Mamelodi, Diepsloot, and Tembisa, and reductions in others, such as parts of Johannesburg.
- While **informal settlements** remained on urban **peripheries**, **formal housing areas** have increasingly been **"re-informalised"** through the proliferation of backyard structures, often built without planning approval.
- This reflects a complex cycle of formalisation followed by informalisation.



Census Year	Informal Settlements (households)		Informal backyard dwellings (households)	
	Number	% of all CoJ Households	Number	% of all CoJ Households
2001	133,400	12.7%	78,572	7.5%
2011	179 028	9.7 %	123,977	8.6%
% change from 2001 to 2011	**-4.61%**		**57.79%**	

Source: CoJ, Spatial Development Framework, 2024

INFORMAL SETTLEMENTS AND BACKYARD DWELLINGS

The anaylsis of the Informal Backyard Dwellings and Informal Settlement Dwellings in Johannesburg in 2020 provide information on cover growth, housing pressure, and urban form transformation in Johannesburg, with **significant implications for municipal planning and revenue** (rates).

Implications for City of Johannesburg in Terms of Rates

Revenue Challenges

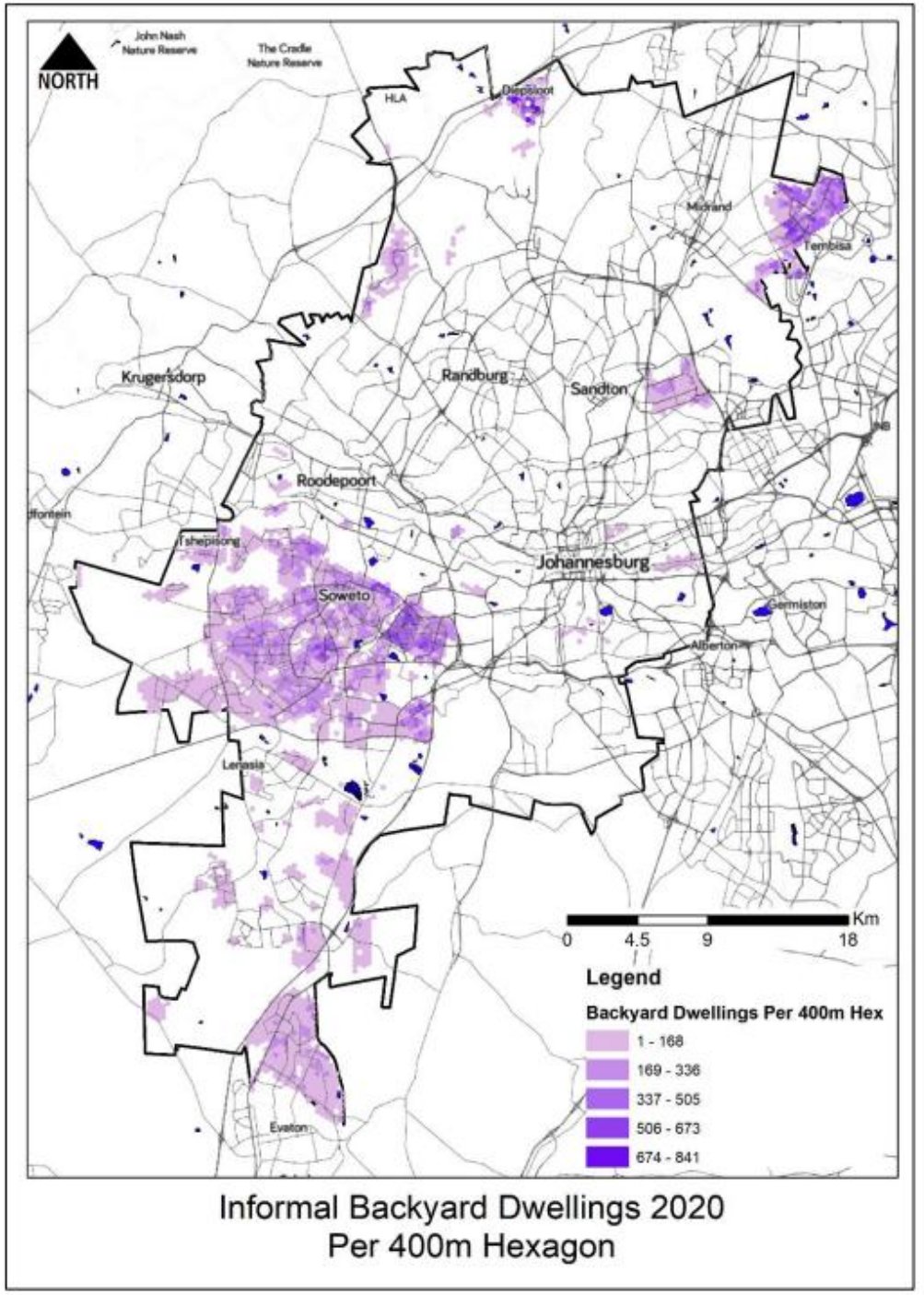
- Unrated Properties: Many **informal dwellings,** especially in settlements, are **built on land that is not formally registered or rated**, resulting in lost municipal revenue.
- Hidden Density: **Backyard units** may exist within rated properties but **do not contribute proportionally to property tax**, unless specifically assessed.

Service Delivery Strain

- Both types of **informal growth outpace formal service planning** (water, electricity, sanitation), leading to **overloaded systems and maintenance** backlogs.
- Informal **densities** complicate waste collection, road access, and emergency response, and thus i**ncrease operational costs without corresponding rate income.**

Regularization Dilemma

- The city faces pressure to upgrade and formalize these areas, which involves capital expenditure before any return in the form of rates.
- Where regularization occurs, cities may recover rates—but the process is slow, contested, and politically sensitive.



Informal Backyard Dwellings 2020
Per 400m Hexagon

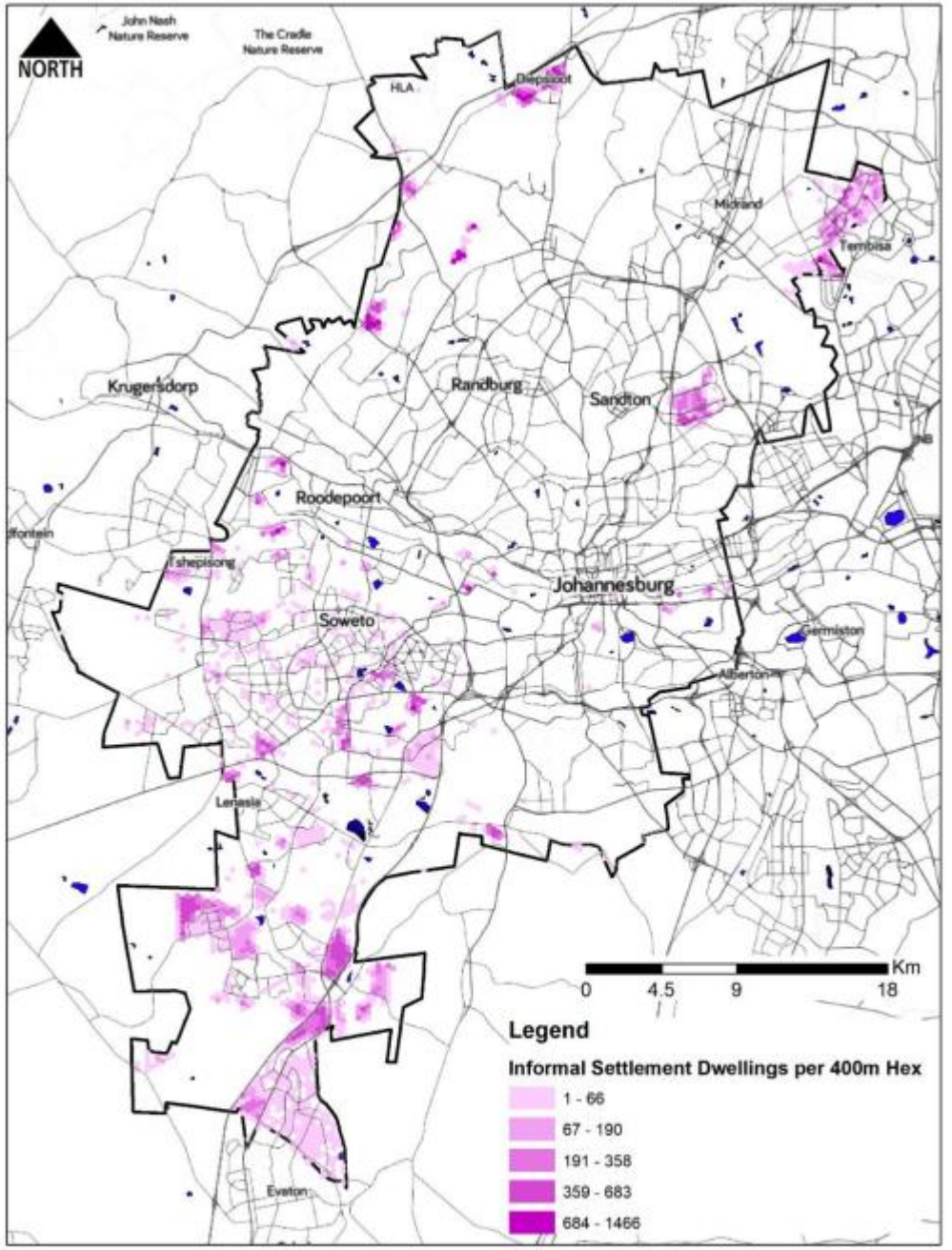
INFORMAL SETTLEMENTS AND BACKYARD DWELLINGS

Strategic Considerations

- **Mapping-based monitoring** should be used to dynamically **track growth and guide infrastructure and land use decisions**.
- Policies should distinguish between:
  - Backyard dwellings, which may be **integrated into urban upgrade and densification strategies**.
  - Peripheral informal settlements, which may require **relocation, formalization, or greenfield development**.
  - Targeted pilot programmes could explore how to **transition informal areas** into rated, serviced zones, e.g., through incremental tenure and upgrading models.

Conclusion

- The maps reveal **significant informal land cover growth in Johannesburg**, manifesting in both intra-urban densification (backyard dwellings) and peri-urban expansion (informal settlements).
- These patterns underscore urgent planning and financial implications, especially regarding:
  - **Revenue shortfalls** due to **unassessed dwellings**,
  - **Infrastructure pressure** due to high-density growth,
  - **Strategic land use planning** required to accommodate and manage informal expansion sustainably.



Informal Settlement Dwellings 2020
Per 400m Hexagon

BILLING AND COLLECTION: HOTSPOTS

Billing and Collection Hotspots:

- High-billing and high-collection areas in central–northeast (e.g. Sandton, Rosebank, Randburg)
- Strong **alignment between billing and payments in affluent zones** (deep red areas)

Collection Gaps:

- Some southern/southwestern areas show high billing but only moderate collections
- **Dark green areas** signal **non-compliance** or underperformance

Spatial Inequality:

- **Northern suburbs**: higher billing & **consistent payments**
- **Southern**/informal areas: **low billing and collections,** reflecting structural disparities

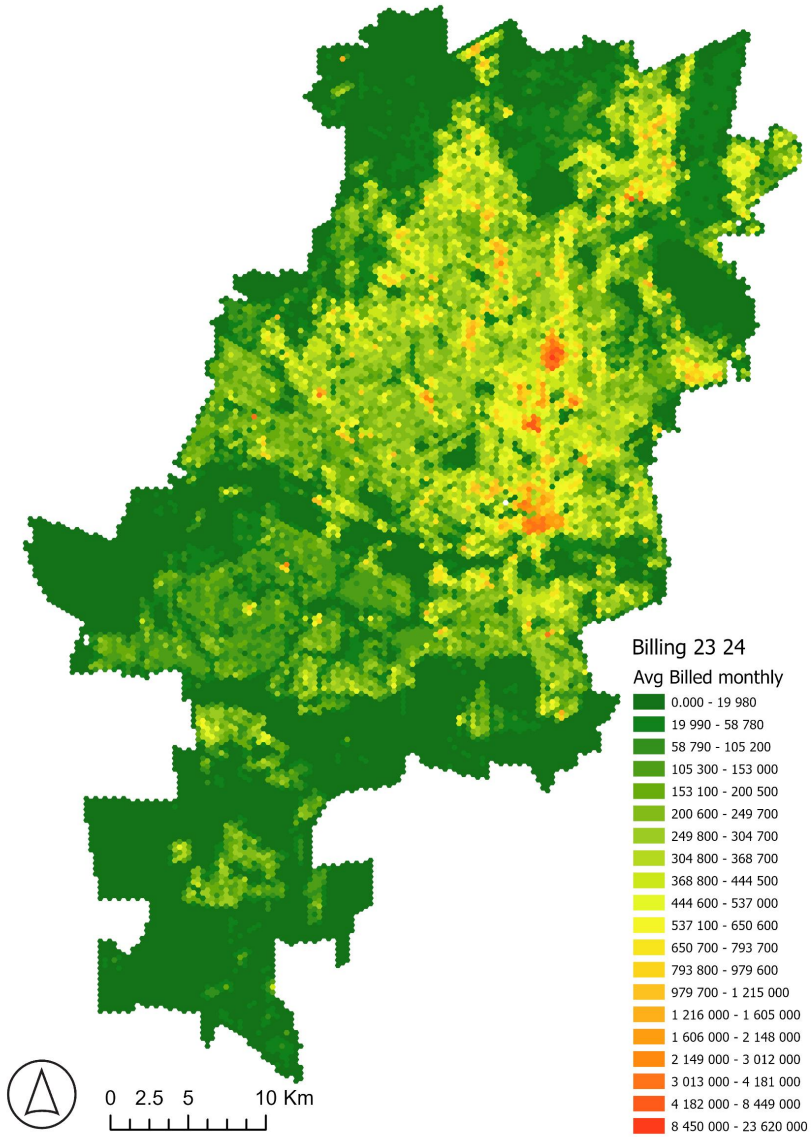
Collection Efficiency:

- **Mixed-income zones show inefficiencies**—mid-billing areas underperform in collections
- Suggests **affordability issues or administrative challenges**

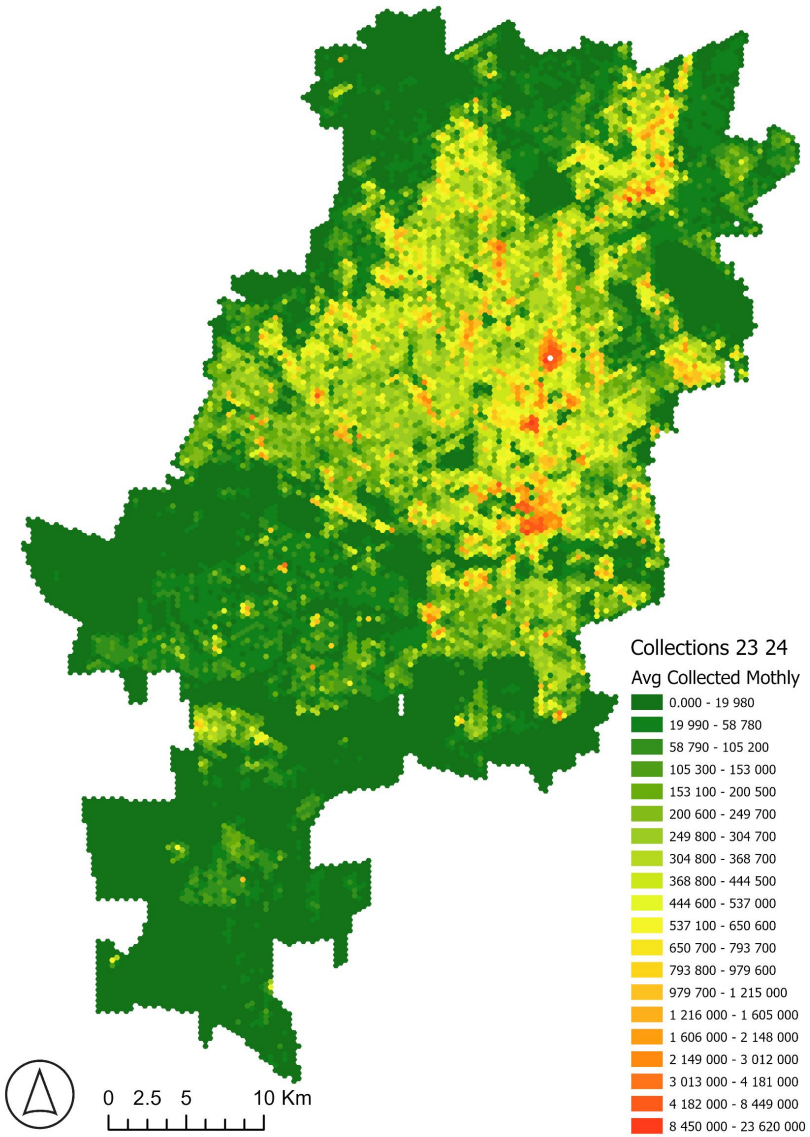
Core–Periphery Divide:

- Urban core = high billing & collection
- Periphery = low billing & poor compliance

Average billed monthly property rates

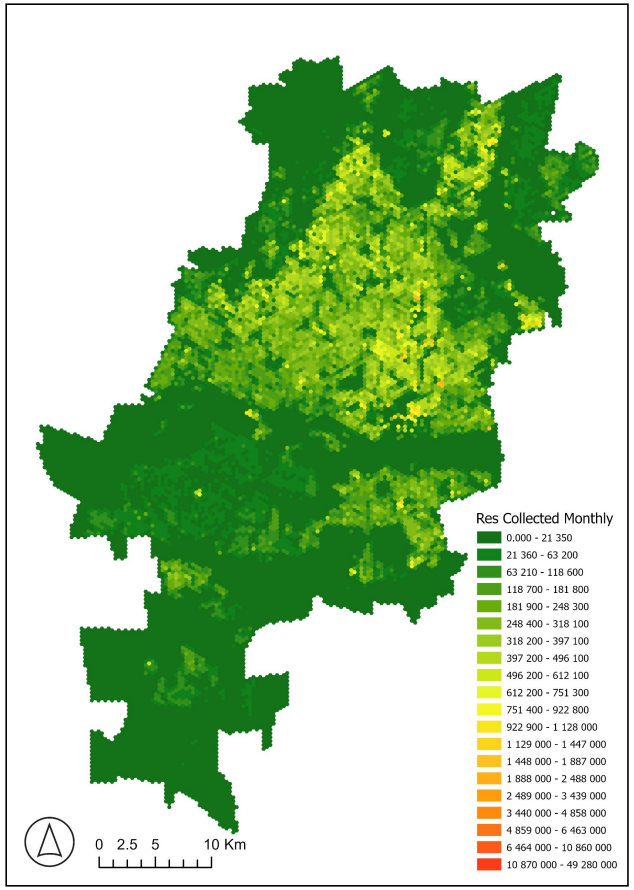


Average collected monthly revenue

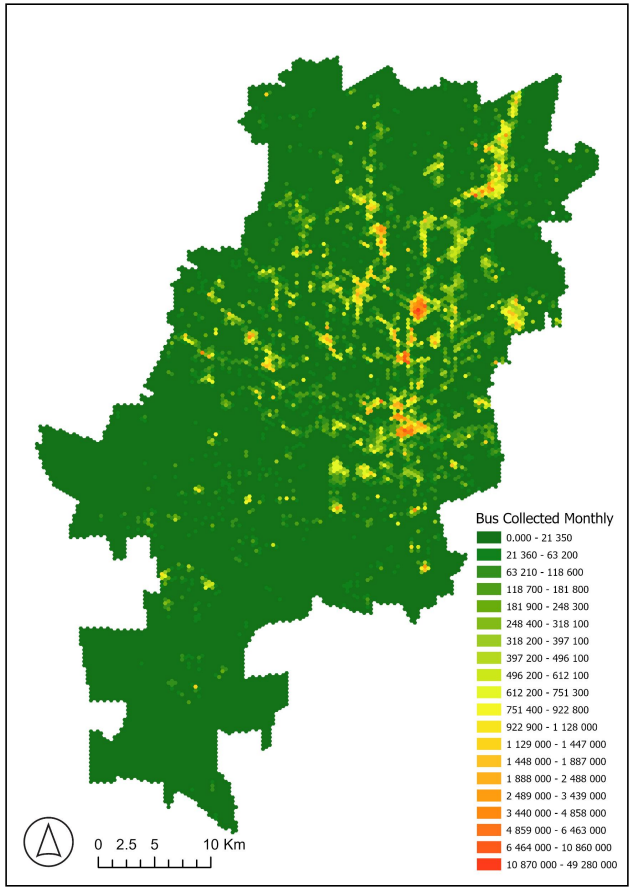


BILLING AND COLLECTION: CATEGORIES AND CONTRIBUTIONS

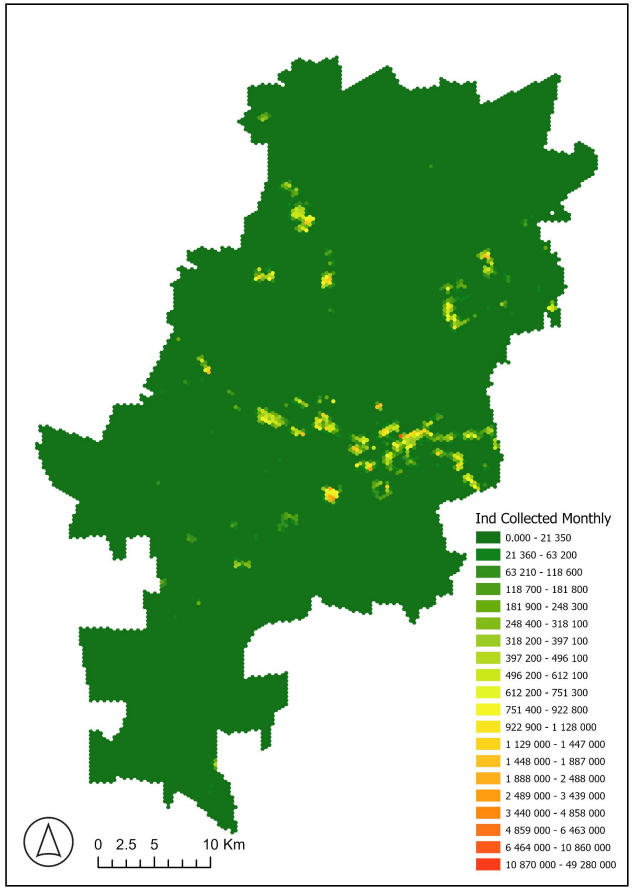
Residential: 46%



Business and Commercial: 37%

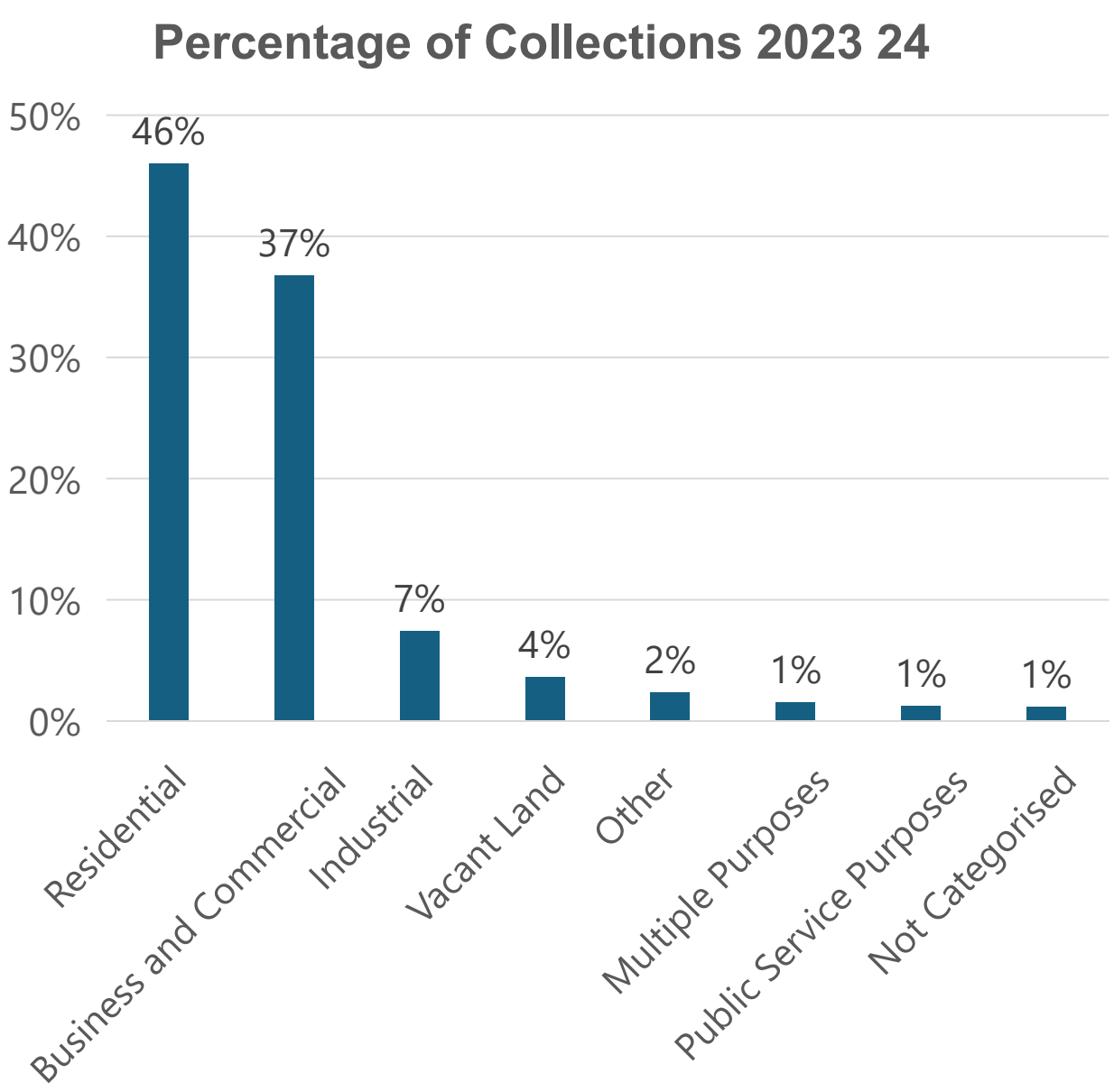


Industrial: 7.4%



44.4% Combined

90% Combined



The graph shows the percentage breakdown of rates collections by property category for 2023/2024.

The key findings noted indicate the following:

- Residential properties contribute the largest share at 46% of total collections.
- Business and Commercial properties follow closely at 37%, highlighting their major role in city revenue.
- Industrial properties account for 7.4%, significantly lower despite their often large footprint.
- Vacant land, Other, and Multiple Purposes collectively make up a small fraction (under 10% combined).
- Public Service Purposes and Not Categorised properties contribute the least, each around 1%.

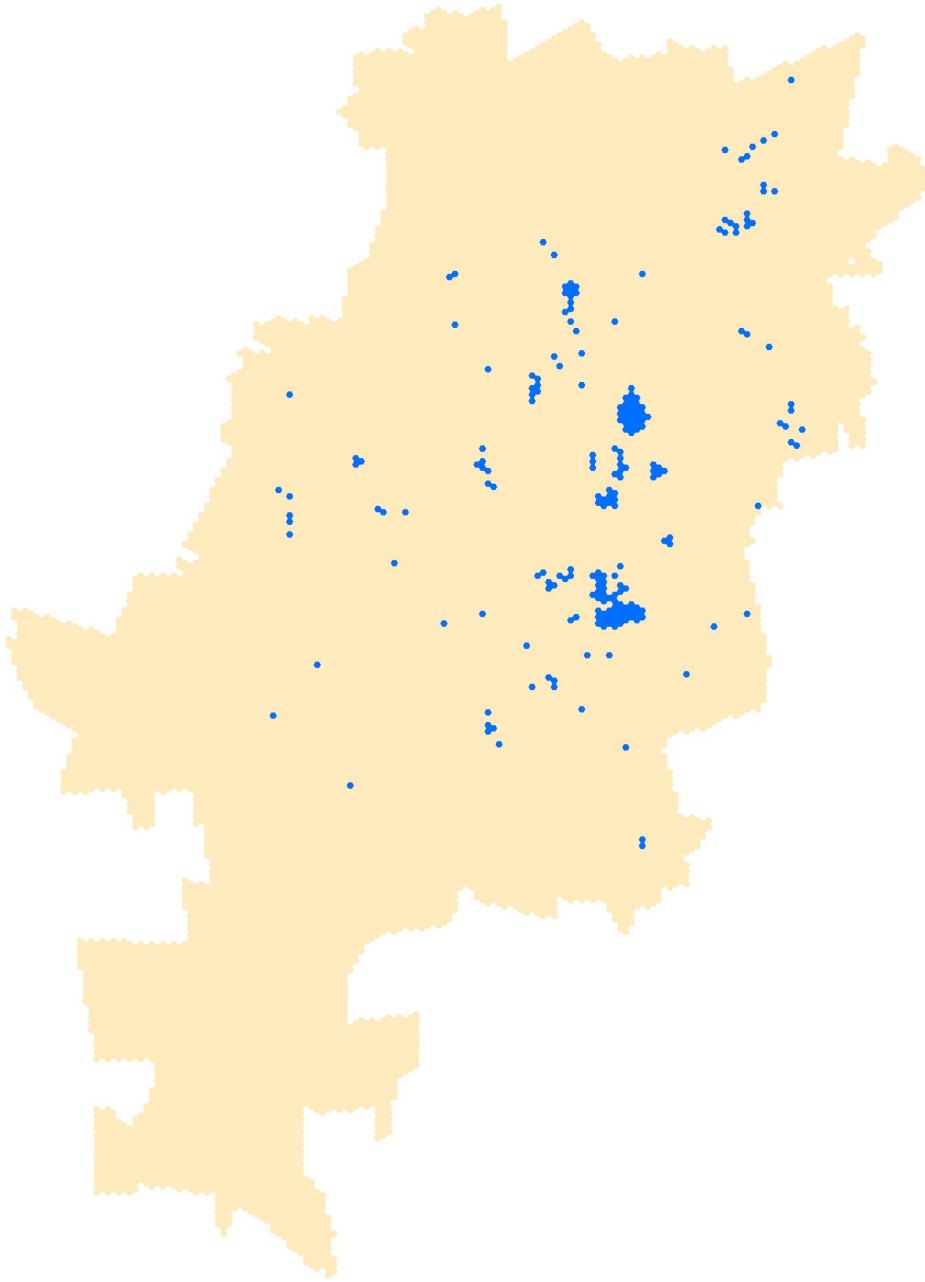
Implications:

- The city's revenue is heavily reliant on residential and commercial properties (over 80%).
- Low contributions from vacant land and public service properties suggest limited taxation or lower valuations in these sectors.
- The high dependence on a few categories underlines the need to broaden the rates base, especially in light of informal growth trends.

20% of Revenue

is from

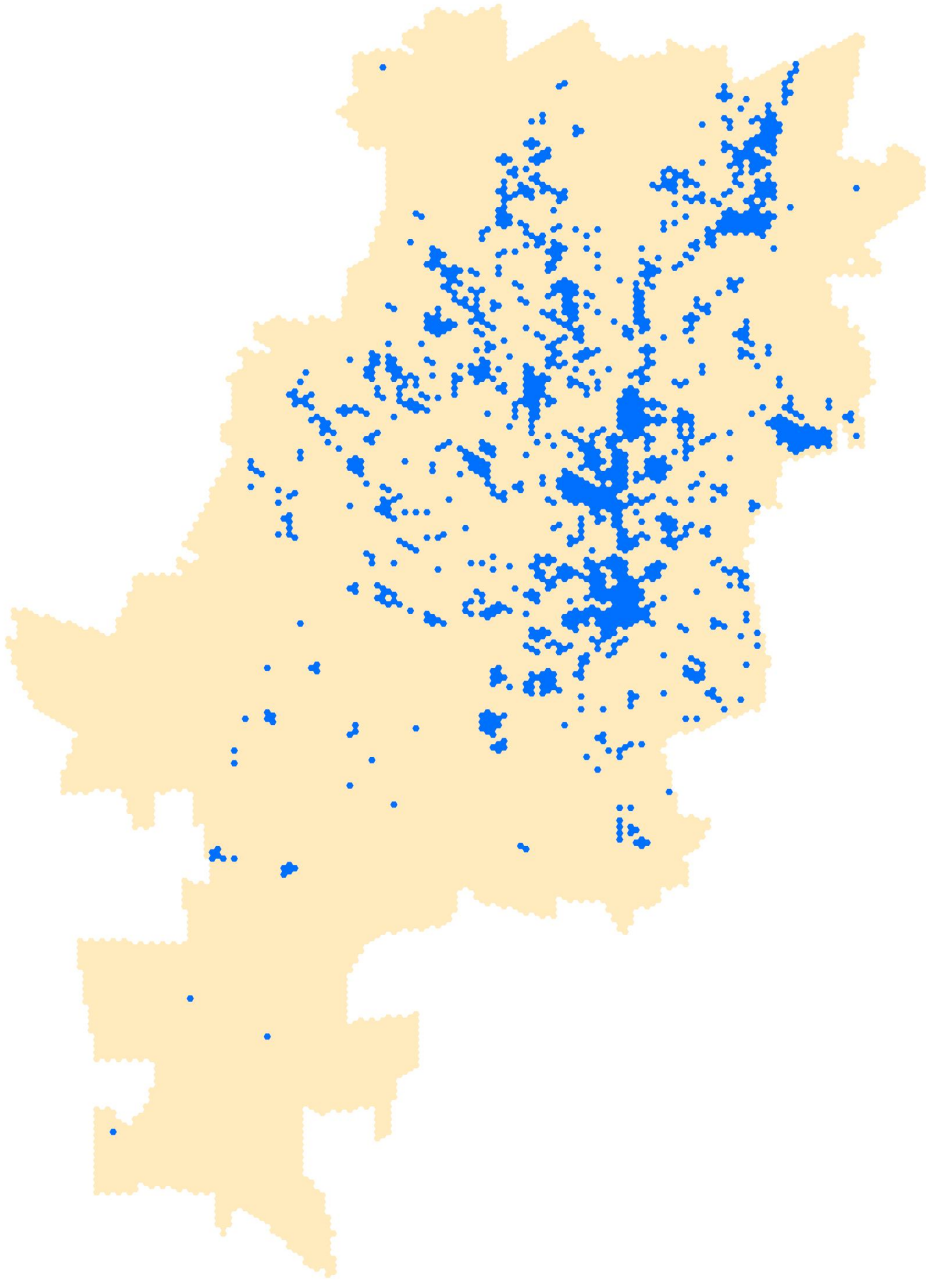
1.2% of the area



50% of Revenue

is from

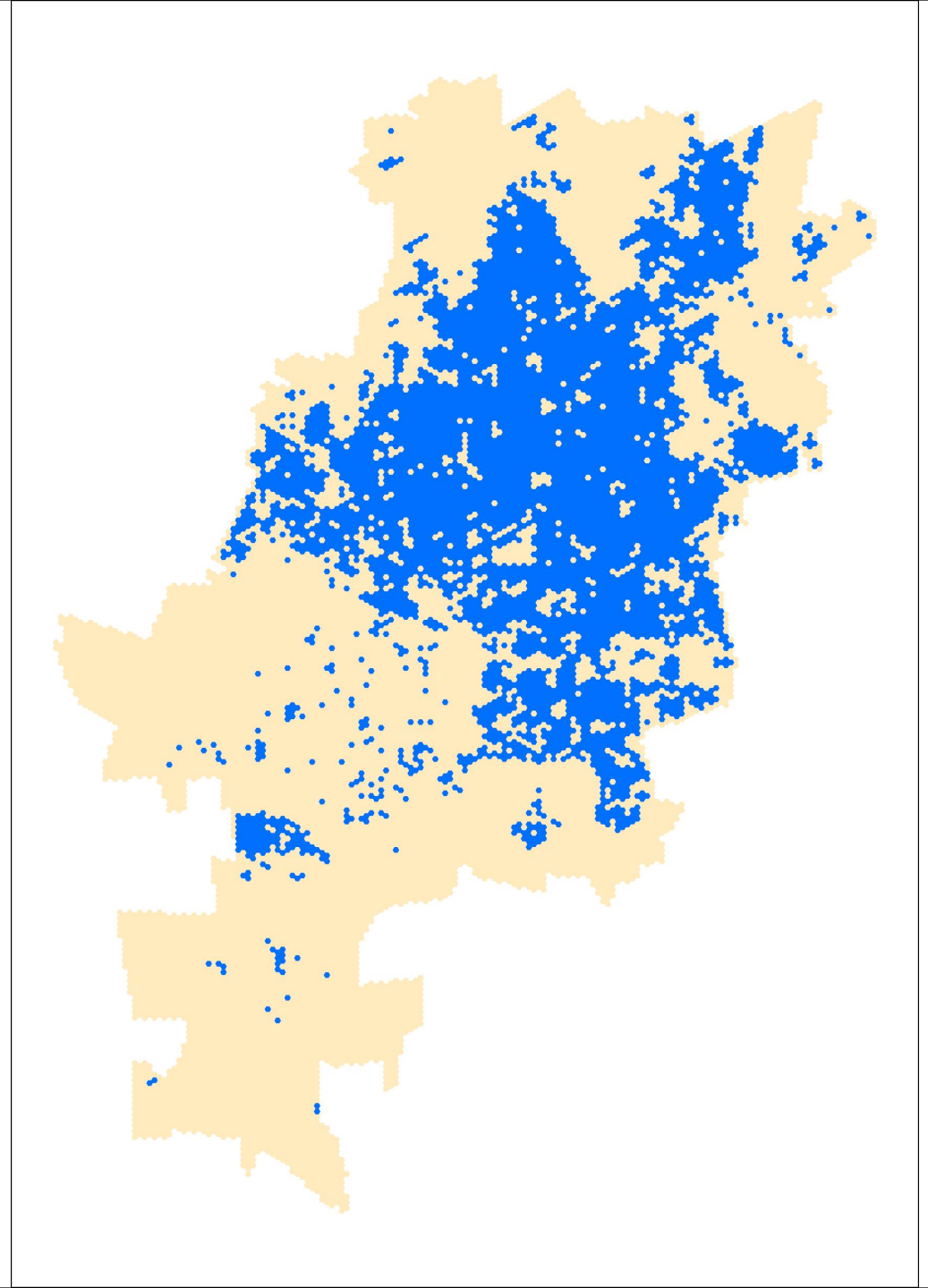
8.7% of the area



90% of Revenue

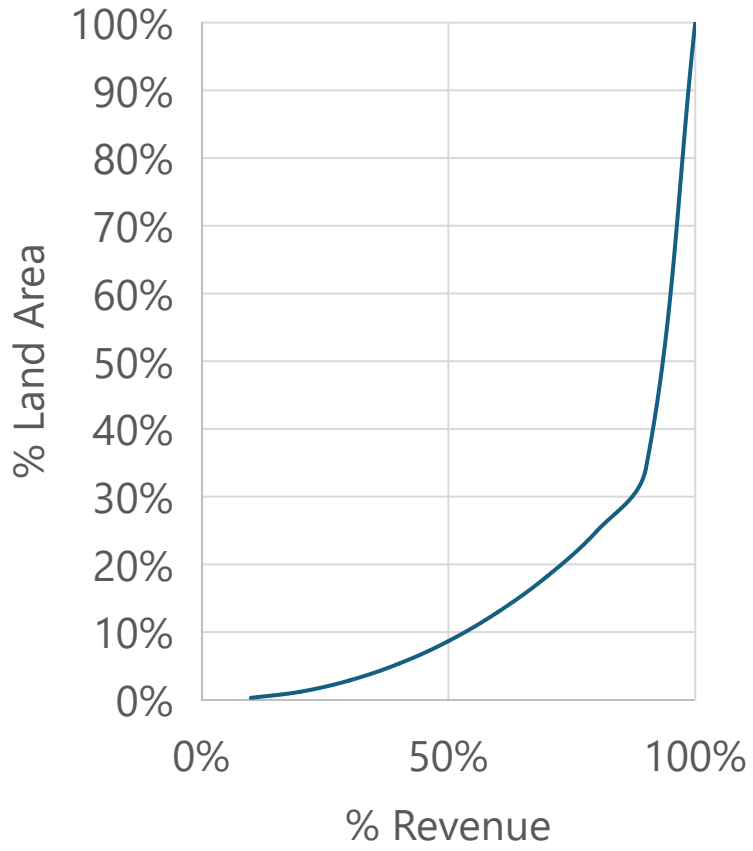
is from

34.2% of the area



REVENUE COLLECTION OVER SPACE

Percent Revenue	Percent Land Area
10%	0.3%
20%	1.2%
30%	2.9%
40%	5.3%
50%	8.7%
60%	12.9%
70%	18.2%
80%	24.9%
90%	34.2%
100%	100.0%



Policy Need:
There is a clear need to **broaden the rates base** through:

- Formalizing informal areas,
- Densifying low-yield zones,
- Reassessing properties for equitable taxation.

This data underscores the urgency for more balanced land use planning and inclusive revenue strategies in Johannesburg.

The key findings noted indicate the following:
Highly Unequal Distribution: The top 10% of revenue is generated from just 0.3% of land area, while the **top 50% of revenue** comes from only **8.7% of the city's land**.

Steep Gradient: Revenue accumulation increases sharply with small increments in land area, indicating that **a small portion of land is extremely high-value** or densely rated.

The remaining **65.8% of land area** contributes only **10% of revenue**, showing that **most of the city generates very little rates income**.

Implications
Revenue Concentration: The city's financial sustainability depends heavily on a few high-value zones (likely central business districts and affluent suburbs).
Vulnerability: Any economic downturn or land use change in this small high-revenue area could significantly impact city finances.
Undervalued or Unrated Land: A **large portion** of the city is **underperforming in revenue generation—likely due to informal settlements/ backyard dwellings, low-value zoning, or under-assessment**.

KEY FINDINGS AND RECOMMENDATIONS

Revenue Distribution by Sector:

- **Residential properties** contribute **46% of total revenue collections.**
- **Business** and **Commercial** properties contribute **37%.**
- **Industrial** properties contribute only **7.4%**.

Combined Revenue Contribution:

- **44.4% combined contribution** from certain zones or categories.
- 90% combined total likely reflects the aggregate contribution of Residential, Business, and Industrial sectors.
- **Residential properties** are the l**argest revenue contributors**, suggesting a high reliance on this sector.
- Industrial contributions are significantly lower, indicating underutilized or undervalued revenue potential in that sector.
- The 44.4% and 90% combined figures may indicate unequal distribution or highlight areas for targeted fiscal policy adjustments.

Recommendations:

- **Diversify Revenue Streams**
- Encourage **more industrial development** to balance sectoral contributions.
- **Reassess property valuation** sor tax policies **in underperforming sectors**.
- Ensure correct assessment, categorisation and taxation of all **Business, Retail and Commercial properties**
- Consider **tiered taxation or incentives** to support sustainable business growth while boosting revenues.

Strategic Urban Planning:

- Use **data to inform zoning** and **development decisions** that increase the value and productivity of industrial zones.
- Regular **Land, Property and Revenue Audits**:
- Implement **ongoing inspections, assessments and reviews** to ensure sectors are taxed equitably - market rate