

# Draft Review

**Version:**

60-day Public Commenting Period 2022



# Gauteng Spatial Development Framework 2030

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## List of Abbreviations

<b>25ITMP</b>	Gauteng 25-Year Integrated Transport Master Plan, 2013	<b>IUDF</b>	Integrated Urban Development Framework, 2016
<b>APAP</b>	Agricultural Policy Action Plan	<b>KZN</b>	KwaZulu-Natal
<b>APP</b>	Annual Performance Plan	<b>M&amp;E</b>	Monitoring and Evaluation
<b>BRT</b>	Bus Rapid Transport	<b>MPAT</b>	Management Performance Assessment Tool
<b>CBD</b>	Central Business District	<b>MSDF</b>	Metropolitan Spatial Development Framework
<b>CoGTA</b>	Department of Cooperative Governance and Traditional Affairs	<b>MTEF</b>	Medium Term Expenditure Framework
<b>CRDP</b>	Comprehensive Rural Development Programme	<b>MTSF</b>	Medium Term Strategic Framework
<b>DRDLR</b>	Department of Rural Development and Land Reform	<b>NDP</b>	National Development Plan 2030
<b>DWA</b>	Department of Water Affairs	<b>NDPP</b>	Neighbourhood Development Partnership Programme
<b>EMF</b>	Environmental Management Framework	<b>NMT</b>	Non-Motorised Transport
<b>GCR</b>	Gauteng City-Region	<b>NPC</b>	National Planning Commission
<b>GCRO</b>	Gauteng City-Region Observatory	<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>GDARD</b>	Gauteng Department of Agriculture and Rural Development	<b>OoP</b>	Office of the Premier
<b>GDCS</b>	Gauteng Department of Community Safety	<b>ORTIA</b>	OR Tambo International Airport
<b>GDE</b>	Gauteng Department of Education	<b>PEC</b>	Provincial Executive Council
<b>GDED</b>	Gauteng Department of Economic Development	<b>PICC</b>	Presidential Infrastructure Coordinating Commission
<b>GDH</b>	Gauteng Department of Health	<b>PLAS</b>	Pro-active Land Acquisition Strategy
<b>GDHS</b>	Gauteng Department of Human Settlements	<b>PMO</b>	Project Management Office
<b>GDID</b>	Gauteng Department of Infrastructure Development	<b>PM&amp;E</b>	Performance Monitoring and Evaluation
<b>GDP</b>	Gross Domestic Product	<b>Prasa</b>	Passenger Rail Agency of South Africa
<b>GDRT</b>	Gauteng Department of Roads and Transport	<b>RDP</b>	Reconstruction and Development Programme
<b>GDSD</b>	Gauteng Department of Social Development	<b>SDBIP</b>	Service Delivery and Budget Implementation Plan
<b>GDT</b>	Gauteng Development Tribunal	<b>SEZ</b>	Special Economic Zones
<b>GHG</b>	Greenhouse Gas	<b>SDF</b>	Spatial Development Framework
<b>GIS</b>	Geographic Information System	<b>SDG</b>	Sustainable Development Goal
<b>GPEMF</b>	Gauteng Provincial Environmental Management Framework	<b>SIP</b>	Strategic Infrastructure Project
<b>GRDP</b>	Gauteng Rural Development Plan	<b>SMMEs</b>	Small, Medium and Micro Enterprises
<b>GSDF</b>	Gauteng Spatial Development Framework	<b>SOE</b>	State owned Enterprise
<b>GVA</b>	Gross Value Added	<b>SOC</b>	State owned Company
<b>SSDI</b>	Supporting Spatial Development Interventions	<b>SPLUMA</b>	Spatial Planning and Land Use Management Act, 2013 (16 of 2013)
<b>ICT</b>	Information and Communications Technology	<b>Stats SA</b>	Statistics South Africa
<b>IDP</b>	Integrated Development Plan	<b>TMR</b>	Transformation, Modernisation and Re-Industrialisation
<b>IVRS</b>	Integrated Vaal River system	<b>TOD</b>	Transit Oriented Development
<b>IGRFA</b>	Intergovernmental Relations Framework Act, Act 13 of 2005	<b>UBPL</b>	Upper-bound poverty line
<b>IPRP</b>	Industrial Parks Revitalisation Program	<b>UN-Habitat</b>	United Nations Human Settlements Programme
<b>IRPTN</b>	Integrated Rapid Public Transport Network	<b>UDB</b>	Urban Development Boundary
		<b>UNECA</b>	United Nations Economic Commission for Africa
		<b>WLM</b>	Westonaria Local Municipality

## 1 INTRODUCTION TO GSDF 2030 REVIEW

### 1.1 Background to the Review of the Gauteng Spatial Development Framework, 2030

Gauteng Spatial Development Framework 2030 (GSDF) was approved in November 2016 by EXCO as the first Provincial Spatial Development Framework developed in terms of the provisions of SPLUMA. GSDF 2030 seeks to (i) direct, guide, focus and (ii) align, coordinate and harmonise all development spending in the province, to ensure rapid, sustainable and inclusive provincial economic growth and township redevelopment, therefore enabling decisive spatial transformation. Review of GSDF 2030 will focus on:

- Changes in overarching policy, planning frameworks and regulatory reform
- Emerging built environment trends and manifestations as well as latest statistical and spatial data as basis for evidence-based analysis

Provincial Spatial Development Frameworks (PSDFs) have been put forward as best practise since the early 2000s although, they were not regulated until the approval of SPLUMA, in 2013 as enacted in 2015. SPLUMA directs a new approach to spatial planning that requires linkages with overall long-term planning, budgeting and infrastructure investment in support of the spatial principles of NDP 2030 as reiterated in law by SPLUMA which are being advanced in various sets of regulatory reform. SPLUMA instructs all spheres of government to develop a Spatial Development Framework (SDF) and within the provincial context requires the Premier of each province to compile, determine and publish a PSDF to:

- “Coordinate, Integrate and align” planning of provincial departments, and planning between provincial departments, national departments

and municipalities within the provincial area in terms of Section 15(3), and

- Ensure all provincial development plans, projects and programmes are consistent with the Provincial Spatial Development Framework In terms of Section 17(2).

The review of GSDF 2030 will focus on providing responses to changes in overarching policy, planning frameworks and regulatory reform, emerging built environment trends and manifestations, including consideration of the COVID-19 pandemic, as well as latest statistical and spatial data as basis for evidence-based analysis.

Key areas that require direct responses in the review include:

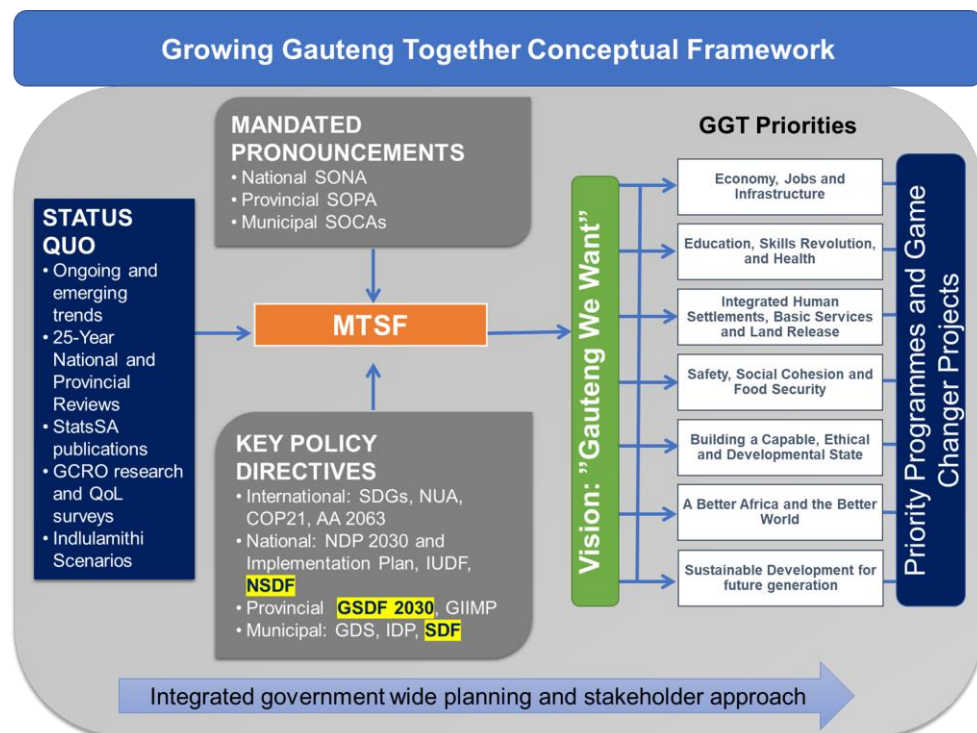
- Change in overarching policy, planning frameworks and regulatory reform
- Overarching political mandate of the 6th Administration of Gauteng Provincial Government (GPG) of Growing Gauteng Together (GGT 2030)
- Significant changes in overarching policy and planning frameworks at international, national, provincial and municipal level such as New Urban Agenda (NUA) linked to UN Habitat Sustainable Development Goals, National Spatial Development Framework (NSDF) Final Draft, Integrated Urban Development Framework (IUDF), Smart Cities Framework, District Development Model (DDM) and related Profiles and One Plans, Growing Gauteng Together through Smart Mobility 2030 Priority Human Settlement and Housing Development Areas (PHSHDAs) and other policy directives established post the approval of GSDF 2030 in November 2016
- Nationally driven regulatory reform dictating responsiveness to spatial planning by strategic planning (as per the Revised Framework for Strategic Plans and Annual Performance Plans, 2020) and budgeting (as



per the Medium-Term Expenditure Framework Guidelines for Provinces Guidelines, 2021)

- Amended Municipal Spatial Development Frameworks and related documents
- Planned GPG-led infrastructure development

GGT2030 has already suitably considered regulatory reform that calls for Spatial Development Frameworks at all spheres to form part of the Key Policy Directives that informs GGT 2030 as indicated in the GGT 2030 Conceptual Framework.



## 1.2 Preparing the Gauteng Spatial Development Framework, 2030

### 1.2.1 Ongoing engagement with stakeholders via IGR FORA

It is pertinently noted that the Review of GSDF 2030 requires a consultative process specifically due to the multi-sectoral nature of the discipline that manifests across all three different spheres of government at various scales. In light of the aforementioned, ongoing engagement with stakeholders includes the following key actions:

- Requests for formal designations of permanent stakeholders to participate in the GSDF review process has been sent to Director Generals, HODs, Municipal/City Managers.
- Multi-sphere inter-sectoral platforms for technical and general engagement linked to existing UP&COGTA and provincial IGR processes
- Preliminary sessions with provincial sector departments that have prominent linkages with spatial planning
- Sectoral Technical Sessions transpired 10-12 Augusts 2021 including sessions with the broader:
  - Roads and Transport Sector
  - Water, Sanitation and Solid Waste Sector
  - Energy, Information and Communications Technology Sector
  - Development Planning, Human Settlements and Social Facilities Sector
  - Environment and Heritage Sector
  - Economic Development, Mining, Agriculture and Tourism Sector
- Plenary session with representation from all sectoral sessions on 26 August 2021

- The respective spatial analysis put forward lead to the Draft Spatial Strategy which was presented at the Quarterly Gauteng Spatial Planning and Land Use Management Forum (September 2021) (as hosted by NDALRRD)
- Presentation made on progress of GSDF 2030 Review at National Spatial Planning and Land Use Management Forum in November 2021 (as hosted by NDALRRD)
- The spatial strategy was subsequently consolidated with the respective spatial analysis to form the Draft Reviewed GSDF. This version will be further informally interrogated with stakeholders to ensure alignment and buy-in prior to the process to formally go on public participation as per the prescribed 60-day period following the publishing of the Final Draft GSDF 2030 in the Provincial Gazette.
- Specific implementation and spatial governance responses will be finalised post public participation for incorporated into the Final Reviewed GSDF for final endorsement by EXCO.
- The list below provides an overarching timeline for the review of the GSDF 2030:

Phase/Deliverable		Due Date	Status
1	Inception	June 2021	Completed
2A	Spatial Analysis	August 2021	Completed
2B	Spatial Strategy	Sep-2021	Completed
2C	Draft Reviewed GSDF	Nov-21	Completed
	Soft Public Participation	Dec-Mar-22	Completed
	EXCO Approval	June 2022	Completed
3A	Formal Public Participation – 60 days	Aug– Oct 22	To commence
3B	Implementation & Spatial Governance expansion	Aug-Nov-22	
3C	Submit Final Reviewed GSDF to EXCO	Dec22-Jan-23	
Gazette EXCO approved document (Beginning 2023)			

## 1.3 Structure of the Gauteng Spatial Development Framework, 2030

### 2 FUNCTIONAL AREAS RELEVANT TO SPATIAL PLANNING

This chapter provides an overview of the three legal and policy drivers that framed, guided and informed the preparation of the GSDF 2030:

- The national legal framework;
- The international, national and provincial policy framework, including strategic, high-level national and provincial spatial development plans and directives; and
- Municipal Spatial Development Frameworks.

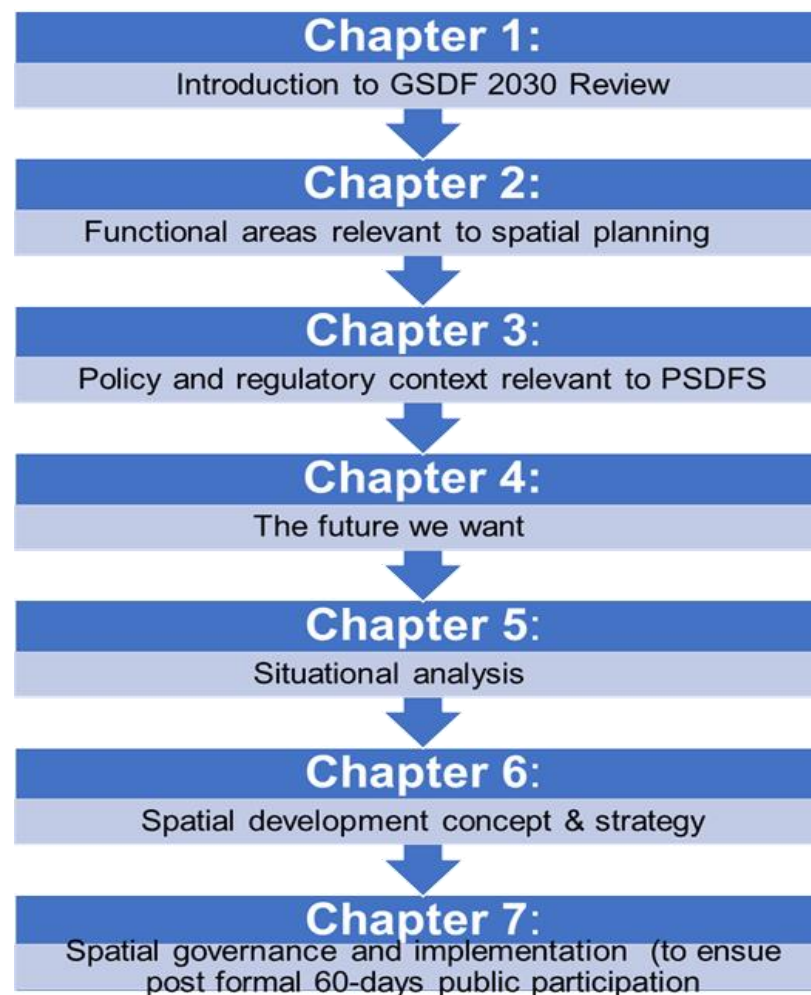
Each of these sets of drivers is dealt with in a separate sub-section below.

#### 2.1 The National Legal Framework

##### Introduction

SPLUMA regulates the compilation and review of national, provincial, regional and municipal SDFs. In turn, these processes take place against the background of (i) the constitutional structure of government and (ii) the division of the different functional areas around planning.

Provincial SDFs not only form an integral part of *national spatial planning and governance* but are also key components in the overall structure and functioning of provincial government, in particular *provincial spatial planning and governance*, and as such a clear understanding of their role in all these instances is of crucial importance.



Such focus of necessity requires a discussion of the salient constitutional issues regarding (i) the structure of government, (ii) cooperative government, and (iii) the division of planning powers and functions. As a result of the specific structure of government, many of the issues are intertwined, requiring a broad approach.

Besides the Constitution of the Republic of South Africa, 1996, (i) relevant legislation including SPLUMA, the Infrastructure Development Act, Act 23 of 2014, and the Intergovernmental Relations Framework Act, Act 13 of 2005, and (ii) applicable case law are dealt with in this section.

## 2.1.1 Spatial Development Frameworks

### General

SPLUMA provides that *one of the components* of the spatial planning system in the Republic consists of SDFs to be prepared and adopted by national, provincial and local spheres of government.<sup>1</sup> Some general and pertinent provisions in SPLUMA refer to SDFs in general; others relate specifically to provincial SDFs. Yet other provisions set out the role of SDFs in the development principles.

### Application of development principles

SPLUMA contains a number of development principles that apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land. They are the principles of (i) spatial justice, (ii) spatial sustainability, (iii) efficiency, (iv) spatial resilience, and (v) good administration. These principles must, among others, guide the preparation, adoption and implementation of any SDF, policy or by-law concerning spatial planning and the development or use of land<sup>2</sup>.

In addressing the content of the development principles, the principle of spatial justice indicates that SDFs and policies at all spheres of government, must address the inclusion of persons and areas that were previously excluded, with an emphasis on informal settlements, former homeland areas and areas characterised by widespread poverty and deprivation<sup>3</sup>. The principle of good administration obliges all government departments to

provide their sector inputs and comply with any other prescribed requirements during the preparation or amendment of SDFs<sup>4</sup>.

### Content

SPLUMA prescribes that all SDFs must:

- (a) interpret and represent the spatial development vision of the responsible sphere of government and competent authority;
- (b) be informed by a long-term spatial development vision statement and plan;
- (c) represent the integration and trade-off of all relevant sector policies and plans;
- (d) guide planning and development decisions across all sectors of government;
- (e) guide a provincial department or municipality in taking any decision or exercising any discretion in terms of the Act or any other law relating to spatial planning and land use management systems;
- (f) contribute to a coherent, planned approach to spatial development in the national, provincial and municipal spheres;
- (g) provide clear and accessible information to the public and private sector and provide direction for investment purposes;
- (h) include previously disadvantaged areas, areas under traditional leadership, rural areas, informal settlements, slums and land holdings of state-owned enterprises and government agencies and address their inclusion and integration into the spatial, economic, social and environmental objectives of the relevant sphere;

<sup>1</sup> S 4(a).

<sup>2</sup> S 6(1)(a).

<sup>3</sup> S 7(a)(ii).

<sup>4</sup> S 7(e)(ii).



- (i) address historical spatial imbalances in development;
- (j) identify the long-term risks of particular spatial patterns of growth and development and the policies and strategies necessary to mitigate those risks;
- (k) provide direction for strategic developments, infrastructure investment, promote efficient, sustainable and planned investments by all sectors and indicate priority areas for investment in land development;
- (l) promote a rational and predictable land development environment to create trust and stimulate investment;
- (m) take cognisance of any environmental management instrument adopted by the relevant environmental management authority;
- (n) give effect to national legislation and policies on mineral resources and sustainable utilisation and protection of agricultural resources; and
- (o) consider and, where necessary, incorporate the outcomes of substantial public engagement, including direct participation in the process through public meetings, public exhibitions, public debates and discourses in the media and any other forum or mechanisms that promote such direct involvement<sup>5</sup>.

The national government, a provincial government and a municipality must participate in the spatial planning and land use management processes that impact on each other to ensure that the plans and programmes are coordinated, consistent and in harmony with each other<sup>6</sup>.

<sup>5</sup> S 12(1). S 12(1)(d) to (e) are referred to in *Minister of Local Government, Environmental Affairs and Development Planning, Western Cape versus Habitat Council* 2014 4 SA 437 (CC) fn 24.

<sup>6</sup> S 12(2)(a).

<sup>7</sup> S 12(2)(b).

<sup>8</sup> S 12(6).

SDFs play a particularly significant role in planning decision-making processes because they must guide and inform the exercise of any discretion or of any decision taken in terms of the Act or any other law relating to land use and development of land by that sphere of government.<sup>7</sup>

SDFs must outline specific arrangements for prioritising, mobilising, sequencing and implementing public and private infrastructural and land development investment in the priority spatial structuring areas identified in SDFs<sup>8</sup>.

## 2.1.2 Provincial Spatial Development Frameworks

Besides the provisions that relate to all SDFs, specific provisions apply to provincial SDFs.

### Preparation

SPLUMA provides that the premier of each province must compile, determine and publish a provincial SDF for the province<sup>9</sup> that is consistent with the national SDF<sup>10</sup>. In addition to this, provincial SDFs must coordinate, integrate and align provincial plans and development strategies with policies of national government, provincial departments and municipalities<sup>11</sup>.

The provincial executive council must adopt and approve a provincial SDF for the province within five years from the date of commencement of the Act<sup>12</sup>.

The executive council may amend the provincial SDF when necessary and must review it at least once every five years<sup>13</sup>. Before determining or making any proposed amendments to the provincial SDF, the premier must (i) give notice of the proposed provincial SDF in the *Provincial Gazette* and the

<sup>9</sup> S 15(1).

<sup>10</sup> S 15(2).

<sup>11</sup> S 15(3).

<sup>12</sup> S 15(4).

<sup>13</sup> S 15(5).

media; (ii) invite the public to submit written representations in respect of it to the premier within 60 days after the publication of the notice and (iii) consider all representations received in respect of the proposed provincial SDF<sup>14</sup>.

A provincial SDF and any amendment must be approved by the executive council and published in the *Provincial Gazette* and the media<sup>15</sup>.

## Contents

SPLUMA provides that a provincial SDF must:

- (a) provide a spatial representation of the land development policies, strategies and objectives of the province, which must include the province's growth and development strategy where applicable;
- (b) indicate the desired and intended pattern of land use development in the province, including the delineation of areas in which development in general or development of a particular type would not be appropriate;
- (c) coordinate and integrate the spatial expression of the sectoral plans of provincial departments;
- (d) provide a framework for coordinating municipal SDFs with each other where they are contiguous;
- (e) coordinate municipal SDFs with the provincial SDF and any regional SDFs as they apply in the relevant province; and

- (f) incorporate any spatial aspects of relevant national development strategies and programmes as they apply in the relevant province<sup>16</sup>.

A provincial SDF must contribute to and express provincial development policy as well as integrate and spatially express policies and plans emanating from the various sectors of the provincial and national spheres of government as they apply at the geographic scale of the province<sup>17</sup>.

## Legal effect

A provincial SDF comes into operation upon approval by the executive council and publication to that effect in the *Provincial Gazette*<sup>18</sup>. All provincial development plans, projects and programmes must be consistent with the provincial SDF<sup>19</sup>. However, a provincial SDF cannot confer on any person the right to use or develop any land except as may be approved in terms SPLUMA, relevant provincial legislation or a municipal land use scheme<sup>20</sup>.

## Inconsistency with Municipal SDF

Where a provincial SDF is inconsistent with a municipal SDF, the premier must, in accordance with the Intergovernmental Relations Framework Act, take the necessary steps, including the provision of technical assistance, to support the revision of those SDFs in order to ensure consistency between the two<sup>21</sup>.

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<sup>14</sup> S 15(6).

<sup>15</sup> S 15(7).

<sup>16</sup> S 16.

<sup>17</sup> S 12(4).

<sup>18</sup> S 17(1).

<sup>19</sup> S 17(2).

<sup>20</sup> S 17(3).

<sup>21</sup> S 22(3).

## Provincial SDFs and the Constitution

The Constitution is the supreme law of the Republic and all law or conduct inconsistent with it is invalid and the obligations imposed by it must be fulfilled<sup>22</sup>. The Constitution prescribes a specific structure of government as well as legislative and executive functions that fit into that structure. Since the consequences for SDFs of both these issues are complicated, the subsections below engage (i) the structure of government; (ii) cooperative government, (iii) executive functions of the provincial sphere of government, and (iv) content of the applicable functional areas.

### Structure of government

The Constitution puts in place a government that is constituted as three spheres, namely the national, provincial and local spheres. This provision defines a model of government where the three spheres are distinct from one another and yet are interdependent and interrelated<sup>23</sup>. Each sphere is granted the autonomy to exercise its powers and perform its functions within the parameters of its defined space<sup>24</sup>. Furthermore, each sphere must respect the status, powers and functions of government in the other spheres and “*not assume any power or function except those conferred ... in terms of the Constitution*”<sup>25</sup>. The geographical and institutional integrity of each sphere is preserved.

### Cooperative Government

Each of the three spheres of government has specified powers and they are enjoined to work together according to the principles of co-operative government<sup>26</sup>. This is further regulated by the Intergovernmental Relations Framework Act, Act 13 of 2005 (IGRFA). Cooperative government is of particular significance in a planning context where (i) legislative and

executive powers and functions are distributed across the three spheres of government, and (ii) national and provincial government have duties of support, assistance and monitoring. Furthermore, it must play a role in both the vertical and horizontal alignment of functions between organs of state.

The Constitution introduces principles of cooperative government and intergovernmental relations in Section 41. Pertinent matters listed include (i) respect for the constitutional status, institutions, powers and functions of government in the other spheres; (ii) not to assume any power or function except those conferred on them in terms of the Constitution; (iii) to exercise their powers and perform their functions in a manner that does not encroach on the geographical, functional or institutional integrity of government in another sphere; and (iv) to co-operate with one another in mutual trust and good faith by (1) fostering friendly relations; (2) assisting and supporting one another; (3) informing one another of, and consulting one another on, matters of common interest; (4) co-ordinating their actions and legislation with one another; (5) adhering to agreed procedures; and (6) avoiding legal proceedings against one another<sup>27</sup>.

In pursuance of these principles the IGRFA was enacted. It establishes a framework for the national government, provincial governments and local governments to promote and facilitate intergovernmental relations. Its object is to provide, within the principle of co-operative government in Chapter 3 of the Constitution, a framework for the national government, provincial governments and local governments, and all organs of state within those governments, to facilitate co-ordination in the implementation of policy and legislation, including (i) coherent government; (ii) effective provision of services; (iii) monitoring implementation of policy and legislation; and (iv) the realisation of national priorities. A provincial intergovernmental forum promotes and facilitates intergovernmental relations between provinces and

<sup>22</sup> Constitution of the Republic of SA, 1996 S 2.

<sup>23</sup> Constitution s 40(1).

<sup>24</sup> *Johannesburg Metropolitan Municipality v Gauteng Development Tribunal* 2010 6 SA 182: 2010 9 BCLR 859 (CC) par 43.

<sup>25</sup> Constitution s 41(1)(e) to (f); see *Johannesburg Metropolitan Municipality v Gauteng Development Tribunal* supra par 43.

<sup>26</sup> Constitution s 41.

<sup>27</sup> Constitution 41(e)-(h).

the local governments in the provinces<sup>28</sup>. This forum discusses and consults on matters of mutual interest, including *“the coordination of provincial and municipal development planning to facilitate coherent planning in the province as a whole”*<sup>29</sup>.

Besides environmental, transport and mining legislation other significant legislation that must be taken into account in compiling a provincial SDF is the Infrastructure Development Act, Act 23 of 2014. The Act contains some far-reaching provisions to undertake so-called Strategic Integrated Projects (SIPs) such as airports, human settlements, mines, pipelines, power stations, public roads and transport, waste and water infrastructure. Multi-disciplinary steering committees consist of a SIP coordinator, officials representing departments in the three spheres of government responsible for environment, water, public works, finance, economic development, spatial planning, land use management or any other relevant portfolio or representing any other person who will be required to grant an approval, authorisation, exemption, licence, permission or exemption necessary for the implementation of the strategic integrated project as well as other experts<sup>30</sup>. Every organ of state must ensure that its future planning or implementation of infrastructure or its future spatial planning and land use is not in conflict with any strategic integrated project implemented in terms of the Act<sup>31</sup>. This provision does not derogate from any power of a province or municipality to implement any infrastructure project which falls outside the ambit of a strategic integrated project<sup>32</sup>.

### **Legislative and Executive Authority of Provincial Sphere of Government**

Each of the three spheres of government has specified legislative and executive powers, delineated in the Constitution. The legislative authority of

a province is vested in the provincial legislature<sup>33</sup> and includes the power to make laws with regard to the functional areas in Schedules 4 and 5.

The executive authority of a province is vested in the Premier<sup>34</sup> who exercises that authority together with the other members of the executive council (MECs). This is done by (i) preparing and initiating provincial legislation, (ii) implementing provincial legislation in the province, (iii) implementing all national legislation within the functional areas listed in Schedule 4 or 5 except where the Constitution or an Act of Parliament provides otherwise, (iv) administering in the province, national legislation outside the functional areas listed in Schedules 4 and 5, the administration of which has been assigned to the provincial executive in terms of an Act of Parliament, and (v) performing any other function assigned to the provincial executive in terms of the Constitution or an Act of Parliament<sup>35</sup>. The compilation of a provincial SDF in terms of SPLUMA clearly falls within the scope of the executive authority of a province.<sup>36</sup>

The compilation and approval of a provincial SDF is not administrative action in terms of Section 33 of the Constitution and the Promotion of Administrative Justice Act 3 of 2000 because, albeit an exercise of a public power, it does not adversely affect the rights of any person nor does it have a direct external effect. Moreover, the executive powers and functions of national, provincial and municipal executives are excluded from the definition of *“administrative action”*<sup>37</sup>. This, however, does not mean that executive action falls outside the reach of judicial control.

<sup>28</sup> S 16.

<sup>29</sup> S 18(a)(viii).

<sup>30</sup> S 12(1).

<sup>31</sup> S 8(4)(a).

<sup>32</sup> S 8(4)(b).

<sup>33</sup> Constitution s 104.

<sup>34</sup> Constitution s 125(1).

<sup>35</sup> Constitution s 125(2).

<sup>36</sup> Constitution 125(2).

<sup>37</sup> Promotion of Administrative Justice Act 3 of 2000 s 1.



A province has such executive authority only to the extent that it has administrative capacity to assume effective responsibility<sup>38</sup>. Any dispute concerning the administrative capacity of a province regarding any of its functions must be referred to the national council of provinces<sup>39</sup>.

## 2.2 Functional areas relevant to planning

### Introduction

Schedule 4 of the Constitution lists the functional areas of concurrent national and provincial legislative competence. Matters relevant to planning include “*regional planning and development*”, “*urban and rural development*” in Part A and “*municipal planning*” in Part B. Part B includes matters that municipalities have executive authority over and the right to administer, as well as the power to make by-laws for the effective administration of the matters it has the right to administer<sup>40</sup>.

Schedule 5 of the Constitution lists “*provincial planning*” as a functional area of exclusive provincial competence.

Provinces therefore have competence over both Schedule 4 and Schedule 5 matters. The content of each of these functional areas must be ascertained. This is confusing, because the contents overlap and there is uncertainty regarding the responsibility for and precise contents of the functional areas relating to planning. In the sub-sections below the meaning of terms of importance to the review of the GSDF are engaged.

### “Municipal Planning”: Meaning

For long there was uncertainty over the content of and boundaries of “*municipal planning*” and it was left largely to the courts to unravel. The first case was *Wary Holdings (Pty) Ltd v Stalwo (Pty) Ltd and Another*.<sup>41</sup> It was

the minority judgment that stressed that planning entails land use and is inextricably connected to every functional area that concerns the use of land. There is probably not a single functional area in the Constitution that can be carried out without land<sup>42</sup>. The minority judgment’s view was that, to continue to accord the planning function to the (then) national Minister of Agriculture and Land Affairs in relation to agricultural land, would be at odds with the Constitution in two respects. Firstly, it would negate the municipal planning function and, secondly, it might well trespass into the sphere of exclusive provincial competence of provincial planning<sup>43</sup>.

In *Johannesburg Metropolitan Municipality v Gauteng Development Tribunal*<sup>44</sup> the City of Johannesburg Metropolitan Municipality wished to perform its statutory functions in regard to municipal planning without the interference of the Gauteng Development Tribunal. A number of applications for development were being made, not in terms of the provincial Town-planning and Townships Ordinance 15 of 1986 but in terms of the Development Facilitation Act 67 of 1995 (DFA). These applications were being approved by the Gauteng Development Tribunal in contravention of the City of Johannesburg Metropolitan Municipality’s planning policy. The Constitutional Court stated that the Constitution confers planning on all spheres of government by allocating “*regional planning and development*” concurrently to the national and provincial spheres, “*provincial planning*” exclusively to the provincial sphere and “*municipal planning*” to the local sphere. While these functional areas are not contained in hermetically sealed compartments, they remain distinct from one another<sup>44</sup>. Determining the meaning of “*municipal planning*”, Jafta J held that “*planning*” in the context of municipal affairs is a term which has assumed a particular, well-established meaning which includes the zoning of land and the

<sup>38</sup> Constitution s 125(3).

<sup>39</sup> Constitution s 125(4).

<sup>40</sup> Constitution s 156(1) to (2).

<sup>41</sup> 2009 1 SA 337 (CC).

<sup>42</sup> Par 128.

<sup>43</sup> Par 131.

<sup>44</sup> Pars 54 to 55.

establishment of townships. In that context, the term is commonly used to define the control and regulation of the use of land<sup>45</sup>.

In *Minister of Local Government, Environmental Affairs and Development Planning of the Western Cape v Lagoonbay Lifestyle Estate (Pty) Ltd*<sup>46</sup> rezoning and subdivision approvals were sought for purposes of a large-scale property development that would impact on areas outside the municipality. The Constitutional Court held that the municipality was the proper authority to determine rezoning and subdivision applications. It stated that the Court's jurisprudence quite clearly established that: (i) barring exceptional circumstances, national and provincial spheres are not entitled to usurp the functions of local government; (ii) the constitutional vision of autonomous spheres of government must be preserved; (iii) while the Constitution confers planning responsibilities on each of the spheres of government, those are different planning responsibilities, based on "*what is appropriate to each sphere*"; (iv) "*planning*" in the context of municipal affairs is a term which has assumed a particular, well-established meaning which includes the zoning of land and the establishment of townships; and (v) the provincial competence for "*urban and rural development*" is not wide enough to include powers that form part of "*municipal planning*".

In *Minister of Local Government, Environmental Affairs and Development Planning, Western Cape versus Habitat Council*<sup>47</sup> the appeal of municipal land use decisions to the provincial government was found to be unconstitutional. In a similar Constitutional Court case, *Tronox KZN Sands (Pty) Ltd v KwaZulu-Natal Planning and Development Appeal Tribunal*,<sup>48</sup> it was held that an appeal from municipal planning decisions to a provincial tribunal is unconstitutional.

<sup>45</sup> Par 57.

<sup>46</sup> 2014 1 SA 521 (CC); 2014 (2) BCLR 182 (CC).

<sup>47</sup> 2014 4 SA 437 (CC).

<sup>48</sup> 2016 4 BCLR 469 (CC).

SPLUMA provides that, for purposes of the Act, "*municipal planning*" comprises the compilation, approval and review of both integrated development plans and the components of an integrated development plan prescribed by legislation and falling within the competence of a municipality, including an SDF and a land use scheme<sup>49</sup>. It also entails the control and regulation of the use of land within the municipal area where the nature, scale and intensity of the land use do not affect the provincial planning mandate of provincial government or the national interest<sup>50</sup>.

Given the interpretation of "*municipal planning*" by the courts, the latter provision in SPLUMA is problematic, because, even where the scale and intensity of the land use do affect a province, the decision on the development application remains with the municipality.

#### **"Provincial Planning": Meaning**

The Constitution provides that provincial government has exclusive executive competence<sup>51</sup> over matters listed in Schedule 4 Part A. "*Provincial planning*" is listed in Part A of Schedule 4.

The courts have dealt with the content of "*provincial planning*" on a few occasions. In the *Wary Holdings* case Yacoob J pointed out that "*provincial planning*" does not include "*municipal planning*"<sup>52</sup>. As a result, "*provincial planning*" is determined by the content of "*municipal planning*". "*Provincial planning*" therefore excludes (i) integrated development planning, (ii) municipal spatial development frameworks, (iii) land use schemes, (iv) zoning, (v) rezoning, (vi) the removal of restrictions, (vii) the subdivision of land, (viii) the establishment of townships, and (ix) all building restrictions that apply within municipalities. Moreover, any appeals on any of these are excluded.

<sup>49</sup> S 5(1)(a)-(b).

<sup>50</sup> S 5(1)(c).

<sup>51</sup> Constitution s 125(2)(b).

<sup>52</sup> Par 127.

To repeat what was said above in respect of “*municipal planning*”, in *Johannesburg Metropolitan Municipality v Gauteng Development Tribunal*<sup>53</sup> Jafta J indicated that the functions of “*regional planning and development*”, “*urban and rural development*”, “*provincial planning*” and “*municipal planning*” remain distinct from one another even if they are not “*contained in hermetically sealed compartments*”. The distinctiveness of the three planning competences “*lies in the level at which a particular power is exercised*”.

In holding that the approval or amendment of a regional spatial plan was part of “*provincial planning*”, the court, in *Shelfplett 47 (Pty) Ltd v MEC for Environmental Affairs and Development Planning*<sup>54</sup> stated that the Constitution distributes legislative and executive competence among the various levels of government. The subjects on which the various levels of government may legislate and the executive functions they may perform are the subject of the distribution, not the reasons and considerations they may take into account.

SPLUMA provides that, for purposes of the Act, “*provincial planning*” comprises the following:

- (a) the compilation, approval and review of a provincial SDF;
- (b) monitoring compliance by municipalities with SPLUMA and provincial legislation in relation to the preparation, approval, review and implementation of land use management systems;
- (c) the planning by a province for the efficient and sustainable execution of its legislative and executive powers insofar as they relate to the development of land and the change of land use; and
- (d) the making and review of policies and laws necessary to implement provincial planning<sup>55</sup>.

<sup>53</sup> 2010 6 SA 182; 2010 9 BCLR 859 (CC) par 55.

<sup>54</sup> 2012 3 SA 441 (WCC) par 55.

<sup>55</sup> S 5(2).

### “Urban and Rural Development”: Meaning

“*Urban and rural development*” is listed as an area of concurrent national and provincial legislative competence in Schedule 4 Part A. By questioning what happens to “*municipal planning*” once all of the functions of town planning and township establishment are excised, Nugent JA in the SCA case in *Gauteng Development Tribunal*<sup>56</sup> in effect stated that “*urban and rural development*” is determined by the content of “*municipal planning*”.

The term “*development*” features prominently in attempts to describe the content of “*urban and rural development*”. In essence, “*development*” includes material changes that take place on land, such as construction, alteration, demolition, and the subdivision and consolidation of land. Nugent JA gave some indication of what the content of this functional area is by holding that it could include: “*...the establishment of financing schemes for development, the creation of bodies to undertake housing schemes or to build urban infrastructure, the setting of development standards to be applied by municipalities, and so on*”.

The Constitutional Court in *Gauteng Development Tribunal* indicated that a restrictive meaning should be ascribed to “*development*” in order to enable each sphere to exercise its powers without interference from the other spheres<sup>57</sup>.

### “Regional Planning and Development”: Meaning

“*Regional planning and development*” is listed as an area of concurrent national and provincial legislative competence in Schedule 4 Part A. As is the case with “*urban and regional development*”, “*development*” is central in “*regional planning and development*”. Since the prefix “*municipal*” in

<sup>56</sup> *Johannesburg Municipality v Gauteng Development Tribunal* 2010 2 SA 554 (SCA) par 39.

<sup>57</sup> Par 62.

“municipal planning” puts the competence in the municipal sphere, “regional” refers to a context separate from “provincial” or “municipal”.

In *Wary Holdings* the Constitutional Court stated that “planning” is said to entail both forward planning and land use<sup>58</sup> and “development” envisages change in land use. “Regional planning and development” as listed in Schedule 4 would refer to the forward planning of a specifically demarcated region, geographical or otherwise, for a specified purpose.

Regional SDFs, as provided for in SPLUMA, would need to deal with “regional planning and development”.

### “National Planning”: Meaning

National government is responsible for planning in the national sphere of government. National functional areas are not listed in the Constitution. For the purposes of SPLUMA, national planning comprises (i) the compilation, approval and review of spatial development plans and policies or similar instruments, including a national SDF; (ii) the planning by the national sphere for the efficient and sustainable execution of its legislative and executive powers insofar as they relate to the development of land and the change of land use; and (iii) the making and review of policies and laws necessary to implement national planning, including the measures designed to monitor and support other spheres in the performance of their spatial planning, land use management and land development functions<sup>59</sup>.

<sup>58</sup> Par 128.

<sup>59</sup> S 5(3).

<sup>60</sup> Constitution s 125(3).

<sup>61</sup> S 9(1)(a)(i).

<sup>62</sup> S 9(2).

<sup>63</sup> Defined in s 239 of the Constitution as

(a). any department of state or administration in the national, provincial or local sphere of government; or

## 2.3 Assistance and Monitoring by National and Provincial Government

### National Government

The Constitution places a duty on national government to, by legislative and other measures, assist provinces to develop administrative capacity required for the effective exercise of their powers and performance of their functions<sup>60</sup>. This is echoed in SPLUMA, which directs the minister to provide, within available resources, support and assistance in the performance of its land use management functions and related obligations to any province<sup>61</sup>. National government must, in accordance with SPLUMA and the IGRFA, develop mechanisms to support and strengthen the capacity of provinces to adopt and implement an effective spatial planning and land use management system<sup>62</sup>. The minister may, after consultation with organs of state<sup>63</sup> in the provincial and local spheres of government, prescribe procedures to resolve and prevent conflicts or inconsistencies which may emerge from spatial plans, frameworks and policies of different spheres of government and between a spatial plan, framework and policies relating to land use of any other organ of state<sup>64</sup>.

The regulations under SPLUMA provide that if the minister, after consultation with departments in the provincial and local sphere of government, deems it necessary to issue guidelines to municipalities to assist them in exercising any of their functions under the Act, municipalities and, where applicable a province<sup>65</sup>, must have regard to those guidelines in the performance of their functions<sup>66</sup>. The minister may revoke or amend guidelines issued under this

(b). any other functionary or institution exercising a power or performing a function in terms of the Constitution or a provincial constitution; or exercising a public power or performing a public function in terms of any legislation, but does not include a court or a judicial officer.

<sup>64</sup> S 9(3).

<sup>65</sup> Reg 36(4).

<sup>66</sup> Reg 36(1).



regulation<sup>67</sup> and must publish, in the *Gazette*, a notice of any guidelines and of any amendment or revocation of those guidelines so issued<sup>68</sup>.

### Provincial Government

In a manner similar to national government, provincial governments have a constitutional duty to assist, support and monitor municipalities. When a municipality cannot or does not fulfil an executive obligation in terms of the Constitution or legislation, the relevant provincial executive may intervene by taking any appropriate steps to ensure fulfilment of that obligation, including:

- (e) issuing a directive to the Municipal Council, describing the extent of the failure to fulfil its obligations and stating any steps required to meet its obligations;
- (f) assuming responsibility for the relevant obligation in that municipality to the extent necessary to maintain essential national standards or meet established minimum standards for the rendering of a service; prevent that Municipal Council from taking unreasonable action that is prejudicial to the interests of another municipality or to the province as a whole or maintain economic unity; or
- (g) dissolving the Municipal Council and appointing an administrator until a newly elected Municipal Council has been declared elected, if exceptional circumstances warrant such a step<sup>69</sup>.

SPLUMA reiterates this provision by providing that a premier may, subject to the Constitution and any other law regulating provincial supervision and monitoring of municipalities in the province, (i) assist a municipality with the preparation, adoption or revision of its land use scheme, as well as (ii) facilitate the coordination and alignment of the land use management systems of different municipalities or system of a municipality with structure

plans, development strategies and programmes of national and provincial organs of state<sup>70</sup>. It may also take appropriate steps to resolve disputes in connection with the preparation, adoption or revision of an SDF, a land use scheme or related tools and planning instruments between a municipality and its local community or different municipalities<sup>71</sup>. Furthermore, a premier may, by notice in the *Provincial Gazette*, identify matters of provincial interest in respect of which provincial legislation, policies, frameworks, norms and standards consistent with the Act must apply<sup>72</sup>.

SPLUMA also provides that provincial governments must develop mechanisms to support, monitor and strengthen the capacity of municipalities to adopt and implement an effective system of land use management in accordance with the Act<sup>73</sup>. In the development and application of such measures to monitor and support the performance of the functions of municipalities in terms all legislation relating to spatial planning, land development and land use management, the national government and provincial governments must take into account the unique circumstances of each municipality<sup>74</sup>. “*Unique circumstances*” in this context may be determined on the basis of identified criteria, including categories of municipalities, the criteria identified and applied in accordance with national or provincial legislation relating to the supervision and monitoring of local government and financial resources as well as the capacity and financial viability of a municipality<sup>75</sup>. For these purposes, different information may be requested from different municipalities, taking into consideration the capacity of a municipality to administer the Act and the compliance of a municipal SDF and land use scheme with the Act<sup>76</sup>.

### Local Government

<sup>67</sup> Reg 36(5).

<sup>68</sup> Reg 36(6).

<sup>69</sup> Constitution s 139(1).

<sup>70</sup> S 10(3)(a) to (b).

<sup>71</sup> S 10(3)(c).

<sup>72</sup> S 10(4).

<sup>73</sup> S 10(5).

<sup>74</sup> S 11(1).

<sup>75</sup> S 11(2).

<sup>76</sup> S 11(3).

The role of the municipality in cooperative government is important and the planning it undertakes must be aligned with, and complement, the development plans and strategies of other affected municipalities and other organs of state (provinces are included) so as to give effect to the principles of co-operative government<sup>77</sup>. To that end municipalities must participate in national and provincial development programmes<sup>78</sup>.

These provisions are reiterated in SPLUMA, where it provides that a municipality must consult any organ of state responsible for administering legislation relating to any aspect of an activity that also requires approval in terms of the Act in order to coordinate activities and give effect to the respective requirements of such legislation, and to avoid duplication<sup>79</sup>. After such consultation a municipality may enter into a written agreement with that organ of state to avoid duplication in the submission of information or the carrying out of a process relating to any aspect of an activity that also requires authorisation under the Act<sup>80</sup>. Once such an agreement has been concluded, the relevant Municipal Planning Tribunal may take account of any process authorised under the legislation covered by that agreement as adequate for meeting the legislative requirements<sup>81</sup>.

### Conclusion

A provincial SDF must comply with all the requirements that relate to SDFs in general and provincial SDFs in particular. Since a provincial SDF is part of the executive authority of a province it must comply with all the constitutional requirements. These include that it must co-operate with all relevant organs of state within the framework of Chapter 3 of the Constitution and the IGRFA. It plays a significant role since all provincial development plans, projects and programmes must be consistent with the provincial SDF. This implies that all other sector plans, programmes must be aligned with it.

Since the compilation of a provincial SDF is part of “provincial planning” it must deal only with issues that comprise the constitutional functional area of “provincial planning” as outlined by the courts.

Provinces must take the sector plans of other organs of state into account and it has a role to play in assistance and monitoring *vis-à-vis* both national and local government.

## 3 POLICY AND REGULATORY CONTEXT RELEVANT TO PSDFS

### 3.1 International Policy Directives

#### United Nations Sustainable Development Goals 2030

Following the 2015 Millennium Development Goals (MDG), the United Nations convened in September 2015 to consent on *Transforming our world: The 2030 Agenda for Sustainable Development*. It is stated by the United Nations that:

*“This Agenda was a plan of action for people, planet and prosperity. It sought to strengthen universal peace in larger freedom while recognizing that eradicating poverty in all its forms and dimensions, including extreme poverty, was the greatest global challenge and an indispensable requirement for sustainable development”.*<sup>82</sup> The 17 sustainable development goals (SDGs) to transform our world:

<sup>77</sup> Municipal Systems Act 32 of 2000 s 24(1).

<sup>78</sup> S 24(2).

<sup>79</sup> S 29(1).

<sup>80</sup> S 29(2).

<sup>81</sup> S 29(3).

<sup>82</sup> Source: United Nations General Assembly A/69/L.85

- GOAL 1: No Poverty
- GOAL 2: Zero Hunger
- GOAL 3: Good Health and Well-being
- GOAL 4: Quality Education
- GOAL 5: Gender Equality
- GOAL 6: Clean Water and Sanitation
- GOAL 7: Affordable and Clean Energy
- GOAL 8: Decent Work and Economic Growth
- GOAL 9: Industry, Innovation and Infrastructure
- GOAL 10: Reduced Inequality
- GOAL 11: Sustainable Cities and Communities
- GOAL 12: Responsible Consumption and Production
- GOAL 13: Climate Action
- GOAL 14: Life Below Water
- GOAL 15: Life on Land
- GOAL 16: Peace and Justice Strong Institutions
- GOAL 17: Partnerships to achieve the Goal

Following this assembly, 17 Sustainable Development Goals (SDG) were agreed upon by the United Nations for the year 2030.

#### **UN SDG Goals 2030 Takeaway:**

GSDf 2030 review provides policy support for the 11th Development Goal, which is to “*Make cities and human settlements inclusive, safe, resilient and sustainable*”, as it is most relevant to the review of the GSDf which also pertinently links to the New Urban Agenda (NUA) developed to further Goal 11 as well as the localisation of such through the Integrated Urban Development Framework and localisation efforts.

### **3.1.1 New Urban Agenda linked to SDGs**

*NUA is an action-oriented approach setting out global standards towards achieving SDGs Goal 11 to :“Make cities and human settlements inclusive, safe, resilient and sustainable.”* NUA challenges us to rethink the way we build, manage, and live in cities through drawing together cooperation with committed partners, relevant stakeholders, and urban actors at all levels of government as well as the private sector. NUA advocates for a new paradigm to address both challenges and opportunities brought about by rising populations and urbanisation through integrated urban planning and design, finance, development, good governance and management in order to achieve sustainable urban developments across the globe.

As NUA was adopted during Habitat III, midway through the Gauteng Provincial Government (GPG) 5th Administration, GPG is responding to NUA through building on the gains made in the 10-Pillar Programme of Transformation, Modernisation and Re-Industrialisation (TMR) programme which are further being advanced in Growing Gauteng Together 2030 (GGT). TMR, and the 6th Administration’s subsequent Growing Gauteng Together 2030 serves as provincial response to the National Development Plan 2030, which already drives an integrated city region characterised by its advancement of social cohesion, economic inclusion, underpinned by sustainable socio-economic development. In doing so, GGT 2030 guides planning and development decisions across all sectors of provincial government to direct planning, budgeting, implementation, monitoring and evaluation efforts which resonates well with many of the NUA objectives.

Urbanization and development are inextricably linked, and it is necessary to find a way of ensuring the sustainability of growth. Urbanization had become a driving force as well as a source of development with the power to change and improve lives with NUA calling for a paradigm shift in planning for cities by redirecting population growth and urbanisation to be sustainable.

#### **New Urban Agenda Takeaway:**

GSDf 2030 identifies and direct linkages between sustainable urbanisation and job creation, livelihood opportunities and improved quality of life, and guide institutionalisation of all these sectors in urban development or renewal policy and strategy.

### **3.1.2 COP26**

COP26 is the next annual UN climate change conference and stands for Conference of the Parties in the form of a summit attended by the countries that signed the United Nations Framework Convention on Climate Change (UNFCCC) – a treaty that came into force in 1994. The COP26 summit transpired in Glasgow from 1-12 November 2021, as the 26th COP summit hosted in partnership between the UK and Italy a year later than planned due to delays caused by the COVID pandemic. COP26 is deemed a significant climate event since the 2015 Paris Agreement – when all the signatories to the UNFCCC agreed to keep temperatures well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

COP26 is deemed critical due to it being the first opportunity for countries to set out more ambitious goals for ending their contribution to climate change under the Paris Agreement.

*Mr Cyril Ramaphosa responded by highlighting* South Africa's, commitment to ambitious emission reduction targets noting that achieving these will require transformation of our energy system at an unprecedented speed and scale. This will include the decommissioning, the repowering and the repurposing of coal-fired power stations and the roll-out of renewable energy. SA's ability to do so will be determined by the extent of support that we receive from developed economies. The Political Declaration that was announced at COP26 by governments of France, Germany, the United Kingdom and the United States, as well as the European Union, represents an important breakthrough in this effort. Through this partnership, an initial amount of \$8.5 billion will be mobilised over the next three to five years to support South Africa's just transition to a low-carbon, climate resilient future.

Cities consume the majority of the world's energy and greenhouse gas emissions necessitating multi-disciplinary solutions that can be scaled up in response to climate challenges by empowering innovators and communities to collaborate in designing and demonstrating solutions and reinventing how cities innovate. Urban planning and the design of new and existing areas in cities needs to be integrated with climate mitigation and adaptation benefits

#### **COP 26 takeaway:**

- GSDf 2030 review to support efforts linked to regional urban form, development typologies and intensities to cut carbon emissions that are equitable and contribute to the wellbeing of inhabitants.

### 3.1.3 African Urban Agenda 2063

The *African Urban Agenda 2063* sets out three over-arching considerations that must inform and anchor democratic debates about how best to develop and manage African cities and towns, namely:

- Optimise urban form to become appropriately dense, green and just;
- Calibrate urban infrastructure networks and systems to ensure a sustainable flow of money, resources, goods, services, people and data; and
- Accelerate economic development through strategic infrastructure investments, appropriate planning regulations, institutional coordination and the provision of useful information.

#### African Urban Agenda 2063 Takeaway:

- GSDF 2030 to identify an optimal spatial form for Gauteng Province that is dense, green and just
- Highlight and direct regional urban infrastructure synergies
- Identify key strategic infrastructure investments linked to spatial objectives and related governance measures.

## 3.2 National Policy and Spatial Planning Directives

### 3.2.1 National Development Plan, 2030

According to the National Development Plan, 2030, “South Africa needs to rethink the urban to face future challenges. We must grapple with this task and deal intelligently with social exclusion, environmental threats, economic inefficiencies, logistical bottlenecks, urban insecurity, decaying infrastructure and the impacts of new technologies”.

#### NDP 2030 Takeaways:

GSDF 2030 review to provide provincial context and directives that ensure:

- containment and possible reversal of urban sprawl at regional scale
- prerequisites for the development and identification of sustainable human settlements;
- new urban development (in particular affordable housing) to be focused around public transport corridors and economic nodes
- creation of economic hubs within historically black townships that have sufficient market size
- integration of townships into wider economic functioning localities
- upgrading of informal settlements where appropriate
- design and quality of urban public space; and
- that state funding does not support the further provision of non-strategic housing investments in poorly located areas.

### 3.2.2 NDP 5-Year Implementation Plan, 2019-2024

The NDP Five Year implementation plan is aimed at reinforcing a coherent vision and plan to achieve the long term priorities expressed in the NDP, and aligned with regional and international obligations, such as the Sustainable Development Goals (SDGs) and the African Union (AU) Agenda 2063 which the country has committed to. It will provide a national strategic direction for the country’s development in the medium-term period, considering the autonomy of the provincial and local governments to do their own planning. The plan will allow for necessary prioritisation of a few key interventions and the sequencing of their implementation to enable effective and optimal resource allocation. It will form the basis for developing five-year institutional plans that will guide the realisation of the NDP priorities over the remaining 10 years.



## NDP 5-Year Implementation Plan, 2019-2024

GSDF 2030 to identify strategic locations where related investments and interventions support spatial transformation as envisioned by the NDP 2030

### 3.2.3 Final Draft National Spatial Development Framework, 2021, (NSDF)

The National Spatial Development Framework (NSDF) is the first of its kind to be compiled in terms of the Spatial Planning & Land Use Management Act (SPLUMA), a new addition to the 'family' of spatial development frameworks (SDFs) across the three spheres of government. The NSDF recognises the challenges involved in bringing about the necessary changes in planning, budgeting and implementation in and between the three spheres of government, it is also very clear as to their importance in contributing to the joint crafting of our desired and shared future.

The NSDF puts forward the national spatial development vision of a shared and just South Africa, setting out the 'shifts' that must be made in the national spatial development logic based on the objectives and directives of the NDP and the SPLUMA principles, to enable a radical, transformative and decisive change in our national spatial development pattern, puts forward six national spatial development levers to give spatial expression to the national spatial development vision, and support the shifts that need to be made in accordance with the new national spatial development logic, (4) provides a set of five required national spatial outcomes to achieve the national development objectives, as outlined in the NDP, and realise the national spatial development vision and desired national spatial development pattern, as outlined in the NSDF.

It further provides an indication as to what life would be like in our country by 2050 if the vision is pursued, the necessary shifts are made, and the six national spatial development levers are appropriately and effectively used.

Guidance is also provided for national spatial development and investment in the form of an ideal national spatial development pattern and five NSDF sub-frames, and five national spatial action areas, to inform, direct and guide all infrastructure investment and development spending decisions by government and the private sector, to enable us to achieve the desired national spatial development pattern for South Africa in 2050, and in doing so, realise our national development objectives, as set out in the NDP; The implementation of the NSDF outlines measures, approach and actions required to realising our national spatial development vision in a coherent, diligent and systematic way, and provides an overview of the role-players involved in doing so.

#### NSDF Takeaways:

GSDF 2030 will respond to the NSDF Implementation Charter by aligning and infusing core NSDF modules into all SDFs and sector plans through provincial contextualisation and application of the following:

- **NSDF Mission** of making our common desired spatial future together through better planning, investment, delivery and monitoring”
- **NSDF Logic** (Theory of Change) directing targeted, coordinated and integrated (1) infrastructure investment and (2) social and economic development expenditure.
- **NSDF Levers:** Urban Areas, Spatial social service provision, National development corridors, Transport communication and energy infrastructure, Productive rural regions and Ecological infrastructure)

- **NSDF Outcomes:** National urban nodes, regional development anchors and development corridors, National-scale corridors and regions of opportunity, National connectivity and movement infrastructure systems, Productive rural regions and National ecological Infrastructure
- **NSDF Sub-Frames:** (Inter-Regional Connectivity, National System of Nodes and Corridors, National Resource Economy Regions, National Movement and Connectivity Infrastructure System, National Ecological Network)
- **NSDF National Spatial Action Areas applicable to Gauteng:** Spatial Transformation and Economic Transition Regions and Central Innovation Belt

### 3.2.4 Integrated Urban Development Framework, 2016

South Africa has had an evolving national policy dialogue on urbanisation. This was clearly recognised in the National Development Plan (NDP) 2030 (NPC, 2011) and embodied in the Integrated Urban Development Framework (IUDF), which is South Africa's urban policy (DCOG, 2016). The IUDF articulates how South Africa will transform urban areas to overcome both historical and prevailing challenges, while working together to ensure more integrated, sustainable and equitable human settlements, as envisaged in the NDP's vision.

As South Africa's national urban policy, the IUDF needs to be contextualised within the UN Habitats New Urban Agenda (NUA), through interpreting and localising the NUA directives. In other words, aligning South African urban policy and practice with the NUA priorities. The Integrated Urban Development Framework, 2016 (IUDF) is government's policy position to guide the future growth and management of urban areas.

The IUDF stems from the National Development Plan 2030 and marks a New Deal for South African cities and towns towards the transformative vision of restructured urban spaces and compact, connected cities and towns. The potential of urban areas is maximised when people, jobs, livelihood opportunities and services are aligned, which is referred to as the urban dividend. The Integrated Urban Development Framework (IUDF) is designed to unlock the development synergy that comes from coordinated investments in people and places which necessitates spatial integration; inclusion and access, growth and Governance.

#### IUDF Takeaway:

GSDP 2030 will contextualise regional spatial manifestation of (i) jobs, (ii) housing and (iii) transport in order to direct sustainable urban growth and management of these towards sustainable urban development and capitalisation of the urban dividend.

### 3.2.5 District Development Model, 2019 (DDM) Approach

Informed by the National Development Plan (NDP) and the Integrated Urban Development Framework (IUDF) and other government policies, legislations and previous similar programmes, the DDM seeks to ensure maximum coordination and cooperation among all three spheres of government (National, provincial and local). Amongst others, the Model will be implemented through a collaborative process to develop One Plans for all 44 districts and 8 Metropolitan Municipalities which will be further synchronized with Integrated Development Plans (IDPs) of municipalities.

Each district and metro plan will develop a long-term government agenda in these spaces and unpack at least the following developmental issues:

- Managing urbanisation, growth and development
- Supporting local economic drivers
- Accelerating land release and land development
- Investing in infrastructure for integrated human settlement, economic activity and the provision of basic services
- Addressing service delivery in municipalities

To date DDM “One Plans” have been developed for the five DDM District’s within Gauteng Province including: COEMM, COEMM, COTMM, SDM, WRDM.

#### **DDM Takeaway:**

GSDf 2030 will identify provincial and municipal spatial priorities (as put forward by municipalities) to feed into DDM Profiles as well as DDM One Plans to plans as basis for strategic investment responses and prioritisation.

### **3.2.6 A South African Smart Cities Framework, 2021 (SCF)**

The SCF shares learning on the potential contribution of smart cities as well as the perceived limitations of these types of interventions. It further emphasises the critical characteristics of South African cities and towns that need to be considered when planning and implementing smart city initiatives. The unique South African context calls for local and tailor-made interventions to develop settlements that are not only smart, but also inclusive. Any smart city initiative should contribute to the well-being of ordinary city dwellers and support the broad national vision for human settlements outlined in, among others, the National Development Plan (NDP) and the Integrated Urban

Development Framework (IUDF). The SCF further assists in establishing a common understanding of smart cities in the South African context and outlines a set of principles to guide decision-making for smart cities. The document concludes with highlighting critical issues to consider and outlining initial steps to be taken when identifying, planning and implementing smart city initiatives.

#### **A South African Smart Cities Framework Takeaway:**

GSDf 2030 will identify key smart city issues within the Gauteng context and relevant initial steps to be taken towards application of smart city concepts as part of spatial planning practice.

### **3.2.7 National Infrastructure Plan 2050 (NIP 2050) (Draft, 2021)**

A National Infrastructure Plan with 18 identified Strategic Integrated Projects (SIPs) was developed and adopted by Cabinet in 2012. The Infrastructure Development Act, No 23 of 2014 was gazetted, which saw the establishment of the Presidential Infrastructure Coordinating Commission (PICC) Council, Management Committee and Secretariat. Further, a PICC Technical Task Team was established. The respective plan is currently being updated as NIP2050. NIP 2050 sets out to ensure that the foundations for achieving the NDP’s vision for inclusive growth. It has been prepared by Infrastructure South Africa (ISA). The NIP 2050 offers a strategic vision and plan that links top NDP objectives to actionable steps and intermediate outcomes. The aim is to promote dynamism in infrastructure delivery. It addresses institutional blockages and weaknesses that hinder success over the longer term, and guides the way to building stronger institutions that can deliver on NDP aspirations.

The NIP 2050 does not seek to be comprehensive – it is not meant to be a database of all projects, a consolidation of master plans, a spatial mapping of projects or a mechanism for centralised decision-making. The aim is to identify the most critical actions needed for sustained improvement in public infrastructure delivery that will have impact in the short term but with the longer-term imperatives in view. The current phase of the NIP 2050 focuses on four critical network sectors that provide a platform: energy, freight transport, water and digital infrastructure. There will be a second phase that focuses on distributed infrastructure and related municipal services.

NIP 2050 advances Strategic Infrastructure Projects (SIPs) by providing recommendations in respect of augmenting the existing SIPS and priority actions to be delivered by 2023/4. Specific emphasis is also placed on industrial development and localisation in the design and approach to implementation including localisation of supplier industries to infrastructure projects, driving the establishment of Special Economic Zones around intermodal transport linkage nodes, and the stimulation of the civil construction and supplier industries

#### **National Infrastructure Plan 2050: Takeaways:**

GSDP 2030 to incorporate existing and planned Top Priority Strategic Integrated Projects (SIPS) reflected in NIP2050 that has bearing on Gauteng Province is outlined below:

#### **Energy**

- SIP (no 8) includes: Green energy projects, including procurement of renewable energy under the Independent power Producer Procurement Programme (REIPPPP).

- SIP (no 9) includes: expansion of electricity generation capacity, including from Kusile, Medupi and Ingula (completed), with attention to reducing carbon footprint.
- SIP (no 10) includes: expanding electricity transmission and distribution network
- SIP (no 20) include:
- Emergency/Risk Mitigation Power Purchase Procurement Programme (2000MW): National
- Small IPP Power Purchase Procurement Programme (100MW): National
- Embedded Generation Investment Programme (EGIP)-400MW: National

#### **Freight Transport**

- SIP (no 2) includes: Durban-Free State-Gauteng logistics and industrial corridor. This includes strengthening logistics and transport corridors between the main industrial hubs, improving access to Durban's export and import facilities, integrating the Free State industrial strategy activities into the corridor, establishing Durban as a Hub port and an aerotropolis around OR Tambo Airport.
  - Increasing the use of rail for freight transport, as opposed to the use of roads/trucks;
  - Expanding rail, train station, port and logistics hub investment, maintenance and upgrading;
  - Enhancing intermodal integration along the N3-corridor;
  - Improving feeder route connection to the N3-corridor;
  - Strengthening the economies of towns along the N3-corridor;
  - Improving safety and security around deliveries on the transportation routes and at the stations, terminals and ports;
  - Increasing night-time freight movement to ease congestion;

- Making greater use of smaller trucks for short-haul purposes to and from railway stations and other destinations, to reduce the negative impacts of such movement on road surfaces and the environment.

### **Water**

- SIP No 19 - Vaal River System including Phase 2 of the Lesotho Highlands Water Project: Gauteng

### **Digital Communications**

- Expand broadband coverage to all households and schools by 2020 – No 15.
- Digitising of Government Information – no 30
- SA Connect Phase 1B Programme – no 35

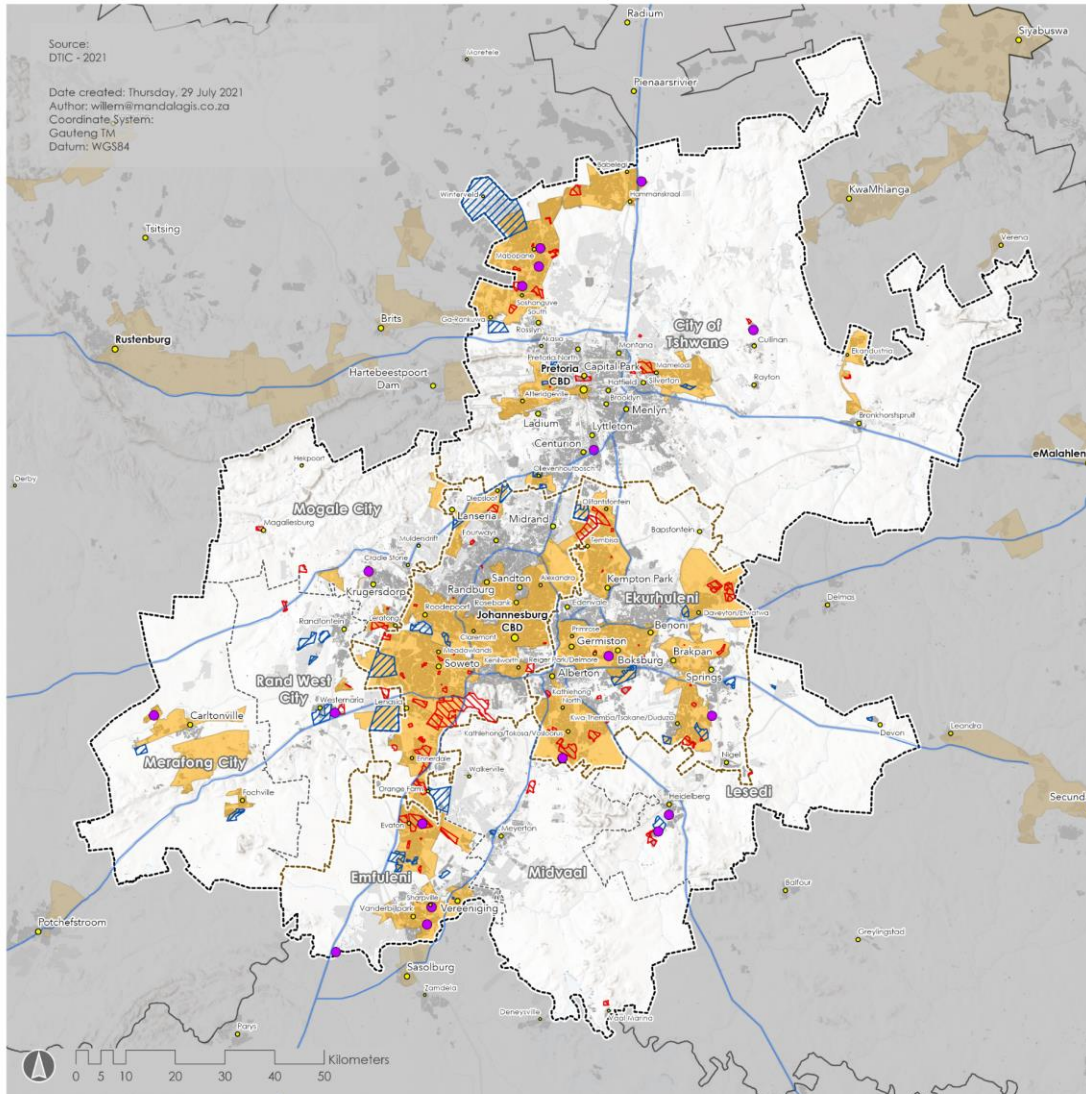
### **Human Settlements**

- SIP 24: Sub-Projects
  - Lufhereng: Gauteng
  - Malibongwe Ridge: Gauteng
  - Green Creek: Gauteng
  - Mooikloof Mega Residential City: Gauteng
  - Fochville Extension 11: Gauteng
  - Germiston Ext 4 Social Housing Project: Gauteng
  - Phola Heights - Tembisa Social Housing Project: Gauteng
  - Sondela Phase 2: Gauteng
  - Joe's Place Social Housing: Gauteng
  - Jeppestown Social Housing Project (Unity House): Gauteng



Figure 1: Mega Projects & PSHDAs

## Mega Projects and PSHDA



-  Verified Mega Projects
-  Verified Housing Projects
-  Unverified Projects
-  Priority Human Settlements and Housing Development Areas
-  Urban
-  Smallholdings
-  Gauteng Province
-  District Municipalities
-  Local Municipalities
-  National Routes

### 3.2.8 Priority Human Settlements and Housing Development Areas, 2020 (PHSHDAs)

In 2020, the Minister of Human Settlements, Water and Sanitation declared 136 Priority Human Settlements and Housing Development Areas (PHSHDAs) across the country, of which a total of **26 PHSHDAs have been declared in Gauteng Province (as indicated)**. The PHSHDAs intends to advance Human Settlements Spatial Transformation and Consolidation by ensuring that the delivery of housing is used to restructure and revitalise towns and cities, strengthen the livelihood prospects of households and overcome apartheid spatial patterns by fostering integrated urban forms.

The PHSHDAs endeavours to enable residents to live closer to areas with economic activities and social amenities such as schools, health facilities and job opportunities, including improved access to adequate accommodation. The implementation of the PHSHDAs is intended to be in line with the national housing programmes namely, Enhanced People's Housing Process (Zenzeleni), Informal Settlements Upgrading, Integrated Residential Development Programme and Social Housing Programme. Over the next few years, resources will be directed towards the successful roll out of these programmes, including the targeted allocation of the Human Settlement Development Grant and other supporting grants. The PHSHDAs are underpinned by the principles of the National Development Plan (NDP) and allied objectives on the National Spatial Development Framework (NSDF) and the Integrated Urban Development Framework (IUDF) which directs the reversal of segregated development and creation of poverty pockets in the peripheral areas, integration of previously excluded groups

and resuscitation of declining areas as this links with the PHSHDAs objectives.

#### Priority Human Settlements and Housing Development Areas: Takeaway:

- GSDF 2030 to direct urban consolidation in line with the 26 proclaimed PHSHDAs in Gauteng in response to localised municipal spatial prioritisation in this regard in support of the NDP 2030 directive that state funding should not support the further provision of non-strategic housing investments in poorly located areas.
- Only well-located areas determined and/or formally supported by municipalities to be furthered by provincial programmatic responses, specifically investment linked to conditional grants. This is in keeping with the exclusive constitutional mandate of “municipal planning” and the exclusive SPLUMA requirement for only municipal SDFs to identify estimates of the demand for housing units across different socio-economic categories and the planned location and density of future housing developments as planning for such (as these are dependent on municipal bulk infrastructure related planning, prioritisation and budgeting directly impacting financial feasibility of municipalities.)

### 3.3 Provincial Policy and Spatial Planning Directives

#### 3.3.1 Gauteng 10-Pillar Programme of Transformation, Modernisation and Re-industrialisation

The State of the Province Address, 2015 proposed a 10-Pillar Strategy for the economic, social and spatial transformation of Gauteng, of which (i) Decisive Spatial Transformation and (ii) Modernisation of Human Settlements and Urban Development are in particular relevant to the Gauteng Spatial Development Framework from a spatial structuring perspective. Decisive spatial transformation includes (i) transforming the apartheid spatial economy and human settlement patterns to integrate economic opportunities, transport corridors and human settlements, (ii) revitalising and mainstreaming the township economy, (iii) enhance the competitiveness of strategic economic sectors and (v) significant investment in economic infrastructure.

According to the State of the Province Address 2015, the province is focusing on three macro interventions, namely spatial reconfiguration, township economy revitalisation and massive infrastructure investments. The 2015 State of the Province Address proposed the development of five (5) regional focus areas in the province (which spatially relate to the administrative areas of the metropolitan and district municipalities with the aim to provide a functional and regional approach “*Reconfigure the Gauteng City-Region’s space and economy*”. These corridors are planned along specific economic themes, and include:

- Central: City of Johannesburg as the hub of finance, services, ICT and pharmaceutical industries, with a strong focus on the regeneration of the inner-city as the seat of the Provincial Government;
- Eastern: Ekurhuleni Metro as the hub of manufacturing, logistics and transport industries;
- Northern: City of Tshwane as the nation’s administrative Capital City and the hub of the automotive sector, research, development, innovation and the knowledge-based economy;
- Western: West Rand District and the creation of new industries, new economic nodes and new cities; and
- Southern: Sedibeng District and the creation of new industries, new economic nodes and new cities.

These respective areas coincide with the District Development Model approach which was adopted Nationally which was also further embedded in the 6th Administration’s Growing Gauteng Together (GGT2030)

#### 3.3.2 Growing Gauteng Together (GGT) 2030

The sixth administration, learning from the past administrations and immediately from the work done towards transforming, modernizing and reindustrializing the Gauteng City Region, has taken a decision to embark on a path towards realising the Gauteng of our dreams – “The Gauteng We All Want” by 2030.

The Gauteng of our dreams is based on the Indlulamithi scenarios, specifically the Nayi le Walk scenario which requires that we work together with national government and execute with a great sense of discipline the right policies – particularly the seven priorities and the 162 interventions.

As we work towards the achievement of the GGT2030, emphasis will be on coordination and collaboration.

The 6th administration is cognisant that government alone, cannot deliver true development impacts, acknowledging the need to mobilise society to partake in the development path along with government to create environments that enable communities to prosper while improving efficiencies as government. The 5th Administration brought many lessons for the Gauteng Provincial Government (GPG), including the need to improve policy coordination across the GCR, and to improve performance monitoring systems, in line with the District Delivery Model. GGT 2030 notes that joint and collaborative planning will allow all of us to focus on agreed spatial and development priorities.

### **Growing Gauteng Together 2030: Takeaway**

GSDP will identify areas of spatial prioritisation linked to the spatial transformation logic determined, and link such with programmatic responses required by provincial sector departments per mandates in order to direct investment and prioritisation linked to strategic planning and budgeting processes (e.g. Strategic Plans, Annual Performance Plans, MTEF Budgets, Infrastructure Delivery Management System processes, etc.) which will feed into both the existing GGT 2030 as well subsequent review.

Existing GGT 2030 Projects to be spatially referenced and bolstered for joint spatial prioritisation across spheres and sectors as per the DDM Districts include the following:

### **West Rand: “Agri-Business, Agro-Processing, Renewable Energy and Tourism City”**

- New Smart City in Lanseria
- Mega Special Agro-processing Park
- Logistics Hub N12 Corridor
- Expansion of Busmark manufacturing plant
- Solar farm and urban agricultural projects

### **Sedibeng: Manufacturing and Agro-Processing City**

- Savannah City development
- Vaal River City development
- AB InBev investment project
- Vaal Marina development and logistics and mining investments in Lesedi
- University village (Merging VUT & NWU)
- Highlands development
- Agrotropolis

### **Tshwane: Automotive City-Innovation Hub**

- Expansion of BMW & Nissan plants
- Auto City development in Rosslyn
- Ford investment in Silverton
- Automotive Special Economic Zone
- Menlyn Maine Development
- Castle Gateway Precinct
- Renovation of Babelegi, Ga-Rankuwa and Ekandustria industrial parks

### **Johannesburg: Africa's Financial and Technological City**

- Rosebank, Sandton, Midrand and Fourways Nodal development.
- Joburg Inner-City Development
- Masingita City Development
- Southern Farms to Orange Farm Development
- Lanseria New Smart City

### **Ekurhuleni: Aerotropolis City - Manufacturing Hub**

- OR Tambo IDZ/SEZ (agro-processing, jewellery manufacturing & mineral beneficiation and hydrogen fuel cell technology development)
- Tambo Springs Logistics Gateway
- PRASA-Gibela rail manufacturing hub in Nigel
- Cargo Terminal at OR Tambo
- Oliver Tambo University of Science and Innovation



### 3.3.3 Special Economic Zones (SEZs) in Gauteng

As part of the Grow Gauteng Together 2030 strategy, Special Economic Zones were identified (SEZs), where feasible, to boost manufacturing, increase exports and employment, and add momentum towards turning the GCR into a single, multi-tier and integrated SEZ. SEZs “are geographically designated areas set aside for specifically targeted economic activities to promote national economic growth and exports by using support measures to attract foreign and domestic investments and technology. The Special Economic Zones Programme is set to play a critical role in the implementation of not only Gauteng, but also South Africa’s economic reconstruction and recovery plan. This is due to the SEZ Programme being at the core of the reimagined industrial strategy, which is purposefully structured to stimulate local and foreign direct investments. T

The SEZ programme is at the core of the reimagined industrial strategy, which is purposefully structured to stimulate local and foreign direct investments. The SEZs are also going to play an important role in the African Continental Free Trade **Agreement as we position** our country to become a vibrant manufacturing hub of the African Continent. To date, OR Tambo SEZ in City of Ekurhuleni and the Tshwane Automotive Special Economic Zone (TA SEZ) that has been formally designated by DTIC, while processes are underway to designate the Vaal SEZ in Emfuleni Local Municipality.

#### **SEZ: Takeaway**

GSDf 2030 to contextualize and prioritise the existing and proposed SEZs in the broader Gauteng context including OR Tambo SEZ, TA SEZ and proposed Vaal SEZ.

### 3.3.4 Township Economic Development Bill

The Township Economic Development Bill endeavours to bring opportunity to the many and confront inequality at the spatial level by:

- Changing how townships are supported to transform them into zones of widespread, job-creating commercial activity
- Set up better procurement rules and programmatic support which allow government and its main contractors to buy from large groups of township-based firms, with systems linking them so they can supply if they were one large firm – this includes Manufacturing cluster pilots
- Deploy a dedicated Financing mechanism for firms engaged in TER activities through a legal framework which establishes an SME fund to provide wholesale, blended finance to intermediaries that can de-risk lending to township-based firms, including community banks.
- Provide legal framing for the Taxi Economy Initiatives, including the Taxi Economy Fund to set up investment vehicles to commercialize taxi ranks and other taxi economy nodes using blended finance and zoning overlays to incentivize development around ranks, transforming them into township CBD nodes.
- Provide legal framing for Commercial rapid land release initiative to release publicly owned land for best, most developmental use in township areas
- Provide legal framing for the Township backyard real estate Initiative – including provisions to establish township commercial precincts/ high streets in areas targeted for precinct-level backyard real estate upgrades

### **Township Economic Development Bill: Takeaway**

GSDF 2030 will provide guidance towards the characteristics of areas that may be suitable for application of the proposed bill in order to support municipalities in the identification of erstwhile marginalised township areas that may benefit from proposed interventions.

### **3.3.5 Gauteng 25-year Integrated Transport Master Plan, 2013 (25 ITMP)**

The lack of a strategic coordination in the transportation sector prompted the preparation of the 25-Year Integrated Transport Master Plan (25ITMP), undertaken by the Gauteng Department of Roads and Transport. The 25ITMP provides a framework for integrated transport planning covering a 25-year horizon, with the objective of achieving a world class and sustainable transport system that supports Gauteng's economic, social and cultural, and environmental goals. The review of the 25-ITMP is set to commence shortly and is deemed a key component of support for the GSDF 2030 to towards directing transport interventions to support spatial transformation and spatial equality.

The 25-ITMP provides a planning framework that will be used to reach its aim of developing a world class and sustainable transport system that supports Gauteng's economic, social and cultural, and environmental goals over the next 25 years. The plan sees development along the identified priority public transport and road networks with a focus on densification along identified corridors, the development of nodes along these corridors and the promotion of Transit Oriented Development as key to transforming the spatial structure of the province.

### **Gauteng 25-year Integrated Transport Master Plan 25-ITMP Takeaways:**

GSDF 2030 to provide guidance at a regional scale that supports the following 25-ITMP interventions:

- Subsidised housing provision within urban core areas;
- Land use densification in support of public transport
- Reinforcing passenger rail network as the backbone of the transport system
- Extension of integrated rapid and road-based public transport networks;
- Strengthening intermodal freights hubs
- Mainstreaming non-motorised transport
- Continued provincial wide mobility

### **3.3.6 Growing Gauteng Together through Smart Mobility 2030 (2020)**

The 6th administration recognises the pivotal role Transport plays in supporting Gauteng's Economic growth story. To this end, the Growing Gauteng Together Through Smart Mobility plan was developed to address the province's Transport challenges and to kick-start the programmes of the 6th administration. The plan is characterised by the key focus areas of Infrastructure, Operations, Institutions and enabling technology. It is understood that the plan operates in conjunction with other Urban and Transport-orientated policies instituted at a national and municipal government level.

Smart Mobility can be defined as "an effective and efficient mobility system utilising appropriate technologies" and is characterised by a consistent and systematic use of innovations (ICTs) to streamline Transport management.

This view resonates with the objectives of the 6<sup>th</sup> administration, for it emphasises the need for efficiency, effectiveness, innovation and use of technology as key ingredients in growing a competitive economy. Therefore, taking into consideration the key focus areas that form part of the Growing Gauteng Together.

Implementation of the Smart Mobility plan rests on four pillars, and their applicable sub-pillars:

- Restructuring the Urban Form (Green Mobility, Commercialisation of Stations and Assets)
- Gauteng as a Freight and Logistics Hub
- Data Centric Mobility
- Building Strong Institutions (G-Fleet, Enhance the Feeder System)

#### **Growing Gauteng Together through Smart Mobility 2030: Takeaway**

GSDF 2030 to direct regional intervention towards a more compact urban form that besides optimising sustainability and urban efficiencies purposefully supports public transport and regional mobility related to freight and logistic movements.

### **3.3.7 Gauteng Human Settlements Spatial Master Plan, 2020 (GDHSSMP)**

The Gauteng Department of Human Settlements (GDHS) Spatial Vision (as indicated in the following figure) can be summarized as a “living” document as informed by several form-giving imperatives. The assessment, analysis and development of the spatial vision embraces the policy and legal guidelines as indicated, amongst others, the National Development Plan (NDP) and the Spatial Planning and Land Use Management Act, 2013.

The GDHS Spatial Vision, by way of the identification of the strategically “Optimally” located human settlements investment zone has achieved the following:

- To direct the establishment of Human Settlements in areas which adhere /comply to sustainability criteria (economic, environmental, social),
- To promote the principles of infill and densification in achieving the “compact” urban structure. This principle and the implementation thereof will transform the current urban structure to address the planning imbalances of the previous “regime” pre -1994,
- It provides the investment opportunity to accommodate all potential beneficiaries, regardless of creed, race and income. Human Settlements investment need to focus on higher density development, supported by complimentary land uses.
- It maximizes the use of existing engineering, economic and social infrastructure and optimizes connectivity between different higher order precincts,
- It proposes the optimum use of land (Brownfields and Greenfields) within the existing urban concentrations. These land parcels, which is a scarce resource need to be optimized in terms of density, land use and connectivity in line with the guidelines of the “Smart City” urban design concept.

The implementation of the GDHS Spatial Vision should be viewed as flexible and be guided by the following directives:

- The focus zone for implementation should be the “Optimally” located zone.
- Prior to a decision by the GDHS to proceed /engage with a potential project, it need to comply with the “Project Evaluation Criteria” tool.

- Mega Projects need to be re-assessed in terms of delivery targets and expenditure. A number of these projects have been delayed owing to the lack of bulk infrastructure.
- Socio-economic (economic catalytic projects), political intervention and strategic re-alignment may have an impact of housing investment within the “Optimally “located zone. These cases need to be dealt with on merit and compliant to the project evaluation tool.
- Large scale human settlement investment within smaller Local Municipalities, which exceed the housing need within these municipal areas should not be supported.
- Other human settlement programmes which aim to address the imbalances of the past should continue to be implemented (urban renewal, hostel upgrading, formalization of townships). Informal settlements which are strategically located ,in compliance to the project evaluation criteria ,should be upgraded.

The Gauteng Department of Human Settlements Spatial Vision needs to be viewed as a dynamic and incremental strategy, and as such still needs to be further refined to include the following:

- Map all planned provincial sector departmental programmes/projects (water, sanitation, electricity, refuse, transport, educational, others) in order to refine the spatial logic.
- Conduct a detailed access to community services (educational, health, safety) analysis, informed by future need (scenario planning).
- Identify vacant and developable land within the “Optimally “located zones linked to public ownership.
- Identify existing buildings within the “Optimally” located zone eligible for redevelopment.

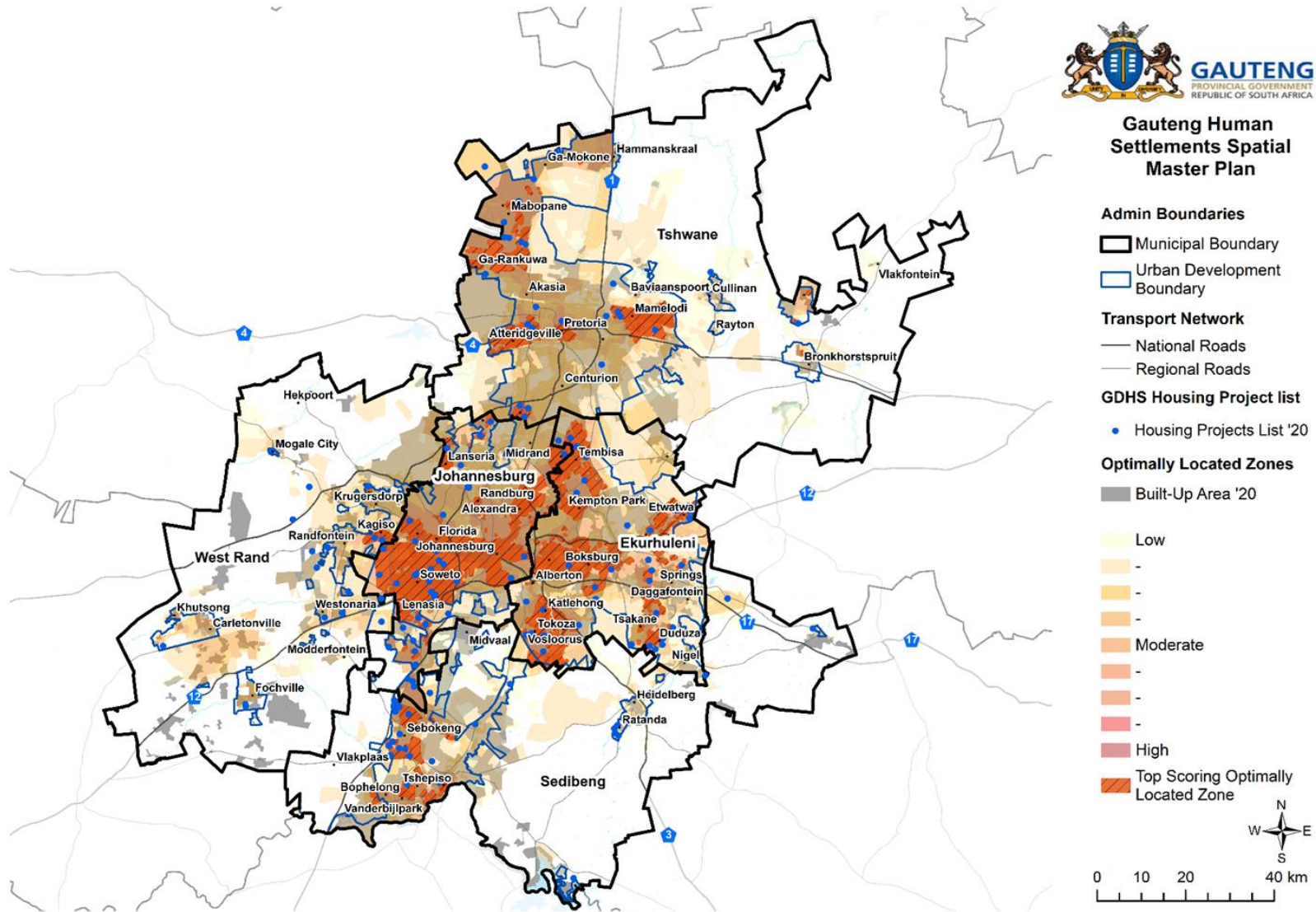
- Promote the establishment of an institutional framework in support of infill, high density development of Greenfield and Brownfield aimed at the lower income beneficiaries.

#### **Gauteng Human Settlements Spatial Master Plan, 2020 (GDHSSMP): Takeaway**

GSDP2030 to outline short, medium- and longer-term human settlement interventions that responds to spatial rationale of National, Provincial and specifically local government (in terms of the exclusive constitutional mandate of “municipal planning”). Beyond only reflecting upon spatial alignment of priorities the feasibility of proposed human settlement interventions should also be linked to bulk infrastructure capacity as key component of feasibility.



Figure 2: Gauteng Human Settlements Spatial Masterplan showing Optimally Located Zones





### **3.3.8 GCR Over-arching Climate Change Response Strategy and Action Plan**

Through the implementation of the GCR Over-arching Climate Change Response Strategy and Action Plan, Gauteng seeks to work towards addressing its 'fair share' of the national GHG mitigation target as a means to stimulate economic development and improve social well-being. The Strategy and Action Plan is not simply to absorb or counter the impact of climate change. Instead, it aims to place the region on a path towards climate resilience, low carbon developments that capitalises on the opportunities presented by climate change and the need for adaptation. The overall outcome for the GCR should be a growing economy and improving human well-being.

The strength, weaknesses, opportunities and threats (SWOT) analysis undertaken as part of the development of this Strategy has revealed that Gauteng province and the wider GCR region need to capitalise on opportunities that allows a shift from unsustainable activities and technologies to innovative practices that are not only economically viable but also socially just and environmentally friendly. The urban and economic contexts of the GCR, opportunities lie in the transportation, energy, built environment, agro-processing and ecotourism sectors. These sectors offer possibilities for roll-out of climate-resilient interventions that are independent of external dependencies.

Efficient urban design, linked to modernised mass transportation and safeguarded green infrastructure, is also a key ingredient towards making cities (and the people living in them) resilient and helps reduce disaster risks. These opportunities and possibilities have been used as a foundation for response programmes outlined in this Strategy. Eleven response programmes have been identified for this Strategy. They include natural

resources; agriculture and agro-processing; disaster risk reduction and management; water security; commercial and institutional buildings; human settlements; energy supply; industry and mining; transport; waste management; and health.

The "Transport Response Programme" holds particular significance in terms of the review of GSDF 2030 transformation of the transport sector holds major promise in terms of reducing the provincial carbon footprint and in improving the resilience of households as well as the provincial or regional economies.

### **GCR Over-arching Climate Change Response Strategy and Action Plan: Takeaway**

GSDF 2030 to direct and support opportunities to expand and consolidate modern mass transit systems, foster closer integration between transport and development planning and a transition to a more energy efficient transport system stem directly from the challenges facing the current transport system, and are, in fact, necessitated by the rising costs in the fossil fuel energy sector and the need to mitigate the province's carbon footprint.

### **3.3.9 Gauteng Provincial Environmental Management Framework, 2021**

The updated GPEMF forms part of the suite of integrated environmental management (IEM) tools that are used to support informed decisions regarding the management of impacts on the environment that arise out of human and development activities. GPEMF 2021 continues the focus of the 2014 version to encourage compatible development activities in specific zones to minimise conflicting activities undertaken adjacent to one another, the implications for non-compatible activities are undesirable.

The update of the GPEMF focused on improving the Geographic Information System (GIS) mapping of environmental sensitivities to ensure they are protected from unsustainable practices. Environmental Management Framework, 2014 developed the following 'Environmental Management Zones:

The zones of opportunities (zones 1 and 5) that seek to encourage infill development has not been not affected by the update. State institutions will still be able to take advantage of the benefits of developing in these zones to fast track the delivery of much needed social services such as housing, schools, residential etc.

- Zone 1: Urban Development Zone: Urban development activities are streamlined (exempted from environmental assessment requirements) and infill and densification is promoted with the aim of minimising urban sprawl into rural areas;
- Zone 2: High Control Zone (within the urban development zone): Sensitive areas in the Urban Development Zone are conserved;
- Zone 3: High Control Zone (outside the urban development zone): Sensitive areas outside the urban development zone is protected;
- Zone 4: Normal Control Zone: Agricultural uses outside the urban development zone is protected; and
- Zone 5: Industrial and large commercial focus zone: Non-polluting industrial and large-scale commercial activities are streamlined (exempted from environmental assessment requirements), specifically in areas that are already used for such purposes and areas that are severely degraded but in close proximity to required infrastructure. This assists with facilitating economic development in the province.

**Gauteng Provincial Environmental Management Framework: Takeaway**  
GSDF 2030 review to direct and support urban development and intensification to GPEMF Zone 1: Urban Development Zone and Zone 5 Industrial and large commercial focus zone as part of regional growth management.

### 3.4 Municipal Spatial Development Frameworks

An analysis found that most of the municipal SDFs have similar objectives, with the following being the most common:

- The promotion of densification in specific areas, to ensure more efficient use of resources.
- The creation of an integrated open space system and the promotion of the functions and functioning of natural systems.
- The integration of economically disadvantaged communities into the urban system, particularly those on the periphery.  
The promotion of viable public transport systems and the reduction of the reliance on private motor vehicles.
- The establishment of a hierarchy of nodes, and the support of existing development nodes as well as emerging/new nodes.
- The creation, strengthening and enhancement of development corridors.
- The improvement of linkages and connectivity in municipal areas.
- The analysis shows that the frameworks are (to a greater or lesser extent) structured around the themes of nodes, corridors and movement networks, and the protection of sensitive natural environments. Most municipalities also have an urban development boundary (or urban edge) as part of their SDF.

- However, the SDFs differ in how concepts are employed and, in the terminology, used, which indicates the lack of a
- common “spatial language”. Significant differences are found in the maps (use of and type, and terminology/inscriptions) and in the level of detail – SDFs range from very strategic, high-level documents to very detailed and focused plans.
- A stated aim of most of the municipalities is the integration of their SDFs with those of neighbouring municipalities, but this is not generally evident in their frameworks. The SDFs are not aligned, with some of the integration issues being the lack of:
- A shared pursuit of province-wide spatial objectives.
- Integration, coordination and stitching-up of spatial proposals among
- municipalities.
- Engagement with cross-border issues, such as informal settlements located on the boundaries of municipalities.
- The implication of this misalignment is that the opportunities for creating agglomerations and economies of scale within the province are not optimised.

#### **Municipal Spatial Development Framework: Takeaways**

GSD2030 to confirm spatial prioritisation and spatial targeting per municipality as reflected in Municipal SDFs that require provincial responses, notably in order to inform GPG Departments’ medium to longer term infrastructure planning as part of the Infrastructure Delivery Management System (IDMS) related processes, e.g. Human Settlements, Education, Roads and Transport, Social Development, Health, Rural Development and Land Reform, etc.

The respective spatial priorities also to feed into District Development One Plans as well as ultimately Annual Performance Plans once due diligence has been approved by Provincial Treasury for the inclusion of capital projects in Departmental Integrated Project Management Plans (IPMPs) and Estimates of Capital Expenditure (ECE’s).

### **3.5 Summary of key policy objectives**

As part of the analysis of the various policy frameworks, the relevant principles, directives or policy statements set out in each document were extracted and grouped under certain themes, namely:

- Connectivity
- Urban form
- Space Economy
- Human Settlements
- Infrastructure
- Natural Resources
- Joint Planning

An analysis was then done to determine the frequency with which various principles/directives appeared in different policies.

The top ten policy directives that emanate from the policy analysis are:

- Improve rural access and mobility to urban areas and markets through inter alia public transport
- Invest in public transport to improve access to social and economic opportunities

- Promote high density and mixed-use development around priority and public transport nodes and corridors;
- Revitalise township economies through the development of economic hubs and mixed-use development and by strengthening their link to the wider economy;
- Focus on urban renewal, clustering, densification and infill development;
- Improved support for and renewal of secondary cities and smaller towns as focal areas in rural development;
- Integrate housing with public transport systems and economic and social infrastructure;
- Promote use of green energy, buildings and infrastructure;
- Protect high-potential agricultural land by limiting development on agricultural land; and
- Limit develop of human settlements to well-located land only as a matter of optimising access to urban opportunity, efficiency and sustainability.

The section below provides a summary narrative of the main directives from national and provincial policies.

### **Connectivity**

National and provincial plans, policies, strategies and frameworks related to connectivity focus mainly on the following two focus areas: (i) improving accessibility of rural towns, townships and informal settlements to social and economic opportunities in urban areas mainly through the development of public transport networks, and (ii) improving accessibility to the wider national economy through the development of logistics and industrial corridors (e.g. the Durban-Free-State-Gauteng logistics and industrial

corridor and the logistics corridor between Mpumalanga and Gauteng), increasing rail usage and improving and expanding the freight hubs.

### **Urban Form**

The following four key policy statements relate to urban form: (i) directing an equitable, efficient and sustainable urban form by focusing development in strategically targeted nodes and corridors where high density, mixed-use developments are promoted in conjunction with an integrated public transport system, (ii) focusing on urban renewal, clustering, densification and infill development in conjunction with an urban development boundary in order to limit sprawl and create densities that support effective public transport systems, (iii) support and renew secondary cities and smaller towns which will in turn support rural development, and (iv) prevent development in sensitive areas, discourage development in peripheral locations and promote development in central and strategic areas such as the 'Urban Development Zones' and 'Industrial Development Zones' as identified in the Gauteng Environmental Framework, 2021.

### **Space Economy**

With regard to the space economy, the following key focus areas have been identified: (i) develop the comparative and competitive advantages of key localities through the clustering of key economic sector developments in identified development corridors or zones, (ii) revitalising township economies through the development of economic hubs and mixed use development and by strengthening their link to the wider economy, (iii) promote agro-processing, tourism and small enterprise and trade development in order to support rural livelihoods and improve food security, and (iv) prioritise the regeneration of inner cities.

## **Human Settlements**

Development of quality living environments that ensures access to socio-economic urban opportunity in well-located areas which calls for: (i) a variety of affordable housing and tenure opportunities in activity nodes and corridors, (ii) revitalisation and upgrading of townships and informal settlements with a focus on mixed-use economic development, (iii) development of new human settlements and new cities exclusively on well-located land as part of urban consolidation, and (iv) integration of housing with public transport systems and economic and social infrastructure and (vi) due consideration of access to regional and localised bulk infrastructure capacities as a non-negotiable factor in determination of feasibility and prioritisation of proposed housing development or land acquisition.

## **Infrastructure**

With regard to infrastructure the main focus areas of national and provincial legislation are: (i) developing logistics and industrial corridors (e.g. the Durban-Free-State-Gauteng logistics and industrial corridor and the logistics corridor between Mpumalanga and Gauteng), (ii) providing quality basic services in rural areas, (iii) using spatial prioritisation of municipalities to guide public and private infrastructure investment (e.g private developers on greenfield sites to provide infrastructure and social facilities), (iv) promoting infrastructure investment and (v) using smart, resource efficient infrastructure in new developments and maintaining and retrofitting older infrastructure.

## **Natural Resources**

National and provincial plans, strategies and frameworks related to the development and protection of natural resources centre predominantly around the following three focus areas: (i) curbing carbon emissions through the development of a more sustainable electricity supply, more energy efficient industrial, commercial and mining operations and buildings, and expansion of public transport systems to curb individual vehicle usage, (ii) protecting and managing the viable land-based water resources through the implementation of water supply interventions, addressing water leakages by focussing on infrastructure maintenance, diversifying the water supply mix and protecting wetlands and flood-prone areas from development, and (iii) protection and enhancement of conservation areas and agricultural land with a focus on food security by protecting these areas from urban expansion, the development of adaptation strategies for the protection of rural livelihoods, investment in new agricultural technologies and expansion of commercial agriculture. The Gauteng Environmental Management Framework, 2021 includes detailed maps indicating desirable and undesirable uses land uses in Gauteng, which the review of the GSDF will incorporate.

## **Joint Planning**

The notion of joint planning practice has grown substantially beyond being put forward as best practice in various policy prerogatives to specific interventions being included in various sets of regulatory reform linked to strategic planning, resource planning, budgeting and prioritisation as well as practical considerations as part of planning processes in the built environment and related infrastructure planning at regional and localised levels. Some notable implications for joint planning, pertinently linked to spatial prioritisation as per SDFs across various scales and mandates, are now contained in:



- Division of Revenue Act spatially informed grant conditions (Nat, Prov & Municipal)
- Strategic plans/ annual performance plans (Nat&Prov)
- Guidelines for Mid-Term Expenditure Frameworks (Nat&Prov)
- Framework for Infrastructure Delivery and Procurement Management (FIDPM) and related implementation of Infrastructure Delivery Management System (IDMS) and subsequent Integrated Asset Management Plans, Business Cases and Integrated Project Implementation Plans.
- Cities' Infrastructure Delivery and Management System (CIDMS) informed by Capital Expenditure Framework (CEF)

The District Development Model approach is specifically highlighted as the most prominent joint planning related reform that requires a spatialised focus on longer-term planning across the full scope of possible parties and stakeholders that will enhance coordination between the myriad of existing prescribed planning processes.

**Pertinent policy and regulatory reform notes that incremental spatial transformation towards a desired future not only necessitates a concerted effort between the greater collective but also specifically requires joint planning practice to be institutionalised as part of business as usual.**

## 4 THE FUTURE WE WANT

### 4.1 Indlulamithi Scenarios – towards the desired future for Gauteng

By 2030 the world as we know it will have changed which requires is all to consider and respond to pertinent ways in which the future may differ from what we know as the current reality which include

- **Increasing levels of income and wealth inequality**, both between nations and within countries, including all the BRICS countries.
- **Contributing** to inequality is the decline of wages as a proportion of national income and less generous

The Indlulamithi SA Scenarios 2030 are the product of discussions between various members of society about the need for a deeper understanding of the country's trajectory, its unique challenges and opportunities. These discussions were informed by an understanding that:

- **Rising consumer debt levels – and the possibility of severe economic 'shocks'** such as another global stock market crash – might undercut the projections for steady global economic growth in the medium term.
- **Geo-political shifts to a more multipolar world** as China's economy – and military prowess – continues to grow. China will surpass the USA as the world's biggest economy in late 2020s.
- **Demographic growth – and stability of democracies – across the African continent** but particularly in South Africa's neighbouring countries, will impact on South Africa for many years to come.

- In most countries **outside Africa, population growth is falling** and in many OECD countries overall population sizes are falling too. By 2030, the rate of the world's population growth is expected to decelerate, when the global population is about 8.6 billion (up from 7,53 billion in 2019).
- **Migration, urbanisation and cross-country disparities in income and demographics are likely to substantially increase** the pressure for migration between African countries, and between African countries and the rest of the world.
- Environmental changes, including increasingly severe shifts in global climate patterns, long-term temperature increases, and environmental degradation means that **Africa's urban development is likely to confront unprecedented biophysical risks including food security.**
- The shift away from fossil fuels and the 'carbon economy' and growing pressure for all countries to conform to lower carbon emissions standards.
- **The Fourth Industrial Revolution** is already well developed and characterised by a range of new technologies that are fusing the physical, digital and biological worlds, impacting on economies and industries, and even challenging ideas about what it means to be human.
- **It has to be considered how will we navigate the various opportunities that a digital, online world offers** considering that Africa averages only 30% total online connectivity (although more than 80% of Africa's population had cell phone access in 2018).
- **How might this change the way we form and maintain relationships, connect with others** – and find meaning in our lives assuming greater and cheaper access to online technology.

The Indlulamithi South Africa Scenarios 2030 were launched in June 2018 as a multi-stakeholder, research-driven initiative to provide tools – in the form of scenarios – to focus leaders from different sectors and people from all walks of life on a key question: What would a socially cohesive South Africa look like, and can we achieve it by 2030?

The scenarios are intended to support social compacts across all levels and sectors of society. Three Scenarios express the ways in which South Africa might develop:

#### **Nayi le Walk: A Nation in Step with Itself**

In a precise sequence of steps, Nayi le Walk choreographs a vision of South Africa where growing social cohesion, economic expansion and a renewed sense of constitutionalism get South Africa going.

The three Indlulamithi Scenarios were launched in 2018, each accompanying a different vision of how South Africa's future will unfold:

#### **iSbhujwa: An Enclave Bourgeois Nation**

Epitomising a loose limbed, jumpy nation with a frenetic edge, iSbhujwa is a South Africa torn by deepening social divides, daily protests and cynical self-interest.

#### **Gwara Gwara: A Floundering False Dawn**

In a nation torn between immobility and restless energy, Gwara Gwara embodies a demoralised land of disorder and decay. South Africa's future will play out in global and continental contexts which will shape and colour, constrain or expand our local choices. The Indlulamithi Scenarios highlight some

GGT2030 also duly considered the respective scenarios in order to shape the future we want along the trajectory of Naye le Walk which requires a value-led focus on the future we want.

## 4.2 The spatial development vision (Naye le walk) (spatial transformation)

In contrast to the current fragmented, inefficient and unjust scenarios above, which cater primarily for the few, the Naye le Walk vision for Gauteng of 2030 calls upon all to purposefully travel towards realising a Gauteng where social cohesion is embedded, and economic gains are shared. Growing Gauteng Together 2030 envisions that bold steps in spatial transformation will realise:

- An integrated, connected space that provides in the needs of those either born or drawn to it. Economic growth can no longer be limited to a few core areas, but spread far more widely in and around nodes and multi-modal activity corridors.
- Established nodes and corridors provide safe, high intensity and density, mixed land-use settlements where walking, cycling and relaxing in public space is possible for young and old.
- A range of public transport modes not only assists in ensuring affordable province-wide interconnectedness and access to the full spectrum of economic, cultural and educational opportunities that the province offers, but also in placing the province on a far more sustainable growth trajectory.
- Differences in income are far less severe, and those who earn the lowest incomes are still capable of living a life of dignity and have access to the benefits of living in the economic heartland of the country.

- Smart city solutions and a more compact urban form not only enables the provision of household services at a lower cost, but also reduces maintenance and upgrading costs, enables the protection and use of the unbuilt areas for agriculture, agro-processing, relaxation and tourism, and has seen the province become a far less wasteful, energy-efficient and polluting urban conurbation.

## 4.3 POLICY DRIVEN SPATIAL DEVELOPMENT PRINCIPLES

In order to realise the spatial development vision as derived from overarching policy perspectives, all spatial development in the province must adhere to, enhance and/or pursue the following six spatial development principles: (i) Liveability, (ii) Concentration, (iii) Connectivity, (iv) Conservation, (v) Diversity, and (vi) Viability. Each of these principles is discussed briefly below.

### 4.3.1 Liveability

Spatial development must:

- Lead to the creation of settlements in which people live their lives in a way that is worthy of 'being human' in the fullest sense of the phrase, and enables contentment, personal growth and healthy social interaction;
- Include those spatial, social and environmental characteristics and qualities that contribute to people's sense of personal and collective wellbeing and to their sense of satisfaction in being the residents of that particular settlement;

- Ensure that integration between human settlement planning, economic opportunity and public transport is the key driving factor for spatial transformation; and
- Allow all people to easily access and enjoy public spaces for a range of educational, cultural and entertainment purposes and without fear.

### 4.3.2 Concentration

Spatial development must:

- Focus on the creation of agglomeration economies and clustering;
- Allow the concentration and equitable distribution of (i) opportunities in key nodes and along key 'connectors' and (ii) of public investment in and around these nodes or connectors;
- Focus on (i) the integration between land use and public transport around nodes and along connectors according to the nature of these two structural elements and (ii) broadening the economic base in the concentration areas through infrastructure investment, land release and skills development;
- Optimise the utilisation of existing infrastructure and social amenities, particularly in areas where spare capacity exists;
- Increase access of greater numbers of people to greater number of opportunities in areas of concentration through increased densities; and
- Ensure that densification take place according to the nature and scale of the node or corridor and in relation to the location of these places in the broader urban environment.

### 4.3.3 Connectivity

Spatial development must:

- Ensure connectivity between nodes and connectivity from surrounding areas, for example lower density neighbourhoods, major industrial zones, or the rural hinterland, to areas of concentration, which implies a hierarchy of movement routes;
- Include investment in public transport along the key connectors to link various nodes;
- Incorporate connectivity to and through a green open system throughout the built environment;
- Address the spatial marginalisation of townships and the overwhelming tendency to locate the majority of government-funded housing projects on the periphery through spatial integration and development of housing on well-located land parcels;
- Not lead to further spatial fragmentation; and
- Recognise secondary towns as part of the overall settlement and economic network of the province, with functional linkages between the urban conurbation and the hinterland.

### 4.3.4 Conservation

Spatial development must:

- Allow for the maintenance of healthy natural environments, ecosystems and biophysical processes which support life and which must be allowed to continue without significant change;
- Ensure that stresses that affect environmental integrity are avoided, or at the very least limited and mitigated;

- Focus on maximising the use of scarce natural resources through recycling, the transformation of existing consumption patterns, the use of zero-emission transportation systems and the reduction of waste;
  - Create a functional and aesthetically pleasing integrated open space system across the province that will not only add essential cultural services, but also contribute to the enhancement of the other types of ecosystems; and
  - Protect high-potential agricultural land on the periphery of the urban environment to ensure future food security.
- Facilitate and support sustainable, inclusive and equitable economic growth.

#### **4.3.5 Diversity**

Spatial development must:

- Make provision for and allow the development of various types of urban spaces and places with unique qualities and attractions to provide for the full spectrum of those living, working, studying, doing business and relaxing in the province; and
- Ensure equality in access to opportunities by attending to land affordability and availability, as well as public transportation options and costs.

#### **4.3.6 Viability**

Spatial development must:

- Maximise access of all to goods, services and opportunities in the province, and ensure the optimal use of available land, services and facilities in such a manner that it can be sustained over time;
- Make it possible to put in place and operate a viable and efficient public transport system and cost-effective infrastructure investment model; and



## 5 SITUATIONAL ANALYSIS

### 5.1 INTRODUCTION TO GAUTENG PROVINCE

#### 5.1.1 Gauteng National Connections

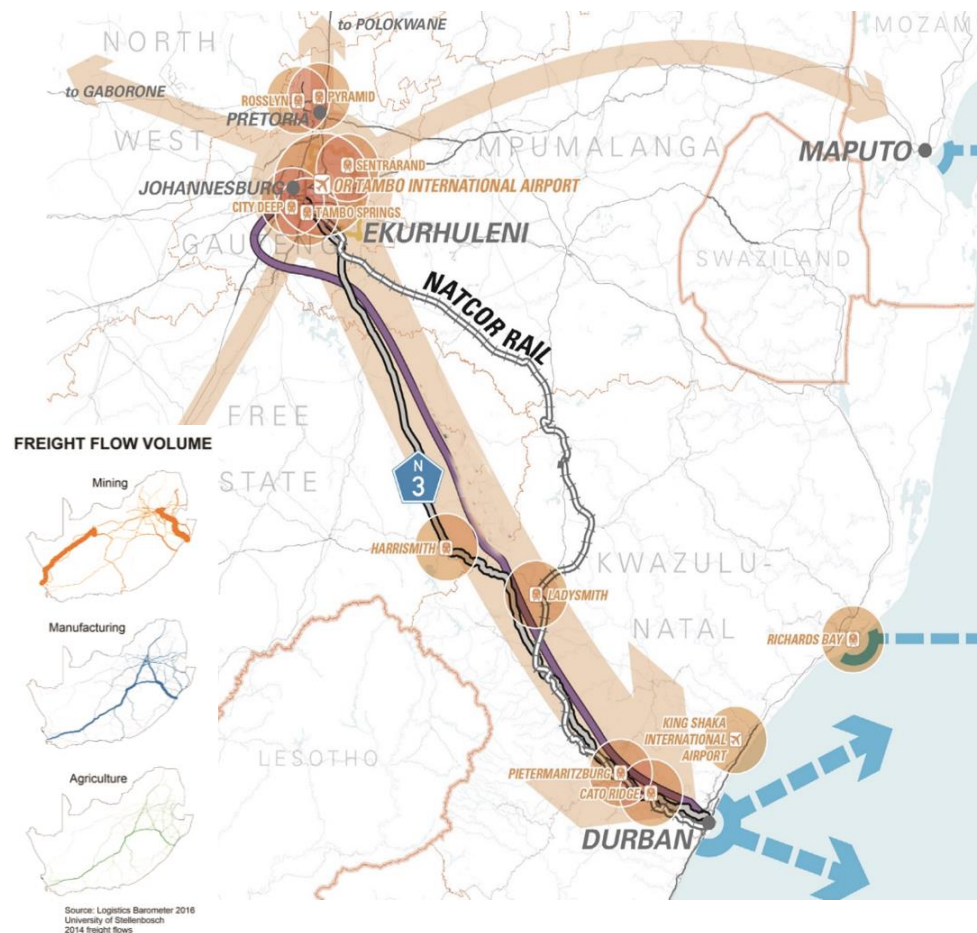
Gauteng is nationally connected by a road and rail network intended to be bolstered, with rail as the backbone<sup>83</sup> (refer to Figure 3) This network is underpinned by:

- the N1 corridor: Cape Town to Johannesburg, Polokwane and Zimbabwe
- the N3 corridor: Durban to Johannesburg (busiest route to Gauteng)
- the N12 to Maputo
- the N4 connecting Gauteng to Namibia, Botswana and Maputo

*'Urban regions act as international gateways for trade with the SADC region and world, comprising 86.5% of South Africa's total national formal economy in 2016' (source NSDF, 2021, pg. 70)*

Figure 3: Freight routes linking to Gauteng

Source: Ekurhuleni Aerotropolis 25 Year Master Plan Land use report, 2015 and NSDF Inter-regional connectivity



<sup>83</sup> NSDF, 2021

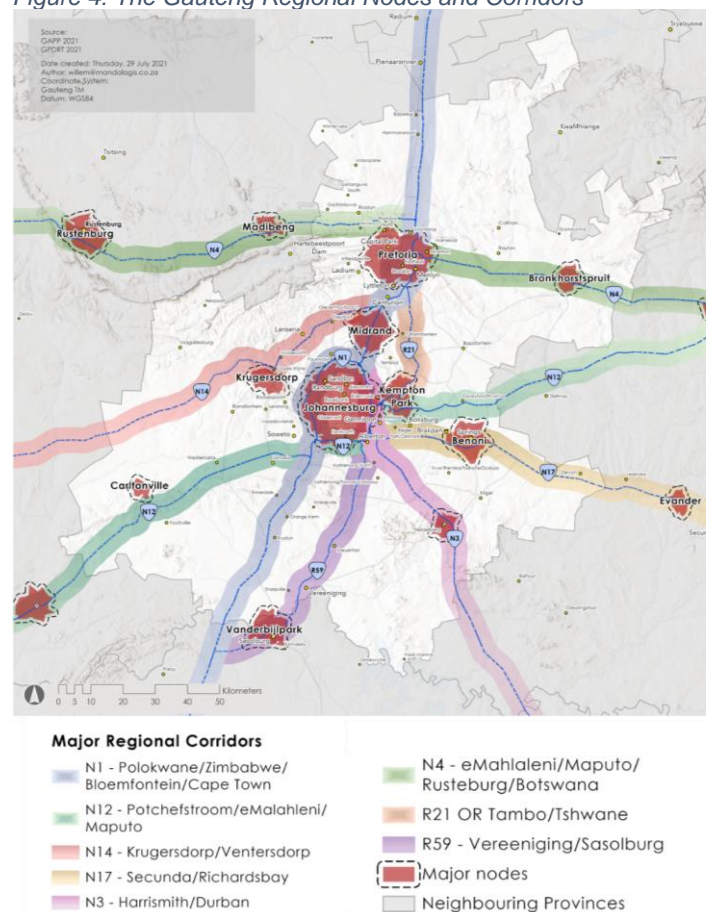
## 5.1.2 Gauteng regional connections

One of the key structuring elements of the GCR is the convergence of main corridors linking to major economic centres nationally and internationally (refer to Figure 4).

- The **Johannesburg to Durban**, N3 Corridor / Natcor Corridor, via Heidelberg and Harrismith is the strongest corridor owing to freight links. Given the strength of this corridor, more performance in the Gauteng urban system would be expected. The N3 corridor also links the central eastern parts of the GCR, connecting to the eastern corridors through to Maputo and north through to Tshwane, Polokwane, and Musina, Zimbabwe.
- The **Zimbabwe – Cape Town Corridor**, N1 Corridor serves as an axis between Tshwane, Johannesburg, and Vanderbijlpark. The southern portion of this axis through southern Gauteng is weak and would benefit from policy support to maximise on its infrastructure investment.
- The **Cape Town via Kimberley**, N12 Corridor **south-westwards axis** is less pronounced and manifests in a less mature urban consolidation in the axis via Randfontein / Carletonville / Potchefstroom and a mining industry in decline.
- The **east-west regional development**, N4 Corridor, axis from Angola, Botswana and Maputo is relatively robust, although integration to the east is stronger than integration with the North West Province, which has higher population dependencies.
- Noting how the regional development axes provide the basis for the morphological structure of the Gauteng urban system, the inadequacies in the system appear to be most notably in the south, south-western and south-eastern sectors of the system.

- To a lesser extent, the northern and north-western sectors of Tshwane also show inadequacies (those in areas where significant marginalised communities exist: Ga-Rankuwa/Soshanguve/ Mabopane/ Winterveld).

Figure 4: The Gauteng Regional Nodes and Corridors

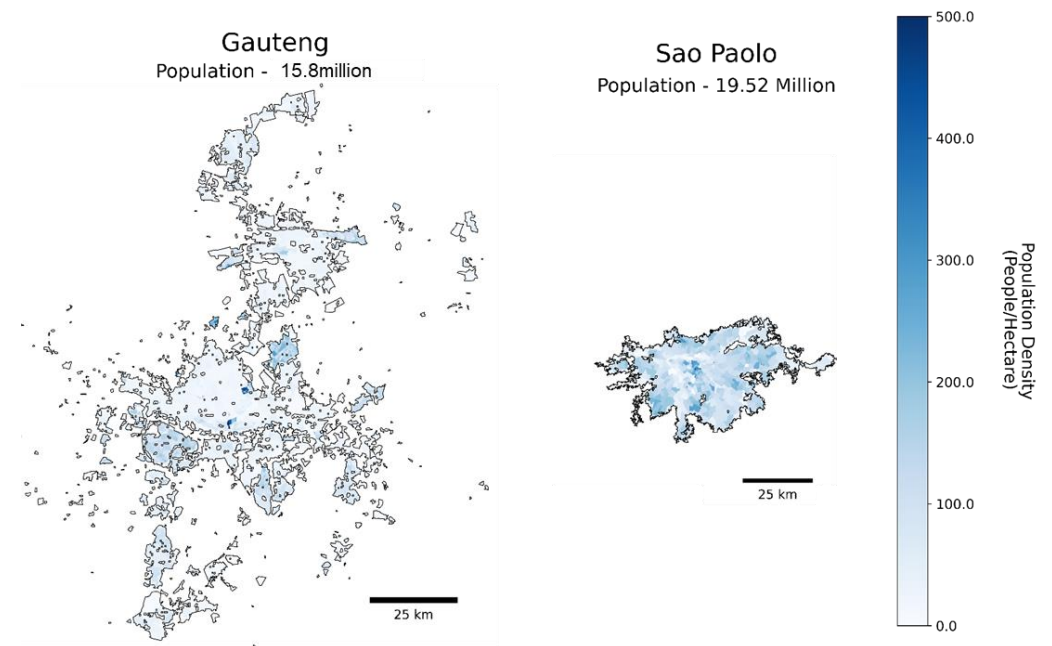


### 5.1.3 The footprint of Gauteng

The Gauteng Province (refer to the adjacent figure) has the smallest land area in South Africa and 26% of the total South African population. The population size is 15,8 million (2021) with a 2,5% annual population growth rate (source StatsSA, Mid-year population estimates, 2019). **Gauteng has a low population density** (734 people/km<sup>2</sup>) compared to international best practice, with UN Habitat<sup>84</sup> recommending at **least 15 000 people/km<sup>2</sup>** to prevent urban sprawl and achieve sustainable urban extension. The population density is only one-tenth that of Sao Paulo (7216 people/km<sup>2</sup>), a city with similar socio-economic conditions.

Gauteng, like other urban regions, eThekweni and Cape Town, is socially vulnerable due to the high population, unmanaged densities and sprawl. Furthermore, it relies on water transfers from neighbouring municipalities, highlighting the need for improved water security and management.

Figure 5: Comparison between Population Density in Gauteng City Region and Greater Sao Paulo



<sup>84</sup> Unhabitat 'A new strategy of sustainable neighbourhood planning'

## 5.2 THE PEOPLE WE PLAN FOR (SETTLEMENTS AND HOUSING)

### 5.2.1 Current Population Size

Of Gauteng’s 15,8 million people<sup>3</sup>, the provinces three metros account for 87% of the population. The City of Johannesburg has the largest population at just over 6 million people, followed by Ekurhuleni (3,8 million) and the City of Tshwane (3,8 million). The Sedibeng and West Rand District Municipalities have the smallest populations at just under 1 million each (refer to Figure 5).

### 5.2.2 Population Growth

In 2021, the population growth rate in Gauteng is estimated to be 2,5% per annum, the highest of any province in the Country. This equates to a population increase of just over 300,000 people per year. The population increased by 2.6 million<sup>85</sup> over the last five years, placing greater emphasis on the importance of infrastructure investment, service delivery and job creation. The most recent forecasts<sup>86</sup> project that Gauteng’s population will continue to grow over the coming decades, but at a slower rate (Figure 32). It is expected that growth will decline to an average of 2,15% per annum from 2021 to 2030, thereafter falling to 1,89% per annum from 2031 to 2040, and 1,48% from 2031 to 2050. Despite this decline, the Gauteng population will continue to grow faster than any other province in the country.

The provincial population is expected to increase to 18 million by 2030 and **22 to 25 million** by 2050<sup>87</sup>.

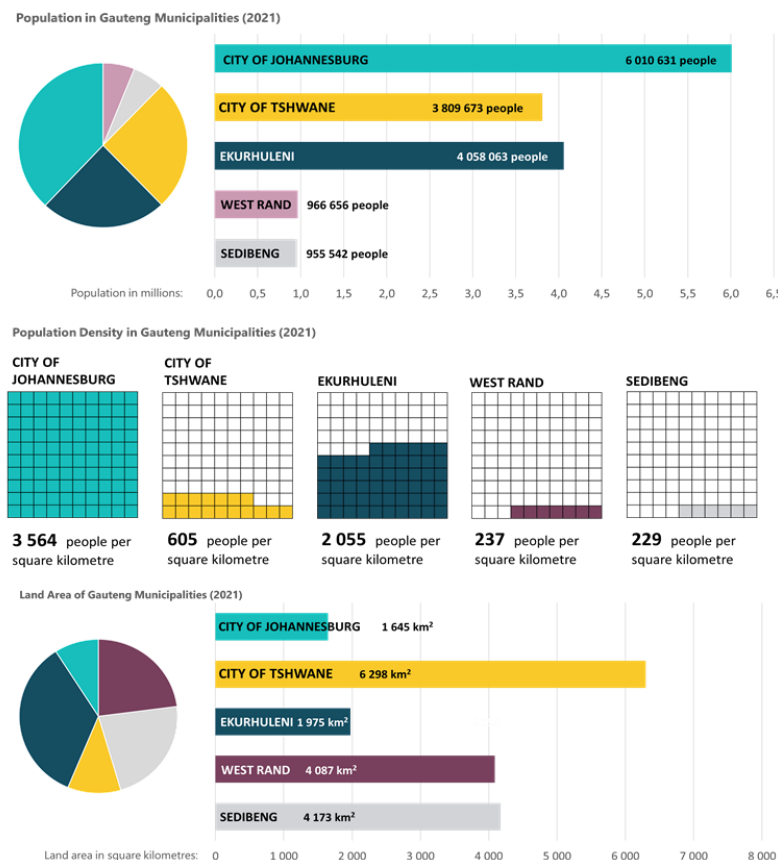


Figure 6: Gauteng Population by Municipality

<sup>85</sup> ibid  
<sup>86</sup> StatsSA, 2021

<sup>87</sup> StatsSA, Community Survey 2016 and Census 2021



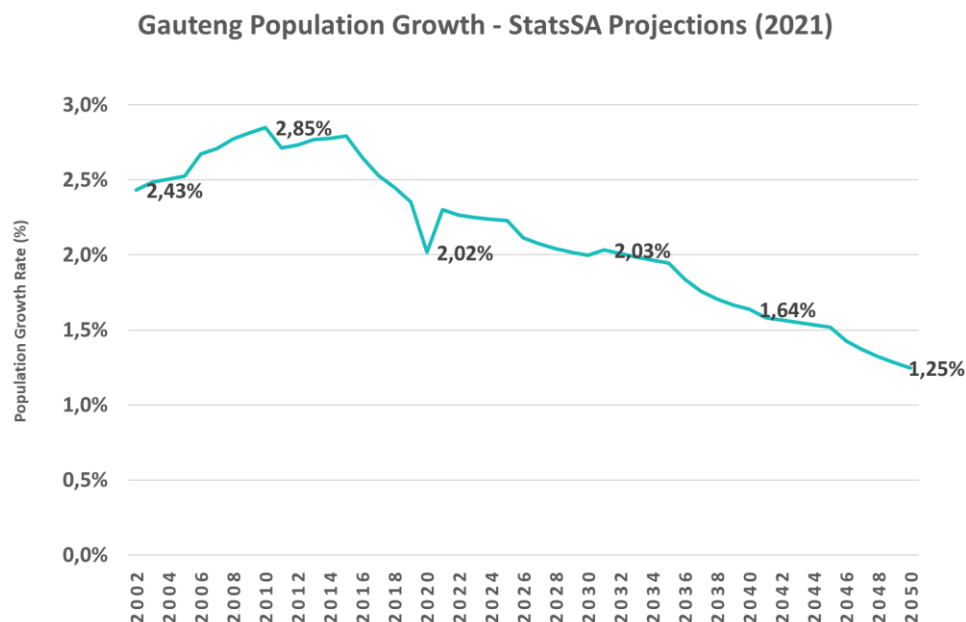


Figure 7: Gauteng Population Growth (2002 to 2050)  
Source: StatSA 2018

### 5.2.3 Migration

Gauteng receives more international and inter-provincial migrants than any other province, with 485 000 people moving to the province between 2016 and 2021 (see Figure 31). As the economic epicentre of South Africa, Gauteng attracts a large number of job seekers from KwaZulu-Natal, Limpopo and the Cape Town area. It also serves as the main hub for migrants from southern Africa and elsewhere, seeking economic opportunity and improved quality of life.

Figure 8: Gauteng has the highest rate of in-migration 2016-2021  
Source: StatsSA 2018

### 5.2.4 Housing circumstances and housing need

The Household Survey (StatsSA, 2016) indicates that most households in Gauteng (79%) live in formal accommodation (owned or rented) (see table below). Of all households, 20% (878,246) live in informal conditions, of which 11% (480,552) are in informal settlements and 9% (397,694) in informal backyard dwellings.

The City of Johannesburg (CoJ) has the highest number of households in the province (1,7 million) and City of Ekurhuleni (CoE) the second highest number of households (1,2 million). In both Metros, 79% of households are in formal accommodation and 20% are in informal accommodation.

The City of Tshwane (CoT) has the third highest number of households (1,1 million), of which 81% are in formal accommodation and 18% in informal accommodation.

The current housing need in the Gauteng Province is estimated to be **878,246** homes, comprising those households which are living in informal conditions (informal settlements and informal backyard rentals). Of these the majority are located in the three Metros:

- In respect of informal settlements, 33% are in Johannesburg and 24% are in Ekurhuleni and Tshwane respectively;
- In respect of informal backyard rentals, 43% are in Johannesburg, 24% are in Ekurhuleni and 18% are in Tshwane.

The three Metro's are experiencing high levels of growth, ranging from 3,2% in Johannesburg and Tshwane to 3,6% in Ekurhuleni. This is significantly higher than growth rates in the District Municipalities (1% for Sedibeng and 1,5% for the West Rand). On the basis of these estimated growth rates



overall there will be an additional 2,4 million households requiring housing between 2016 and 2030. Of these, 39% (922,732 households) will be in Johannesburg, 32% (769,348) will be in Ekurhuleni and 25% (586,971) will be in Tshwane.

Growth rates within the Metro and District Municipalities were used to project housing demand. From 2016 and 2030 the housing need is estimated to be 3,3 million households, of which 35% (1,3 million) will be located in Johannesburg, 31% (1 million) will be in Ekurhuleni, 24% (0,8 million) will be in Tshwane, and 7% will be in the District Municipalities.

Should the land required to meet current need and projected housing growth be delivered through new greenfield development only (mega projects and site and service - Rapid Land Release), and applying a typical subsidy housing mixed income development at a gross density of 30 units per hectare, some 100,915 hectares of additional land will be required. The vast majority of land required will be in the metros, particularly Johannesburg and Ekurhuleni. This equates to 1,009 km<sup>2</sup>, almost half the size of Johannesburg’s current total jurisdictional area.

Should the emerging phenomenon of private sector affordable rental be applied as a seriously pursued and supported delivery option, the amount of greenfield land required would be significantly reduced. While it is conceivable that there could be densification in all areas of the city, for quantification purposes the following conservative assumptions have been adopted:

- Only low-density residential areas have been targeted (formal owned);
- Only 50% of these homeowners would over time pursue the densification of their properties; and

- Of these, 30% would sub-divide their properties and sell or rent out one unit, and a further 30% would develop on average four flatlets or rooms for rental purposes.

*This would yield some 1,7 million additional units within the province without any requirements for additional greenfield development or government subsidy funding. Therefore, such densification would substantially reduce the land required for new greenfield developments from 100,915 hectares to 44,295 hectares. This is a 56% reduction in the amount of greenfield land required.*

Figure 9: Distribution of households living in informal circumstances

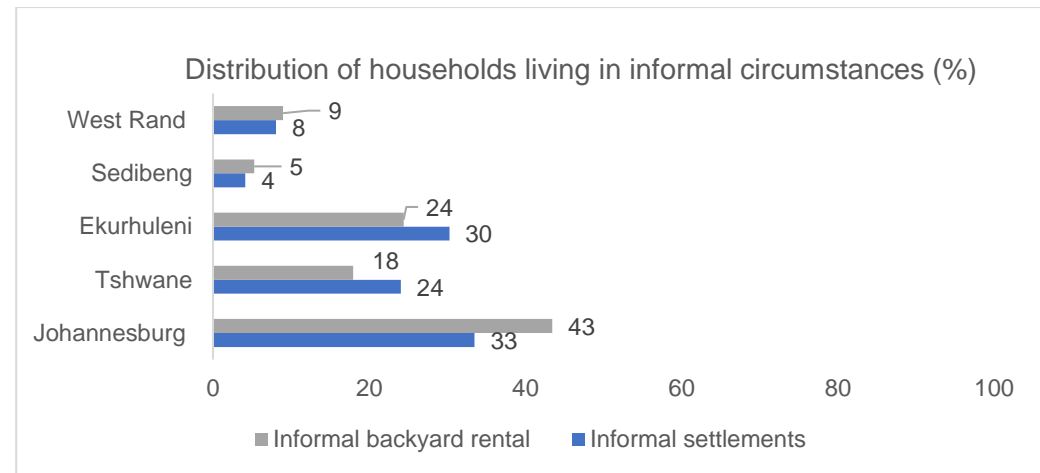


Table 1: Gauteng Province: Housing circumstances

DDM District	Joburg		Tshwane		Ekurhuleni		Sedibeng		West Rand		Total	
Indicator	No	%	No	%	No	%	No	%	No	%	No	%
<b>Formal - owned</b>	782 496	47%	582 489	55%	588 363	49%	188 056	64%	123 387	43%	2 264 791	50%
<b>Formal - rented</b>	295 265	18%	197 735	19%	234 621	20%	36 122	12%	62 661	22%	826 404	18%
<b>Informal settlement</b>	160 889	10%	115 537	11%	145 426	12%	19 866	7%	38 834	13%	480 552	11%
<b>Backyard dwelling (formal)</b>	237 865	14%	78 980	7%	123 312	10%	25 506	9%	24 810	9%	490 473	11%
<b>Backyard dwelling (informal)</b>	172 682	10%	71 325	7%	97 072	8%	20 916	7%	35 699	12%	397 694	9%
<b>Traditional dwelling</b>	2 628	0%	3 580	0%	2 248	0%	1 103	0%	1 205	0%	10 764	0
<b>Other</b>	13 060	1%	9 425	1%	9 699	1%	2 269	1%	351	1%	34 803	1%
<b>Total</b>	<b>1 664 885</b>	<b>100%</b>	<b>1 059 071</b>	<b>100%</b>	<b>1 200 741</b>	<b>100%</b>	<b>293 838</b>	<b>100%</b>	<b>286 947</b>	<b>100%</b>	<b>4 505 481</b>	<b>100</b>
<b>Assumed growth rate pa</b>	3.2%		3.2%		3.6%		1%		1.5%		3%	
<b>Project hh growth rate to 2030</b>	922 732		586 971		769 348		43 921		66 502		2 389 475	
<b>Total estimated households in 2030</b>	2 587 732		1 646 042		1 970 089		337 759		353 449		6 894 956	
<b>Total estimated housing need to 2030**</b>	<b>1 256 303 (38%)</b>		<b>773 833 (24%)</b>		<b>1 011 846 (31%)</b>		<b>84 703 (3%)</b>		<b>141 035 (4%)</b>		<b>3 267 721 (100%)</b>	

Source: Community Survey 2016

\*The growth rate has been assumed by determining growth between 2011 and 2016 using the StatsSA 2011 Census and 2016 Community Survey

\*\* This comprises households currently living in informal conditions (informal settlements and informal backyard rentals) and projected household growth to 2030

## 5.2.5 Urban classification

The urban classification of Gauteng (refer to Figure 11), comprises:

- A series of economic centres, industrial areas, and historic towns, offering economic opportunities, with more peripheral town centres mainly in decline;
- Suburban areas, (shown in the darker grey), being the most advantaged areas of the urban system as they closely relate to the economic cores of the overall conurbation, exacerbating urban sprawl and a reliance on private mobility;
- Historical Townships<sup>88</sup> (in orange), persist in peripheral areas, with an increasing amount of informal settlements and backyarding (refer to Figure 10), without the benefit of being actively 'stitched-into' the areas of urban prospect, with some very well-located township areas such as Jabulani and Alexandra;
- Informal settlements, often peripheral to the urban conurbation<sup>89</sup>;
- Gated communities, which continue to put strain on municipalities to provide services;
- Smallholdings on the periphery of urban areas, which if growth is not managed will become further suburban areas/gated communities, causing further sprawl.

The GCR's urban system remains sprawled and displays a lack of socio-economic performance, despite the commitment to spatial transformation identified in previous GSDF iterations.

Of continued concern is further peripheral growth (orange and ox-blood colour), notably to the north-west of Tshwane and into the corridor south from Soweto to Emfuleni: much of this further growth comprises formal housing initiatives (gated communities and human settlements projects) as well as informal land settlement and, very particularly, backyard dwellings, as this exacerbates the sprawled<sup>90</sup> region and puts strain on municipalities<sup>91</sup>, households, and the environment<sup>92</sup>.

<sup>88</sup> Characterised by lacking economic access, spatial isolation, poverty, limited access to services and facilities, the lack of a secondary housing or property market, the limited local economy and poor environmental quality

<sup>89</sup> Gauteng Provincial Province Informal settlement upgrading strategy & management plan, it found that 43% of informal settlements are poorly located, and a vast majority of these are located in the historical townships

<sup>90</sup> Brendon van Niekerk (2018) Housing as urbanism: A policy to discourage urban sprawl and provide well-located and affordable housing in South Africa. States 'America has concluded that urban sprawl costs approximately USD 400 billion in external costs, and USD 625 billion in internal costs annually.'

<sup>91</sup> Brendon van Niekerk (2018) Housing as urbanism: A policy to discourage urban sprawl and provide well-located and affordable housing in South Africa. States 'America has concluded that urban sprawl costs approximately USD 400 billion in external costs, and USD 625 billion in internal costs annually.'

<sup>92</sup> Divercity and GBCSA: how to build a city for people and planet - GreenEconomy.Media and Does Location Matter, 2021 undertook a study to compare the carbon emissions on those living on the urban periphery and those located in well-located urban cores within Johannesburg, and it was found that there is a vast difference where housing located on the urban periphery is as much as 10 times more than within urban cores.

Figure 10: Informal circumstances assessed in terms of public transport and economic access

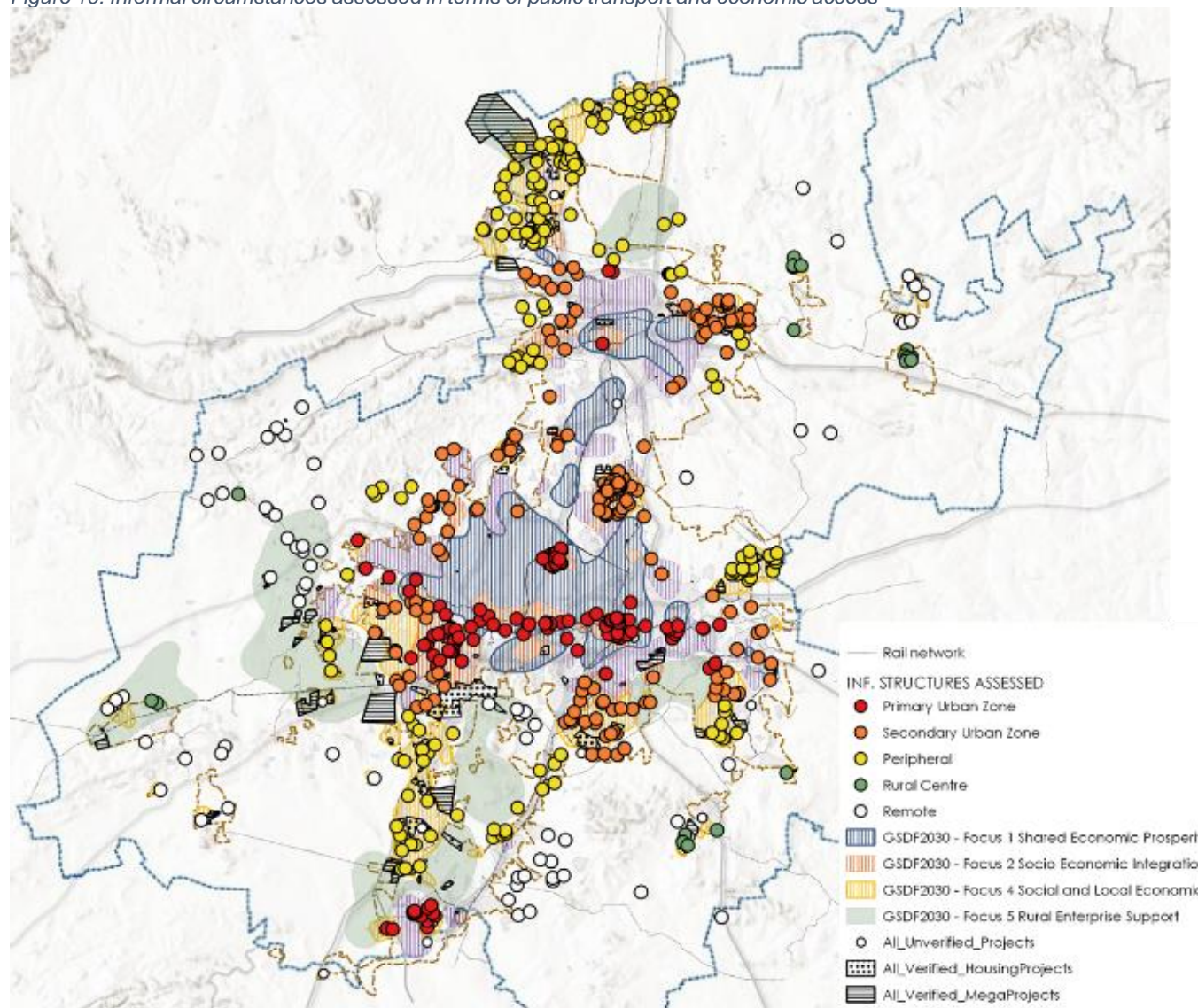
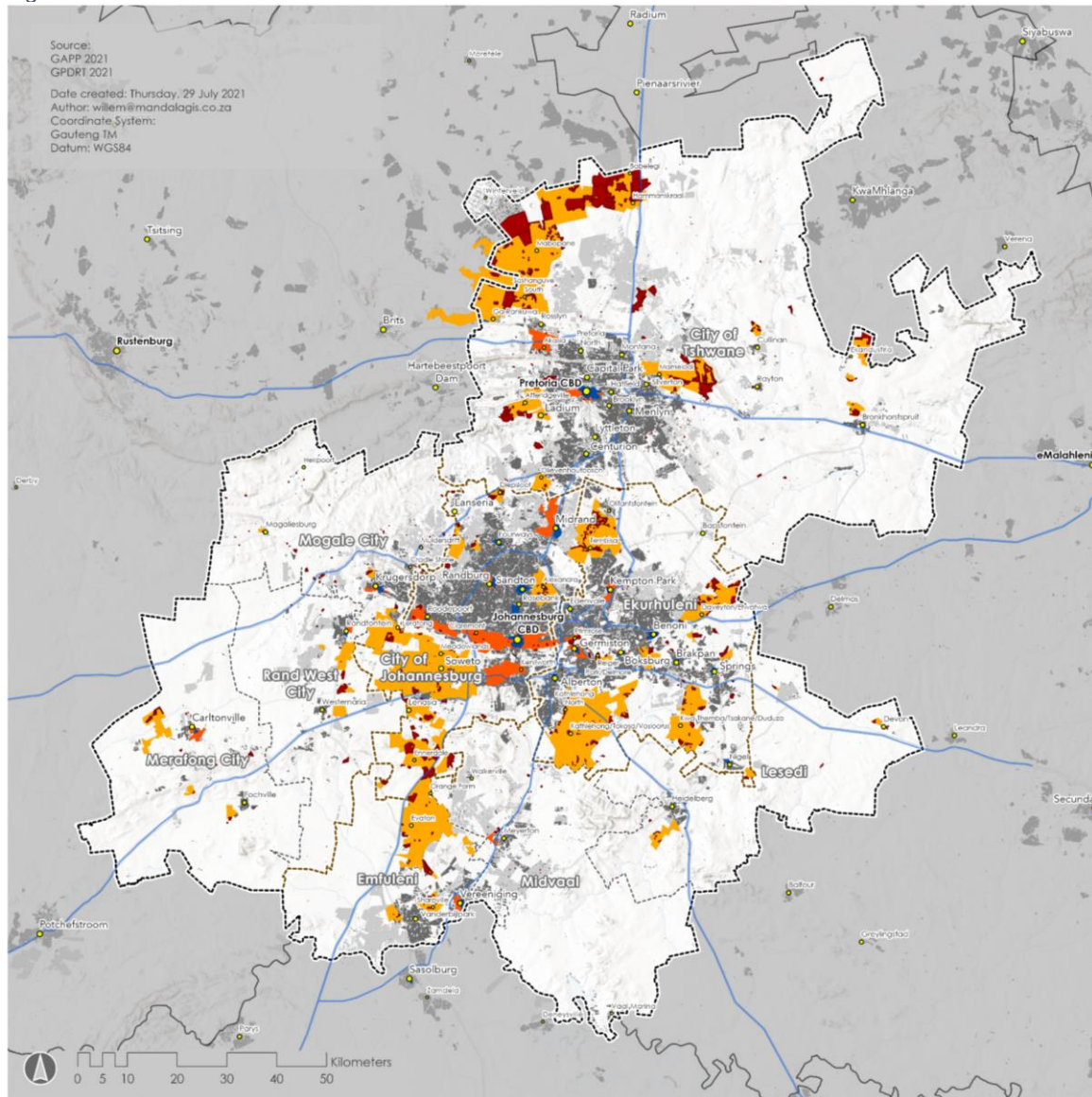




Figure 11: Urban Classification



## Urban Classification

- Gauteng Province
  - District Municipalities
  - Local Municipalities
  - National Routes
- Urban Classification**
- Suburban
  - Smallholdings
  - Majority Non-white Suburban
  - Old Townships
  - Informal Settlements
  - Historic CBDs



## 5.2.6 Summary

The summary of findings includes:

- Urban growth remains high, is accelerated by the rate of in-migration and may continue to create economic strain as people migrate to cities;
- The GCR's urban system remains sprawled and displays a lack of socio-economic performance, despite commitment to spatial transformation identified in previous GSDF iterations;
- Most households in Gauteng (79%) live in formal accommodation (2016), while 20% live in informal sub-optimal conditions of which 11% are in informal settlements and 9% in informal backyard dwellings;
- Current housing need comprises the 20% of households living in informal conditions. This comprises 878,246 households of which the majority are located in the three Metros;
- Of continued concern is gated communities, peripheral residential development, the rapid growth rate of informal settlements on the periphery as this exacerbates the sprawled city region; and
- Increases in informal settlement are marked together with land invasion and the heightening of issues around land availability, land restitution and the contestation of space.

## 5.3 DRIVERS OF SPATIAL FORM

### 5.3.1 Apartheid geography

Apartheid planning is still prevalent in the GCR, as indicated in Figure 12, recent mapping<sup>93</sup> shows the concept of alignment or otherwise of a NTC (the Night Time City reflecting where people domicile) and the DTC (the Day Time City reflecting where people want to be by day in terms of access to economic activity). In a well-balanced, integrated urban model, congruence would exist between the DTC and the NTC.

This is not the case for the GCR, as it can be seen that there is a distorted mis-alignment between the two: the NTC depicts, the dormitory town planning paradigm that prevailed during apartheid (the spread of wealth to dormitory suburbs and towns remote from the major economic centres on one hand and the conscious separation of 'non-whites' into dormitory townships beyond the naturally-occurring economic profile of the urban system on the other). The DTC depicts the areas in and around the polycentric patterning of nodes, the N1 corridor between Johannesburg and Tshwane, and east towards Benoni (what the GSDF 2030 regards as 'areas of economic proximity').

<sup>93</sup> This mapping was not available in 2016 at the time of compiling the GSDF 2030 now available in the review of the GSDF 2021/22

### 5.3.2 Post-apartheid development urban growth and density patterns

With reference to Figure 13, it would be expected that after democracy, as the spatial pattern ‘normalised’, people would move towards better located areas in proximity to socio-economic opportunity, i.e., the urban system (near the DTC). It would have been anticipated that the DTC areas would have intensified over time. This has not been the case, as well-located areas remain very low density in form and character, with only certain inner-city areas showing notable increases in density. The anomaly of high-density peripheral dormitory townships remains and has only expanded (see Figure 13 and Figure 13 *Figure 15*), which is the greater population with the least economic access and needing to overcome vast distances to access economic opportunities.

Certain inner-city areas have, over the years, emerged as what might be termed naturally occurring **zones of urban accretion**: (notably Braamfontein, Hillbrow, Berea, Yeoville and Killarney in Johannesburg and Sunnyside in Tshwane); and somewhat denser areas such as Doornfontein, Troyeville, Rosettenville and Turffontein; and more recent examples of mixed-use nodes like Menlyn, Sandton, Rosebank, Melrose Arch and Waterfall.

New households (public sector-led) and development have mainly been occurring on the urban periphery (refer to Figure 14), with densification of certain nodes and corridors. Rapid increase in households has occurred in

the Centurion, Soshanguve, Midrand, Krugersdorp, Kempton Park and Vereeniging areas<sup>94</sup>.

### 5.3.3 Development Footprint

As seen in Figure 11, Figure 12 and Figure 13, the GCR can be seen as a disconnected, loosely-assembled array of cities, towns, dormitory townships, semi- and informal settlements. These disparate spatial entities are very often characterised by low-intensity sprawl, with varying levels of connectivity between them, and in cases certain areas are very poorly connected (i.e., the townships, newer developments on the urban periphery in the form of gated communities and human settlements projects). The areas that may be understood as being ‘conurbations’ are mostly confined to:

- What may be termed the Central Witwatersrand (straddling the broadly defined historic east-west urban corridor from roughly Roodepoort on the West Rand through Johannesburg CBD to Boksburg in Ekurhuleni and stretching from Midrand in the north roughly down to the southern suburbs of Johannesburg)<sup>95</sup>;
- The historic Central Tshwane area (the city centre, its inner suburbs, its expanded activity system south of the Magaliesberg range, its south-western and south-eastern suburbs and as far south, more recently, to include Centurion);

<sup>94</sup> Demacon, 2020, Gauteng Human Settlements Masterplan, 2020

<sup>95</sup> This is what, in the 1970s and pre-decentralisation from the Johannesburg urban core at scale, according to the Wits University Urban & Regional Research Unit, was termed the Central Witwatersrand

Metropolitan Area, being defined as the extent within which 80% or more of residents were dependent on the core city for economic opportunity and commuting to this core daily.

- The more recently consolidating broadly defined north-south corridor aligned from the Johannesburg city centre to the Tshwane city centre via Sandton, Waterfall, Midrand, Samrand and Centurion.

This is, in essence, what might now be considered as the core Gauteng City Region – a cohesive conurbation with myriad connectivity, increasingly limited breaks in urban continuity, regularly spaced urban centres of varying size and intensity, clearly defined spines of mass movement, including rail and highways, and a highly defined GVA.

Figure 12: Accessibility to day- and night-time city within 5, 10, 15, 20-minute drive

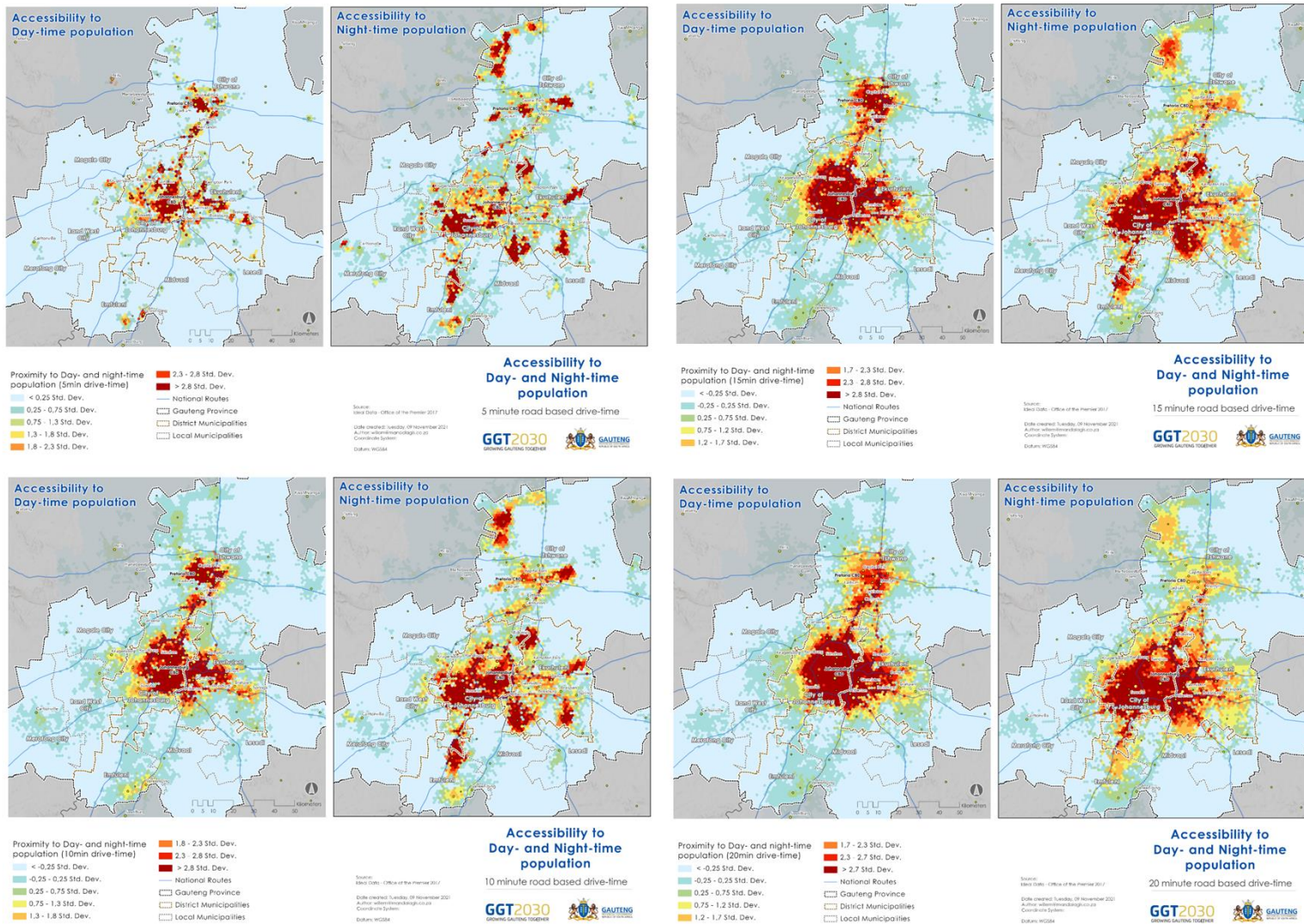
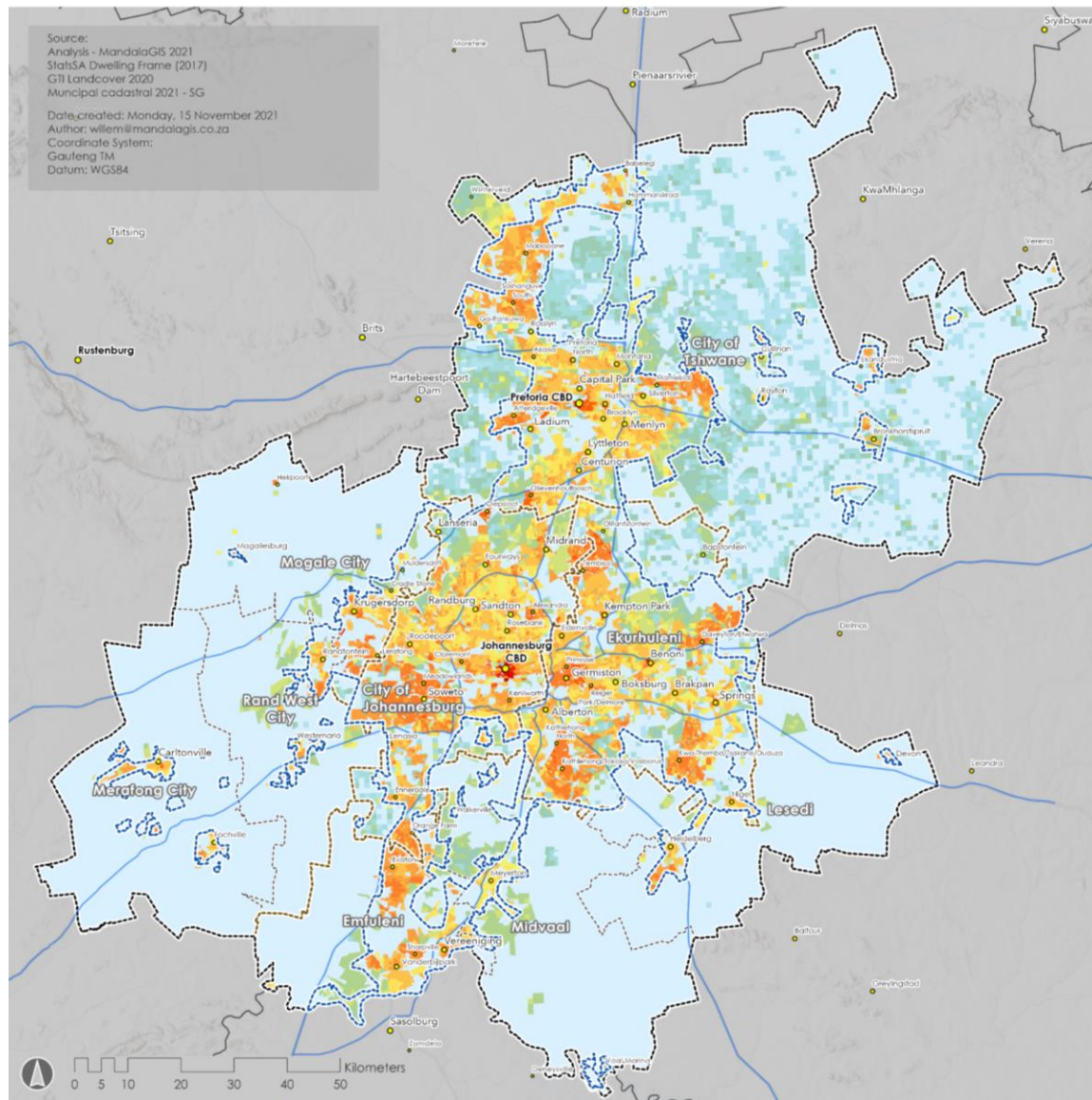




Figure 13: Net residential density



## Current Residential Development - Net-Density

Notes:  
The map only depicts Net-Density of developed parcels within a zone.

Undevelopable and vacant parcels were not included in the calculation

### Net-residential density

Residential units per hectare

- 0 - 0,017
- 0,018 - 0,055
- 0,056 - 0,14
- 0,15 - 0,34
- 0,35 - 0,79
- 0,8 - 1,8
- 1,9 - 4,1
- 4,2 - 9,4
- 9,5 - 21
- 22 - 49
- 50 - 110
- 120 - 250
- 260 - 570
- 580 - 1 300
- 1 400 and more

Urban Support Zone

National Routes

Gauteng Province

District Municipalities

Local Municipalities



Figure 14: Urban growth since 2001, noting the most expansive development is on the urban periphery

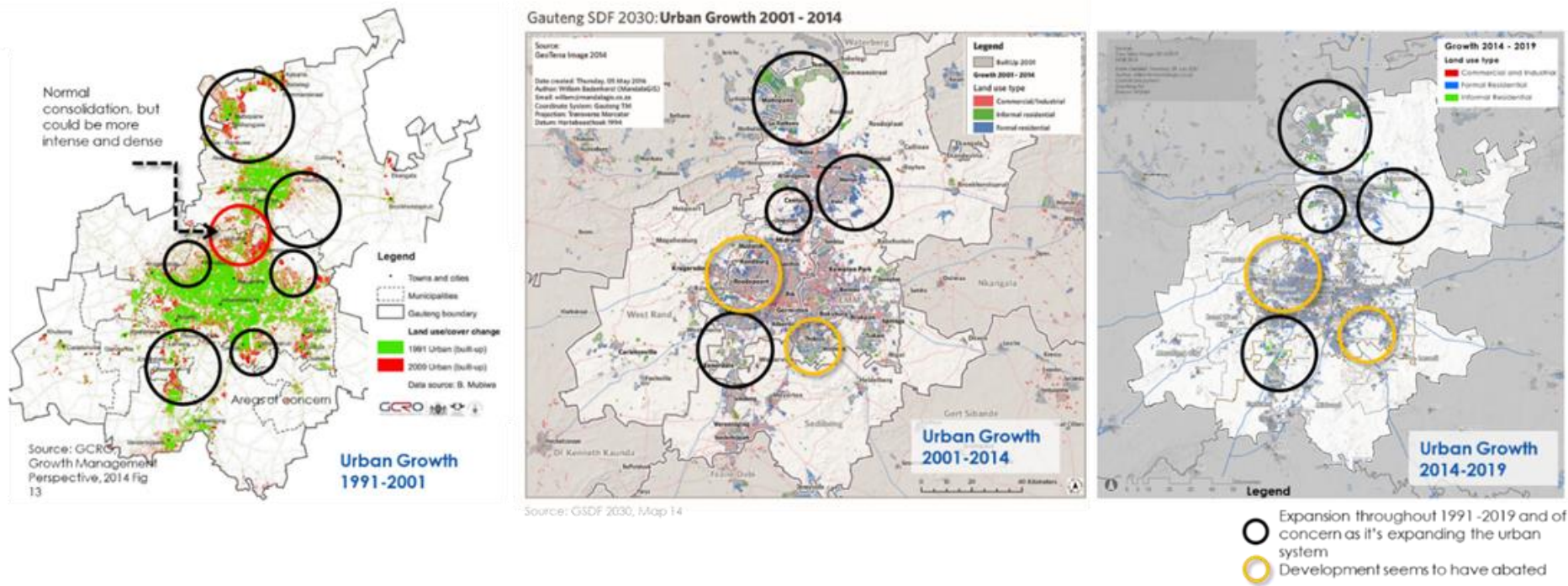
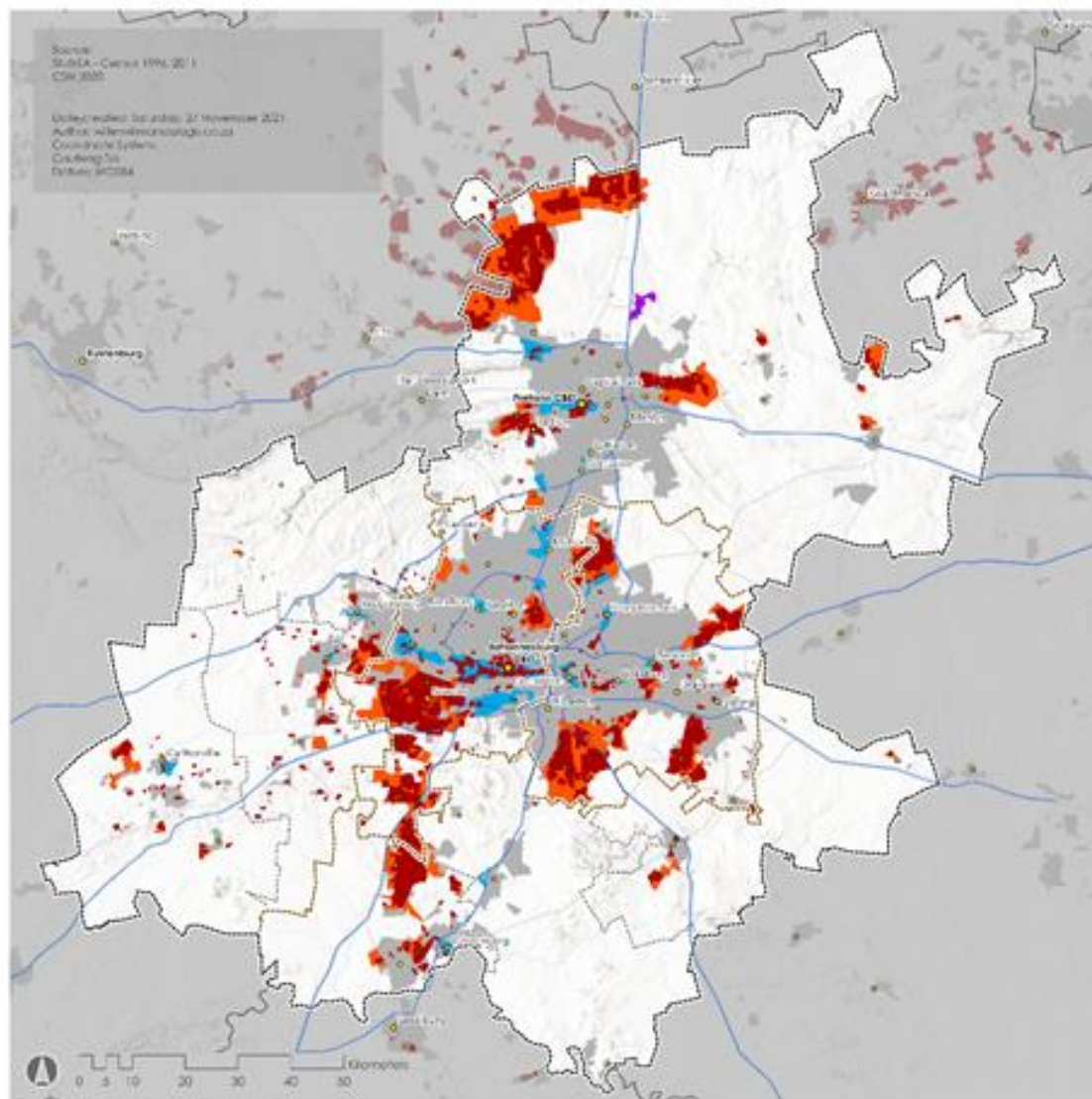


Figure 15: Expansion of townships and settlements into previously whites only areas between 1996-2011 showing very little 'normalisation'



## Expansion of Townships and Settlements into previously whites-only areas 1996 - 2011

Current suburbs with majority non-white population and more than 5 persons per hectare

- Majority non-white 1996
- Townships 2018
- Areas of normalisation
- Land restitution
- Built-up Areas 2020
- National Routes
- Gauteng Province
- District Municipalities
- Local Municipalities

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GROWING GAUTENG TOGETHER



### 5.3.4 The transport network

**Main road infrastructure** (refer to Figure 16) remains one of the most important factors influencing the shape, form and extent of urban development. As important as it is to the GCR, consideration must be on (a) ensuring that it is optimised more as a driver of the region's macro and local economies and (b) being used to contain and structure a more cohesive urban form.

**The very extensive rail network** is one of the greatest assets in dealing with future growth of the GCR and promoting connectivity across the whole region. Putting it back in place, and augmenting it with Gautrain, is an essential aspect for the GCR.

### 5.3.5 Central urban areas and hinterland relationship

The hinterland comprises conservation areas, agriculture, vacant landholdings, mining. With the application of different, agriculture driven, land uses this area can be seen as the urban breadbasket, providing food security to urban areas. The natural systems (ridges, waterbodies, wetlands) serve as biodiversity corridors between the urban and rural areas, and must be protected and enhanced, whilst achieving compact, complex urban systems. There are often conflicts of land uses (i.e. agricultural land being utilised for mining) on the periphery as urbanisation pressure remains.

### 5.3.6 Mining

Mining land continues to shape the development of the province despite the relative decline in gold mining. Much of the far West Rand remains well-endowed with gold ore reserves but will rely on very deep level mining. This makes it a very price-dependent activity and must influence spatial strategies for this hinterland moving away from gold mining over time. The prospects of re-purposed mining land (whether still being actively mined or not) must be regarded as an important spatial asset given its proximity to much of the GCR's economic structure. Continued commitment to redevelopment through the Mining Belt Regional Development Policy, 2019 is key.

### 5.3.7 Geotechnical Constraints

**The dolomites** form a girdle on urban development and should, as far as possible, not be expanded into. They are important in terms of the aquifer role they play as well as the fertility that they characterise. They are also well located as an important regional open space system to the growing GCR.

### 5.3.8 Natural features

**Environmental sensitivities** are province-wide and provide a strong basis for land use discipline. It is a central principle of the GSDF 2030 that the entire urban system be underpinned with a 'green lattice' of biodiversity and natural habitat linkage.

### 5.3.9 Land with high agricultural potential

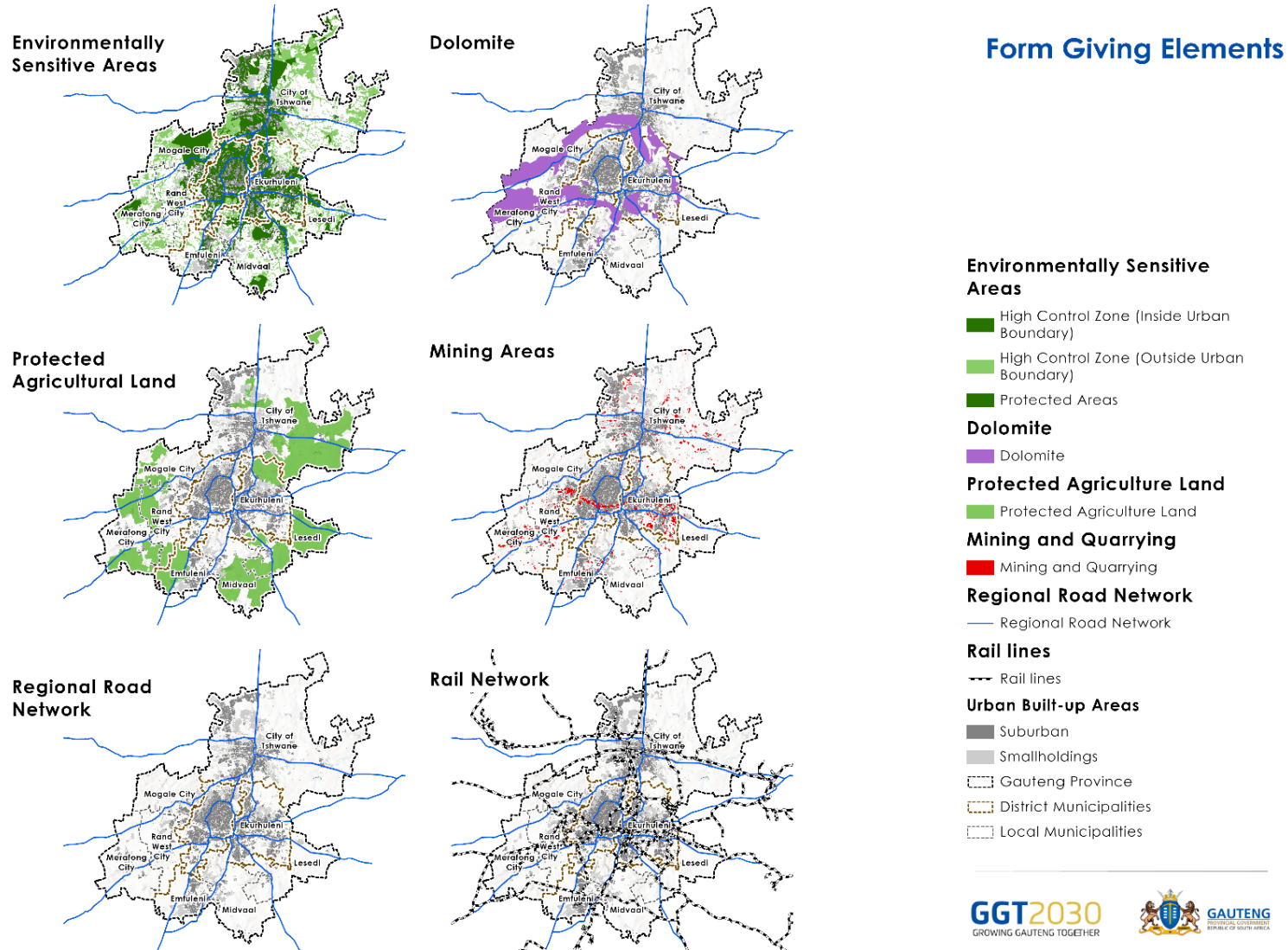
The rural hinterland is one of the most important of Gauteng's assets and, spatially, remains under-utilised relative to the vast potential it could add strategically to the GCR as well as adjacent provinces.

### 5.3.10 Summary (Highlights)

- Market-driven development responses have tended to reinforce the trajectory of wealth seeking to consolidate around highway infrastructure and the Gautrain stations as well as further gated communities and nodes on and beyond the urban periphery;
- Whilst the continued growth and importance of inner-city housing is to be welcomed, the symptoms of ‘bad buildings’ in inner-city areas, whether hi-jacked or simply ill-maintained and administered, pose increased urban management challenges in respect of overcrowding, poor levels of servicing and sanitation, health and safety and urban decay;
- Public sector housing projects continue to be located, or earmarked for the outer fringes of urban development, with the attendant increases in marginalisation and, to a lesser extent, within brownfields sites such as disused mining land.



Figure 16: Form giving elements





## 5.4 SPACE ECONOMY

### 5.4.1 Composition of the Economy

Gauteng is South Africa’s economic powerhouse, central to the nations finance and manufacturing industries, home to national government, and a strong driver of investment and consumer spending. Gauteng contributes over one-third of the nation’s GDP (34%), with Figure 33 illustrating the contribution of each sector (StatsSA, 2020 Fourth Quarter). In 2020, the Gauteng economy comprised R1,491 billion in production and employed 5,4 million people (GDHS, 2020).

In 2019, prior to the devastating impact of COVID-19, the provincial economy grew by 0,6%, down from 3,3% a decade earlier (2009). The official unemployment rate in the first quarter of 2021 is 34,4% (StatsSA LFS, Q1 2021), increasing to 41,6% when discouraged work seekers are included. Gauteng has a small number of discouraged work seekers compared to other provinces, meaning that the unemployed in Gauteng are less likely to give up looking for work than the unemployed in other provinces.

The City of Johannesburg contributes the most to the provinces economy accounting for 39% of Gross Value Added (GVA), followed by the City of Tshwane (25%) and Ekurhuleni (24%). Together, the three metropolitan municipalities account for 88% of provincial GVA with economic activity concentrated in Randburg, Roodepoort, Kempton Park, Midrand and Soweto

(City of Johannesburg), and Centurion, Pretoria Central and Pretoria East (City of Tshwane).

Figure 34 illustrates the economic performance of each sector and its spatial distribution. While the volume of output has changed since 2016 the distribution of spatial activity remains consistent.

Figure 15a: Gauteng Economic Output by Sector and Municipality (2020)

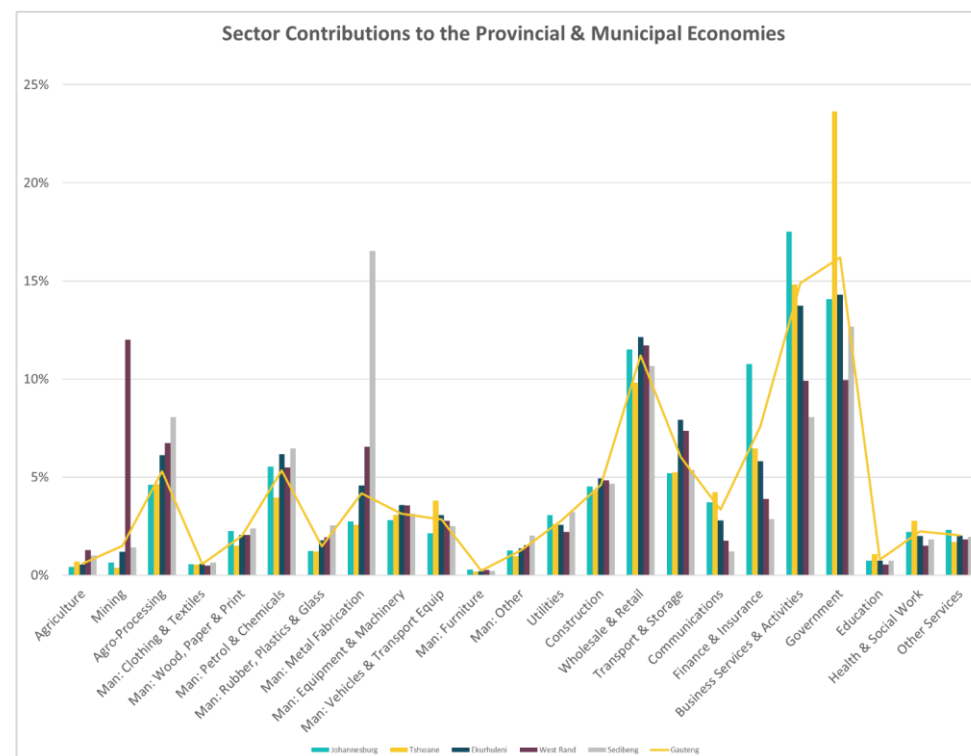
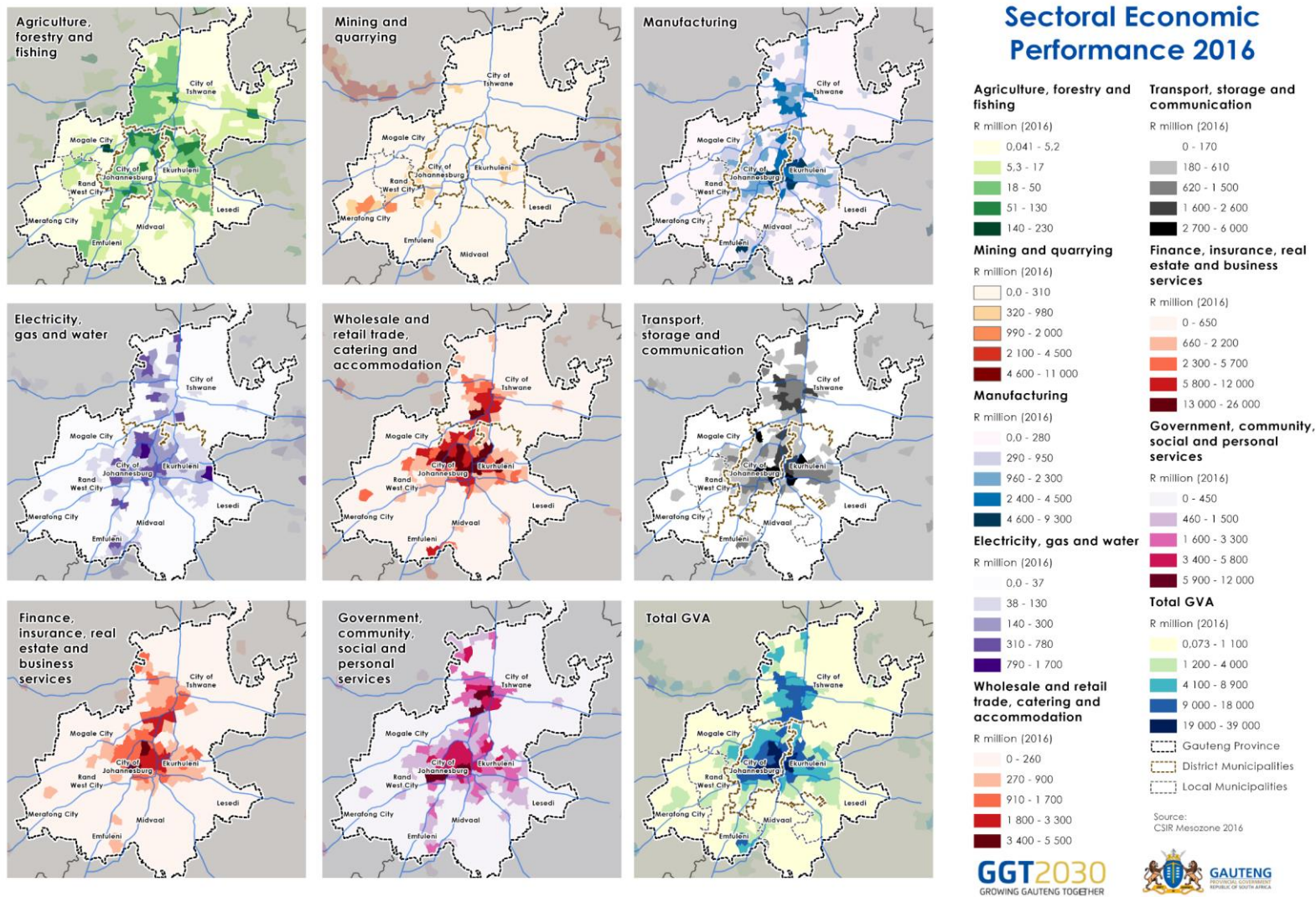


Figure 17b: Sector Economic Performance (2016)



## 5.4.2 Economic drivers

The Gauteng economy is both advanced and diversified relative to other provinces. Figure 33 illustrates sectoral contribution to total economic output in each of the metros and municipalities, compared to the province overall.<sup>96</sup> It shows that the Gauteng economy consists of four main drivers:

### Business & Finance

Gauteng serves as both the nation's economic engine as well as the financial hub of southern Africa. As such, business activities, services, finance and insurance account for 22,5% of the provincial economy. These industries are concentrated in the City of Johannesburg (28,3%), City of Tshwane (21,3%) and Ekurhuleni (19,5%).

### Manufacturing

Despite declines in South Africa's manufacturing sector, the manufacturing industry continues to drive the economy in much of the province. Manufacturing accounts for 26,3% of provincial output and is the main driver of the Sedibeng (44,4%), West Rand (31,3%) and Ekurhuleni (29,4%) economies. Within this sector, the most important products are petroleum and chemicals (5,3% of the provincial economy), agro-processing (5,3%), metal fabrication (4,2%), equipment and machinery (3,1%), and automobiles and transport equipment (2,8%).

### Proximity to Primary Activities

Gauteng's manufacturing sector drives economic activity in neighbouring areas. Mining in the West Rand, and the North West (Bojanala District), Mpumalanga and Limpopo provinces provide materials for metals manufacturing; farms in the Free State, Limpopo and Mpumalanga fuel the provinces robust agro-processing industry; and Gauteng delivers export services for the regions metals, minerals and food.

### Government

The Government sector is critical to the Gauteng economy, accounting for 16,2% of all activity while also supporting the real estate, retail and service sectors in key districts including Braamfontein (Johannesburg) and Pretoria Central/Arcadia. The government sector is most relevant in the City of Tshwane (23,6%), the Nations administrative capital.

The economic drivers discussed above are facilitated by well-established Transport and Storage, Construction and Communications sectors, which account for 6,0%, 4,6% and 3,3% of the provincial economy, respectively. The provinces economic might also supports the Wholesale and Retail, and Community and Social Services sectors, which are critical in terms of SMME development and job creation<sup>97</sup>.

<sup>96</sup> Quantec, 2021

<sup>97</sup> Ibid

### 5.4.3 Investment

In 2019, South Africa ranked 104th out of 132 emerging market economies for investment as a percentage of GDP. Factors contributing to low investment include unreliable energy supply, weak productivity growth, regulatory and policy constraints, poor municipal services, and global economic forces. In 2020, investment was further constrained as a result of the COVID-19 pandemic, falling by 15,5% from the previous year (Quantec, 2021).

Figure 34 provides an overview of declining investment by industry. It shows that four industries saw their GFCF decline by nearly a quarter: Mining (-28,7%), Utilities (-28,1%), Transport & Storage (-24,7%) and Finance & Business Services (-25,3%) in 2020. While some of this investment has and will continue to recover, the pandemic appears to have accelerated the decline of the provinces mining industry and slowed the development of critical water and electricity infrastructure.

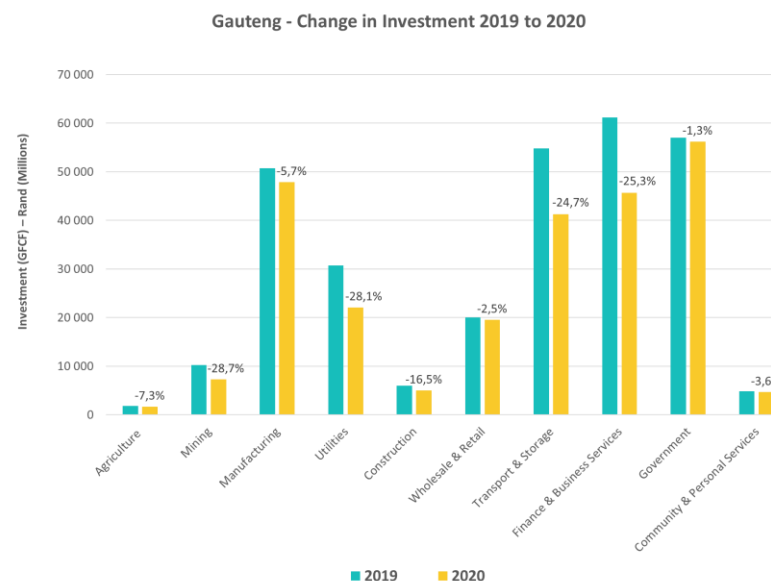


Figure 18: Investment in Gauteng Source: StatSA 2021

### 5.4.4 Socio-economic, psycho-social and governance dynamics of our city-region.

The Quality of Life Survey<sup>98</sup> (QOL) was undertaken during the Covid pandemic and it was found that there is a general decline in satisfaction across the province compared to previous years, however, the decline is strongly related to the strain that people have experienced during the covid pandemic. A sharp decline in government satisfaction has occurred, with a lesser decline in socio-economic status, life satisfaction, health and

access and satisfaction; Environment and extreme events; Governance; and Quality of Life and well-being.

98 The GCRO Quality of Life (QOL) Survey 6 (2020/2021): Overview Report identified 13 616 respondents to be interviewed in Gauteng, to understand the impact of COVID-19; Transport; Poverty, inequality and social mobility; Hunger and food security; Experiences of violence safety; Health; Community and social attitudes; Migration and moving home; Basic service



participation dimensions, and small increases in the dimensions of services and safety.

Of further concern, but not exhaustive, is:

- Unemployment remains high; crime, unemployment, access to basic services and maintenance, are the biggest concerns in respondents' communities;
- Inequality between different income groups remains prevalent;
- A general decline in the number of people living below the poverty line<sup>99</sup> has occurred over the years, however, significantly increased to 36% in this study. This increase is potentially due to Covid -19 suggests that middle-income groups have been negatively affected and in cases become impoverished.
- Just over 50% of respondents faced a level of food insecurity, and are facing 18% extreme levels of food insecurity, not being able to walk to the shop to get food nor receiving basic nutrients
- A gradual increase on reliance on public healthcare (66%) exists.
- A high number of respondents faced childhood abuse, including sexual and physical abuse.

Spatial implications include the importance promoting a city that fosters safe environments, that provides quality infrastructure services, and enable opportunities for citizens to access job opportunities and educational facilities.

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<sup>99</sup> The Gauteng average poverty line used for the QOL is R1193 per person per month

## 5.4.5 Spatial, social and economic fragmentation and isolation

The Gauteng province is highly fragmented owing to historic patterns of spatial development and economic exclusion, further exacerbated by urban sprawl, a weak public transportation network, and a mismatch between jobs and affordable housing. The outcome is a city-region defined by wealthy enclaves and a small number of middle-class suburbs, surrounded by poorer, marginalised communities (townships and low-income suburbs) with weak linkages to the formal economy.

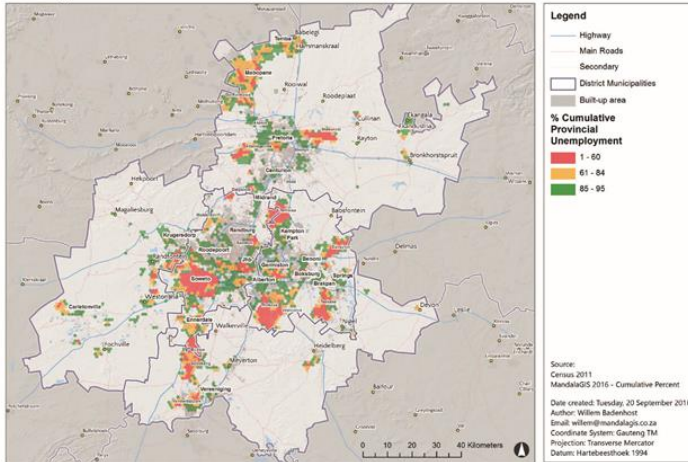
Poverty and unemployment are highly concentrated in the urban periphery, including in townships and formal 'low-income' areas. In 2015, 55,5% of the population lived below the Upper-Bound Poverty Line (StatsSA, 2020). The following Figures illustrate the dislocation between poor households, youth and the formal economy.

Figure 19 shows the correspondence between the location of townships and areas of greatest unemployment, concentrations of poverty and poor education levels. Map 4 on Figure 19 shows the spatial polarisation between areas of deprivation (i.e., townships) and areas of economic and employment opportunities in the low and affordable housing market. These patterns remain unchanged from 2016.



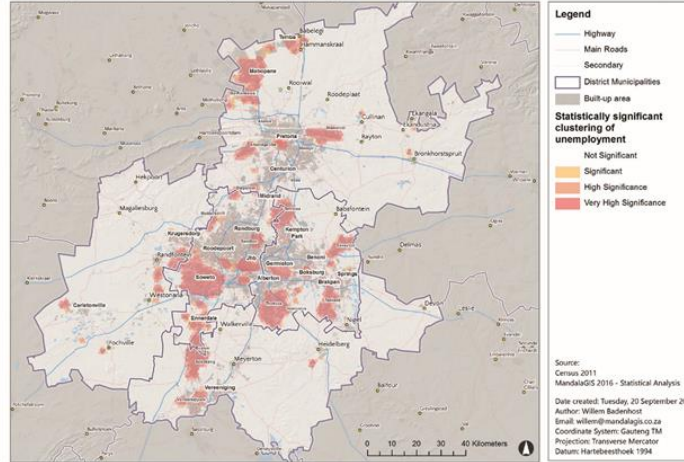
Figure 19a: Unemployment, concentrations of employment, low-income households  
Source: GSDF,2030, StatsSA 2011, no new data is available

Gauteng SDF 2016: Cumulative percent unemployment



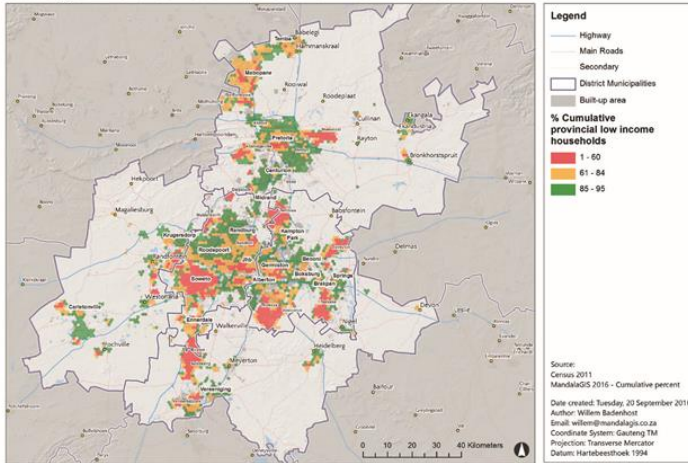
Map 10: Cumulative Percent Unemployment

Gauteng SDF 2016: Clustering of unemployment



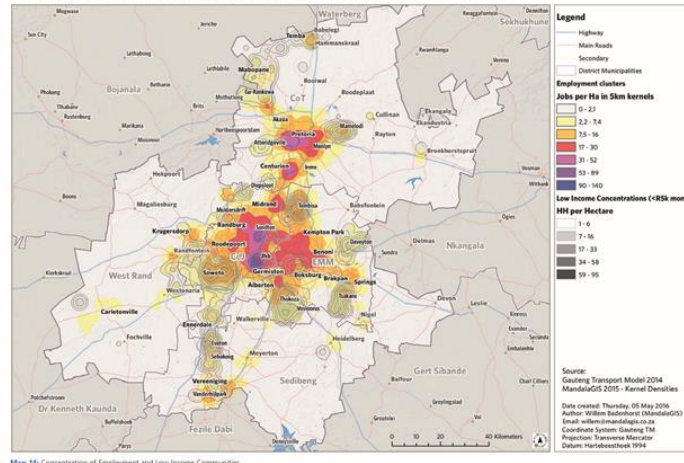
Map 11: Clustering of Unemployment

Gauteng SDF 2016: Cumulative percent low income households



Map 12: Cumulative Percent Low Income Households

Gauteng SDF 2030: Concentration of Employment and Low Income Communities



Map 14: Concentration of Employment and Low Income Communities

## 5.4.6 The township economy

From a spatial perspective, the informal sector has developed in alignment with the patterns of differentiation between ‘formal’ urban areas and ‘informal’ townships, with growing pockets of informal activity in the city centres. There is also a degree of informality in the employment and trade patterns even in the more affluent city suburbs. In the absence of stricter enforcement measures this pattern is expected to remain, as the informal sector continues to find a foothold in areas with high economic or population growth, albeit not at a rate needed to meet employment demands.

In Gauteng, the informal economy (or ‘township economy’) accounts for approximately 22% of all non-farm employment and is concentrated among domestic workers, taxi drivers, construction workers, early education providers, waste recyclers and those offering basic personal services. Figure 35 compares formal and informal employment for each sector (except agriculture and government) in Gauteng. Unsurprisingly, sectors with the highest degree of informality are Wholesale and Retail (35%), Construction (34%) and Transport and Storage (31%).

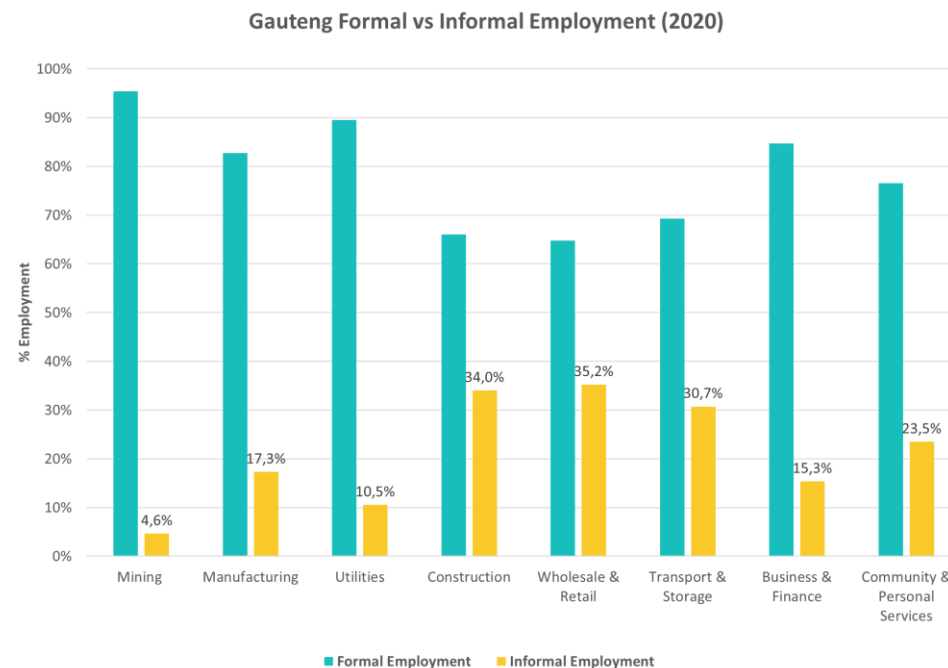


Figure 17b: Informal Employment in Gauteng by Sector (2020)  
Source: StatsSA 2021

## 5.4.7 Rural economies

In Gauteng, approximately 70% of the land area is available for rural purposes. The rural economy in Gauteng is comprised of farming and associated agro-processing; tourism and leisure activities; and mining.

### **Farming and Agro-processing:**

Gauteng has a relatively small farming sector, accounting for only 0,8% of the nation's commercial agriculture (StatsSA, 2021). Approximately 75,7% of Gauteng's commercial farm income originates from livestock, with the remaining output in field crops and horticulture. This activity is concentrated in the provinces' southern hinterland and, to a lesser extent, the north-east region. The greatest opportunity for development is in intensive agriculture, particularly along the urban periphery, underscored by current trends in the agriculture and food production sectors.

### **Tourism and Leisure:**

The Gauteng tourism sector is driven by international visitors, business travellers, and South Africans' visiting friends and family, with the first two categories concentrated in urban centres and severely impacted by COVID-19. In rural Gauteng, tourism activity is supported by a number of nature reserves and the Cradle of Humankind, which offer an important opportunity for SMMEs and an incentive for environmental preservation. Further, COVID-19 restrictions on international and interprovincial travel incentivised Gauteng locals to travel within the province, which it is hoped will stimulate a lasting shift in domestic travel patterns.

### **Mining:**

Mining activity continues in every municipality of the province, but remains concentrated in the West Rand. In all areas, mining output has declined consistently over the last decade, with little indication that it will recover. The focus, therefore, should be on the rehabilitation of mining areas, economic diversification of former mining communities, and the exploration of niche and high-value products.

## 5.4.8 Summary (Highlights)

- Gauteng continues to drive the nation's economy, attracting job seekers from neighbouring provinces and elsewhere on the Continent.
- The tertiary and knowledge sectors are, increasingly, driving growth in the provincial economy. This trend underscores the need for investment in skills and ICT infrastructure.
- In the absence of new investment, declines in mining and manufacturing will exacerbate the concentration of economic growth in key nodes within the GCR, while areas in the periphery continue to decline.

## 5.5 CONNECTIVITY AND MOBILITY

### 5.5.1 Introduction

Connectivity is a weighty shaper of urban settlement patterns and it is vital that road planning, particularly at city-region scale, be thought through as an integral part of guiding and shaping the urban future.



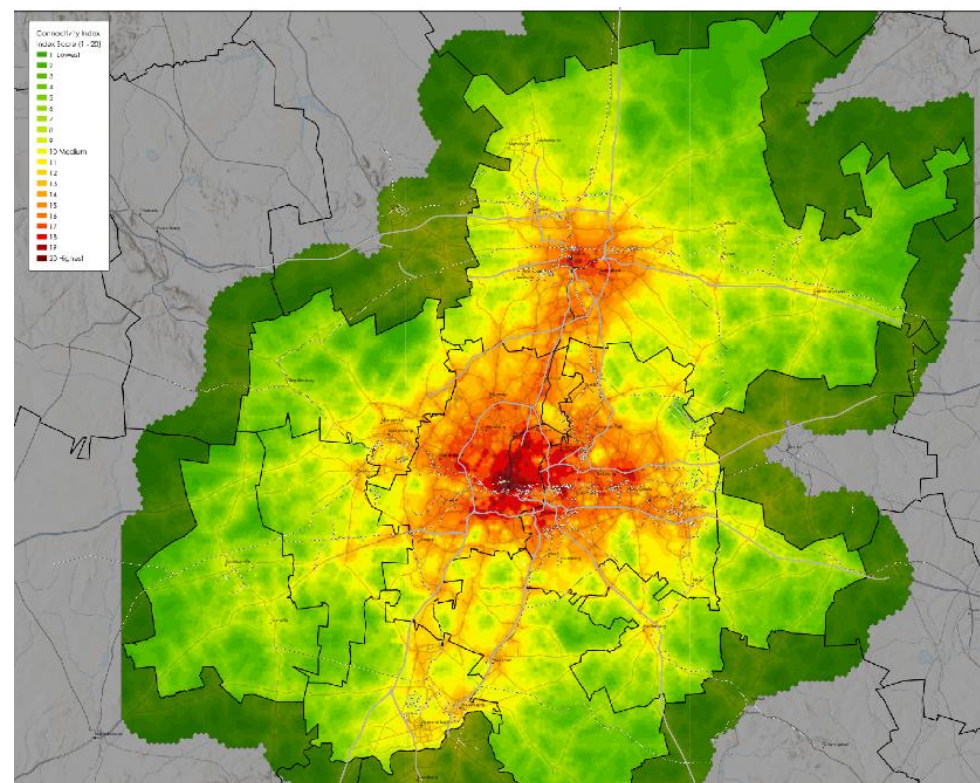
Many have noted, in defence of the GSRN, that an undifferentiated road grid (other than by hierarchy of road class) in and of itself does not lead to nor encourage urban sprawl. They note that it is the responsibility of land use planners to curb development rights in those areas where the road system has penetrated if one does not want to allow sprawl.

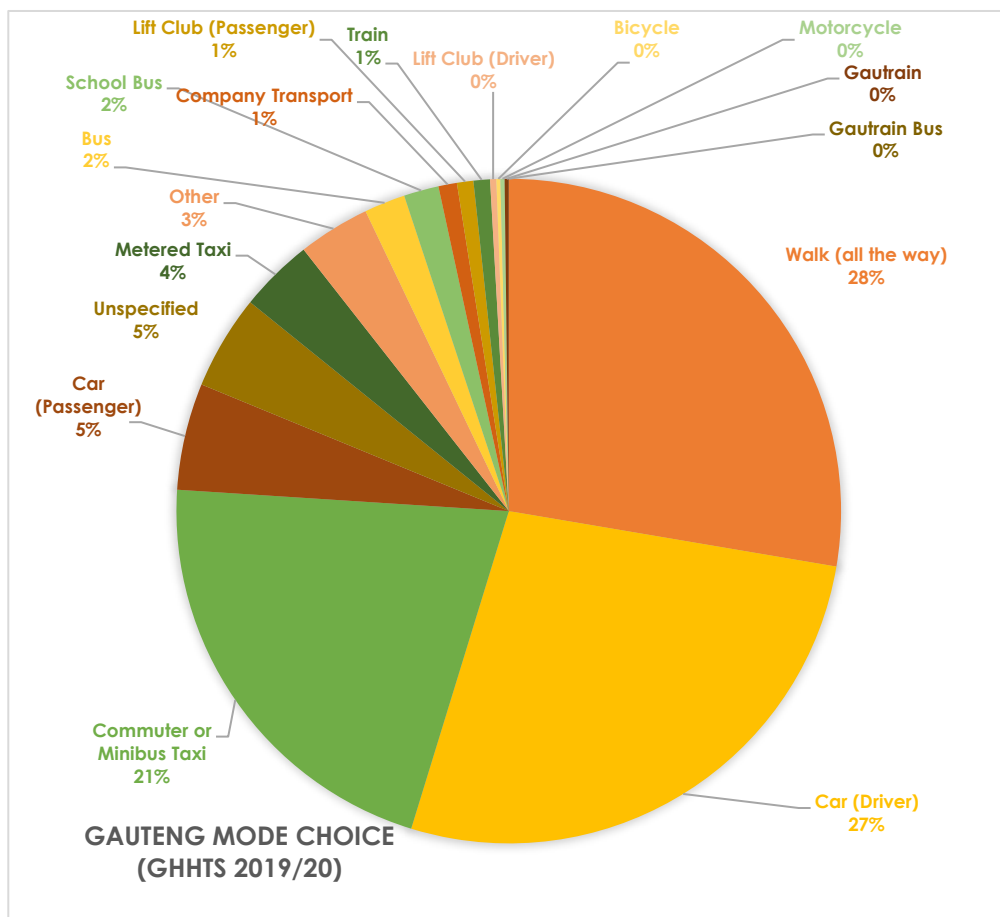
Both views are partial and inadequate: there can be no doubt that roads create urban potential and that holding back development rights often becomes unsustainable as a policy. Similarly, the accessibility of new urban hinterlands through the unfolding of a road network can significantly influence the shape and form of urban development that follows. This may be a positive consequence but, taken in isolation and seen purely through the prism of traffic engineering, it can have unintended spatial planning consequences. There also continues to be conflict between regional mobility versus local access. Whilst mobility can and should be accommodated over a wider region, far more attention needs to be paid to local accessibility within nodes and the corridors and activity spines that connect them.

Discussions in the review process to date seem to suggest that the regular review of the GSRN continues to occur within the narrow confines of a transportation and traffic paradigm rather than a socio-economic performance paradigm based on the performance of the overall urban system.

As with rail, one of the key shapers of urban form and the way a city region's pattern of development functions is its major province-wide road system. Transportation, or the movement of people and goods, forms a vital role in urban development and spatial form. Economic growth is often significantly affected by accessibility to mobility options while significant economic development increases the need for movement systems in an area.

Figure 20: Connectivity in Gauteng





In order to carefully plan for development, transportation plans should be well integrated with spatial development frameworks. In addition, transport planning itself should be integrated to ensure the most efficient systems, the best benefits from investment and higher quality services for users who are then able to transfer seamlessly between modes.

Public transport in South Africa is **still not considered a network or system that facilitates an easy connection**<sup>100</sup> between different transport modes this also holds in the province. This contrasts with experiences from developed countries where public transport is integrated, and commuters can connect seamlessly between different modes. One of the reasons for the lack of integration has to do with the fragmentation in the roles of each sphere of government in the provision of public transport. While the NLTA clearly clarifies the roles of different spheres of government, ineffective intergovernmental relations have resulted in uncoordinated operations creating inefficiencies.

The COVID-19 lockdown has had a significant impact on travel as fewer residents were required to commute to work. Among the changes that were experienced by the transportation include peak spreading.

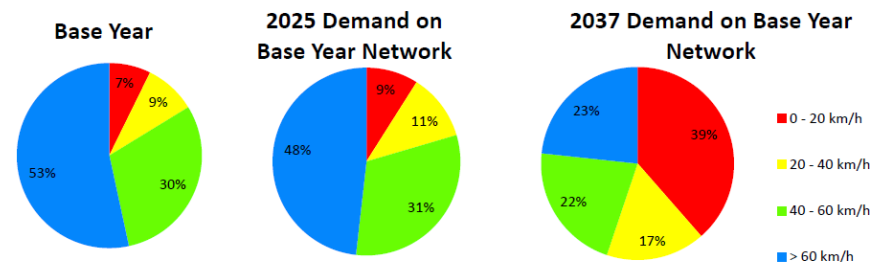


Figure 21: Mode Share Distribution

<sup>100</sup> In May 2017, the Competition Commission conducted a Market Inquiry into the land-based public passenger transport sector, and found network was not integrated.

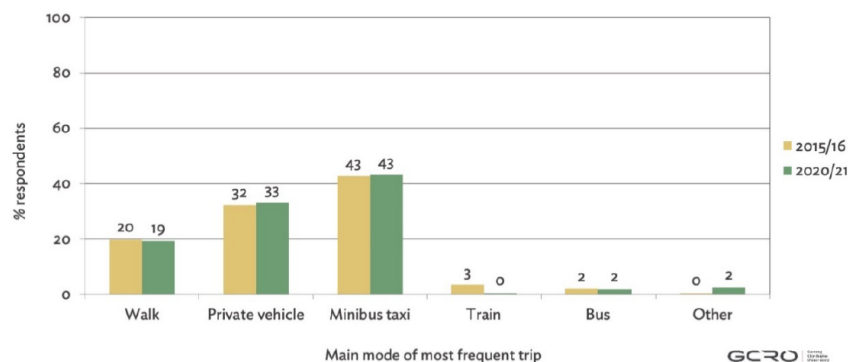


Figure 21, shows the mode share distribution for the province, and important to note is high dependence on walking as a means of transport, private vehicles, and minibus taxis in the province.

The CSIR Household survey for Gauteng, 2019 finds<sup>101</sup>:

- Low-capacity mobility modes, i.e. minibus taxi and private car, are the modes that address the increasing demand for transport.
- The main mode of travel for commuting is walking to their destination.
- Only 33% of the population own a car

Figure 3.4: Main mode of transport used in the most frequent trip, over survey iterations. Data sources: GCRO QoL 6 (2020/21) and GCRO QoL IV (2015/16).



## 5.6 Public Transport Network

<sup>101</sup> GDRT. (2019). Gauteng Province Household travel survey Report 2019/20. Johannesburg: Gauteng Province Department Roads and Transport.

<sup>102</sup> PRASA. (2021). PRASA Corporate Plan 2021/23. Pretoria: Passenger Rail Agency of South Africa.; QOL Survey 2021

### 5.6.1 Passenger rail:

In the GSDF, 2016 and municipal planning documents, passenger rail is identified as the backbone of the public transport network. Metrorail has seen a rapid decline in paying passenger trips due to inefficient services or fare evasion<sup>102</sup>. Currently most of the lines are not operational because of ageing infrastructure or vandalism. Moreover, the lack of maintenance over the years has also contributed significantly to the deteriorating infrastructure.

The planning and provision of duplicate services within the province (e.g., two separate and unintegrated rail services in PRASA and Gautrain, BRTs) have resulted in reinforcing inequality within the province and the substantial waste of resources due to inefficient use.

The Gautrain is a rapid rail system in the province that offers linkage at high speed across the province. The service extends from Hatfield in the north, Parktown in the South, and provides an east-west connection from Sandton to O.R Tambo international airport. The Gautrain also experienced a decline in the number of passengers; however, the decline was because of the restrictions introduced as part of mitigating the impact spread of the pandemic, which has put a further economic strain on provincial government<sup>103</sup>.

<sup>103</sup> GPDRT. (2020/21). Vote no.9 Annual report 2020/21 Financial report. Johannesburg: Gauteng Provincial Government: Department of Roads and Transport.

### 5.6.2 Bus rapid transit:

The implementation of Bus Rapid Transit has also been slower and more costly for municipalities than initially anticipated or planned<sup>104</sup>.

This has resulted in a partial system requiring high subsidies that is only suitable for a small number of people as the systems do not connect to enough key areas within the province. However, once the intended system has been fully implemented and integrated it is anticipated the operational cost will be spread over a wider system. It's been found that the current implementation of BRT infrastructure and services possess a very real financial and fiscal risk<sup>105</sup>.

### 5.6.3 Subsidised bus services:

Most of the bus services in the province are contracted to the provincial government<sup>106</sup>. However, each of the Metropolitan municipalities has some form of a municipal bus service. The provincially subsidised bus service has not been updated recently, despite the significant changes in land use. According to the Gauteng household travel survey, ridership for these bus services has been on the decline. Moreover, the perceived travel times on buses have been increasing.

### 5.6.4 Minibus taxi service:

Public transport provision within the province is still dominated by the minibus taxi industry<sup>107</sup>, which is an uncontracted service. Although, the industry has many positives such as its rapid response to meet changing demand patterns and smaller vehicles that are often able to provide a door-to-door service for commuters, the lack of regulation of the industry and lack of enforcement of road laws result in a heavy cost to commuters being placed in danger without any alternative means of accessing places of work. Although attempts have been made by municipalities to regulate or formalise services in the form of compensation, with the implementation of Integrated Public Transport network, without National and Provincial directives, implementation and enforcement often results in high additional costs for municipalities with little to no benefit to commuters.

### 5.6.5 The Integrated Transport Plan, 2013

The Gauteng integrated transport masterplan identifies all the suggested transportation programs required at the province level in terms of long-term planning. However, due to the needed resources, most of the transportation interventions might not be feasible in the short to medium term. Several plans developed by the different municipalities in the province are intended to be underpinned by Transit-Orientated Development (TOD), which intends to restructure development through densification along public transport corridors. Moreover, TOD intends to provide non-motorised facilities, making it possible for people to walk or cycle between as many amenities and facilities as possible.

<sup>104</sup> CSP. (2018). *Integrated Public transport Network (IPTN) Plan Development: Technical Guidance version 4*. Pretoria: National Treasury: Cities Support Programme

<sup>105</sup> City Support Programme. (2018). *Integrated Public transport Network (IPTN) Plan Development: Technical Guidance version 4*. Pretoria: National Treasury: Cities Support Programme

<sup>106</sup> GPDRT. (2020/21). Vote no.9 Annual report 2020/21 Financial report. Johannesburg: Gauteng Provincial Government: Department of Roads and Transport.

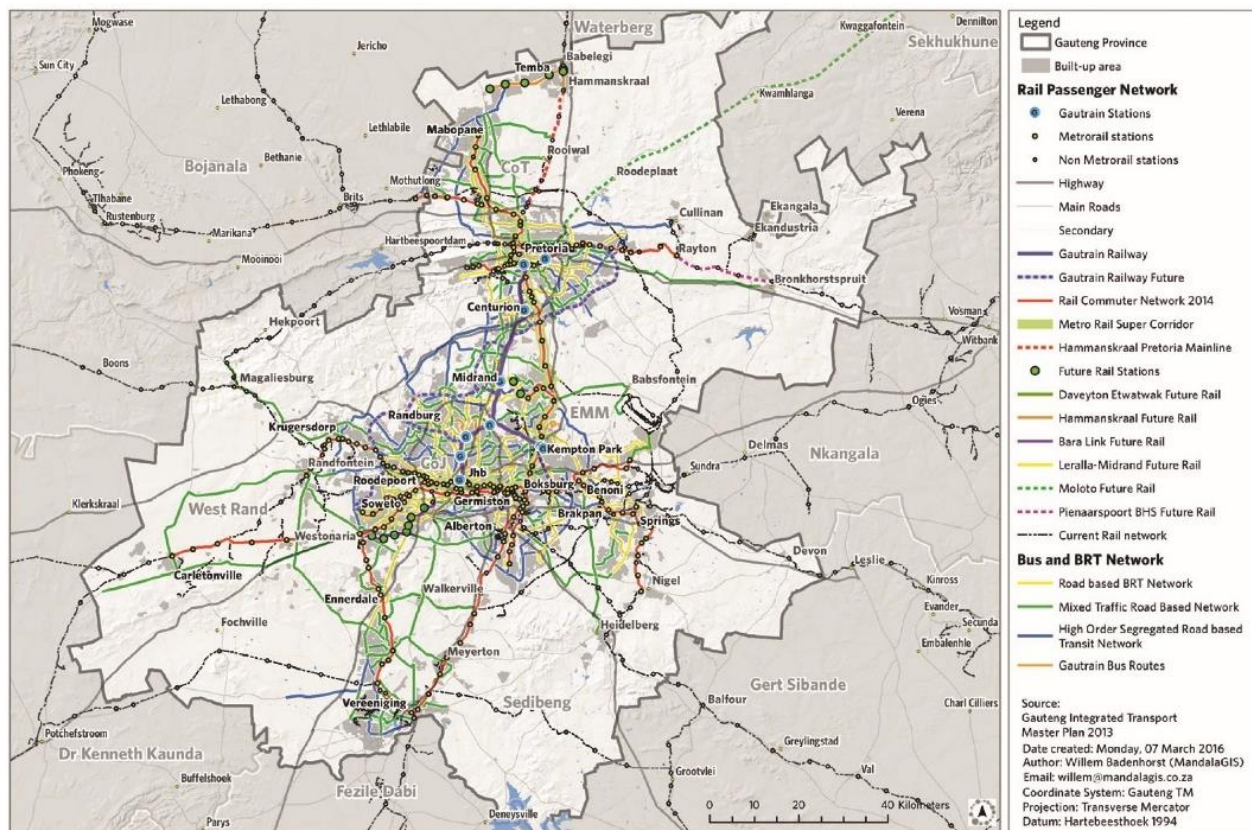
<sup>107</sup> GDRT. (2019). Gauteng Province Household travel survey Report 2019/20. Johannesburg: Gauteng Province Department Roads and Transport.

Although the planning is being conducted at a municipal level, there are still challenges with the soloed approach to planning, which the previous Integrated Transport Plan 2013 aimed to address.

At the provincial level, the Integrated Transport Plan 2013 is currently under review. In the absence of a revised masterplan, the Integrated Transport Masterplan, 2013, will be used, which identifies rail as the backbone of the public transport network.

The road-based network is segmented into bus rapid transit, mixed traffic network and segregated network. The intention is to ensure that the public transport network is integrated. At the provincial level, it is essential to note the importance of the rail service in providing connectivity.

Figure 22: The Integrated Masterplan 2013, Rail and Passenger Network Source: GSDF 2030,2016, Map24, Pg 88



## 5.6.6 Passenger rail

Figure 23 shows the existing passenger and planned rail service. In the province, there are two passenger rail services that are not integrated. Currently, the state of the metro rail service is such that several lines are not operational. There are efforts by PRASA to recapitalise the infrastructure and sort out the maintenance. Following is the key plans:

### **Metro Rail:**

The government aims to invest 172 billion through Capital Programme and Modernisation Acceleration program over ten years. Despite the strong commitment, there has been poor implementation and spending towards the program. Central to public transport services is reliable and predictable service with sufficient capacity, especially during morning and afternoon peak periods. Moreover, the reliability and availability of infrastructure are also important to ensure safe travel. It is estimated that the required rolling stock by the end of the Medium-Term Expenditure Framework in Gauteng will be 118 trains needed to stabilise the commuter service.

The strategic objectives of the programme include:

- Rolling stock fleet renewal program
- 120km/h per way improvement
- Signalling programme
- Depot modernisation
- Station modernisation

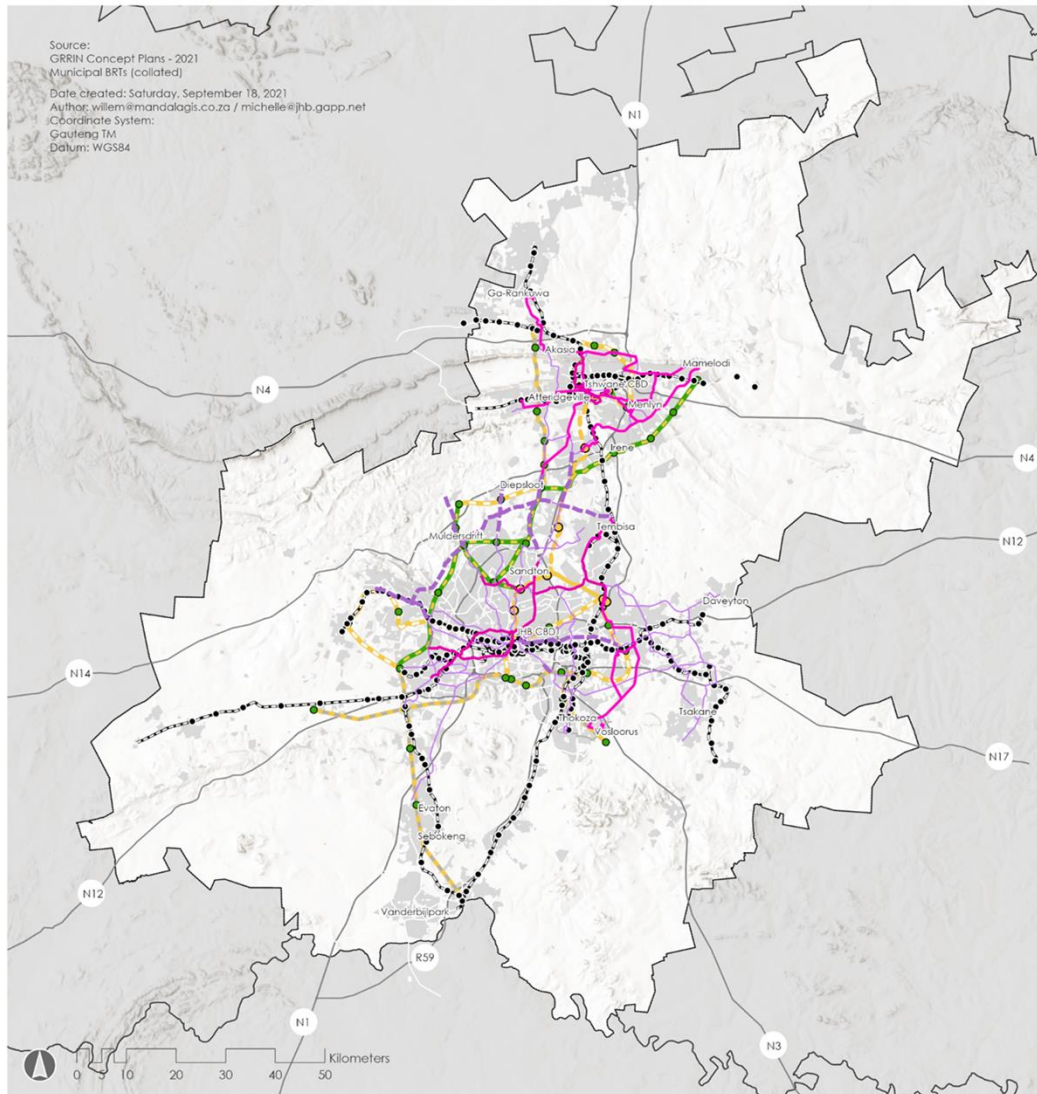
### **Gautrain:**

The high-speed rail system, formerly known as Gautrain, offers an alternative mode of travel for citizens in Gauteng. The Gauteng Management Agency has identified proposed routes connecting Mamelodi and Soweto and from Randburg to Soweto. The GMA is also exploring further connections to enhance its network. The Randburg – Lanseria route is important to support the anticipated growth node at Lanseria into fruition. This link will also benefit Airport-to-Airport connections.

The other proposed connections south to Vereeniging and west to Westonaria, are parallel to Prasa routes. It is important to ensure that Prasa, Transnet and the BRT routes are complementary systems. To date, feasibility studies and business cases studies are currently being conducted. Opportunity exists for development being consolidated around the Gautrain stations.

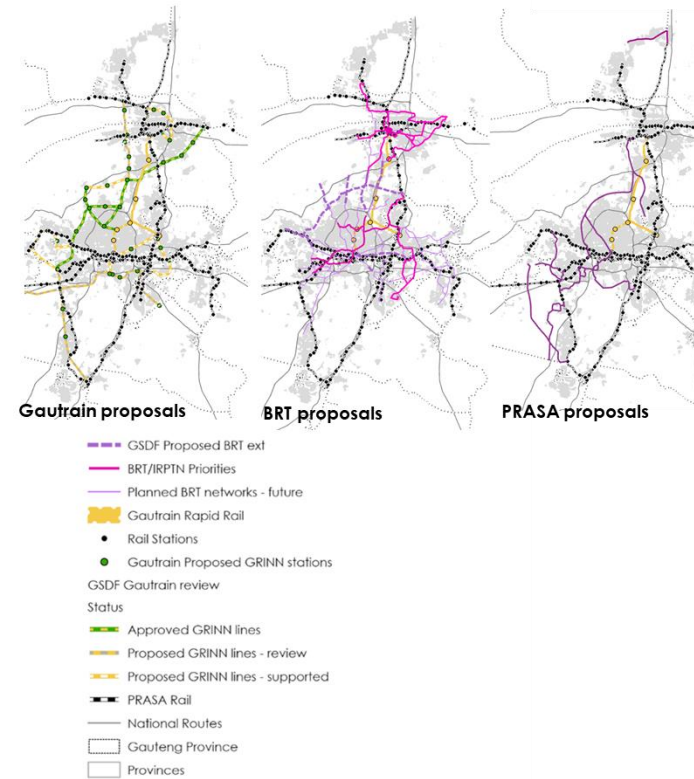


Figure 23: Existing passenger rail service and BRTs and planned passenger service



## Rail and BRT Networks

### Public transport existing and proposed, including the rail status



## 5.6.7 The road network

The Gauteng Department of Roads and Transport has an asset road network of 5,638 km, including 4,200km of paved roads and 1,438km unpaved road (2020 Gauteng Roads and Transport Annual Report). Of the paved network, 65% is rated as fair in condition, 25% poor and condition and only 10% good.

In terms of the road capacity, specifically in peak times, there are significant costs in terms of speed if the required road upgrades and maintenance are not done. The 2037 future forecasts indicate reduced levels of service expected, should this be the case.

The road network deterioration is accelerated by high freight volumes as the rail system's failures and inefficiencies result in no viable alternatives to road-based freight for many goods suppliers.

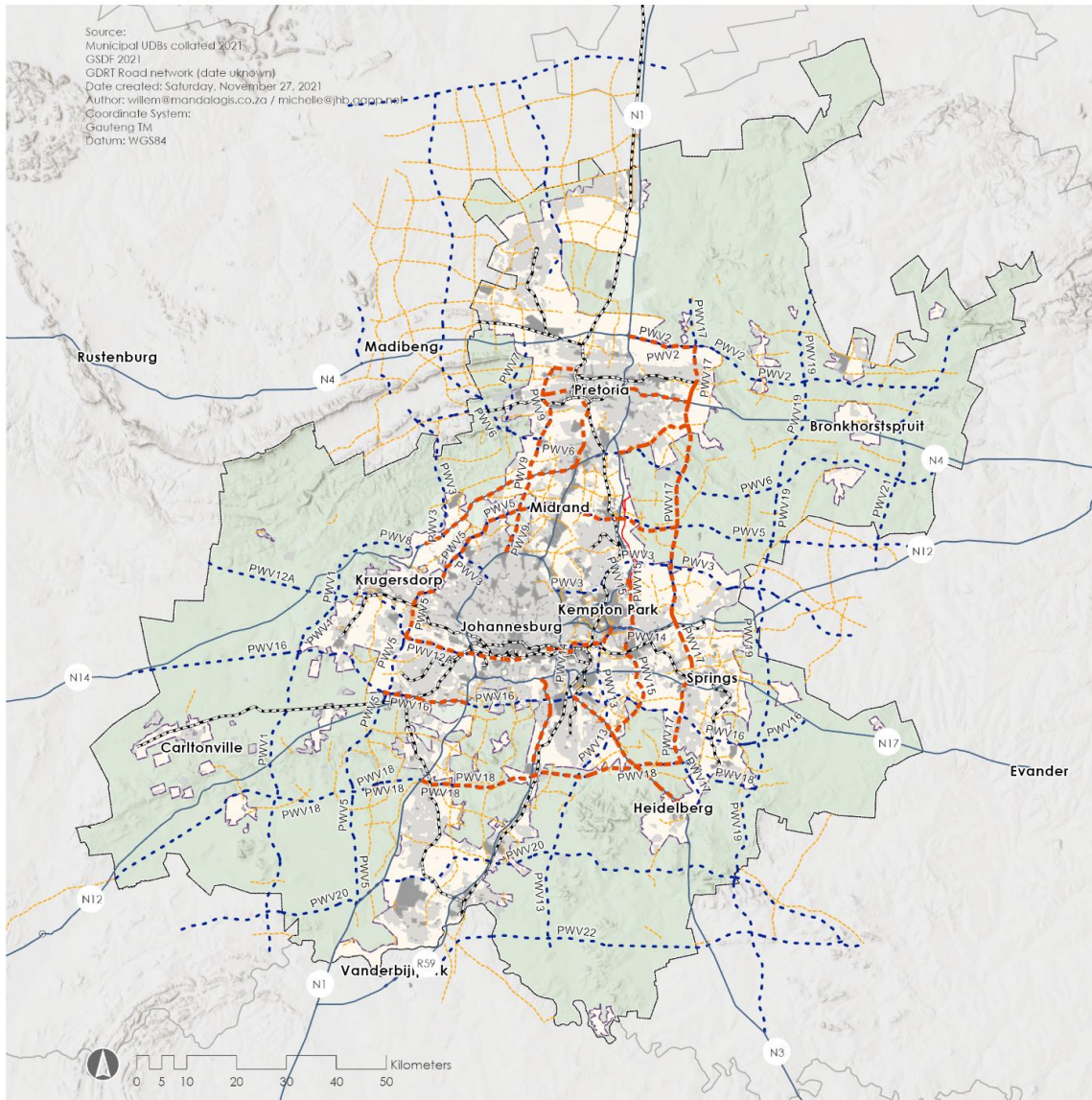
Areas where road infrastructure would unlock opportunity, include:

- Improved east-west route from Johannesburg linking to the airport.
- Improved road connections into historic townships, many remain with few accesses (as planned in apartheid). East-west connections through Vosloosrus and Thokoza, Tembisa.
- Improved road networks to Lanseria to support a growth node.
- Roads that enhance the existing development corridors.
- The north-south and east-west crossings over the mining areas.

In terms of the progress that has been made, to date, with the construction of the strategic network, include the following:

- PWV17: Not constructed
- K27: Not constructed
- K220: Partially constructed (western half- does not extend to R21)
- PWV3: Feasibility study complete (draft in place); Not constructed
- PWV15: Not constructed (buildings and soft infrastructure has been erected in the reserves)
- PWV16: Not constructed
- PWV9: Not constructed
- PWV5: Not constructed

Figure 24: GSRN proposed Class 1 & 2 Roads



## GSRN Strategic Road network

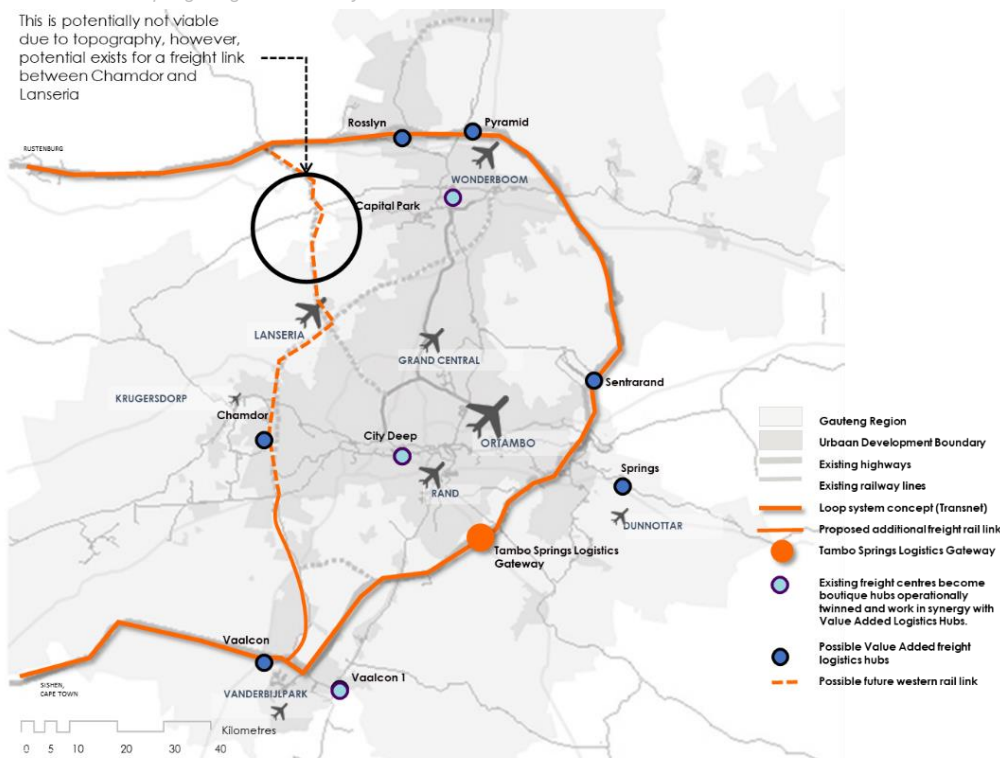


## 5.6.8 Freight & logistics

The GCR logistics strategy intends on creating inland ports along a freight rail loop on the periphery of the GCR to avoid congestion and improve the functioning of freight and logistics (refer to Figure 25).

Figure 25: Transnet Freight Concept

Source: Tambo Springs Logistics Gateway 2020



The GCR logistics strategy intends on creating inland ports along a freight rail loop on the periphery of the GCR to avoid congestion and improve the functioning of freight and logistics.

Transnet are faced with limited resources, and as a result of vandalism and theft and has taken a view of protecting and investing in its existing assets before expanding into new logistics hubs and rail infrastructure. This is the best practice approach to freight and logistics, and these strategies should be considered in future planning. The proposed freight corridor intends to enable support to the inland ports such as proposed Tambo Springs Logistics Gateway, Sandton, Pyramid and Rosslyn in Pretoria.

## 5.6.9 Non-motorised transport

Due to affordability, citizens are using non-motorised transport as their main mode of travel and are often doing so for distances longer than 1km. There is an opportunity for the provincial government to support infrastructure projects that enable non-motorised transport. Moreover, to implement non-motorised transport where appropriate in their transportation projects.

Non-motorised transport is generally a sustainable mode that promotes public health and can become a key feature of the provincial transport system if adequate spatial planning is implemented.

Unfortunately, pedestrian accidents remain significant. This unique opportunity to improve the look and feel of areas, improve public health, decrease adverse effects on the environment and promote investment by prioritising investment in infrastructure that promotes this mode of travel is often neglected.



At the local municipal level, initiatives have been undertaken to introduce infrastructure for non-motorised modes of travel. For instance, cycle routes have been planned for and implemented through Johannesburg. This has not been successful as maintenance and management of infrastructure has failed.

### 5.6.10 Summary highlights

- The very extensive passenger rail system, has continued its slide into disfunction, disrepair and loss of operational capacity, to both rolling stock and infrastructure with little evidence of a turn-around in this degradation;
- Freight rail appears to have similar challenges and there is little evidence of an integrated freight and logistics strategy being implemented as a basic shaper of the urban region and the relationship between rail and road is unclear at national and provincial levels, with this having profound implications of inefficiency for Gauteng as the economic heart of the national system of production and markets;

- BRTs continue to be only partially complete, with large sections seemingly stalled in implementation and no evidence of connectivity between the various metropolitan systems yet in sight;
- There is continued reliance on an increasingly stretched taxi industry as a mainstay of urban transportation and little evidence of comprehensive integrated network operation across all forms of transportation;
- The mini-bus taxi industry continues to be the dominant mode of transport, but is often unsafe and costly to the user;
- The roll-out of new major road infrastructure, including the GSRN, is limited and sporadic and apparently driven more by response to points of pressure in the system rather than the consistent, comprehensive implementation of a movement network for a balanced urban system;
- Planning for NMT remains ineffectual;
- The sprawled urban structure of the GCR has remained and has resulted in increased travel times<sup>108</sup>, and longer distances, which has a heavy cost on the proportions of income spent on travel and social opportunity costs.

<sup>108</sup> In 2019, the Provincial Household survey report 2019/2020, found that the share of household income spent on public transport has increased. Almost 60% of households spent more than 10% of their income on public transport in 2019, increasing from 55% in 2014.

## 5.7 INFRASTRUCTURE

### 5.7.1 Introduction

The Gauteng Province is divided into the following main municipalities:

- City of Johannesburg;
- City of Tshwane;
- City of Ekurhuleni;
- West Rand District Municipality comprising of Mogale City, Rand West City & Merafong LMs; and
- Sedibeng District Municipality comprising of Midvaal, Lesedi & Emfuleni LMs.

The above listed municipalities are responsible for the provision of basic services such as electricity, water and sanitation services, roads and solid waste and ICT (Information and Communication Technology). Looking forward to the year 2030, we know that there will be an ever-increasing demand on infrastructure and resources as it is driven by the rate of urbanisation and population growth rate. The current GSDF 2030 document estimates that there will be 18,7 million people in the province by the year 2030, thus infrastructure planning should be undertaken with this in mind. The planning considered should include the roll out of new infrastructure and the maintenance of the infrastructure already in place.

Spatial data representing bulk infrastructure has been assessed in line with the above listed municipalities. Where there are gaps in the information required to make conclusive recommendations based on existing infrastructure and capacities, the team has reverted to the information provided in the current GSDF 2030 produced in 2016.

### 5.7.2 Water

Gauteng's natural drainage system is not ideal from a water supply standpoint as water must be brought into Gauteng due to a lack of natural inflow into localised storage infrastructure for treatment. Water is imported into Gauteng mainly by making use of the Integrated Vaal River System (IVRS). This system provides water to most of Gauteng together with key areas in Mpumalanga, the Northwest, Free State and Northern Cape.

The IVRS is therefore critically important to the Gauteng Province, and subsequently, due to Gauteng's large role within the economy of South Africa, the IVRS is also important to the nation. Rand Water provides most of the water to Gauteng via IVRS with some of the supply in areas of Tshwane coming from Magalies Water. Further information on demand management within Gauteng is outlined in subsequent sections.

Supply into the IVRS is constrained and Rand Water are at the limit of their abstraction allowance. In order to increase supply volumes, the Phase 2 of the Lesotho Highlands Water Project (LHWP) requires completion, however, the project has been delayed until 2027. Until then, Gauteng faces water supply constraints that could result in a water crisis within the province.

In terms of bulk infrastructure capacity for areas with access to bulk water supply in Gauteng, either limited spare capacity is available or capacities have been exceeded. Notwithstanding the potential future relief offered by the LHWP, demand volumes within Gauteng are unsustainable, with issues such as non-revenue water (real water losses in particular) and inefficient water use by end-users requiring rectification in the interest of sustainability.

### 5.7.3 Sanitation

Water supply and sanitation infrastructure systems are directly linked to one another in most urban environments. Generally, water is transmitted to the end user for consumption and wastewater is generated. Sanitation systems are then used to channel wastewater from the generation point to treatment works. Sanitation systems often rely on gravity for collection and outfall to wastewater treatment works (WWTWs), however, in areas where this is not possible due to inadequate fall, sewerage reservoirs with sewerage pump stations are utilised for the transfer of wastewater.

WWTWs generally function as continuous systems in which wastewater is treated as it flows in via a treatment process that can vary from WWTW to WWTW. It is important to maintain and to not overload a WWTW in terms of influent flows as this can cause the continuous treatment system to fail leading to poor quality effluent being discharged. WWTWs generally discharge effluent directly into natural water systems such as rivers, meaning that the potential for pollution is high should effluent treatment quality goals not be met.

Most Municipalities within Gauteng have had issues with pollution stemming from their WWTWs which has caused damage to natural river systems within the province. Minimal spare capacity is available in areas with bulk infrastructure and the infrastructure networks are aged and require significant maintenance. Furthermore, these WWTWs have the potential to pollute viable water sources for Gauteng, such as the Vaal Barrage system. The situation requires urgent rectification in the form of preventative maintenance and the replacement and/or the upgrade of failing infrastructure.

### 5.7.4 Energy/Electricity

The bulk power infrastructure for Gauteng is supplied by various power stations in the Mpumalanga Highveld, Free State, Mozambique, and the municipality-owned independent power stations (Kelvin, Rooiwal, and Pretoria West power station) via the 66 kV, 8kV, 132 kV, 275 kV, and 400 kV bulk power transmission system. Currently, 89% of the province's electrical power is derived from coal-fired power plants, which are the major source of Green House Gas (GHG) emissions in Gauteng. As per the current GSDF 2030 document, most of the bulk electrical infrastructure network in the province is aging, overloaded with little to no spare capacity. The bad electrical infrastructure outlook is worsened by Eskom's inability to provide stable generation capacity. The table below shows the status capacities in the municipalities of the province.

*Table 2: Status quo electrical capacities in the municipalities in Gauteng*

Municipality	Capacity
<b>COJMM</b>	Sufficient capacity with planned upgrades
<b>COTMM</b>	Sufficient capacity with planned upgrades
<b>COEMM</b>	Sufficient capacity with planned upgrades
<b>Sedibeng DM</b>	Sufficient capacity with planned upgrades
<b>Emfuleni LM</b>	Operating near-maximum capacity with no planned upgrade
<b>Lesedi LM</b>	Sufficient capacity with planned upgrades
<b>Midvaal LM</b>	Overloaded capacity
<b>West Rand DM</b>	Operating at limited capacity
<b>Mogale City LM</b>	Operating near maximum capacity with no planned upgrade
<b>Merafong LM</b>	Operating at limited capacity
<b>Rand West City LM</b>	Limited capacity with notified MVA for application

Source: GCR IIMP 2030, 2016.....

MM/DM	2020	2025	2030
<b>COJMM</b>	1738051593	1949474388	2063808716
<b>COTMM</b>	1166306775	1311804083	1388069315
<b>COEMM</b>	1381812731	1557098161	1661216507
<b>SDM</b>	338658376	358291696	369615375
<b>WRDM</b>	381623298	419462970	440533891

Most municipalities do not have capacity to deal with these high demands. The table below shows the number of operational land fill sites in the five municipalities in the province and the remaining capacities in the respective areas. CoE is the only municipality that has adequate medium-term capacity. The other regions are in dire straits as they either will reach capacity in less than 10 years, or they already have limited capacity.

### 5.7.5 Solid Waste

The GCR IIMP 2030 document states that the province produces approximately 5,7 million tons of waste annually which is processed in thirty-one land fill facilities. The table below shows the estimated demand projections up until the year 2030 for the municipalities in the province.

Table 3: Solid Waste Demand Projections up until 2030



Table 4: Solid Waste Landfill sites and remaining capacities in Gauteng

MM/DM	No of operational landfills	Remaining capacity in 2016
COJMM	4	To reach capacity within 10 years
COTMM	5	To reach capacity within 10 years
COEMM	5	To reach capacity within 20-30 years
SDM	7	Limited capacity
WRDM	6	To reach capacity within 10 years

A shift is required in terms of dealing with waste, this concerns a drive to reduce the total volume of waste disposed in landfills. Waste reduction can be done by implementing recycling and alternate disposal mechanisms such as the waste to energy process, composting of organic waste, etc.

### 5.7.6 ICT

The National Broadband Policy calls for the implementation of an enabling, coordinated, and integrated e-strategy. The policy emphasises that the role of provincial government is to enable the distribution and promotion of uptake and usage of broadband services, this does not strictly specify that the province should be a provider of broadband services, it stresses the role of being an enabler.

Although South Africa is experiencing growth in broadband and internet penetration, it lags<sup>109</sup> behind other major emerging and developed economies significantly. One of the main reasons for this is the cost for

consumers when using this infrastructure. As a result, one finds that more affluent households have access to the internet and lower income households do not, this is the case especially with internet connection at home (GCR IIMP 2030, 2016).

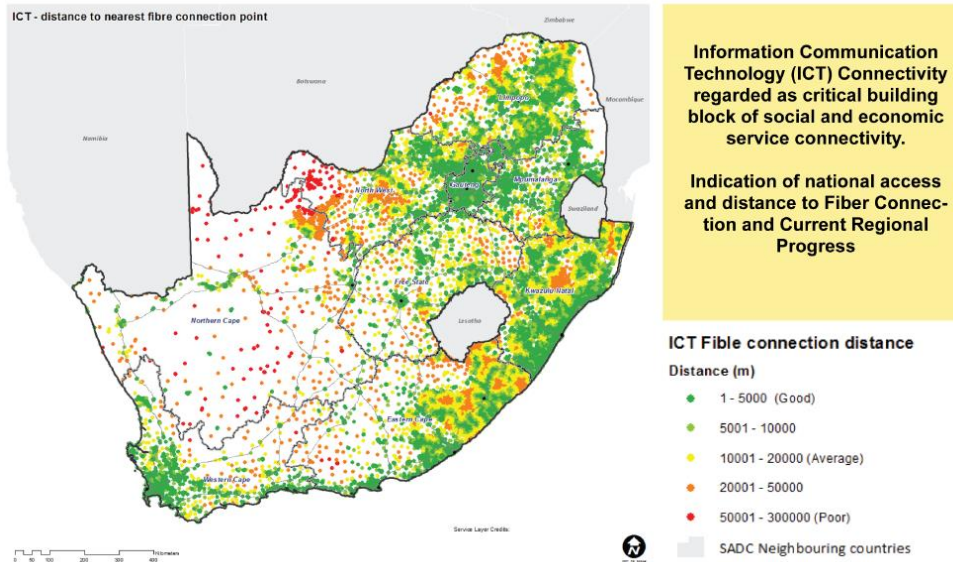
It has proved difficult to source spatial information for the bulk ICT infrastructure. There is a need to reach out to the main players in this space such as Metropolitan Trading Company (MTC), Openserve (Telkom), Neotel, Vumatel, Link Africa, Dark Fibre Africa, the cellular network providers (MTN, Vodacom, Cell C) etc. to collate the information these critical players have. The Province should establish a central database where all this information is collated. This can give critical insight on the footprint of the infrastructure and the capacity thereof.

Figure 26 shows ICT connection to the nearest main fibre infrastructure, the values are thematically illustrated. Even though most of the Gauteng Province shows up as adequate as it is covered in green, the map is at a national scale, as a result, it does not reveal the pinch points in terms of ICT infrastructure footprint capacity clearly.

<sup>109</sup> The QOL Survey 2020 found that during the Covid lockdown 80% of the respondents didn't have access to the internet potentially constraining home learning

Figure 26: ICT prevalence in South Africa  
Source: GCR IIMP 2030, 2016

### INFORMATION COMMUNICATION TECHNOLOGY



- ICT - There is ICT coverage, broadband connectivity is slow and expensive where available.

#### City of Tshwane

- Water - There is limited spare capacity for water. In other areas bulk infrastructure is exceeded. There is also a small portion which has bulk infrastructure with spare capacity;
- Sanitation - WWTP capacity exceeded, upgrades are required. There is a planned wastewater treatment plant for the city;
- Electricity - There is no spare capacity, upgrades are required;
- Solid Waste - There is limited capacity for solid waste (Total of 10 landfills, of which only 5 are operating);
- ICT - There is ICT coverage, broadband connectivity is slow and expensive where available.

#### City of Ekurhuleni

- Water - Insufficient reservoir capacity;
- Sanitation – No capacity in the existing infrastructure, upgrades required;
- Electricity – There is limited capacity;
- Solid Waste – There is sufficient capacity (All 6 landfills are operating and have long lifespans);
- ICT - There is ICT coverage, broadband connectivity is slow and expensive where available.

## 5.7.7 Summary of municipal infrastructure

### City of Johannesburg

- Water - There is limited capacity for water. There is also a small portion which has bulk infrastructure with spare capacity;
- Sanitation - A large part of the city has limited capacity and a small part with spare capacity, therefore future upgrades will be required;
- Electricity - There is no spare capacity and other areas exceed capacity, upgrade is required;
- Solid Waste - There is limited capacity for solid waste (Total of 7 landfills, 4 are closed and only 3 operating. There is 1 planned landfill for the COJ);

### **West Rand District Municipality**

- Water - There is limited spare capacity, upgrades will be required;
- Sanitation - There is spare capacity in some parts, other parts have limited capacity and a small part has exceeded capacity. Upgrades are required in some areas;
- Electricity - There is limited capacity, upgrades are required;
- Solid waste - There is limited capacity (Total of 6 landfills, of which 5 are operating. All landfills have 10 years lifespan);
- ICT - There is ICT coverage, broadband connectivity is slow and expensive where available.

### **Sedibeng District Municipality**

- Water - There is no spare capacity, upgrades are required;
- Sanitation - There is no capacity, upgrades are required;
- Electricity - Capacity is sufficient for current and future development;
- Solid waste - There is limited capacity (currently there is a total of 9 landfills, of which 7 operating and 2 are closed. There are 3 proposed/ planned landfills);
- ICT - There is ICT coverage, broadband connectivity is slow and expensive where available.

## **5.7.8 Summary**

Infrastructure summary for Gauteng Province is as follow:

### **Water**

- Majority of the province has limited water capacity;
- Some areas have an insufficient infrastructure/water network to provide water; and
- There are water losses due to leakages in the network.

### **Sanitation**

- There is limited spare capacity in many parts of the province;
- Many areas have insufficient infrastructure; and
- WWTP capacity has been exceeded in other areas.

### **Electricity**

- There is limited spare capacity in many areas and Eskom has plans to increase capacity by providing new substations and power lines.

### **Solid waste**

- Majority of Gauteng province has limited capacity; and
- Majority of the landfill sites have 10-year lifespan which is not sustainable for such a growing province.

### **ICT**

- Most areas in the province have ICT coverage, but there are issues with the broadband connectivity being slow and expensive. There is insufficient information available for ICT (on the GSDF 2030), and there was no way of telling if areas with coverage have sufficient capacity.

## 5.8 ENVIRONMENT AND HINTERLAND

### 5.8.1 Biophysical influences

South African cities are characterised by inefficient and wasteful uses of scarce resources<sup>110</sup>, and curbing the use of Gauteng’s scarce resources must be addressed in the GSDF Review. In the Gauteng context:

**Water remains a scarce resource** and under severe constraint in terms of growth management (Figure 27). As noted in Figure 27, water storage, supply and reticulation at scale remains a critical issue. As the population increases Gauteng will be more dependent on imported regional supply.

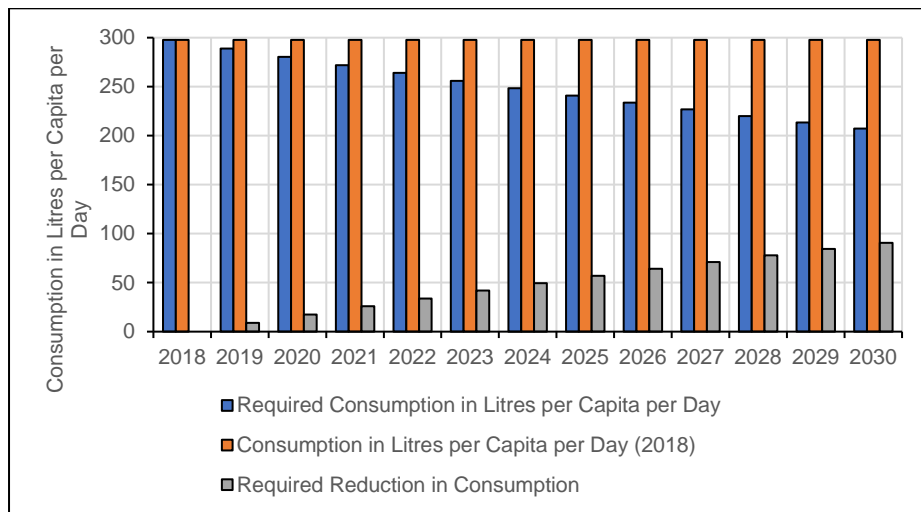


Figure 27: Water consumption and population demand showing the water shortages. In recent times, “environmental sustainability”, “climate change” and “climate resilience” have been demonstrated to be critical elements impacting on the

future of mankind’s health and safety, security and survival. Long term and historic loss and destruction of Gauteng’s natural environment has illuminated the importance of protecting and conserving what remains of our natural heritage. The numerous and diverse benefits of this integration of the natural environment into the man-made built environment have been increasingly evident and prevalent in contributing to meeting goals of our communities, socially, ecologically, financially, and geographically. As awareness and education have increased around the value of nature in cities, it is now common and good planning to continue to ensure that the interrelationship between nature and the built environment is pursued into the future.

Environmental systems, processes and open areas must become part of the overall planning of any new sustainable city in the form of usable and functional spaces, which contribute to positive and proactive land uses within the urban framework. The goal of including the environment in sustainable urban planning is to make it an equal partner in overall land use planning. The role and value of natural environmental systems is vitally important, as they are renewable resources and, if adequately protected, managed, and properly utilised, will provide benefits to communities and cities in perpetuity.

The Gauteng Province is vast and very diverse with a mix of existing development and urban typologies, as well as immense ecologically sensitive and conservation areas.

<sup>110</sup> Integrated Urban Development Framework, 2014



The nature of this diversity means that the area is managed and controlled by a suite of environmental legislation, policies and guidelines (covering everything from the CoHWHS, Protected Areas, numerous watercourses, rocky ridges as well as the fact that the Province has numerous municipalities, each with their own spatial development frameworks and environmental constraints), governed and implemented by different Competent Authorities.

This can and does cause conflict, overlap and perhaps controversy and needs to be addressed holistically. As such, the way forward for integrated environmental and spatial urban planning must be **to incorporate all natural, green and conservation spaces as functional urban spaces for, amongst others, recreation, non-motorised transport and sustainable stormwater management and in such a way, recognise the natural environment as the link between all other land uses.**

The GPEMF is considered the most up-to-date Environmental Management Framework and Environmental “development guideline” in the Province and should be the primary dataset to use when considering Environmental spatial data for sensitive areas and constraints for development.

To this end, the GPEMF has been used as the primary tool for the mapping of developable land areas and environmental constraints for this particular study. **Error! Reference source not found.** The map shows that primary land for development (that has the fewest environmental constraints) is the Development with limited constraints (yellow color on the map), Zone 1 as outlined in the GPEMF.

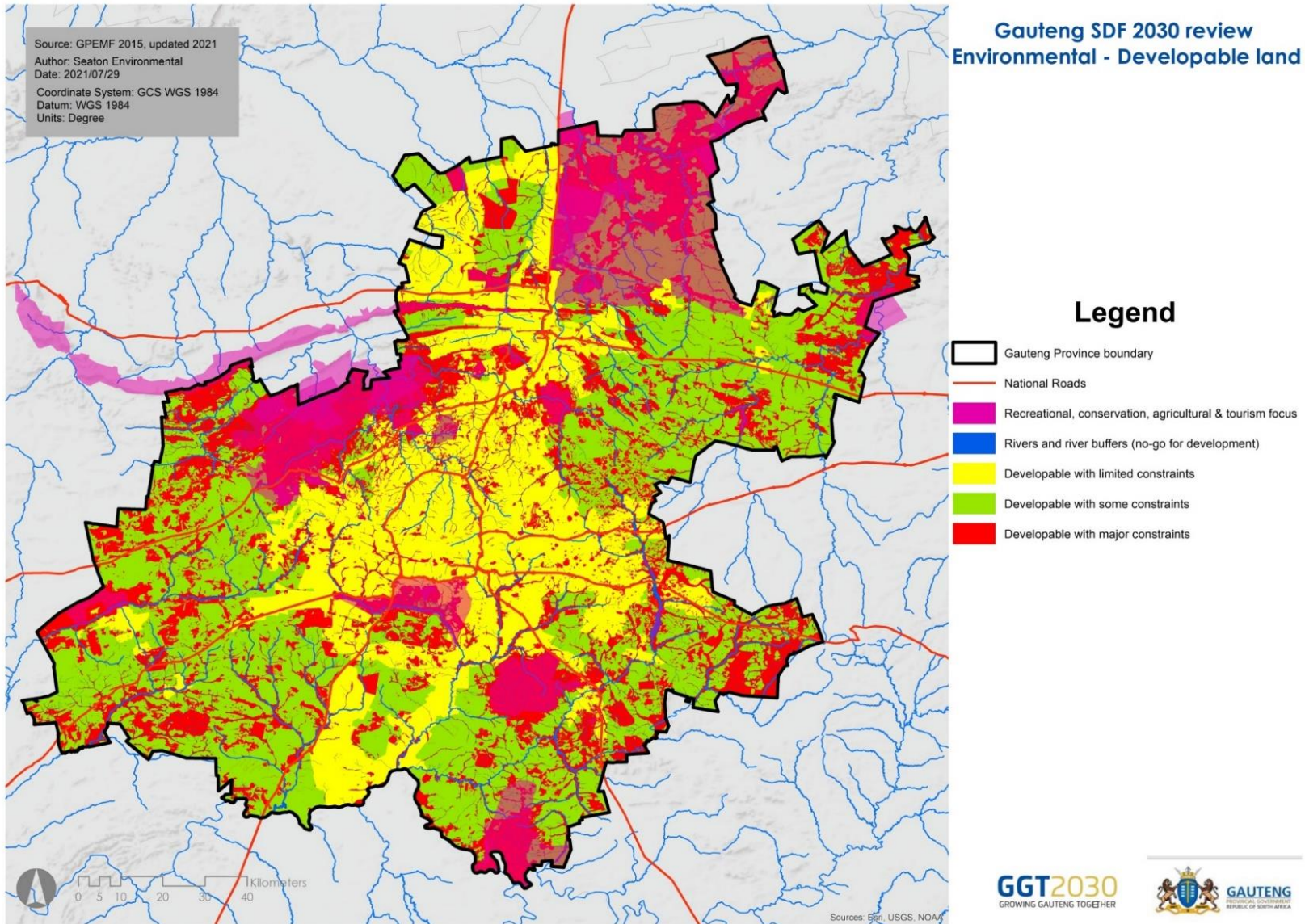
The areas that are environmentally sensitive and for the most part contain constraints to development are summarised as follows (identified as important to protect and create resilience against climate change):

- All rivers and wetlands and their associated 30 or 50m buffers throughout the Province are seen as no-go development zones.
- Class 1 and 2 ridges have been identified as major development constraints, but could focus on recreational, conservation or tourism development activities.
- All protected and conservation areas, (including CoHWHS, Dinokeng and Suikerbosrand), should be a no-go for large scale development activities, and should focus on recreational, heritage, agricultural, conservation or tourism development activities.
- Site specific assessments and ground-truthing must be undertaken to determine if an EIA is required for a specific development precinct or site. Figure 28 illustrates the various levels of development constraints with Gauteng, and should be used as a broad guideline when compiling the Gauteng SDF 2030. Green spaces such small ridges, watercourses and their associated buffers must be used as functional spaces for, amongst others, recreation, non-motorised transport and sustainable stormwater management.

**Due to its immense diversity on all levels (social, economic and environmental), the GSDF is an opportunity to create a true 21<sup>st</sup> century, connected, innovative and sustainable city region, integrating all services and providing for functional green spaces.**



Figure 28: Gauteng development land map - Environmental





### Vulnerabilities and climate change

Disaster incidences are becoming more prominent as a result of various factors including climatic change, population growth and urban development, and now recently the COVID-19 pandemic<sup>111</sup>. From a climatic perspective, Gauteng regularly sees flooding and damage to property of landless communities, (informal structures) within watercourses that are protected in terms of Section 21 of the Water ACT.

GDARD has recently explored how climate change is likely to affect the Gauteng City-Region (GCR)<sup>112</sup>, Although the urban poor, and particularly those living in informal settlements and historical townships, are likely to be the worst affected by disasters, vulnerability to disasters is affected by more than just low income. Factors such as access to food, basic services, transport, communication, social capital and education are also important in influencing vulnerability. There is a growing emphasis on the role of minor everyday risks that accumulate over time to increase vulnerability to hazards such as floods and drought. These socially and economically vulnerable groups<sup>113</sup> have likewise been the most vulnerable in the COVID-19 pandemic.

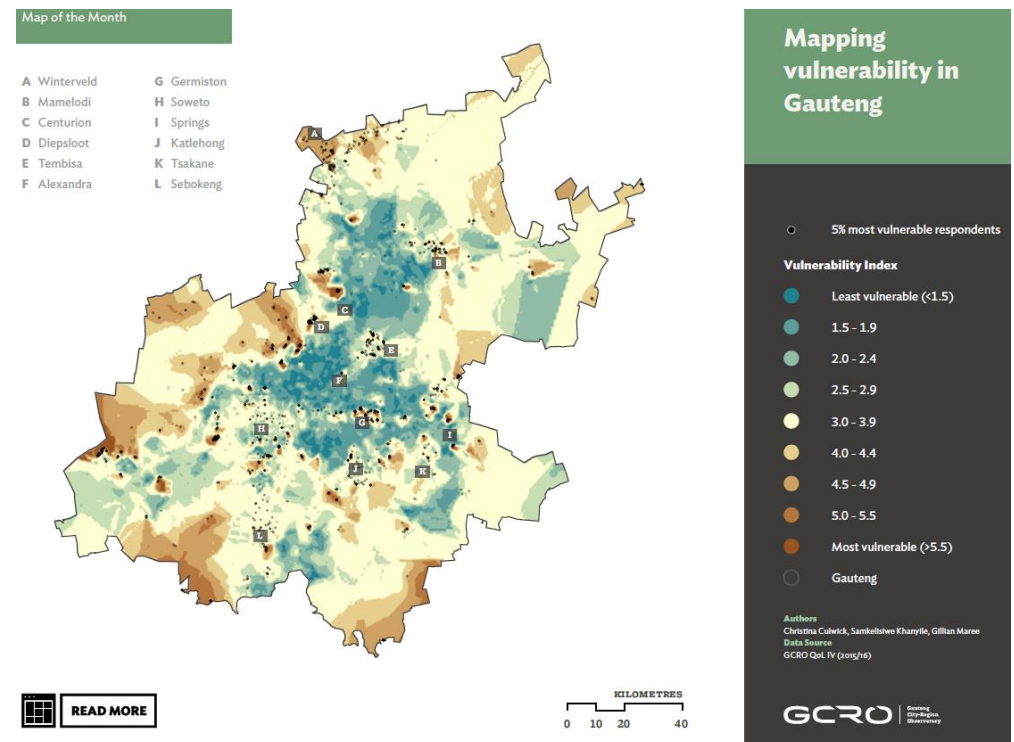
This Vulnerability Index ranges from 0 to 10, indicating increasing vulnerability. Relatively high concentrations of vulnerability can be seen in areas such as Soweto, Diepsloot, Mamelodi, Sebokeng, Tembisa, Tsakane, Germiston, CBDs where overcrowding exists, and Winterveld. This indicates the dire circumstances of many people within the province.

Plans and policies are in place to mitigate the impact of the climate change. The NDP 2030 advocates for a transition to a low-carbon, resilient, and just

society and the Integrated Resources Plan (IRP 2019) provides guidance on how to de-commission aging coal power stations and the future expansion of the national energy mix in response to the country's growing energy demand. Mitigating risk must be the core of the GSDF's planning.

Figure 29: Vulnerability assessment

Source: GCRO Map of the Month



<sup>111</sup> The GCRO Report, 2018 identifies vulnerabilities.

<sup>112</sup> The GCRO explores the vulnerability across Gauteng using data from a survey conducted in 2015/16.

<sup>113</sup> GCRO Covid 19 Index of risk factors that increase social and health vulnerability during outbreak, include citizens with poor health, no access to medical health insurance, have limited savings, and tend to face hunger



### ***Air pollution and carbon emissions***

Air pollution and carbon emissions are of major concern and manifest most noticeably in cities, where as urban concentration makes focused intervention at scale possible. Attention to these disorders has profound multipliers in spatially-targeted intervention. Effluent treatment, particularly in the Emfuleni area and its impacts on local water courses and the Vaal River in particular, requires careful monitoring; the quality of water from effluent treatment from the CoJ Northern Sewer Works and discharging into the Jukskei and Crocodile River system requires careful monitoring.

### ***Biohazards and pandemics - Covid-19***

The COVID-19 pandemic reached South Africa in March 2020, resulting in restrictions on movement, social gatherings and economic activity in an attempt to slow the spread of the disease. These measures devastated the Gauteng economy, which contracted by R80,9 billion in 2020, equivalent to nearly a decade worth of economic growth<sup>114</sup>. The economic hardship was further exacerbated by the looting and destruction that occurred throughout areas of Johannesburg (and KZN) in July 2021.

The pandemic has also had a direct and lasting impact on employment in the province, with the unemployment rate increasing by 3,0% year-on-year, to 34,4% in early 2021. Job losses were concentrated largely in those sectors most reliant on low and semi-skilled workers and SMMEs, including retail, personal services, construction and tourism, resulting in a marked increase in poverty. With many businesses unable to reopen it is likely, in

the absence of concerted intervention, that employment will not fully recover even after lockdown restrictions are fully removed<sup>115</sup>. This has had an impact on municipalities ability to collect revenues, and supplementary budgets that have been intended to facilitate economic growth have been reallocated to limiting the social and economic impact of the pandemic. Policies are being put in place to ensure that the economy recovers.

Further impact has been seen in transport, as more people can work remotely and online shopping has become more accessible (mainly for the middle-upper income citizens), and public transport is now seen in a more negative light. This has resulted in increased capacity on transport systems, and availability of retail and office space. The long-term effects, however, are still to be quantified, as the lockdown has eased, many are returning to work and manual labour is required in a number of jobs.

Research undertaken by Gauteng Cogta<sup>116</sup>, has found that in most pandemics the best solution is through immunity such as vaccination, and in the Gauteng context there was very little correlation between the urban form and how the virus spread. The findings also show that policies can become more responsive to pandemics in terms of the following.

<sup>114</sup> Gauteng Treasury, 2021

<sup>115</sup> Ibid.

<sup>116</sup> Cogta, 2020, Impact of Covid-19 on urban and regional planning in Gauteng

The outcomes from the research includes: (1) **Urban design, density, and urban form** – despite vulnerability in terms of overcrowding, there has been evidence that higher density cities have been better equipped to address outbreaks, and relies heavily on social responsiveness<sup>117</sup> and compact approaches to development rather than sprawl should remain the underpinning of urban development; public spaces and recreational areas become key to resilience and general health and well-being of citizens; (2) **Urban governance, management, and planning**, more flexibility is necessary in how government responds, and more proactive planning rather than responsive planning is required; (3) **Smart cities** – access to ICT infrastructure is becoming core to ‘doing business’ and it becomes necessary to ensure that the digital persists, and facilitative approaches to creating ICT access is necessary for socio-economic development and growth; and (4) **Transportation and mobility** – transit orientated development and sustainable development whereby people can walk and cycle to opportunities, would make for more resilience against the pandemic and economic vulnerability.

## 5.8.2 Conservation and tourism Areas

Rural development initiatives must also target the very extensive and growing opportunities associated with the recreational and leisure needs of Gauteng’s population and a lifestyle increasingly predicated on compacted, complex and intense urban patterns. Opportunities which were only magnified by the pandemic and the growing demand for ‘local’ travel.

The need for recreation and leisure becomes increasingly important both in terms of stress-relief and also in offering a GCR lifestyle that attracts a world calibre of economic activity, skills and competitiveness.

From a spatial perspective nature reserves, green spaces and tourism destinations outside of the urban boundary provide a natural buffer to urban expansion and may offer leisure, business and employment opportunities for residents. Economically, however, the revenue and employment potential of these sites is generally small, the Cradle of Humankind being an exception, with limited private sector investment. Integration of these areas into the rural-urban economy should thus be supported at a policy level.

## 5.8.3 Agriculture

Gauteng is highly urbanised and much of the land has limited agricultural potential due to topography, soil types and limited availability of water resources and irrigation infrastructure. The province has two sources of water from dams:

**The Roodeplaat Dam:** The primary purpose of the Roodeplaat Dam is to supply potable water to the surrounding urban areas for domestic/industrial use and for irrigation purposes on properties listed on the List of Rateable Areas under the Pienaars River Government Water Scheme. However, the need to realise the full potential of the dam, including recreational and tourism related development required the compilation of an RMP.

<sup>117</sup> Ibid. ‘Clustering of people, overcrowding of events, social behaviour and responses, poor management of health-related measures etc.’ pg 29

**Bon Accord Irrigation Scheme:** No evidence could be found that this scheme is still operational.

Most of Gauteng's high potential agricultural land is in the eastern portion of Ekurhuleni, on the dolomite formations towards Carletonville and towards Heidelberg and Vereeniging.

The GSDF 2030, 2016 in general addresses the needs of commercial agriculture. The **Special Agricultural Development Zones** provide clarity on where high intensity agriculture should be practiced. With uncertainty in the proposed land appropriation policies, coupled with labour tenancy in rural areas may derail noble initiatives if not dealt with sensitively. **This could jeopardise food security on a provincial and even national level.**

Many of the **intensive production** approaches **do not depend on the soil conditions or land use area** because the plant mediums (i.e. soils, vermiculite, peat moss, perlite, etc.) for greenhouses are usually 'imported' into the production area and producers rarely use the soils of the premises where greenhouses are erected, making this a viable option in the Gauteng context.

The largest advantages of hydroponic production are that: (i) Vegetable production can occur in a concentrated manner on small surface areas where large open areas with arable soil are not readily available; (ii) Much higher crop yields can be attained than on open crop fields; and (iii) Insect, bacterial and fungal pests can be better controlled than in outside spaces. The strongest disadvantages are: (i) The high cost of the soluble and specialised fertiliser mixtures; (ii) The cost of additional micro-nutrients; (iii) High capital and maintenance cost of buildings; (iv) High cost of the containers, growth media, piping and electric pump systems which supply

the plants with nutrients; (v) Intensive overall management of production, and (vi) Heating costs for cold periods. All these factors increase the risk of the capital investments and skilled management is needed to manage these delicate operations. High maintenance and operational costs enhance risks but also create profitable business opportunities.

**Farming is still labour intensive and a cost-effective method to create jobs, particularly by intensive shaded and hydroponic farming systems.** The ECCA formations may yield coal, which is one of the essential production inputs where heating is required in tunnels. Coal deposits occur in the eastern portions of Ekurhuleni, around Vereeniging and east of Bronkhorstspuit. Transport costs for heating is often prohibitive and can decide financial feasibility of smaller scale production in tunnels.

**Aquaculture has the potential** to create job opportunities and could be highly profitable. The production of Tilapia could be produced in small surface areas but is capital intensive and specialised skills are needed to manage such operations. Production could be conducted on a small parcel of land, but good-quality water would be required. International off- take markets exist for especially fresh and frozen whole-fish products but strict sanitary and phytosanitary (SPS) and food safety standards need to be adhered to. The cost infrastructure and production costs are high, and the management of such systems is intensive and costly – all resulting in high risks.

### *Food security*

Food security is one of the items that should be addressed within the province, it will require that land and resources be made available within easy access to the communities. Programmes promoting food security or supplementing household income should be incorporated into the GSDF.

One has to understand the logistical and strategic imperatives that go with providing food security and to the extent that Gauteng can take care of a significant proportion of its own food needs locally, it is indeed making a significant contribution to the national food security needs. One notes the food market needs that go with this large population and the economic opportunity that accompanies food production and allied value-added agriculture intensively so close the greatest, and most affluent market concentration in the sub-continent.

Food security therefore must remain a priority. Farming continues as:

- Commercial farming on large tracts of land that is generally high potential land or smaller portions where intensive agriculture takes place under cover and where sufficient irrigation water is available;
- Small commercial farms, also in areas where irrigation water is available;
- Smallholdings; and
- Urban areas (including informal settlements).

#### **5.8.4 Summary**

- Climate change is of concern for the GCR as extreme weather patterns become more frequent in Gauteng, causing damage to infrastructure and economic sectors and placing basic services and infrastructure under threat. Climate change continues to pose significant social, economic and environmental risks and challenges on the GCR.
- The GCR's spatial form and development approach moving forward will play a pivotal role in meeting its long-term climate change commitments and national development goals.

- This would be achieved by exploring options for protecting our natural environment, and containing development in a compact and complex way, which makes citizens less reliant on private mobility and promotes walking and cycling, which would lower the carbon footprint significantly.
- Food security is one of the items that should be addressed within the province and will require that land and resources be made available within easy access to the communities. Programmes promoting food security or supplementing household income should be incorporated into the GSDF. As part of food security, land must be identified and made available for market gardens that are not in conflict with environmental legislation, and in particular, wetlands and wetland buffers within urban areas. It will also require that irrigation water be available and technical support be provided in production techniques and to supply production inputs. The role of the agricultural section of the GSDF should be to make suitable land available.
- The natural environment and its diverse and associated features should and must become an integral structuring element of the urban spatial design framework, and not merely set aside as unused open space, perceived as an obstacle to proactive use.



## 5.9 A SYNOPSIS OF THE PLANNING ISSUES

Table 5: Synopsis of issue

<p><b>1</b></p>	<p><b>Housing provision</b></p>	<ul style="list-style-type: none"> <li>• Housing needs to be understood as an integral part of a wider urban development rather than an isolated item;</li> <li>• ‘Human settlements’, whether consciously or otherwise, are a vehicle still for the delivery, essentially, of low-income housing, often taking us into the delivery of further marginalised housing beyond the urban fringe;</li> <li>• Housing delivery constitutes a significant planning distortion that has a profound influence on the shape, form and extent of the GCR and is a primary contributor to urban sprawl from 2001 to 2021;</li> <li>• How realistic are the housing targets that drive us?             <ul style="list-style-type: none"> <li>- since 1994 in Gauteng, 958,000 low-income housing units have been delivered through Human Settlements targets;</li> <li>- in the 9 years leading up to 2030, a further 3,3 million low-income housing units need to be delivered;</li> <li>- over the past 10 years the dominant delivery of housing into the low-income sector has been via ‘backyard development’, largely as an informal process;</li> <li>- policy shift to ‘site &amp; service’ and ‘rapid land release’ suggests even greater levels of low-density peripheral sprawl.</li> </ul> </li> </ul>
<p><b>2</b></p>	<p><b>The costs of housing land on and beyond the urban fringe</b></p>	<ul style="list-style-type: none"> <li>• It is often contended that land on the urban fringe and beyond is cheaper and therefore more affordable for poorer people or more easily assembled to make available to the poor;</li> <li>• Whilst being relatively of lower market value as un-serviced, vacant land, peripheral land has significant direct and indirect additional costs associated with it:             <ul style="list-style-type: none"> <li>- bulk services that need to be brought over great distances;</li> <li>- expensive road infrastructure;</li> <li>- further stretching of public transport and transport subsidies;</li> <li>- greater distances from urban prospect;</li> <li>- higher proportions of meagre earnings spent on transport;</li> <li>- poor, unreliable and unsafe transportation;</li> <li>- the social dysfunction of very long-distance commuting;</li> <li>- poor access to social infrastructure; etc.</li> </ul> </li> <li>• Taking the significant socio-economic dysfunction into account, agencies are better off dealing with complex land assembly in better-located urban zones and achieving better multipliers on the subsidies directed into housing projects.</li> </ul>

<p><b>3</b></p>	<p><b>Urban accretion as a directed growth management approach</b></p>	<ul style="list-style-type: none"> <li>• Cities through history have grown in two dominant ways:             <ul style="list-style-type: none"> <li>○ by spreading further out in a horizontal dimension and extending the urban footprint;</li> <li>○ by consolidating, intensifying and growing vertically within the urban footprint.</li> </ul> </li> <li>• Growth management of the GCR has been predominantly based on the horizontal spread model;</li> <li>• More focus in GCR growth management needs to turn to the consolidation or 'urban accretion' model:             <ul style="list-style-type: none"> <li>○ the urban footprint remains compact;</li> <li>○ the pattern of land uses and activities becomes more complex;</li> <li>○ residential densities become significantly higher;</li> <li>○ existing investments in social and service infrastructure are amortised more efficiently;</li> <li>○ the need to commute is reduced as people live, work, learn, pray and play within 'walkable' neighbourhoods; and</li> <li>○ public transport becomes more possible and integrated.</li> </ul> </li> </ul> <p>Housing delivery largely becomes an economic pursuit for small-scale developers such that subsidies generate further economic multipliers. These processes are largely naturally occurring and exist largely informally and undirected at present in the form of 'backyard development';</p> <ul style="list-style-type: none"> <li>• Significant investment is now being directed into formalising this process, at scale, within well-located areas close to economic opportunity and with formal lease agreements providing the necessary security of tenure.</li> </ul>
<p><b>4</b></p>	<p><b>A pragmatic, short-term public transport strategy</b></p>	<ul style="list-style-type: none"> <li>• An extensive, fully integrated public transport system (probably with extensive rail transit as its backbone and fed by various integrated, more localised systems such as BRT, local bus systems and taxis) remains a longer-term ideal.</li> <li>• Public transport has very long-term planning and implementation horizons and is vital to the population and economic growth anticipated within the GCR well into the future.</li> <li>• In the next 10-year horizon of the GSDF 2030, however, a more pragmatic strategy seems necessary but which in no way negates the broader public transportation strategy noted above.</li> <li>• It is crucial that the many limitations confronting a comprehensive, integrated public transport strategy be acknowledged:             <ul style="list-style-type: none"> <li>- The Prasa passenger rail service and infrastructure has degraded and the role it can and must play can only be regarded, if at all, as a very long-term strategy;</li> <li>- Effectively we have "free" high-quality travel on Gauteng's very extensive freeway system, and it is unlikely that a more comprehensive public transport system at scale will emerge in the short to medium terms;</li> <li>- The GSDF 2030 seeks to curb and reverse urban sprawl that makes public transport unviable, but this is a particularly long-term strategy and is unlikely to support a more comprehensive public transport system at scale in the shorter-term;</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>- Significant vested interests exist in the public transport arena that limit the levels of integration required for a more comprehensive public transport system at scale and this is unlikely to change in the short-term;</li> <li>- Notwithstanding a more determined effort to attract private sector funding into the public transport arena, resources for public funding at scale are limited and under more pressure than ever.</li> <li>• Faced with this, a more pragmatic short- to medium-term public transport strategy is needed as part of the GSDF 2030 making do with what's on hand but remembering some fundamental spatial principles:             <ul style="list-style-type: none"> <li>- The need to commute must, as far as possible, be reduced through a spatial policy of compact complexity;</li> <li>- More intensive consolidation of development must be directed into existing transport corridors, existing urban nodes and within transit-oriented developments (TODs);</li> </ul> </li> <li>• There has to be urgent resolution around the impasse that exists in making motorists pay their way on freeways.</li> <li>• Existing investments into BRT need to be consolidated and extended.</li> <li>• More must be done to find reciprocation between the systems we now have (BRTs, other bus systems, the introduction of high-occupancy vehicle lanes (HOVL) on main corridors, most notably for taxis and buses, etc).</li> <li>• We must be increasingly inventive in elaborating and finessing what we have as far as possible and seek reproachment between these and the interests they represent.</li> </ul>
<p><b>5</b></p>	<p><b>A Freight and Logistics strategy must be an essential aspect of the GSDF 2030</b></p>	<ul style="list-style-type: none"> <li>• Worldwide, a major component of extensive, competitive city regions is a Freight and Logistics strategy that entails, very often, an outer freight rail loop beyond the urban fringe that has several freight and logistics hubs that service these city regions. Between cities, these hubs are often connected by mainline rail, with further distribution into the city regions themselves being short-haul road or local rail systems:</li> <li>• Transnet planning is fully aligned with this concept and encompasses:             <ul style="list-style-type: none"> <li>- the existing loop from the north-west and passing Tshwane to the north, east of ORTIA and south-west to Saldanha via Vereeniging;</li> <li>- several freight hubs are prioritised related to this line: Pyramid; Silverton; Kaalfontein; Tambo Springs and, in future, the Sentra Rand hub at Bapsfontein;</li> <li>- Potentially, on the western periphery of the GCR, hubs at Zuurbekom and in the vicinity of Lanseria.</li> </ul> </li> </ul>

<p><b>6</b></p>	<p><b>Provincial road planning should be geared to shaping and forming the extent of the GCR</b></p>	<ul style="list-style-type: none"> <li>• As with rail, one of the key shapers of urban form and the way a city region’s pattern of development functions is its major province-wide road system.</li> <li>• Whilst this is indeed a spatial asset, it must also be recognised within the GSDF 2030 that extensive road networks can have the unintended consequence of promoting urban sprawl if not judiciously managed.</li> <li>• At present there is a tendency for the western sector of the GCR to be disadvantaged by a lack of major road infrastructure whilst the eastern sector (notably Ekurhuleni in general and OR Tambo International Airport) is distinctly advantaged.</li> <li>• The roll-out of movement capacity must remain mindful of the role the Province can play in ensuring that road infrastructure shapes and forms the extent of the urban system such that it trends towards compact complexity and a balanced urban system.</li> <li>• Noting the extent of sprawl, the selective prioritisation of provincial GSRN sections is seen as a key spatial intervention to support the desired urban configuration, that can, over time, support spatial logic and discipline to the GCR.</li> </ul>
<p><b>7</b></p>	<p><b>The GCR ‘hinterland’ needs far more recognition as a valuable and vital resource</b></p>	<ul style="list-style-type: none"> <li>• Apart from containing further urban sprawl there is a need to be far more mindful of the role to be played by the ostensibly open, vacant or unutilised land that might collectively be referred to as the GCR’s provincial hinterland.</li> <li>• Noting the danger of simply regarding this land as easily accessed and available for further urban expansion on a piece-meal basis, it is vital that the GSDF 2030 places far greater value on this resource. It is an important composite of conservation land, extremely important and, in many instances, fragile ecological and complex environmental components, aquifers, outstanding international heritage value, varying levels of agricultural value, and, very importantly, outstanding recreational and tourism value.</li> <li>• At present, however, it tends to be regarded as a loose assembly of all these component parts: each component, in its own right and according to its own merits, always being vulnerable to the greater and inexorable pressures of urban growth by what may appear to be incremental ‘creep’ but is, in fact, rampant and unbridled urban sprawl.</li> <li>• Instead, it should be regarded as a collective resource and asset that is extremely carefully coded, from a land-use, activity and accessibility point of view, and very explicitly regarded as an “urban support zone” that may not be regarded for further urban expansion.</li> </ul>



<p><b>8</b></p>	<p><b>Agriculture must itself be regarded as one of Gauteng’s primary economic underpinnings</b></p>	<ul style="list-style-type: none"> <li>• Building on the importance of provincial hinterland as essential land resource, it is essential that agriculture be understood and prioritised as strategic economic pursuit. It appears that this valuable asset continues to be vulnerable from three points of view:             <ul style="list-style-type: none"> <li>○ Although each area identified is typically extensive, they nonetheless stand as elements divided from one another by other elements comprising this ‘hinterland’ and do not, therefore, enjoy the advantage of being considered as a single, consolidated resource that may not be trifled with;</li> <li>○ There has been too little emphasis placed on this agricultural potential as an essential component of Gauteng’s provincial economy: instead, it is defended on far less solid ground such as simply being important from a “food security” point of view but more needs to be done to realise its undoubted potential; and</li> <li>○ In many respects, these agricultural assets do not appear to be supported by a fully integrated, cogent economic strategy of production (both extensive and highly intensive farming types and practices) together with the associated agri-processing possibilities (both of locally produced content as well as produce from surrounding provinces).</li> </ul> </li> <li>• It is felt that far more concerted economic planning between the many and varied agencies (provincial and national) is required and that simply the designation of ‘agri-hubs’ is too nebulous: what precisely are these focused on? of what does each comprise and what strengths and competitive advantage is exploited? how do they intersect with properly managed land restitution? how are they supported by public and private sector investments and inputs? how, precisely, do they form part of the provincial growth and development strategy?</li> </ul>
<p><b>9</b></p>	<p><b>Urban Sustainability as a Provincial responsibility</b></p>	<ul style="list-style-type: none"> <li>• As noted in the Planning Criticalities, many of the planning issues regarding urban sustainability and the green agenda that supports it occurs at functional levels that often cut across jurisdictional boundaries and regions: it is a scale of planning best suited to province and also allows for the planning interfaces with national and regional agencies such as RWB and Eskom.</li> <li>• The Sustainability Agenda needs to go beyond ‘business as usual’ in so many ways: the way we shape our urban systems for access to opportunity; the way we set up institutional arrangements to cut across the ‘silos’ that constrain our thinking and planning approaches; in effect, we need to embrace holistic thought and the value of finding synergy across disciplines. Too much of our planning approach focuses on specific objectives without realising how much more could be achieved if these objectives were defined and understood collectively. This reflects in the siloed way infrastructure is regarded, economic development is regarded and the single-minded remits of various agencies are regarded.</li> <li>• Infrastructural investment too must be thought through holistically and there are many instances of how provincial-wide approaches to servicing would yield more appropriate and progressive ways of finding synergy and promoting</li> </ul>

		<p>sustainability. The water-cycle thinking at scale coming out of this review, as well as waste-to-energy dealing more with functional areas rather than jurisdictional definitions, are obvious cases in point.</p>
<p><b>10</b></p>	<p><b>Compact complexity and spatial consolidation must be facilitated by service capacity</b></p>	<ul style="list-style-type: none"> <li>• The GSDF 2030 is clear on the primary focus of further urban development being in and around existing nodes and those areas sharing advantage by economic proximity. In addition, the metropolitan SDFs all vigorously promote intensified nodal growth. Nevertheless, it is important that service infrastructure be bolstered in order to achieve these intentions. Clearly, more holistic thinking across all planning agencies is required in promoting urban intensification and consolidation.</li> <li>• Similarly, more unequivocal direction to the market is required: for as long as a market-led development model finds it easier to go to newer areas that deal less with the wider socio-economic profile of the South African market, there will be market resistance to re-investment and consolidation in the older, more established parts of the urban system. This policy direction, encouragement and support, too, needs to be backed up by infrastructural capacity.</li> </ul>

## 5.10 SUMMARY OF PLANNING CRITICALITIES

1	Population growth and urbanisation	<ul style="list-style-type: none"> <li>• Global and regional population growth remains too high but the allied global process of rapid urbanisation is reducing growth by virtue of the top-down economies that characterise urbanisation: the factors of urban production require expensive resources of information, skills, education and training to encourage smaller families.</li> <li>• It is anticipated that population growth in the CGR will continue, but at a slower pace.</li> <li>• Growth by in-migration will nevertheless continue from regional, national and continental hinterlands.</li> <li>• The GSDF 2030 is thus posited on <b>dealing with relatively rapid urban growth</b> and fairly <b>high levels of poverty</b>.</li> <li>• How this growth is managed on a basis of equitable social integration and economic inclusion is crucial to the formulation of the GSDF 2030.</li> </ul>
2	Sustainability as a developmental issue	<ul style="list-style-type: none"> <li>• It is noted that sustainability is not an environmental issue but a <i>developmental</i> issue.</li> <li>• Urban sustainability, in particular, has several dimensions that underpin it: <ul style="list-style-type: none"> <li>- the extent to which we include people in social and economic integration;</li> <li>- access to opportunity based on proximity and the need to commute less;</li> <li>- ready availability of integrated, affordable, safe and reliable public transport;</li> <li>- the compact complexity of urban shape, form and extent;</li> <li>- environmental and bio-diverse underpinnings to a 'green/blue' economy;</li> <li>- 'smart city' principles that close the gap in the 'digital divide';</li> <li>- urban agriculture as an inherent and vital aspect of the city region's economy.</li> </ul> </li> </ul> <p>All of these aspects are critical to the content and spatial rationale of the GSDF 2030:</p>
3	Climate change and environmental duty of care	<ul style="list-style-type: none"> <li>• <b>Global warming and climate change</b> have direct and indirect implications: <ul style="list-style-type: none"> <li>- indirectly, rising sea levels could add to in-migration from the coast and the intensification of the present patterns of inland economic consolidation;</li> <li>- inundated coastal cities may be unable to contribute present rates of economic growth and the GCR will have to assume more responsibility in this regard.</li> </ul> </li> <li>• <b>Water as a scarce resource</b> will remain a severe constraint in the growth management: <ul style="list-style-type: none"> <li>- Whilst Gauteng is expected to receive increased levels of rainfall, water storage, supply and reticulation at scale remains a prominent constraint; and</li> <li>- The GCR will be more dependent on imported regional supply.</li> </ul> </li> </ul>

	<p><b>Climate change and environmental duty of care continued</b></p>	<ul style="list-style-type: none"> <li>• <b>Concern for the Water Cycle</b> is required for a compacted city region that uses water frugally:             <ul style="list-style-type: none"> <li>- progress must be made in less water-dependent sanitation (both systems and treatment methods);</li> <li>- a major change is required, at a provincial level, in implementation and management of the overall <b>water cycle</b>;</li> <li>- planning in this regard must be seen as a Provincial competence; and</li> <li>- the GSDF 2030 is the primary spatial vehicle through which this must be realised.</li> </ul> </li> <li>• <b>Gauteng's bio-diversity resources</b> are valuable and well documented, often extending beyond the boundaries of the province:             <ul style="list-style-type: none"> <li>- they must form a bed-rock of spatial planning for the Province and is a key informant for the spatial strategy</li> <li>- .</li> </ul> </li> <li>• <b>Air pollution and carbon emissions</b> manifest most noticeably in conurbations:             <ul style="list-style-type: none"> <li>- urban concentration makes focused intervention at scale possible; and</li> <li>- attention to these disorders has profound multipliers in spatially-targeted intervention.</li> </ul> </li> <li>• <b>Agriculture</b> falls within the environmental duty of care as an extractive industry:             <ul style="list-style-type: none"> <li>- extensive cropping / intensive crop farming / hydroponics / allotment farming / pastoral commonage / market gardening / urban farming / etc., all encompass what is essentially part of an urban economy;</li> <li>- agriculture and associated agri-processing are a major contributor to <b>food security</b>;</li> <li>- it is, by nature, an industry that is generally space-extensive and is thus an inherent and critical component of the 'urban hinterland' that supports the GCR; and</li> <li>- as an important economic activity, it sits embedded with by far the biggest concentrated market on the sub-continent.</li> </ul> </li> <li>• Mining, as a highly impacting extractive industry requires close scrutiny, particularly in terms of acid mine water, the stability of groundwater relative to dolomites, tailings safety and radon gases.</li> <li>• Effluent treatment, particularly in the Emfuleni area and its impacts on local water courses and the Vaal River in particular, requires careful monitoring. The quality of water from effluent treatment from the CoJ Northern Sewer Works and discharging into the Jukskei and Crocodile River system requires careful monitoring.</li> </ul>
<p><b>4</b></p>	<p><b>Criticality 4: Socio-economic indications</b></p>	<ul style="list-style-type: none"> <li>• <b>Socio-economic performance</b> is the benchmark against which effective settlement planning is measured:             <ul style="list-style-type: none"> <li>- how are people assimilated into an urban system;</li> <li>- how are they a part of a city's social milieu and integrated into its economic life;</li> <li>- how is cultural expression and diversity accommodated; and</li> <li>- how do all people in a city region live with inclusion, dignity and being part of an 'urban commonwealth'?</li> </ul> </li> </ul> <p>This has to do with the kind of city-shape we choose: In the face of a spatial apartheid planning legacy, the need to overcome spatial marginalization and exclusion is a pertinent focus of post-apartheid planning; Nevertheless, the GCR has continued, even escalated, in its pattern of urban sprawl and the resultant spatial peripheralization of communities.</p>



5	<p><b>Criticality 5: Delivery into various sectors</b></p>	<ul style="list-style-type: none"> <li>• Urgent delivery drives planning but a ‘silo’ mentality continues to deliver an increasingly dysfunctional city region;</li> <li>• A housing delivery drive that is unaware, or heedless, of the negative impacts on the urban system and the socio-economic impacts of peripheral accommodation results in further social exclusion and lack of economic integration;</li> <li>• While the price, extent and relative ease of assembly of uncontested land beyond the urban fringe is attractive (and without reference even to the socio-economic costs on users) the capital and on-going costs of bulk and link services, public transport and social amenities are vast and unsustainable;</li> <li>• Extensive surveys across the Province indicate bulk service infrastructure is unavailable, stretched and unaffordable in the areas beyond the well-established portions of the urban system;</li> <li>• Public transport (let alone integrated public transport) becomes less attainable;</li> <li>• The move now to rapid land release and site-and-service spawns further low-density sprawl that commits planning to future socio-economic upgrade and support in perpetuity at costs that already outstrip capacity to deliver;</li> <li>• The acceleration of ‘back-yard’ development, even in peripheral, poorly located areas, exacerbates this;</li> <li>• Housing delivery is not the sole driver of sprawl: uneven strategic road roll-out of GSRN can have the unintended consequence of distorting the city-region’s shape;</li> <li>• Prioritising within the GSRN roll-out must be the subject of <i>an urban review</i>;</li> <li>• The hinterland that supports the urban system is increasingly denuded and under threat: it is, in planning terms, simply a loose assembly of disparate, miscellaneous elements comprising spatially disjointed conservancies, environmental assets, heritage components and agricultural value;</li> <li>• A far more determined, holistic understanding of this resource is necessary, making it less prone to urban creep and providing a base for tourism, agriculture and agri-processing (all having energetic economic multipliers);</li> <li>• It has been noted that economic and social support becomes increasingly uneven as the scale of peripheralization escalates, whilst there has to be a clear commitment for such support, further escalation of marginalisation should be avoided;</li> <li>• The social and economic burdens of marginalisation continue for those who can’t afford it, pointing to under-achievement in socio-economic performance.</li> </ul>
6	<p><b>Criticality 6: Reconciling the ‘Night Time City’ with the ‘Day Time City’</b></p>	<p>Recent mapping now available indicates a telling disconnect between the <b>NTC</b> (the Night Time City reflecting where people domicile) and the <b>DTC</b> (the Day Time City reflecting where people want to be by day in terms of access to economic activity):</p> <ul style="list-style-type: none"> <li>• the NTC has always been relatively well-known and mapped: only now, with more digitally-orientated economic agglomeration mapping, is the extent of DTC activity patterns more readily discernable;</li> <li>• the NTC depicts the ‘dormitory town’ paradigm of apartheid: many people are waking up every morning very far from the places they need to be by day;</li> <li>• even the areas in and around the polycentric patterning of nodes (what the GSDF 2030 regards as ‘areas of economic proximity’) are generally of extremely low density and do not support the growth management requirements of the GCR;</li> </ul>

		<p>Horizontal, outward expansion of the GCR remains by far the prominent urban growth management approach rather than the re-consolidation of existing settlement patterns (with their substantial investments in infrastructure, public transport and amenities) into more intense, complex, more efficient settlement patterns. Very few well-located suburbs have intensified over time (apart from certain inner-city areas).</p> <p>More recent suburban spread (the north-western quadrant of CoJ and the south-eastern quadrant of CoT) at moderate densities do not support sensible public transport yet place traffic pressure on inadequate roads. <b><i>A spatial policy of meaningful intensification and redevelopment of well-located suburbs, underutilised land or previously unavailable land is strongly suggested.</i></b></p>
7	<p><b>Criticality 7: The potential to create decentralised urban economies in the GCR</b></p>	<p>'Mega Cities' have to be assessed relative to the basics of urban economies: decentralisation is not new in urban policy and the GSDF 2030 polycentric model is a recognition of (a) shifting reliance from only a few urban cores and (b) moving economic opportunity to existing peripheralised 'dormitory' areas. We need to review whether we can realistically create decentralised economies outside of the DTC logic. Similarly, housing projects cannot lead these initiatives and should only follow when the economic armatures of these new initiatives are delivered.</p> <p>The GSDF 2030 should primarily support investment into well-defined areas of economic prospect: the Greater Lanseria Master Plan shows real potential if well-directed; the existing economic investments into the Automotive Hub west of Mamelodi and Rosslyn north-west of the Tshwane city centre; and possibly the 'Vaal City' initiative as part of an expanded Vaal Triangle consolidation with Sasolburg to the south, across the Free State border).</p> <p>Development initiatives noted for Syferfontein, however, should only be supported in the GSDF 2030 if the initial focus is on developing a new economic base for the sub-region; a high-tech SEZ initiative adjacent to Ekandustria is too far away from regional spatial integration, airports and the 'knowledge community' that supports such initiatives; Provincial initiatives to resuscitate the industrial initiatives of Ekandustria and Babelegi on the N1 are necessary in trying to bolster economic support for Ekangala and the wider Hammanskraal areas respectively.</p>

8	<p><b>Criticality 8: The Covid –19 pandemic</b></p>	<p>Whilst grappling to come to terms with the COVID-19 pandemic, the wisdom of further population concentration in urban areas may be questioned. Closer spatial analysis, however, suggests the following:</p> <ul style="list-style-type: none"> <li>• The present shape, form and extent of the GCR (as noted in the NTC pattern of dormitory settlement) is defined by high concentrations of population <b>away</b> from the core areas of competence to deal with the pandemic;</li> <li>• As with impacting on carbon footprint, the multipliers in being able to tackle the pandemic are greater in concentration rather than the diseconomies and inaccessibility presented by dispersion;</li> <li>• The dispersal of the economy into ‘work-from-home’ is less so now than during ‘hard lock-down’ but is still having noticeable effects on the functioning of the urban system; and</li> <li>• Nevertheless, this pattern of dispersal is limited and a return to ‘concentrated work place’ patterns (albeit at somewhat reduced levels) is anticipated.</li> </ul> <p>The general view is that COVID-19 is entering an endemic stage, which will reduce the need for ongoing restrictions in order to curb the virus’ spread. Notwithstanding spatial adjustments and unevenness dealing with COVID-19, the urban system will still be better placed to deal with <b>all</b> socio-economic challenges (including the after-shocks of the pandemic) within <b>a city region that is compact.</b></p>
9	<p><b>Criticality 9: Dealing with the dysfunction of urban sprawl</b></p>	<p>Urban sprawl in the GCR has accelerated over the past 20 years and continues despite the planning intentions and directives of the GSDF 2030:</p> <ul style="list-style-type: none"> <li>• The dysfunction of urban sprawl is noted yet planning injunctions in this regard continue to receive less attention than warranted;</li> <li>• Present trajectories of sprawl are unsustainable and will yield even greater challenges regarding socio-economic performance in future if left unchecked; and</li> <li>• A UN report (2016) noted that unchecked urban sprawl in Africa will exacerbate settlement patterns that will set back the continent’s competence to compete globally for many years to come.</li> </ul> <p>The GSDF 2030 has to be more unequivocal on the need to concentrate settlement in Focus Areas 1 and 2 particularly (and 3 to a lesser extent) and further sprawl should be avoided.</p>
10	<p><b>Criticality 10: Emergency services, safety, security and GBV</b></p>	<p>A spatial strategy of concentration is posited on the economies of scale and better delivery of centres of assistance and policing, better design of well-integrated neighbourhoods, and social facilities of all types for the care of vulnerable communities and sectors within communities. The walkable city increases access to such facilities and centres and greater focus on emergency services is required, if necessary, as an integrated regional spatial strategy. “A city without emergency services is not a city”: Lael Bethlehem, Business day, 21 Nov. 2021. Re-investment into civic facilities (local provincial and central government) is a basis for re-claiming the public environment of cities as the armature of meaningful social, cultural and economic inclusion and a ‘sense of ownership’ by local communities.</p>

## 6 SPATIAL DEVELOPMENT CONCEPT & STRATEGIES

### 6.1 THEORY OF CHANGE

Change, and the ability of spatial planning to enable change, is the focal aim of the GSDF 2030: a legacy of spatial fragmentation, class stratification, racial separation, vast developmental needs, areas of economic decline and a need for new economic growth and relative economic stability all point to the enduring patterns of ill-disciplined spatial development that the GSDF 2030 needs to turn the GCR away from.

As much as there is this need for spatial change, several factors constrain the ability to change and the rate of that change: not least of these are the very real developmental pressures of growth: relatively rapid population growth and rates of urbanisation; the need to stimulate economic growth; market resistance to change; competing urgencies in the prioritisation of focus and actions.

In essence, there are so many pressing issues that have to be dealt with urgently that there is little time to effect carefully considered change in a seamless, coordinated way: change itself is not the only constant of urban development: it is also the dynamic in which this change has to be directed and achieved.

### 6.2 THE IDEAL: A PROVINCIAL BALANCED POLYCENTRIC SPATIAL NETWORK/Form

The GSDF 2030 bases one of its most important drivers for change on a 'Balanced Polycentric Spatial Form', breaking from the reliance on major metropolitan centres alone and consolidating new settlement in and around several spatially dispersed activity nodes, many of which tend to the peripheral parts of the GCR. In this way, in a polycentric model, these activity centres are energised in order to bring further urban prospect to peripheralised communities: in effect, it addresses the need to consolidate development in and around established urban economies while noting that some development needs to happen in ways that integrate with peripheral areas. The network of connections between these activity centres is also an aspect of bringing more spatial structure to these peripheral areas.

It is so that the polycentric approach can, however, become difficult to direct in that it possibly becomes open to interpretation and, potentially, expediency that may actually have the unintended consequence of exacerbating urban sprawl. In this regard, on review, it becomes necessary to bring far more clarity to where and what exactly is directed through the GSDF 2030's spatial strategies: it has to become more unequivocal in its intentions around polycentricity.



### 6.3 ACTIVE PARADIGM SHIFT TOWARDS NAYI LE WALK (REQUIRES US TO:)

The GGT 2030 highlights the *Nayi le Walk* scenario derived from the *Indlulamithi* visioning process: taking the scenario of where we are (*Isbhujwa* – a teetering between hope and despair for the future) and a determination to avoid the worst-case *Gwara Gwara* scenario of where we succumb to despair.

The Nayi le Walk scenario expresses an optimism that guides our belief in the future and the spatial planning embodied in the GSDF 2030 seeks to assist in effecting positive change: improved economic growth; reduced unemployment; improved per capita GDP; reduced rates of poverty; reduced income inequality; and significant industrial restructuring.

In effect, the Nayi le Walk scenario expresses **where we all want to be** in future. In spatial terms, this means having to prevent marginalisation of communities as the GCR grows, improving access to economic opportunity, making the GCR a modern, spatially integrated industrialised economy and ensuring that it has the necessary spatial underpinnings to be sustainable and globally competitive.

The outcomes indicated in the diagram show, spatially, where we come from (OUTCOME A: *Isbhujwa*) and how, if we do not effect change and turn the GCR space economy around, OUTCOME B: *Gwara Gwara* ensues. OUTCOME C: *Nayi le Walk* gives a clear spatial intent of a more spatially-disciplined, less sprawled GCR based on urban consolidation within a highly-networked periphery with the spatial emphasis on socio-economic inclusion and integration.

Figure 30: Spatial outcomes from the Indlulamithi visioning process

**Quoting possible outcomes of Indlulamithi South Africa Scenarios 2030 (MISTRA) from GGT 2030:**

re-direct growth and development to

The Isbhujwa Scenario

arrest the slide into

The Gwara Gwara Scenario

Nayi le Walk

**Isbhujwa (where we are right now):**

- hope and despair as the country zigzags backward and forward;
- change is happening but not fast and deep enough;
- losing hope and retreating into enclaves of privilege or poverty;
- this scenario can lead to **Gwara Gwara**.

**Gwara Gwara (the worst-case scenario):**

- things get worse on every development indicator;
- breakdown of public order fuelled by anger and dysfunction;
- rising poverty, increasing inequality, rampant corruption;
- unrelenting climate crisis.

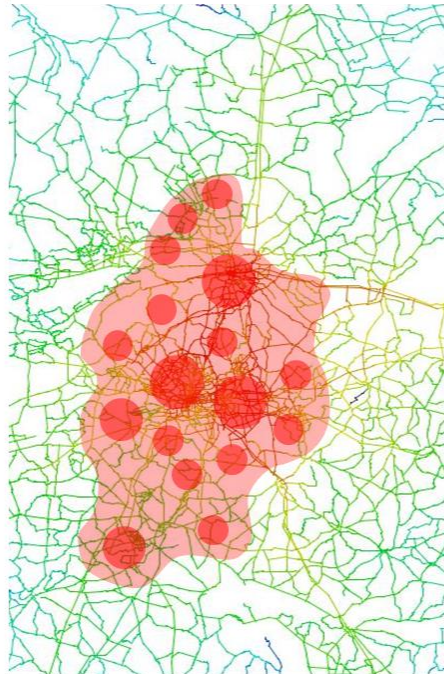
**Nayi le Walk (the best-case scenario):**

- SA recovers from its socio-economic, political and moral crises;
- drastic and far-reaching interventions are made in all sectors;
- a better life for all becomes tangible;
- unemployment, poverty and crime reduce markedly.

**OUTCOME A:**

**Existing trending:**

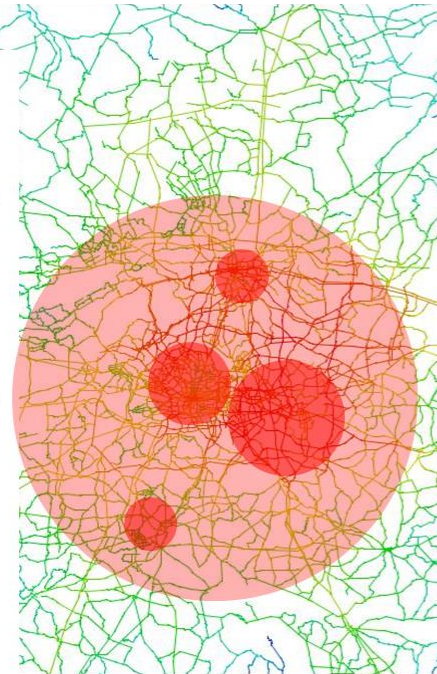
- further sprawl to cope with growth;
- marginalization of the poor continues;
- limited K-Routes;
- the Metrorail network is failing;
- Gautrain serves a limited sector only;
- GSRN road implementation is uneven;
- spatial dysfunction and low socio-economic performance.



**OUTCOME B:**

**A worst-case:**

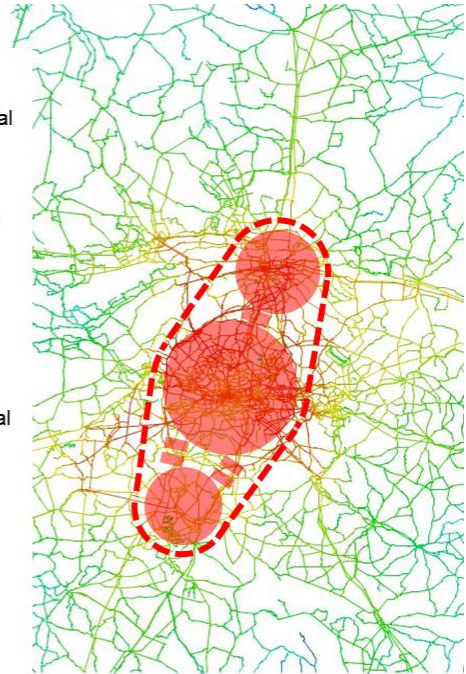
- the GCR sprawls hopelessly;
- spatial dysfunction;
- marginalization is extreme;
- spatial exclusion intensifies;
- rail failure leaves a transport crisis;
- socio-economic performance plummets;
- biodiversity fails;
- infrastructure failure.



**OUTCOME C:**

**A best-case:**

- direct, bold spatial interventions;
- intensification, densification and consolidation;
- GCR integration with integrated planning;
- a re-set urban model with spatial integration and inclusion;
- responsible environmental management;
- strong socio-economic performance



- *On current trajectories, the GCR continues to become even more sprawled and fragmented;*
- *contrary to the NSDF, the GCR is limited in becoming a stronger spatial entity at the heart of the national economy.*

- *Contrary to the NSDF, the GCR becomes polarised and fails as the driver of the national economy;*
- *highly marginalised communities, poor economic prospect, unsustainable infrastructure and extreme disaffection.*

- The intended spatial re-set outcome of Nayi le Walk :*
- *a compact & complex urban system, fostering a strong economy;*
  - *reducing commuting & improving access to opportunity;*
  - *achieving high levels of socio-economic performance.*



## 6.4 SHARPENING GSDF 2030 SPATIAL STRATEGY

The Gauteng City Region (GCR) has long been acknowledged as one of the most sprawled conurbations in the world and historically became so because of: (a) the spread of mining towns along the Reef and more far-flung towns serving agricultural hinterlands; (b) the subsequent horizontal spread of relatively affluent suburbia; and (c) the creation of 'dormitory townships' that displaced 'non-white' residents to the periphery of and beyond the urban system in terms of apartheid planning.

Since democracy in the mid-1990s, an underlying principle of post-apartheid planning was to limit further urban sprawl, prevent further marginalisation of poor communities and to actively redress spatial separation through social and economic integration and inclusion<sup>118</sup>. This, together with continuing to engender, as far as spatial planning is able to do so, a strong GCR as a primary economic driver for the national economy (Figure 31 and Figure 32). The thrust, effectively, has been, post-apartheid, to enhance **the socio-economic performance** of Gauteng as a province and the urban system that drives it.

<sup>118</sup> Principles in the GGT2030 and the IUDF

<sup>119</sup> National Development Plan, 2030 and the IUDF, 2016; Wits, 2018, in a research project Living the urban periphery Pamphlet 1 Lufhereng Protea glen and Waterworks FINAL 9 dec.pdf (wits.ac.za) qualitative research of people living in these areas was undertaken, found that a common sentiment in was that employment opportunities were located far away and the cost of transport to Johannesburg CBD and other parts of the city was unaffordable.

<sup>120</sup> The Gauteng Growth Management Perspective, 2014 cites the GCRO study on historical and current growth trends. "The establishment of large (low-cost mass housing) dormitory settlements (through RDP), (despite good intentions) and growth of informal settlements long distances (where land is cheaper) from the economic centres perpetuated the apartheid urban form. The development of single use office parks separate from residential areas has propagated fragmentation. It concludes "[i]n light of adverse social, economic and environmental costs of continued unrestrained lateral expansion, it is crucial to manage urban growth. ... As land-use structures also have effects on transport-related energy

The review of the GSDF 2030, however, indicates that not only has continued sprawl and marginalisation not been arrested, the urban system has in fact spread a further 56% over the past 20 years alone (refer to Figure 33) and many communities continue to be marginalised. This leaves the GCR in a threatening position:

Its spatial shape, form and extent continues to preclude many people from the urban economic mainstream<sup>119</sup>:

- Many of these people – mostly poor – are the least economically competent to bear the daily costs of travel to economic opportunity and are poorly serviced, both in terms of engineering infrastructure and social facilities and support<sup>120</sup>;
- Bulk services are stretched and cannot cope with the continued horizontal sprawl. In most cases, there is no / limited capacity nor resources available to rectify this<sup>121</sup>;
- The prospect of integrated public transport to service the very extensive GCR population (and moving away from a private-mobility model in a country where only 33% of people own cars<sup>122</sup>) becomes increasingly remote in an even, balanced, affordable, safe and reliable way;

consumption, mobility patterns, trip-distances and modes of transport, it is essential to pursue growth trajectories that promote spatial, mobility and energy efficiencies.

<sup>121</sup> In a forum on engineering availabilities and capacities held with representatives of Gauteng COGTA, Emendo, SAICE, CoGTA and the GSDF Review Team held on the 7th and 21st September 2021, it emerged that the infrastructural issues for extended peripheral sprawl are significant and that the situation, in availability, capacity, funding and governance terms, in many cases is dire. It was also stated that the environmental, geotechnical, transportation, service infrastructure and solid waste management considerations play relatively little part in moving forward and that if the same strictures in these regards as apply to private sector developers were applied to public agency projects, many would, in likelihood, fail to gain approval.

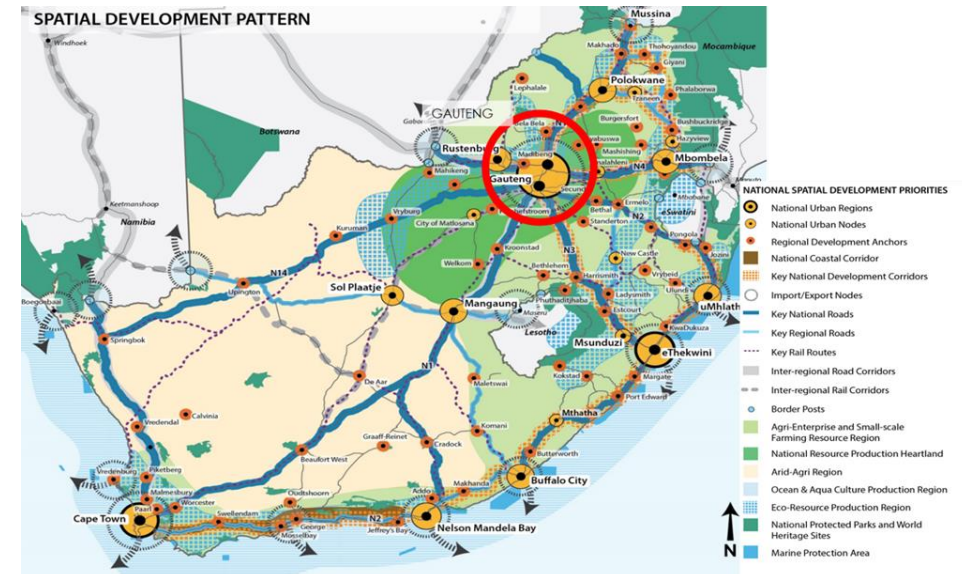
<sup>122</sup> CSIR Household survey for Gauteng, 2019, finds Low capacity mobility modes, i.e. (a) minibus taxi and private car, are the modes that address the increasing demand for transport, (b) the main mode of travel for commuting is walking to their destination, and only 33% of the population own a car

- The economic efficiency of a sprawled urban system limits the GCRs ability to compete globally<sup>123</sup>.

The underlying principles of the GSDF 2030 as prepared in 2030 strive to re-assert the need for a more consolidated urban system and increasing the access of people to economic opportunity: a system that is **more compact** in its horizontal extent (denser and less horizontally spread) and **more complex** in its make-up (integration of mixed land-uses so as to limit the need to commute and to make access to economic inclusion more readily available).

Nevertheless, the many planning agencies (both spatial and aspatial planning) that have spatial influence on development patterns seem to operate in discreet ‘silos’ according to their own narrowly-defined objectives and, unwittingly, may not realise the negative impacts this has on the functionality of the urban system holistically: views emerging from the sectoral sessions and plenary gatherings of stakeholders as part of the GSDF 2030 review suggest that the document has not been unequivocal enough on the need to follow the spatial strategy of **compact complexity** and many agencies see fit to interpret its spatial intentions in narrow, selective ways.

Figure 31: NSDF, Draft 2021, Figure 16: Ecologies, Economies & Spaces Regional economic trends



<sup>123</sup> The Gauteng Growth Management Perspective, 2014; Brendon van Niekerk (2018) Housing as urbanism: A policy to discourage urban sprawl and provide well-located and affordable housing in South Africa, states 'America has concluded that urban sprawl costs approximately USD 400 billion in external costs, and USD 625 billion in internal costs annually.' Fulton states in the The cost of America's inefficient

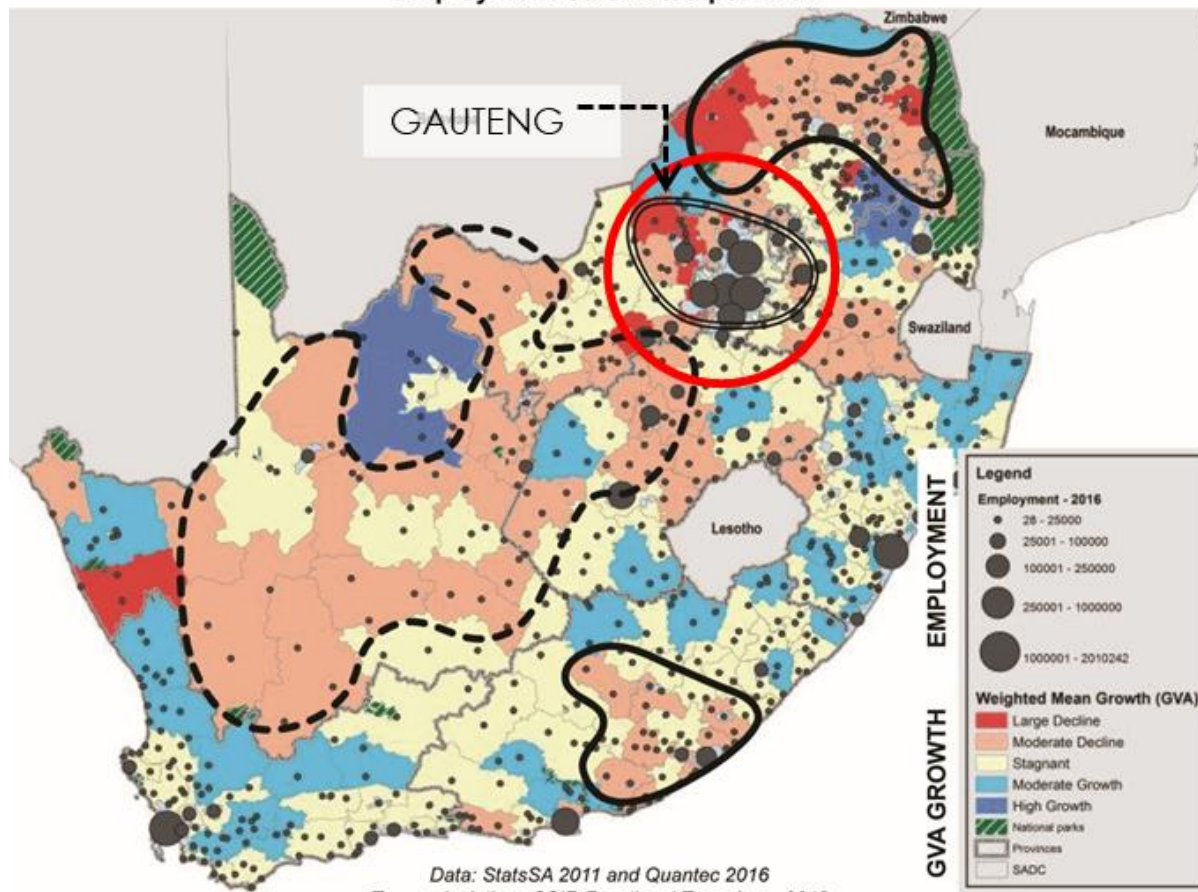
sprawl – Global Public Square - CNN.com Blogs Prosperity and solvency – or a lack thereof – are woven into the very fabric of our cities. ... Put things farther apart and providing services costs more – for the jurisdiction and its taxpayers."

Figure 32: NSDF, Draft 2021, Figure 39 NSDF Main Frame, identifying Gauteng as National Urban Region, the most extensive in nature compared to Cape Town and eThekweni

## REGIONAL ECONOMIC GROWTH AND EMPLOYMENT

### LM Economic Growth Compared against National Average (2001 - 2016)

#### Employment Calculated per Town

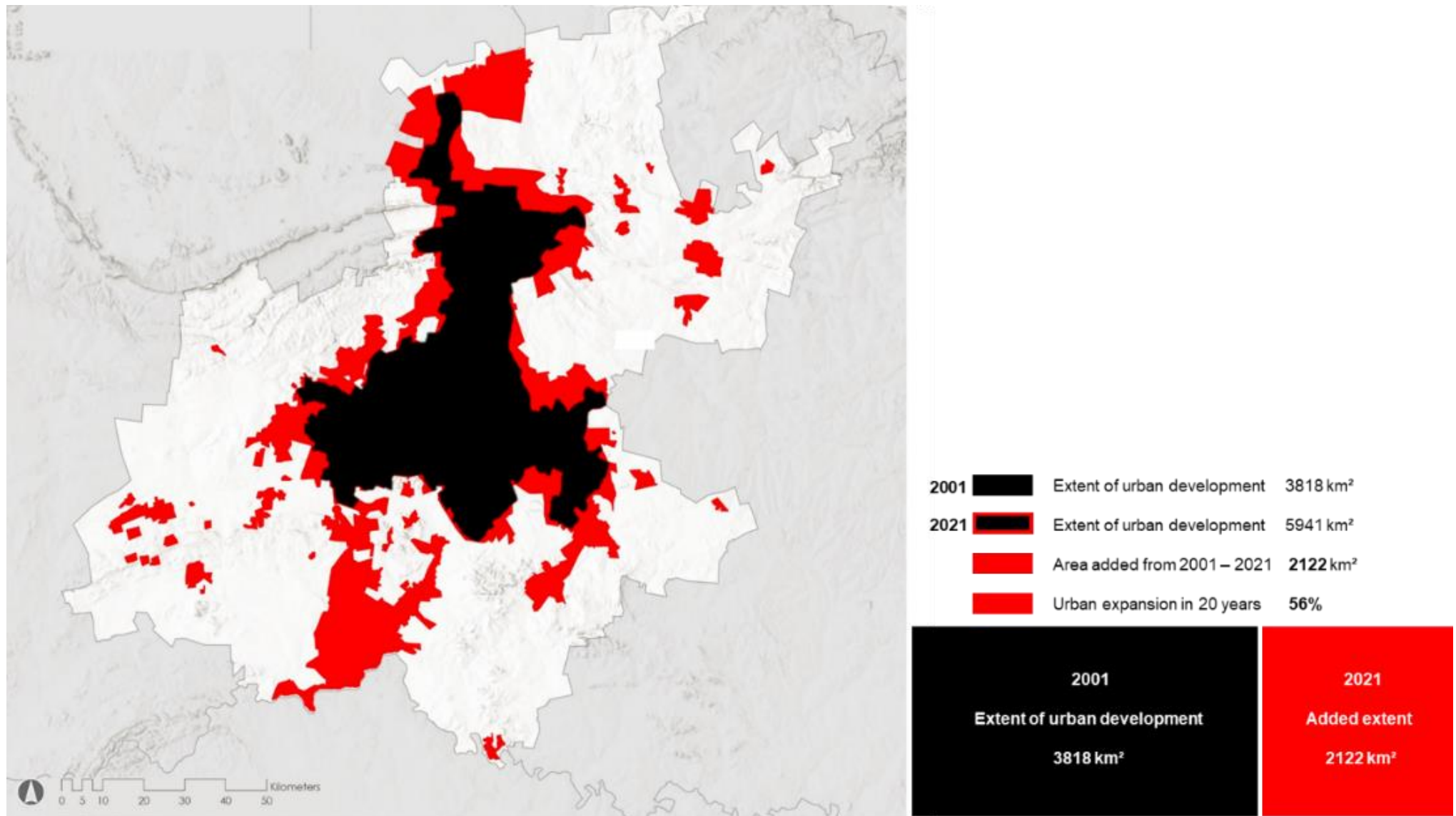


## SIGNIFICANT REGIONAL ECONOMIC TRENDS

-  The mining dependent economies in the area of slow growth and absolute decline around the Gauteng City Region. Mining production in the area around the metro's declined from 7% of the national Mining output in 1996 to 3.86% in 2016. Unemployment increasing whilst region will continue to face population growth.
-  The Bigger Karoo Region, where temperature increases and water security create increasing risks for large number of vulnerable local economies.
-  Densely settled areas where employment vulnerability is very high and where population growth exceeds economic growth.
-  Large and growing urban regions with stagnant economies and low employment growth



Figure 33: Expansion of the urban extent between 2001 and 2021



### 6.4.1 Basic approaches to urban growth management

Throughout the history of urban settlement, two powerful spatial processes are noted and become even more notable in the present global trends of accelerated urbanisation:

1. urban settlements, through added growth over time, expand horizontally to accommodate this growth; and
2. they consolidate within their existing urban footprints through urban intensification (a component of this being residential densification but, more notably, becoming more complex and dense generally as highly mixed-use activity systems).

Both approaches are (a) necessary and (b) are the product of naturally-occurring urban processes but it is important to realise that these processes need to be managed and directed if balance between where people live and where they find economic opportunity is to be maintained, social and service infrastructure is to be rationalised and, very importantly, safe, affordable and reliable public transport networks put in place.

In the case of the GCR (which morphed out of several independent and, often, insular local authorities) the history of accommodating urban growth has been by far more a process of horizontal spread (in suburban terms, as low-density sprawl; in spatial apartheid terms, higher-density spatially expansive but contained 'dormitory' townships) than by urban intensification.

Certain inner-city areas have, over the years, emerged as what might be termed naturally-occurring **zones of urban accretion**: (notably Braamfontein, Hillbrow, Berea, Yeoville and Killarney in Johannesburg and Sunnyside in Tshwane); and somewhat denser areas such as Doornfontein, Troyeville, Rosettenville and Turffontein; and more recent examples of mixed-use nodes like Menlyn, Sandton, Rosebank, Melrose Arch and Waterfall.

Apart from these, however, the process of urban accretion in the GCR has been of limited extent as a means of accommodating urban growth over time (refer to Figure 13): the processes of residential densification in well-located suburbs has been fairly limited and mostly in the form of second dwellings and land-subdivisions; the moderate densities associated with townhouses, cluster-housing and 3 to 4 story walk-up pods in gated communities has tended to be more on the horizontal spread model, often taxing existing service infrastructure, placing additional private-mobility pressure on existing road systems but not yielding an overall pattern of densification that yields sensible, integrated public transport.

### 6.4.2 The accommodation of growth in the GCR is predominantly by horizontal spread

While pointing to the need for more urban consolidation in and around 'areas of economic proximity', (i.e. a growth management approach based on **the urban accretion model**) the GSDF 2030 as formulated in 2016 seems to create uncertainty around a clear understanding of where growth may and may not be accommodated.

The polycentric model of nodes spread throughout an already very sprawled urban agglomeration tends to yield an unintended consequence of further sprawl associated with far-flung polycentric nodes; the indication that 25%<sup>124</sup> of future housing investment may be accommodated beyond the urban fringe (effectively some 800,000 additional households) is an extremely large proportion that takes us away from a more concentrated, vertically defined urban shape and form; indications are that, with further informal back-yard development in and beyond peripheral areas, this form of spread is in excess of 50% of GCR growth.

It seems that the urban spread approach continues to dominate growth management and the debate seems to have devolved into how this spread is achieved, regardless of the injunction to limit urban sprawl. Over the years, the housing delivery approach has distilled primarily to one of small units on small sites at fairly low densities on brownfield and greenfield sites in and beyond the urban periphery and which now are simply to be site and service with no top-structure. ***This is inevitably a direct clash between an approach to housing delivery and the intentions of the form of city regions transcending erstwhile apartheid spatial planning.***

In this context, it is not enough to simply direct, through the GSDF 2030, that housing delivery within and beyond the urban periphery be stopped: one clearly has to show alternatives that involve the assembly of vacant and underutilised land in well-located areas within the existing city region footprint: this is obviously more challenging - the availability of land, the cost of land, its constraints and issues of political contestation (the NIMBY syndrome) – all combine to make this process more difficult.

It has, however, many other important advantages and, apart from anything else, is more cost-effective from a service and social infrastructure point of view as well as achieving vastly improved socio-economic performance.

### 6.4.3 Sprawl vs compaction debate

Increasingly, over the past 6 to 8 years, literature is cited that tends to suggest that the notion of the 'compact city' is a 'Eurocentric' concept having little relevance to the African and South African condition. Much of the literature tends to be more sociologically inclined rather than approached from an urban structuralism point of view and tends to suggest that the dysfunction associated with urban sprawl is perhaps not as acute as held out in literature going back to the 1970s, 1980s, 1990's and the first decade of this century.

Politically, this tends to have been picked up on as a reason not to have to ensure spatial discipline in urban growth management strategies and that sprawl is proportionally acceptable within localised context. Very little of the predominantly South African literature over the previous 50 years draws heavily on European influences and indeed, makes more specific citing of Asian and Latin American (as well as African) instances. Historic and contemporary literature highlights challenges linked to urban sprawl as urbanization escalates, particularly in under-developed and developing regions.

124 GSDF 2030, 2016 page 145 ' This matrix seeks to align the GSDF 2030 focus areas, provincial capital and social spending, and municipal spatial plans in order to realise the GSDF's long-term spatial objectives. National and provincial interventions should firstly focus on municipal nodes, corridors or

development that coincide with the focus areas. As focus areas 1–4 alone account for about 85% of provincial unemployment and income poverty, it is desirable that "P" attracts no less than 60% of provincial social and capital spending for such areas, and "A" no less than 25% where practical'

Possibly one of the most significant recent studies of 200 cities worldwide<sup>125</sup> indicates that, as much as there has been a focus on urban growth strategies around urban consolidation (as opposed to horizontal sprawl), most cities have had to allow for significant horizontal expansion as well as consolidation.

This is entirely understandable, inevitable and, indeed, necessary: it has certainly been one of the out-workings of growth pressure throughout the history of cities. Nowhere in this, however, is it suggested that the emphasis in urban growth management through consolidation, densification, intensification and urban compaction has been inappropriate, misguided or misplaced: it simply notes that growth management in this way alone has not been enough and, where a certain amount of horizontal, lower density urban expansion beyond previous city limits has been discouraged, it has nevertheless, in almost all cases, needed to be accommodated to varying extents.

In the context of the GCR, this is of particular significance: the GCR, as an assembly of many urban entities, urban conurbations, towns and townships over the years, has been loosely defined as an urban region (which is in many ways spatially and urbanistically incoherent, disjointed and contrived, particularly so given the spatial legacy of apartheid with which one endeavours to come to grips). As such, it is prominently cited as one of the most sprawled, low density urban regions internationally.

The 2019-2024 Mid-Term Strategic Framework notes the specific risk related to urban efficiency in relation to sprawl by pertinently stating that: “As municipalities attempt to redress the spatial legacy of apartheid, we are at risk of following a path of unchecked sprawl and inefficient patterns of development that require urgent attention.” (MTSF, 2019-2024).

The Final NSDF 2022 Spatial Development and Investment Guidance directs that all settlement development, both in urban and rural South Africa, must be undertaken in such a way that it:

- increases development density
- reduces urban sprawl
- prevents the unsustainable use of productive land
- optimises investment in infrastructure networks

In support of this the notion of urban consolidation and placement of human settlement development in well-located locations has led to the declaration of the Priority Human Settlement Housing Development Areas (PHSHDAs) which is directly linked to resource allocations for housing, notably conditional grants including the Human Settlement Development Grant (HSDG) as per Division of Revenue Act 2022. This approach also requires application in Gauteng Province in relation to the 26 declared PHSHDAs.

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<sup>125</sup> Shlomo Angel, Patrick Lamson-Hall, Alejandro Blei, Sharad Shingade and Suman Kumar, 'Densify and Expand: A Global Analysis of Recent Urban Growth'



Work emanating from the Gauteng Human Settlement Spatial Master Plan is currently reviewing the historical and proposed projects in various stages of planning against the PSHDAs, spatial prioritisation by municipalities and notable regional and localised bulk infrastructure capacities as key informant of short to medium term viability in support of the National approach towards urban consolidation and placement of human settlement development in well-located locations.

It is therefore evident that despite the historic debate around sprawl vs compaction, National policy directives is calling for compact urban development to support urban efficiencies, spatial equality, economic performance and optimisation of constrained fiscal and physical resources.

The National policy directives in this regard closely correspond with best practise and growingly more nuanced understanding of urban efficiencies globally. Key concepts linked to the “*Leading Change - Delivering the New Urban Agenda through Urban and Territorial Planning (2018)*” developed by UN Habitat, National Department of Human Settlements and SALGA similarly highlights the fact that a clear need exist to drive global policies, plans, designs and implementation processes, which will lead to more compact, socially inclusive, better integrated and connected cities and territories that foster sustainable urban development and are resilient to climate change as per the International Guidelines on Urban and Territorial Planning, linked to SDGs and NUA.

#### 6.4.4 The need to re-strategise the GCR growth management model towards urban consolidation

The emphasis on confining urban growth to within established urban footprints and areas where services (both social and engineering) are already in place or can be enhanced requires that (a) clear criteria be enunciated on what constitutes well-located land and (b) strategic focus on the enhancement of services capacity much form a basis for this approach to growth management.

This has been done in the spatial review of the GSDF 2030 and now forms a far more cogent part of spatial leadership through planning and prioritisation.

A much bigger issue, however, arises: to the extent that housing delivery (quite rightly, a priority policy programme) devolves to an ‘urban spread’ approach, one has to review this approach in the context of an urban integration and consolidation paradigm that breaks from the strictures of apartheid planning. To the extent that this can be achieved by redirecting present delivery approaches to well-located land within the urban footprint (and with emphasis on models that achieve significantly higher densities), this must be done.

Against the sheer scale of backlogs, however, and ever-dwindling resource capacity to tackle these, ***it is believed that far more attention be directed to formulating a conscious strategy of enhanced urban accretion.***

The three GCR metros all have strategies in place requiring and directing greater urban intensification and the GSDF 2030 notes and endorses these: the CoJ nodal review strategy is a case in point.

However, the spatial review of the GSDF 2030 highlights a far more concerted possibility being necessary not only in identified nodes but also along main roads and transport corridors and transit orientated developments where significant increases in densification (and urban intensification generally) are possible. Expanded modelling in this regard is shows evidence to suggest that **well directed policies, enablement and directives based on an urban accretion approach will yield far more significant quantitative and qualitative results** from a socio-economic performance point of view.

#### 6.4.5 What sharpening spatial strategy needs to enable

In terms of a spatial strategy going forward, therefore, it appears necessary to bolster the spatial model that assists with the following:

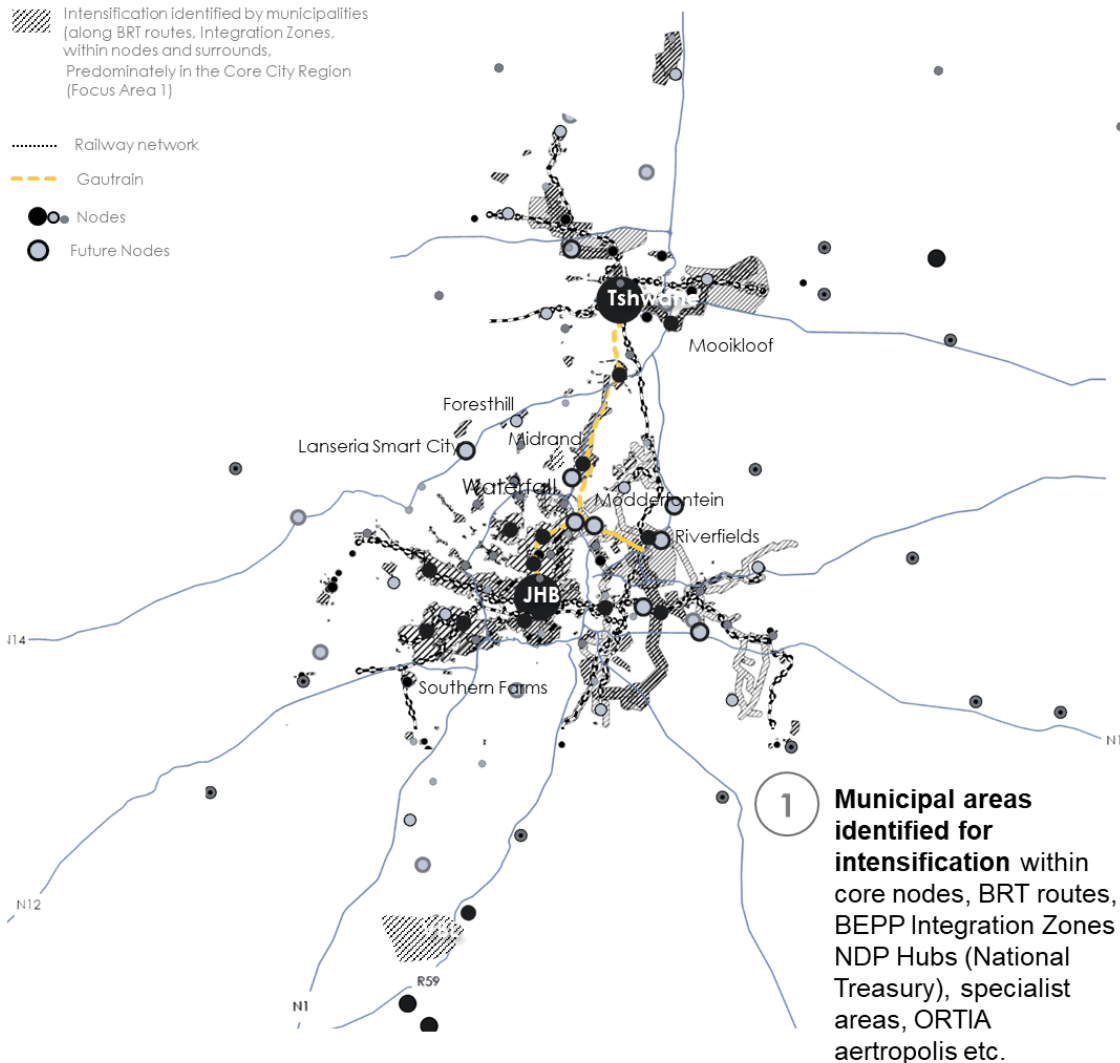
- integrating the GCR into **a more coherent spatial entity** in line with the NSDF;
- acknowledging that much of the horizontal spread is entrenched and advanced and to bring **a re-defined spatial discipline** to the urban system;
- creating a framework in terms of which marginalised communities become part of **the spatial economy** and pattern;

- building on **existing investments in service infrastructure** and expanding these sensibly and timeously;
- taking advantage of **existing investments in social infrastructure** (health, education, social support, economic empowerment);
- putting a **spatial logic in place** that allows for severely fractured public transport and freight systems to be incrementally aligned, integrated and coordinated;
- strengthening **spatial and a-spatial connectivity** (physical transportation and freight linkages as well as digital ICT networks and platforms that not only enhance the GCR's productive capacity but narrow the digital divide between disparate socio-economic groupings);
- making a determined effort to **safeguard the 'urban hinterland'** as an ecological, heritage, tourism, recreational, leisure and economic resource (notably in the form of focused agricultural production and agri-processing as one of Gauteng's most important economic and food security underpinnings).

The following diagrams (refer to Figure 34 - Figure 37) indicate the sharpened spatial interventions envisaged, noting that this is consistent with the inherent thinking and polycentricity set out from inception in 2016 in the formulation of the GSDF 2030.

Figure 34: 1.1. A spatial approach to achieve a polycentric spatial model, consolidated into an area of economic proximity

### 1.1 Sharpening the spatial economy and growth management strategy



Building off the Nayi le Walk scenario of *where we all want to be*, the GCR predominantly, as an inner-core spatial zone, revolves around Tshwane and Johannesburg. The policy of a '**balanced polynucleated urban structure**' (meaning, that urban consolidation should occur in and around a widely spread range of nodes rather than simply a few primary metropolitan cores) sets out to promote urban economies in a dispersed way that is accessible to communities that have, historically, been marginalized from the urban mainstream.

As a spatial policy since the inception of the GSDF 2030 in 2016, this has involved directing growth into Focus Areas that primarily encourages consolidation of the existing urban footprint. This may be termed an **urban accretion growth management strategy** (using existing areas of social and service infrastructure investment in economically active zones to accommodate more people at higher densities and with mixed-use urban activities, as far as possible, making it unnecessary to commute).

Nevertheless, much reliance is still placed on a growth management strategy of **spreading outwards, horizontally** and the already vastly sprawled GCR, historically, has spread significantly more. It has now reached a point where **a significant spatial re-set is necessary** to establish a new spatial logic that accepts what's already in place and planned but creates a new spatial order that can redirect the GCR to a more compact, complex form in future and **instill a new spatial discipline** on future growth management.

Figure 35: 1.2. A spatial approach to achieve a polycentric spatial model, consolidated into an area of economic Proximity

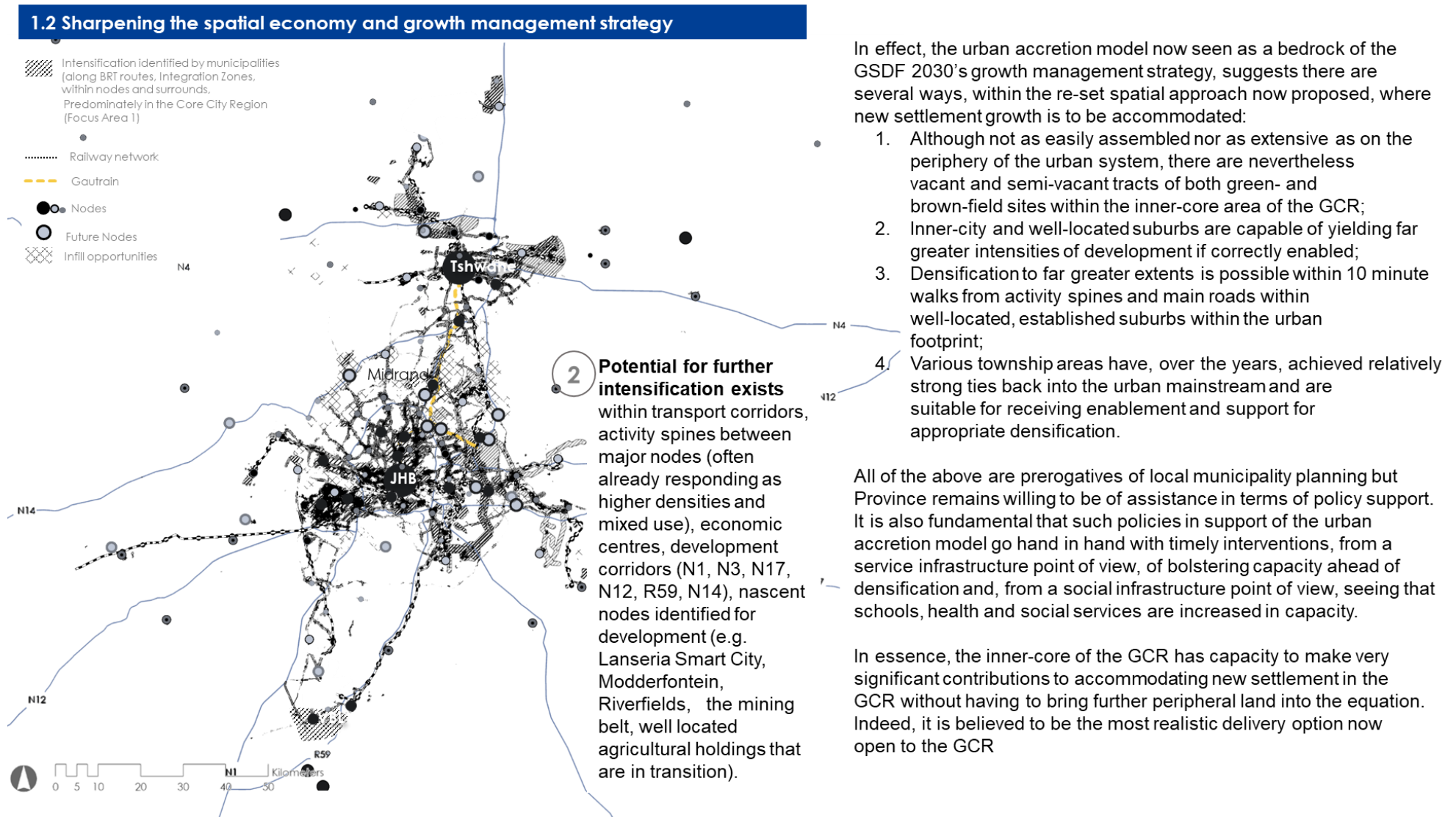
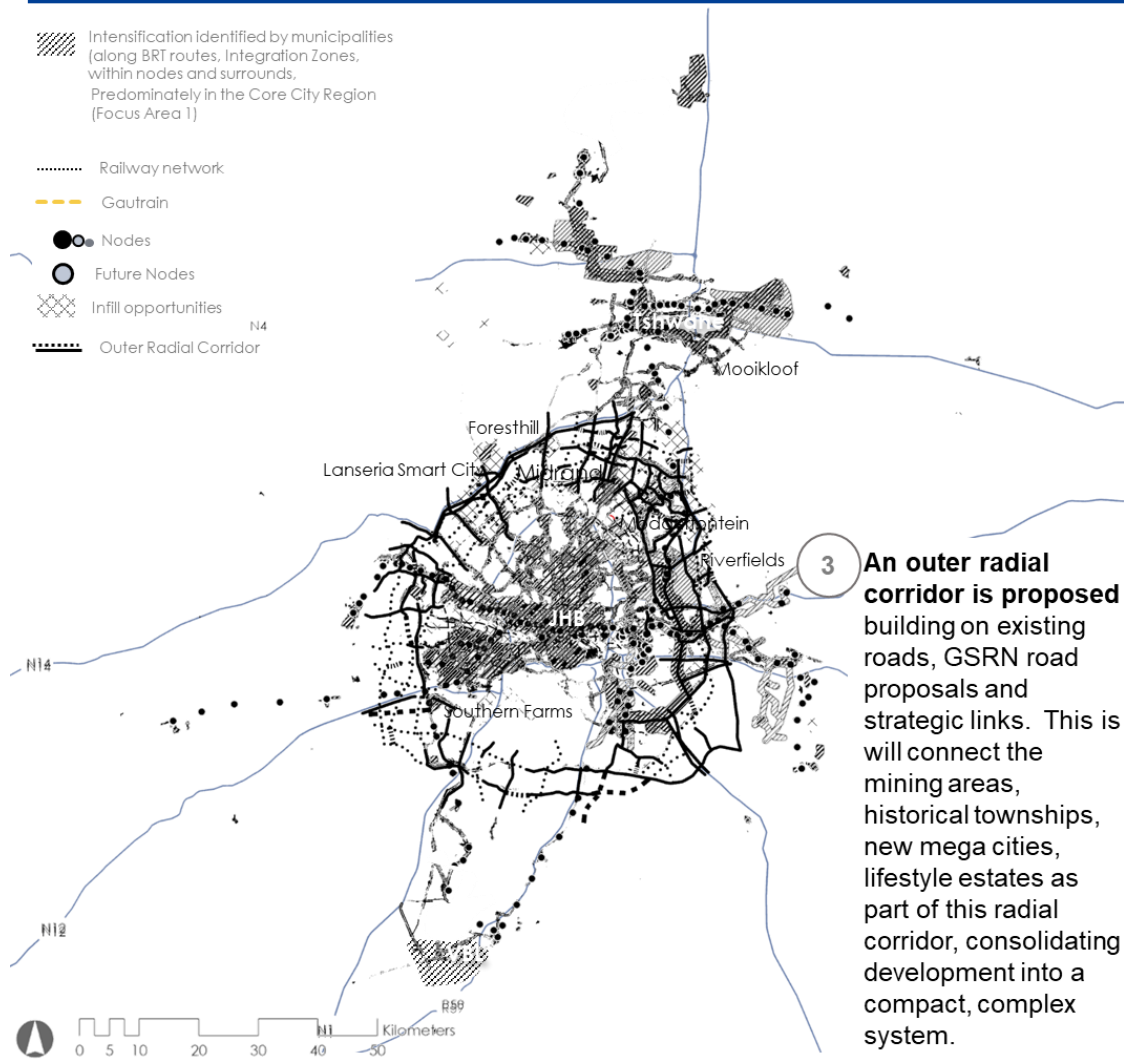




Figure 36: 1.3. A spatial approach to achieve a polycentric spatial model, consolidated into an area of economic Proximity

### 1.3 Sharpening the spatial economy and growth management strategy



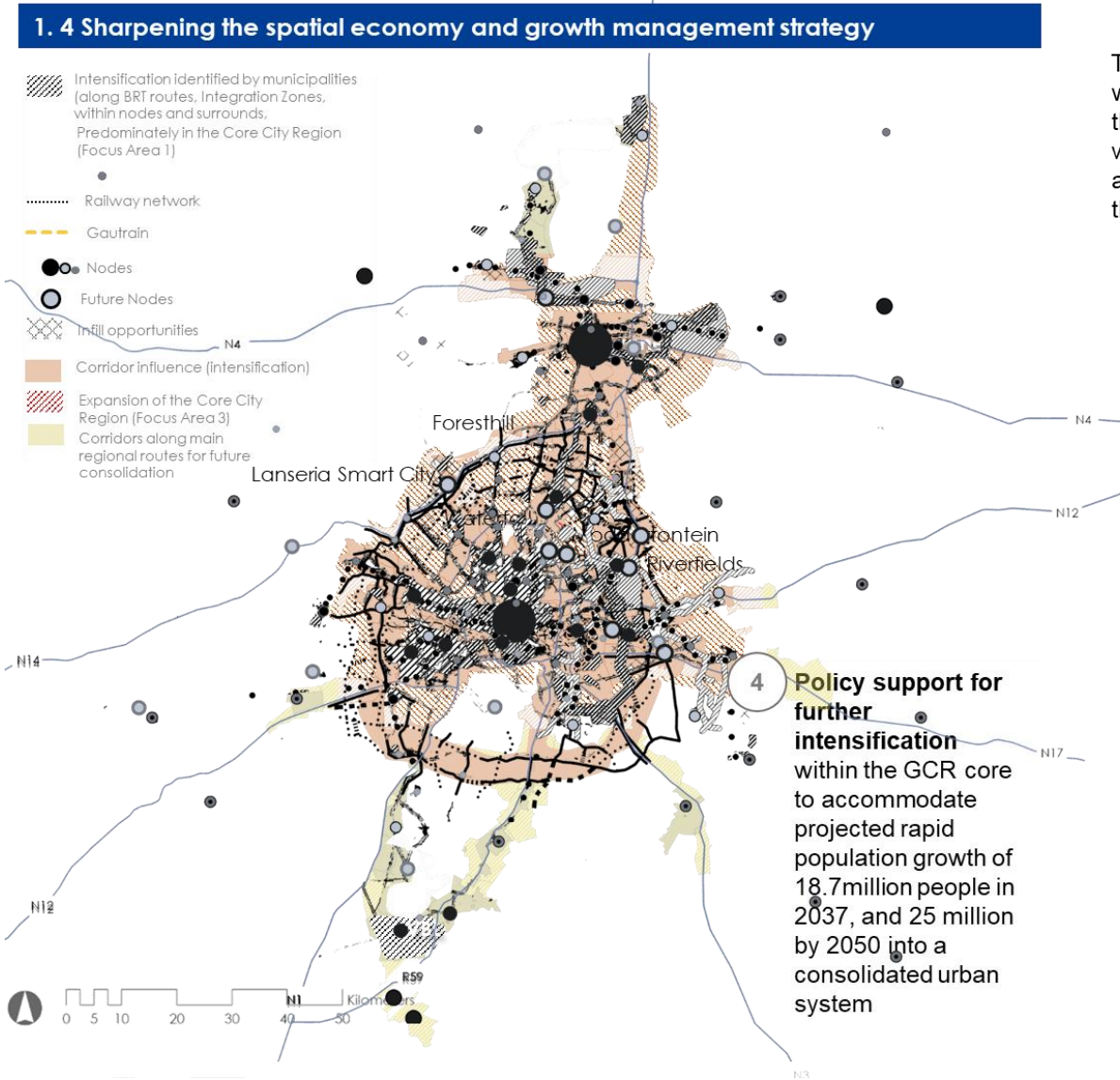
**3 An outer radial corridor is proposed** building on existing roads, GSRN road proposals and strategic links. This is will connect the mining areas, historical townships, new mega cities, lifestyle estates as part of this radial corridor, consolidating development into a compact, complex system.

By careful prioritization of the GSRN road links from an urban point of view (as opposed to simply considering road infrastructure priority in purely traffic-terms), it is possible to define an orbital (or radial) corridor that circumscribes the inner core of the GCR and which brings all the peripheral areas into a new spatial order: the creation of a 'spatial logic' that recognizes the realities of development beyond the urban fringe over the past 25 years and the impact of recent planning that's been put in place.

In doing so, however, it also puts a new 'spatial discipline' on planning that requires that no further peripheral development or sprawl be permitted. The adjacent diagram is fundamentally what is sought, from a spatial point of view, in the spatial adoption of the Nayi le Walk scenario: a spatial re-set that fully acknowledges contemporary realities attendant on the accommodation of new settlement but noting, at the same time, that a new order is not only possible, but entirely necessary, to avoid the GCR devolving into the Gwara Gwara scenario.

This is a new spatial order, entirely in keeping with the principles of the GSDF 2030 yet unequivocal in the injunction that the further horizontal sprawl of the GCR is both entirely undesirable and entirely unnecessary. It should be supported by all agencies in that it fully builds on what we have as contemporary realities and yet points to real alternatives that pull the GCR back from the Gwara Gwara precipice.

Figure 37: 1.4 A spatial approach to achieve a polycentric spatial model, consolidated into an area of economic Proximity



The diagram is a compelling one and is consistent of what the NSDF would have the GCR become: a spatially robust and rigorous entity that can soak up new settlement pressures in a way that builds a viable urban community that is socially and economically inclusionary and which drives a national economy in the face of myriad future threats and challenges.

**4 Policy support for further intensification** within the GCR core to accommodate projected rapid population growth of 18.7 million people in 2037, and 25 million by 2050 into a consolidated urban system

## 6.5 PROVINCIAL SPATIAL DEVELOPMENT STRATEGIES

### 6.5.1 Strategy 1: Developing within Economic Proximity

The GSDF 2030 has, from the outset as part of its spatial strategy of polycentricity, been clear on the need to consolidate development and accommodate urban growth (notably new residential growth) in and around existing well-established nodes. This is noted as a strategy that builds on 'being within economic proximity' and taking spatial advantage of growth in areas in which 'economic prospect' already exists and in which the greatest chances of new residential growth being assimilated successfully into the urban system exist.

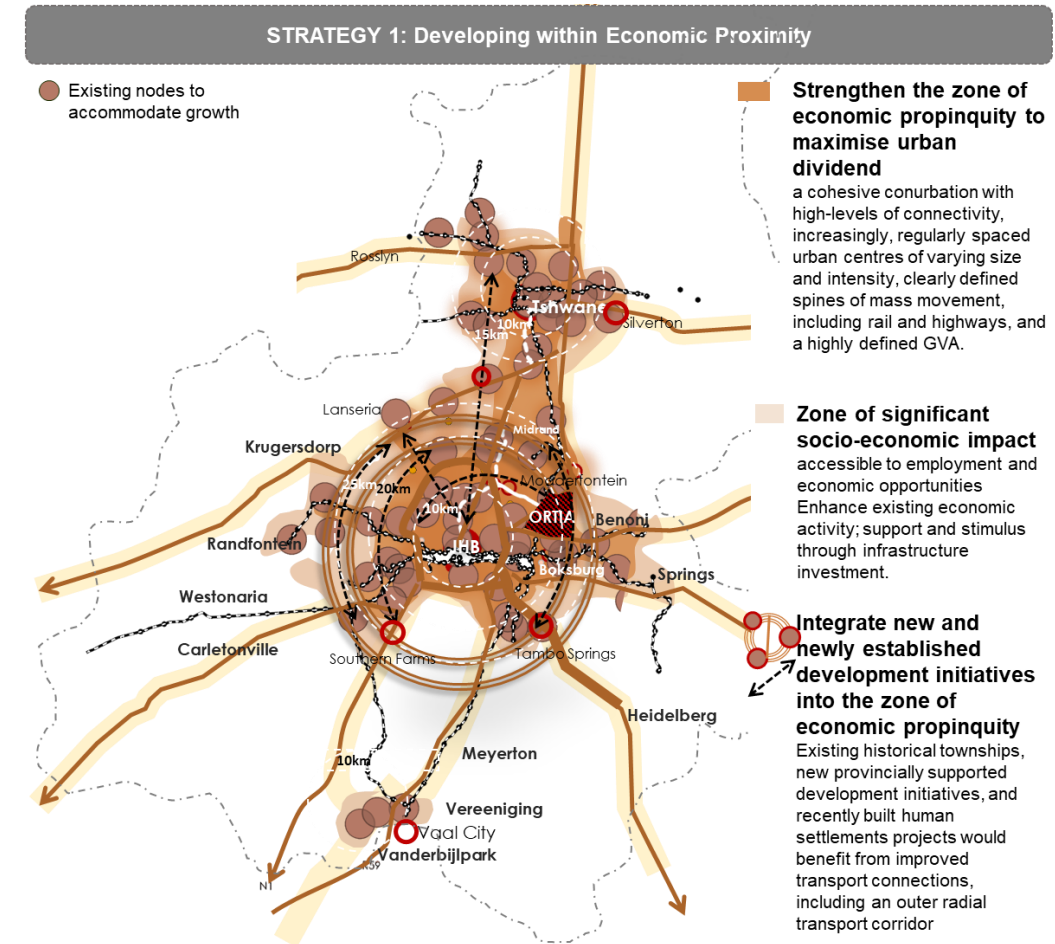
More detailed mapping of this Focus Area 1, as it is referred to in the GSDF 2030, is now to hand: whereas the 2016 mapping was more conceptually 'globular' and dis-continuous (leading to some confusion in spatial interpretation), the boundaries of the zone are now more clearly articulated (as are all the Focus Zones, refer to Figure 46 and Table 10). The spatial strategy of targeting this zone as a primary growth management priority, however, remains unchanged.

This spatial clarification has also had the result of bringing clarity to those nodes included in the spatial model of polycentricity by reiterating which of these falls into the areas regarded as having 'economic proximity'.

In effect, the area regarded as having direct and, by extension, indirect influence on future spatial structuring of the GCR, and in which primary

growth accommodation is to take place, is as indicated in the synthesis diagram below:

Figure 38: Strategy 1: Developing within Economic Proximity



## 6.5.2 Strategy 2: Accommodating new settlement

Notwithstanding the promulgation of a very extensive and expansive array of Priority Human Settlements Housing Development Areas (PHSHDAs), together with intentions to move ahead with extensive rapid land release programmes involving site and service schemes, it is recommended that ***the primary thrust of growth management within Gauteng should be a model of consolidating urban accretion rather than further horizontal spread.***

Whereas the GSDF 2030 as formulated in 2016 allowed for 25% of Human Settlement budget to be invested within and beyond the urban periphery, and while acknowledging the spatial influences already emanating from this, further accommodation of urban growth should focus on:

- well-located vacant or under-utilised land within the existing urban footprint of the city region (refer to Figure 39.);
- the encouragement of far more expansive and far-reaching policies of urban accretion (intensification of the mixed-use activity patterns within and along connections between nodes as well as significant densification within a 10-minute walk of existing main roads that either have existing public transport or offer potential for future transport systems); and
- formalised, institutionalised and assisted programmes of re-development in well-located suburbs and townships<sup>126</sup>.

126 In 2016, the CSIR developed a Gauteng Housing Demand Model for the Gauteng Province, Department of Human Settlements. Findings show that the need for housing far outstrips the extent to which the public sector is able to supply, and potential exists in densification options.

In Schirmer, Bulerman & Atouguia, 2020. 'Massive small': How new entrepreneurs are rebuilding our cities' Short paper Delivery of housing. Housing delivery is happening by the private sector particularly through formal backyard rental, which is providing rental units that generate profit and income for the Developer. It does not rely on government housing subsidies, but uses private financial resources (savings or loans) to fund development and is creating significant benefits including (a) Affordable, well-located accommodation within cities that is proximate to economic and social infrastructure and opportunities; (b) Densification of existing residential areas within cities that enhances the use of the

The influence of peripheral development (urban growth management through further horizontal spread) has placed a distorted spatial mark on the GCR and needs now to be rationalised and become more focused:

- Significant housing development programmes<sup>127</sup> (being public and private sector based) in the north-west quadrant of Johannesburg (Diepsloot, Olivenhoutbosch, Cosmo City and Zandspruit) have, together with the economic potential of Lanseria International Airport, now been encapsulated in a very significant urban development initiative as the Greater Lanseria Master Plan (GLMP);
- Whilst the Thembisa/Ivory Park area is, on the face of it, a peripheral zone poorly connected into the urban mainstream (the very economically-energetic development corridor between the Johannesburg and Tshwane metropolitan centres), well-focused road and transportation investments in this area would yield significant development multipliers and should be a focus for Provincial enablement;
- A development initiative of similar scale as the GLMP, Vaal Triangle (including Vaal River Smart City, Green economy, and new SEZ)<sup>128</sup>, has the potential to consolidate more urban critical mass in the Vanderbijlpark/ Vereeniging area;

existing municipal infrastructure platforms thereby enabling efficiencies in service delivery; © enhancing municipal rates revenue and collections performance in existing residential areas; (d) private funding resources are used rather than housing subsidies which reduces the pressure on scarce public subsidy funding; (e) stimulation of enterprise development particularly small scale entrepreneurs, as well as creating economic multipliers derived locally, thereby contributing significantly to local economic development.

127 The Gauteng Human Settlements Profiling Exercise in 2017 and subsequent work for the Greater Lanseria Masterplan (2021) identify in the order of 60 000 new affordable housing opportunities to be delivered in the area

128 Vaal holds great prospects for economic growth | SANews



- the Lufhureng project west of Greater Soweto has yielded very significant tracts of new housing that need to be connected back into an expanded but coherently re-defined urban system;
- the same can be said of the Sebokeng housing spread (Johandeo Phase 2, Savannah City) on the southern axis between Johannesburg and the Vaal area;
- Syferfontein is being seen as a potential new economic node and, based on achieving economic stimulation, may well yield further housing potential (the emphasis, however, being on leading with economic stimulation and programmes *prior to* any housing development being undertaken);
- A certain amount of further housing consolidation in and around the economic stimulation of the Rosslyn and Auto-Hub industrial areas is also indicated.

The capacity of the areas noted above is extremely significant and gives a great deal of project potential aimed at a well-reasoned and consolidated peripheral zone for the GCR: beyond this, further horizontal spread to accommodate growth is unnecessary, ill-advised and is not to be encouraged. These misgivings are particularly so in the case of expansion intentions into the far West Rand, the south-eastern and eastern extremities of the far-East Rand, and the arc of peripheral dormitory settlement from Ga-Rankuwa, Soshanguve, Mabopane, Winterveld and Hammanskraal.

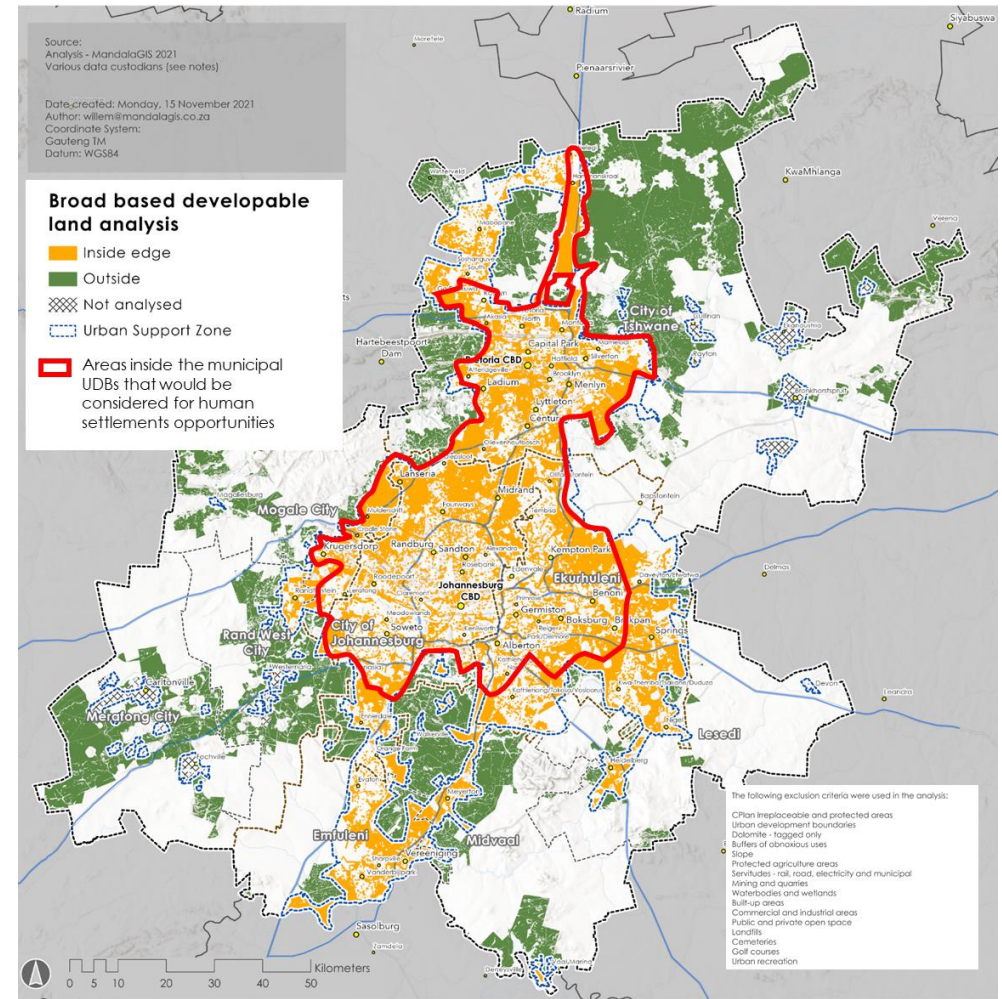
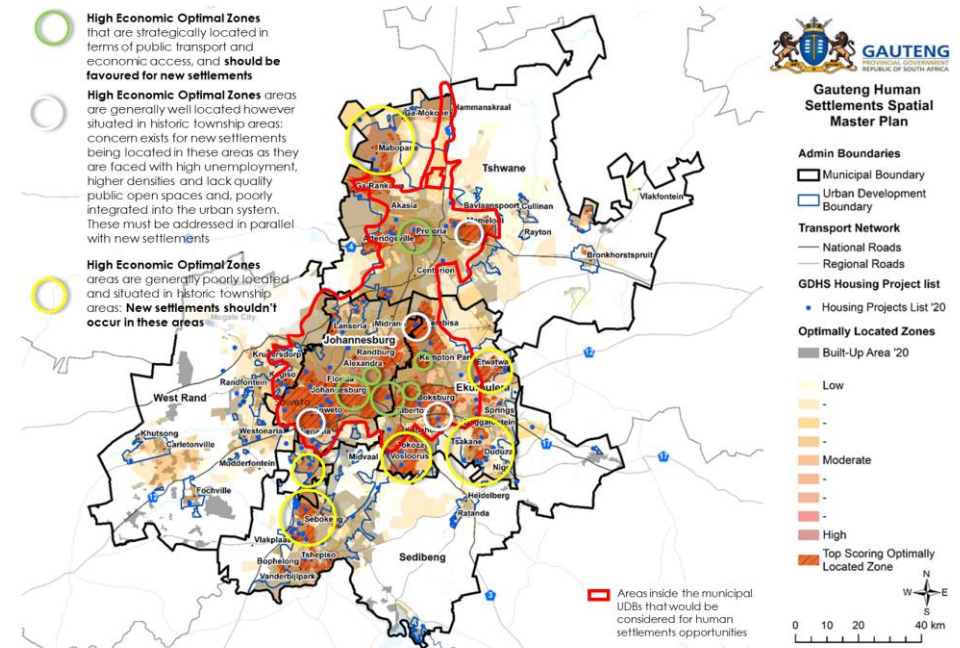


Figure 39: Identification of developable land within the province, the areas within the core city region (red boundary) are favourable and well-located areas where development can take place .

### Gauteng Human Settlements Masterplan, 2021

In terms of the Human Settlements Optimally Located Zones, 2020 (OLZs) (see Figure 40), there are areas where urban accretion is supported (i.e. the green circles on the plan), these areas should be favoured for human settlements opportunities. Areas within the red boundary should also be favoured, but in cases with caution, as there are several (white circles on Figure 40) areas that are historical townships and face several challenges<sup>129</sup>, further commitment to addressing social, and physical infrastructure, in parallel with, new settlement opportunities should occur in these areas. There are several OLZs where new settlements shouldn't be undertaken such as areas outside the Municipal UDBs, and peripheral historic townships areas (yellow circles), namely Ga-Rankuwa, the outer parts of Mamelodi, Tsakane, Vosloorus, Sebokeng, Ekangala and Etwatwa.

Figure 40: Assessment of Human settlements Masterplan Optimally located Zones in context of identified well located land.



<sup>129</sup> Areas with greatest unemployment, concentrations of poverty and poor education levels, informality, poor quality living environments, and lack connections to other parts of the GCR (limiting economic access) and ease of movement.

### Priority Human Settlement Housing Development Areas (PHSHDAs)

The planning intent implicit in the definition of the PHSHDAs is noted and it is understood to be undergoing further detailed review to chart a short, medium and longer term approach in Gauteng in terms of optimizing various aspects, particularly in terms of the availability and capacity of service infrastructure, public transport and social amenities, notably health, education and institutional access as part of work flowing from the GDHS Spatial Master Plan.

To the extent that the review of the GSDF 2030 reiterates the need to place greater spatial emphasis on a more tightly defined 'Core City Region' as indicated in Figure 44 (which itself aims to create the basis for much of the integration of the spatial marginalization that has already occurred over the past 20 years), it is clear that the some PHSHDA areas should only be considered far into the future. As the PHSHDAs have been conceptualised as a long term focus of urban consolidation, the short terms focus of implementing PHSHDAs in core areas would support the national policy directives to curb sprawl, specifically in the short to medium term which should also correlate with municipal growth management effort, specifically municipal urban development boundaries/ edges in light of the fact that these are directly linked to municipal bulk infrastructure planning, funding allocations and conditional grants.

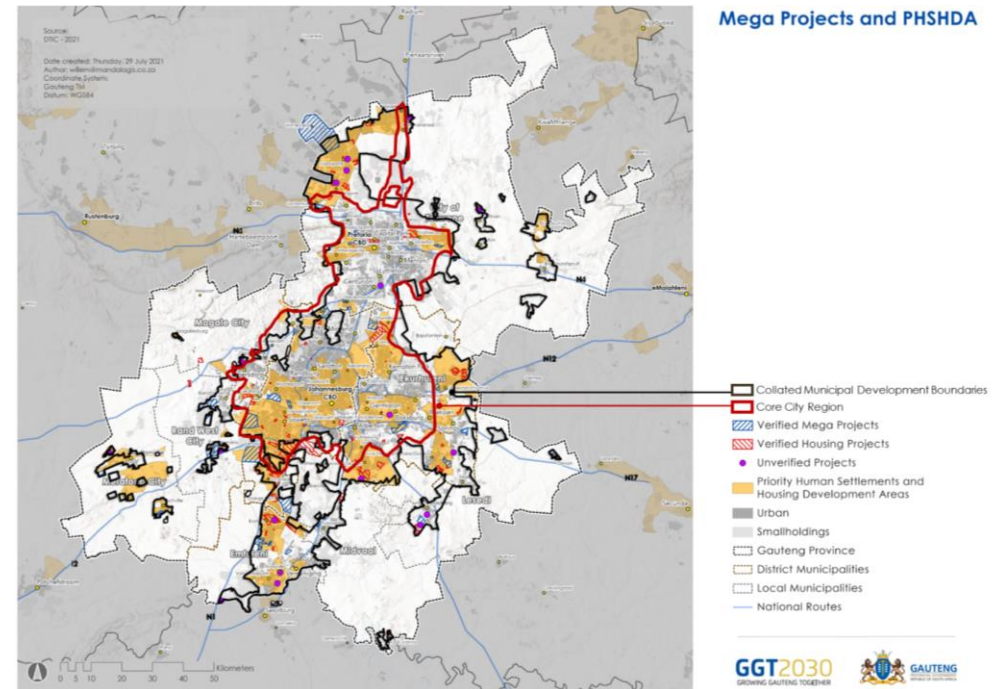
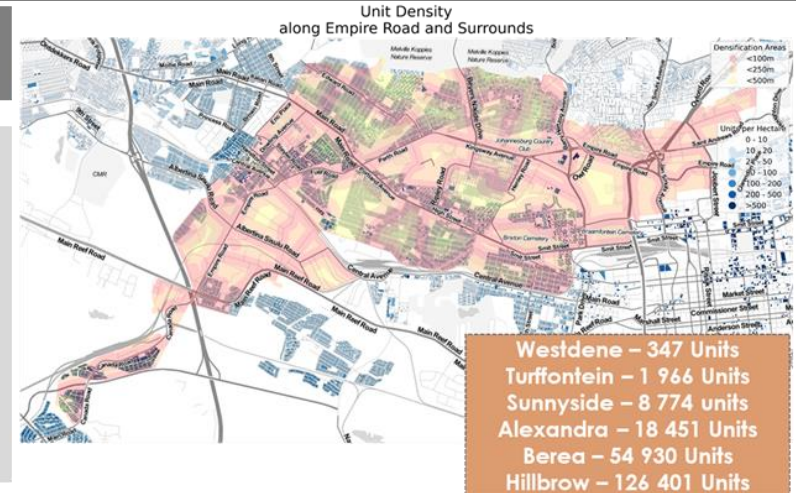


Figure 41: Mega Projects, PHSHDAs, and the Core City Region



## A case for the encouragement of far more expansive and far-reaching policies of urban accretion

CoJ, CoT and CoE have identified areas along the BRT to be intensified. In principle the dwelling units promoted range between 160-250du/ha abutting the route, and grading down to between 100-160du/ha; and further beyond under 100du/ha. A similar principle has been applied to these areas. Areas tested include the corridors of Freedom, CoJ, the route between Mamelodi through to PTA CBD, and the Tembisa Kempton Park Routes) to understand the carrying capacity and whether this is an appropriate approach to accommodating growth (refer to Figure 38). The results are profound at a very reasonable density, a very significant amount of units and density can be added to the system.

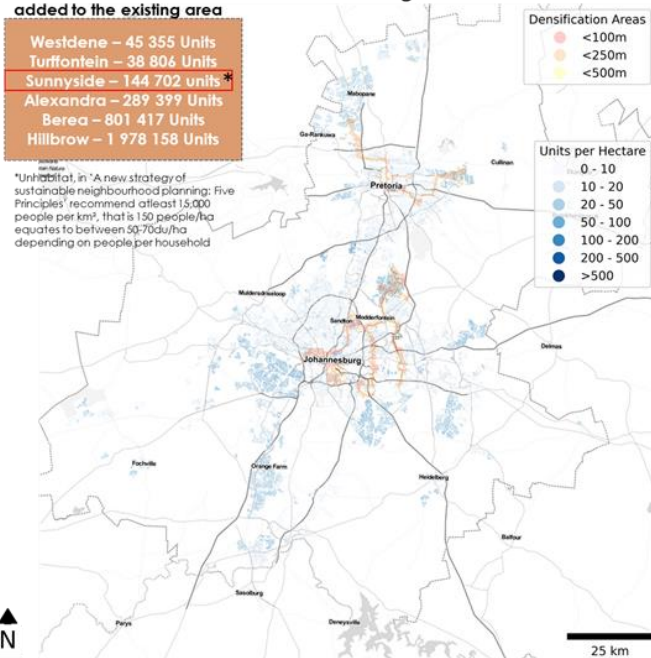


When densifying to a similar density as this suburb, additional units can be added to the existing area

- Westdene – 45 355 Units
- Turffontein – 38 806 Units
- Sunnyside – 144 702 units
- Alexandra – 289 399 Units
- Berea – 801 417 Units
- Hillbrow – 1 978 158 Units

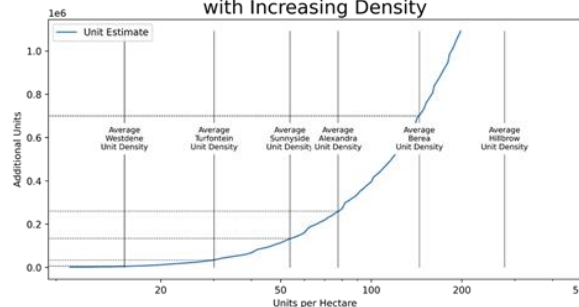
\*Unrealistic in 'A new strategy of sustainable neighbourhood planning: Five Principles' recommend atleast 15,000 people per km², that is 150 people/ha equates to between 50-70du/ha depending on people per household

### Unit Density in Gauteng



### All Units densified within metro's Densification Areas (BRT routes) based on routes and stops

#### Increase in Units in Gauteng with Increasing Density



Areas are densified where density in the overlapping units are less than the density specified, otherwise they are kept the same. The separate densification areas are densified using the following rules:  
 <100m – Densified by amount in Units per Hectare  
 <250m – Densified by half amount in Units per Hectare  
 <500m – Densified by third amount in Units per Hectare

Existing Units in Area – 424 736

### Unit Density in Pretoria East and Surrounds



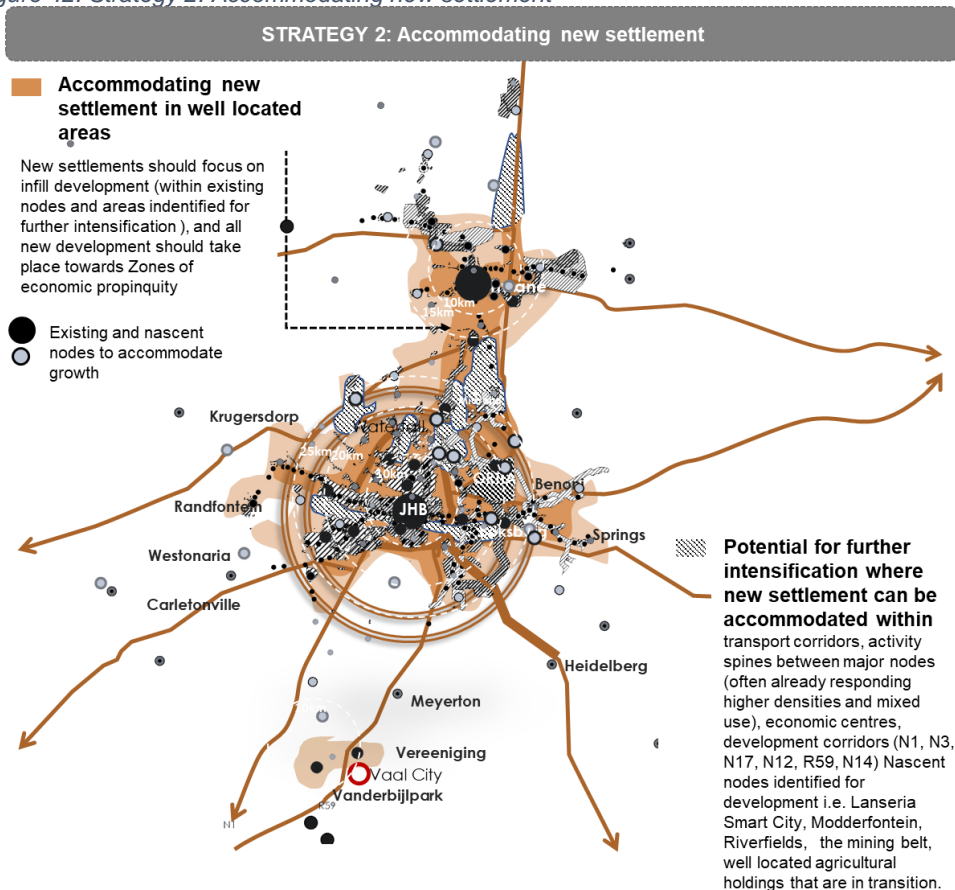
Areas are densified where density in the overlapping units are less than the density specified, otherwise they are kept the same. The separate densification areas are densified using the following rules:  
 <100m – Densified by amount in Units per Hectare  
 <250m – Densified by half amount in Units per Hectare  
 <500m – Densified by third amount in Units per Hectare

- Westdene – 245 Units
- Turffontein – 1 323 Units
- Sunnyside – 5 148 units
- Alexandra – 11 889 Units
- Berea – 41 425 Units
- Hillbrow – 122 276 Units

Existing Units in Area – 55 201



Figure 42: Strategy 2: Accommodating new settlement



- It is a composite of well-positioned urban nodes with an intricate web of connectivity of urban corridors and activity spines;
- It is supported by a composite of suburbs and townships that can be intensified through conscious policies supporting urban accretion;
- It collectively defines an 'armature' of development around which previously underutilized well-located land can be exploited as valuable urban infill resource.

In addition to these inherent attributes, it is possible to utilise what is one of Province's most powerful policy levers, its Gauteng Strategic Road Network (GSRN), to evolve a 'radial corridor' that enables an expanded spatial order that makes sense of, and disciplines the plethora of relatively narrowly-defined spatial initiatives that have over the past 20 years, increased the spread of the urban periphery.

This, as shown in Figure 43, re-integrates the spatial system around the central activity system of central Johannesburg, the east-west activity corridor driven by the history of mining settlements, the dispersal of dormitory townships around the urban system's periphery and the growth of surrounding and infill low-to-medium density suburbia over the years.

As noted relative to the other strategies, consolidation must take advantage of well-located infill land (vacant and underutilised land as well as privately owned land such as the mining land, Modderfontein and the R21 corridor) and strategies of conscious support of urban accretion within well-located suburbs and townships (together with the timeous identification of areas in which services capacity must be bolstered).

Apart from the value to be gained from Provincial investment into the proposed radial urban corridor, the connectivity of road infrastructure that

### 6.5.3 Strategy 3: Reinforcing economic networks

The spatial refinement of functional components of the GCR defines an extensive but integrated, coherent spatial entity that is defined as follows:

- It is predicated on what constitutes urban consolidation in and around what is an extended overall zone of 'economic proximity';

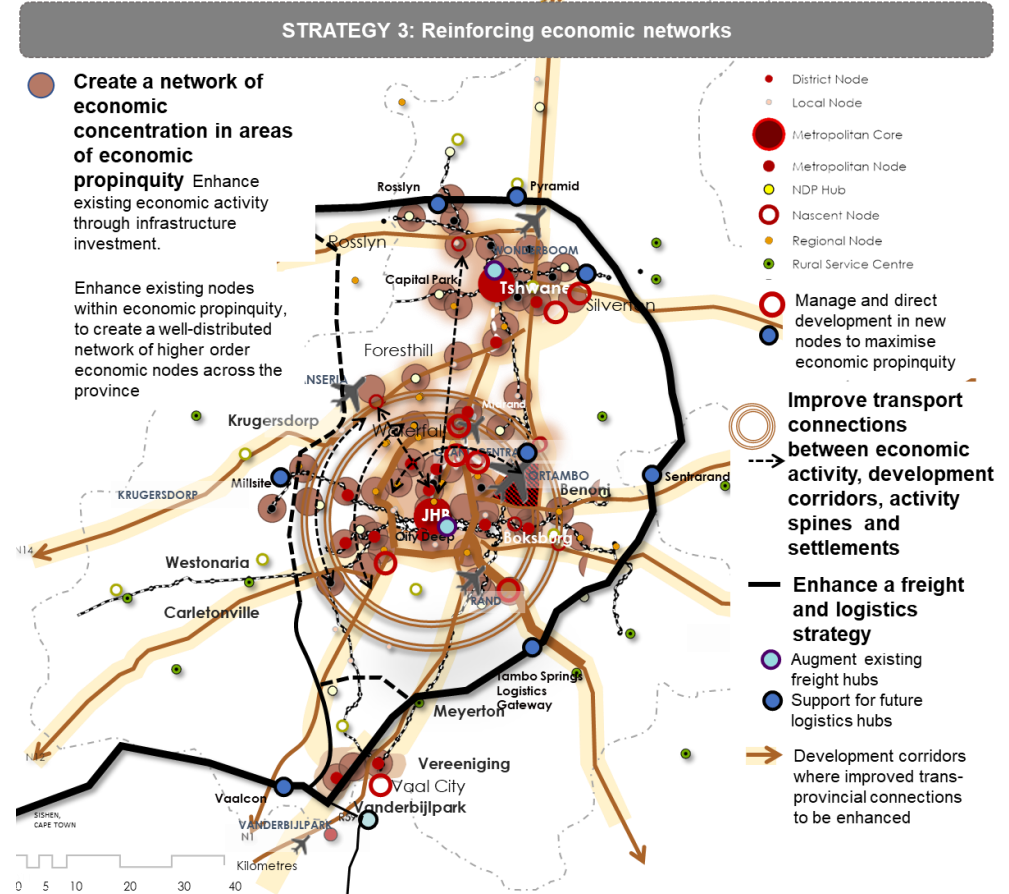
realizes the very real capacity of the central corridor from Johannesburg to Tshwane and, in the process, brings the entire Tembisa/Ivory Park ‘marginalised’ area into the economic mainstream.

The same applies to the consolidation of the R21 corridor from OR Tambo International Airport to the city centre of Tshwane which capacitates an extensive infill zone of the GCR.

The Greater Lanseria Master Plan (GLMP) and the Vaal City initiatives (which seem to build on urban principles from the point of view of existing economic drivers) assist in building a true spatial economy.

Added to this, continued investment and economic assistance to the Auto-hub area adjacent to Mamelodi, Rosslyn and the Babelegi Industrial area on the N1 corridor connection between Tshwane and Polokwane, will assist in providing economic consolidation that brings ‘urban sense’ to the marginalised areas of Mamelodi, Ga-Rankuwa and Hammanskraal.

Figure 43: Strategy 3: Reinforcing economic networks



## 6.5.4 Strategy 4: Creating a Productive Hinterland

*The GCR 'hinterland' needs far more recognition as a valuable and vital resource*

The sector meetings and plenary session yielded a very strong consensus around the twin issues of: (a) the need to contain further urban sprawl (and in fact to reverse it through greater attention to compaction and consolidation); and (b) to be far more mindful of the role to be played by the ostensibly open, vacant or unutilised land that might collectively be referred to as the GCR's "provincial hinterland".

Noting the dangers referred to in preceding sections associated with simply regarding this land as easily accessed and available for urban expansion on a piece-meal basis, the GSDF 2030 review indicates that it is vital that far greater value be placed on this resource. It is an important composite of conservation land, extremely important and, in many instances, fragile ecological and complex environmental components, aquifers, outstanding international heritage value, varying levels of agricultural value, and, very importantly, outstanding recreational and tourism value.

As thought of at present, however, it tends to be regarded as a loose assembly of all these component parts: each component, in its own right and according to its own merits, is always vulnerable to the greater and inexorable pressures of urban growth by what may appear to be incremental 'creep' but is, in fact, rampant and unbridled urban sprawl. Instead, it should be regarded as a collective resource and asset that is extremely carefully coded, from a land-use, activity and accessibility point of view, and very explicitly regarded as an "urban support zone" that may not be regarded for further urban expansion: it must no longer be regarded as a 'disintegrated hinterland of disparate parts' and seen as an 'easy option' and a convenience for 'sloppy' urban management.

*Agriculture must itself be regarded as one of Gauteng's primary economic underpinnings*

Allied to the importance of the provincial hinterland as an essential land resource, it is essential that agriculture be better understood and prioritised as a strategic economic pursuit. It appears that this valuable asset (that has been identified through several very comprehensive studies time and again) continues to be vulnerable from three points of view:

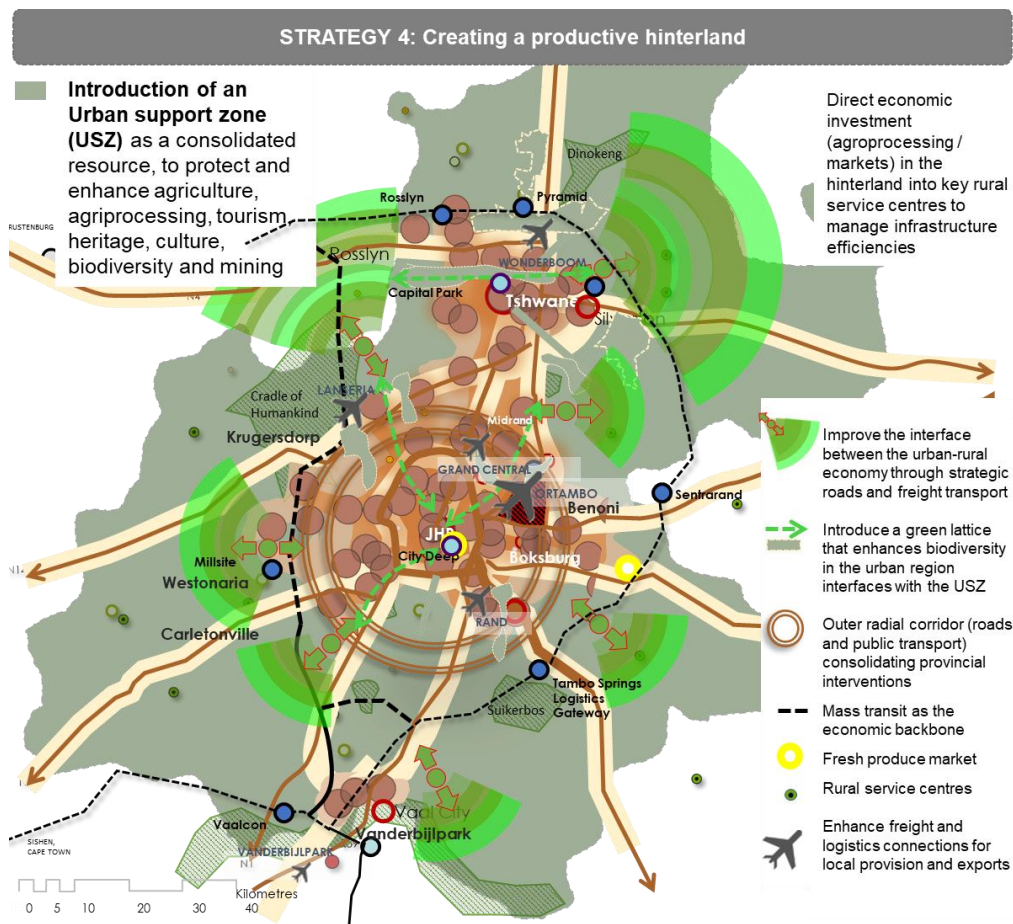
- Although each area identified is typically extensive, they nonetheless stand as elements divided from one another by other elements comprising this 'hinterland' and do not, therefore, enjoy the advantage of being considered as a single, consolidated resource that may not be trifled with;
- There has been too little emphasis placed on this agricultural potential as an essential component of Gauteng's provincial economy: instead, it is defended on far less solid ground such as 'being important from a "food security" point of view'; and
- In many respects, these agricultural assets do not appear to be supported by a fully integrated, cogent economic strategy of production (both extensive and highly intensive farming types and practices) together with the associated agri-processing (both of locally produced content as well as produce from surrounding provinces).

On review, it is felt that far more concerted economic planning between the many and varied agencies (provincial and national) is required and that simply the designation of 'agri-hubs' is too nebulous: what precisely are these focused on? Of what does each comprise and what strengths and competitive advantages are exploited? How do they intersect with properly managed land restitution? How are they supported by public and private



sector investments and inputs? How, precisely, do they form part of the provincial growth and development strategy?

Figure 44: Strategy 4: Creating a productive hinterland



## 6.5.5 Strategy 5: Driving the urban sustainability and resilience agenda

The point has been noted that sustainability is not an environmental issue but rather a *developmental* issue: urban sustainability, in particular, has several dimensions that underpin it: the extent to which we include people in social and economic integration; access to opportunity based on Proximity and the need to commute less; ready availability of integrated, affordable, safe and reliable public transport when commuting is necessary; the compact complexity of urban shape, form and extent; environmental and bio-diverse underpinnings to a ‘green/blue’ economy; ‘smart city<sup>130</sup>’ principles that do not increase the ‘digital divide’ but rather close the gap; emphasizing urban agriculture as an inherent and vital aspect of the city region’s economy.

All of these aspects are, and must continue to be, regarded as central to the content and spatial thrust of the GSDF 2030. Many of the underpinnings of the Urban Sustainability Agenda cannot be targeted meaningfully at the local municipal level of planning and have, perforce, to be dealt with on regional scales that are functionally defined and cut across jurisdictional boundaries:

### *The urban support zone (USZ)*

The urban support zone noted as Focus Zone 4 above, is a key element of the Urban Sustainability Agenda and contains the ecological, environmental, bio-diversity, heritage, tourism, leisure and agricultural potential (both production and agri-processing) underpinnings that lay the basis for a healthy, life-enhancing MegaCity: it provides a significantly expanded economic base for the Province and brings food security, production and

<sup>130</sup> The IUDF Smart City Framework (2021) aimed at sharing best practice examples, guides decision making for smart cities, and becomes an enabler for initiating Smart Cities. This aligns with the GSDF strategy to achieve sustainability and innovation (such as smart city approaches) for the GCR.



processing right onto the doorstep of the biggest and densest urban market on the subcontinent.

### ***Economic growth networks for global competitiveness***

Clearly the growth of a healthy, sustainable provincial economy is basis to urban sustainability and, by extension, national sustainability. Production efficiencies, and the efficiency with which energy is used, are closely related to the form and shape of the urban system. Regional attention, at the level of provincial planning, has to provide for an overall freight and logistics spatial strategy (an aspect that was not well defined in the 2016 formulation of the GSDF 2030); increased spatial connectivity (physical movement and digital integration) that underpins a robust spatial economy; ensuring that physical growth ties into the NSDF and its associated port, corridor and air-based platforms of trans-provincial, continental and global connectivity. It has become increasingly apparent that digital infrastructure is a largely unplanned and unmanaged roll-out of infrastructure by a miscellany of market-related service providers that tends, unwittingly, to exacerbate uneven spatial provision: clearly a more planning-led strategy is required and Province, as an integral part of the GSDF 2030, is well placed to assume this responsibility that, through the review exercise, now stands out as a clear deficiency.

### ***Social and economic integration***

As important as it is that economic growth be engendered, it is vital that, at the very basis of urban sustainability, that all inhabitants of the GCR are integrated by social and economic inclusion: vast disparities in wealth, spatial exclusion and relative deprivation undermine possibly this single most important underpinning of urban sustainability. The spatial policies that drive urban consolidation, access to economic prospect and the limitation of further marginalisation are essential.

### ***Reducing the need to commute and providing a basis for integrated public transport***

Access to economic opportunity, from a spatial planning point of view, is best enabled through the growth of vibrant urban activity patterns in which urban dwellers, at significant scales of density, are able to live, work, learn, pray and play in compact complexity. In effect, the focus of spatial planning shifts to Non-Motorised Transport (NMT, notably, walking and cycling) and, as far as possible, reducing the need to commute. Where communities are not able to find direct access to economic prospect in their local neighbourhoods and districts, effective patterns and means of public transport are enabled by the spatial logic of the integrated city: people are less prejudiced by not having private mobility, do not need to own cars as a basis of economic survival and are not required to spend large proportions of meagre incomes on long-distance commuting between dormitory settlements (the 'Night Time City') and places of economic opportunity (the 'Day Time City'). The GSDF 2030 seeks to narrow the gap between where they need reside by night and where they need to be by day in order to be economically involved and viable.

### ***Urban accretion as a growth management model***

A model of increased urban sprawl is fundamentally at odds with the urban sustainability agenda: making a determined effort to arrest urban sprawl and limit further marginalisation of poor communities is best dealt with by a more cogent spatial strategy of compact complexity. This involves moving away from accommodating urban growth simply by further horizontal spread and making more determined efforts to promote an urban accretion model of intensification, mixed use and densification in nodes, within urban corridors and along activity spines.

### ***Addressing water as a scarce resource***

It is noted that water is a scarce resource for all major urban concentrations the world over (as opposed simply to cities in arid regions) and this is particularly important in respect of the GCR: far more has to be done, at a regional level, to plan with this as a conscious focus. The review of the Water Cycle in this GSDF 2030 review process is of particular importance, noting that this must be a planning responsibility undertaken by Province although this is not in place – RWB has only a certain remit in terms of water provision to a region but cannot/is not mandated to deal with the full cycle that is significant to the management of this vital resource. Inherent to this cycle is the relationship between potable water provision and wastewater management through sanitation provision and management: special planning attention, at provincial level, needs to be focused on (a) far less water-intensive measures of sanitation and (b) integration of all aspects of water management as part of an overall Gauteng system of managing the complete Water Cycle.

### ***A case for water sustainability***

Water sustainability can be achieved by minimising the reliance on external water sources by introducing circular economies into Gauteng's water and sanitation system. Energy sustainably can also be achieved by maximising energy generation from within the water and sanitation system itself. Although not currently practical, it is noted that carbon neutrality must be introduced as a final measure to ensure overall sustainability of the system. This will likely become more achievable as new technologies emerge, out of necessity, that reduce the release of carbon dioxide associated with the provision of water and sanitation services into the atmosphere. A spatial assessment of Gauteng was undertaken in order to put forward examples of potential circular economies that could be introduced in Gauteng by making

use of water reclamation in the form of indirect potable reuse. Gauteng's natural drainage patterns lend themselves somewhat well to downstream abstraction of effluent and, if available, surface water resources from rivers into which significant amounts of effluent are being discharged. It is noted that detailed studies on water availability and downstream user impact will be required before such measures can be implemented, however, it is useful

To demonstrate how such circular economies can be provisioned. Figure 44 shows a stream flow plot of a hypothetical gauging station including an indication of what the natural and effluent flows could be and Figure 46 provides an overview of various measures that could be implemented in mitigation of water and sanitation issues in Gauteng. The intent is to at least abstract and reclaim effluent flows, and, if possible, surface water resources generated by increased runoff owing to the urban environment in Gauteng. Figure 45 shows natural catchments for the northern portions of Gauteng. Three potential abstraction points for indirect potable reuse are shown in the form of a point on the Crocodile River on the edge of Gauteng, Hartbeespoort Dam which is located in the North West Province, and the Bon Accord Dam. An existing abstraction point at Roodeplaat Dam is also shown which is used by the City of Tshwane (CoT) for abstraction to a water treatment plant located at the dam for the production of potable water for the CoT. This represents a form of indirect potable reuse as there are several WWTW's discharging effluent into the Roodeplaat Dam catchment. Table 6 provides an overview of various measures that could be implemented in mitigation of water and sanitation issues in Gauteng.

**Gauteng faces the possibility of Day Zero in terms of water supply within the next 10 to 20 years.**

**A case for the encouragement of far more expansive and far-reaching policies of urban accretion**

Figure 45: Natural drainage patterns for northern Gauteng

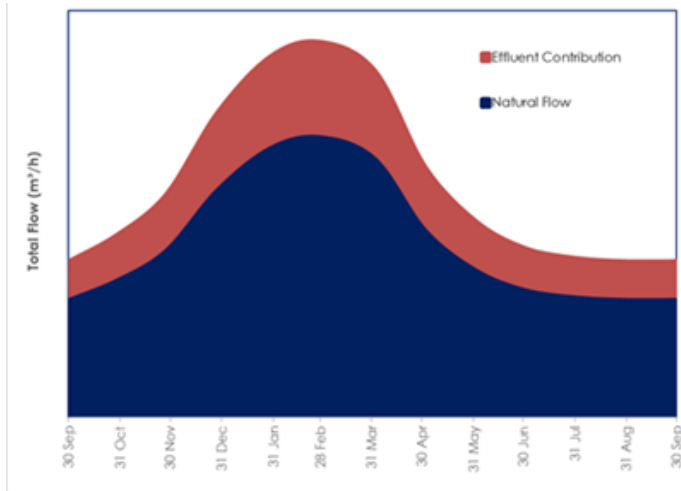


Figure 46: Schematic showing potential interventions

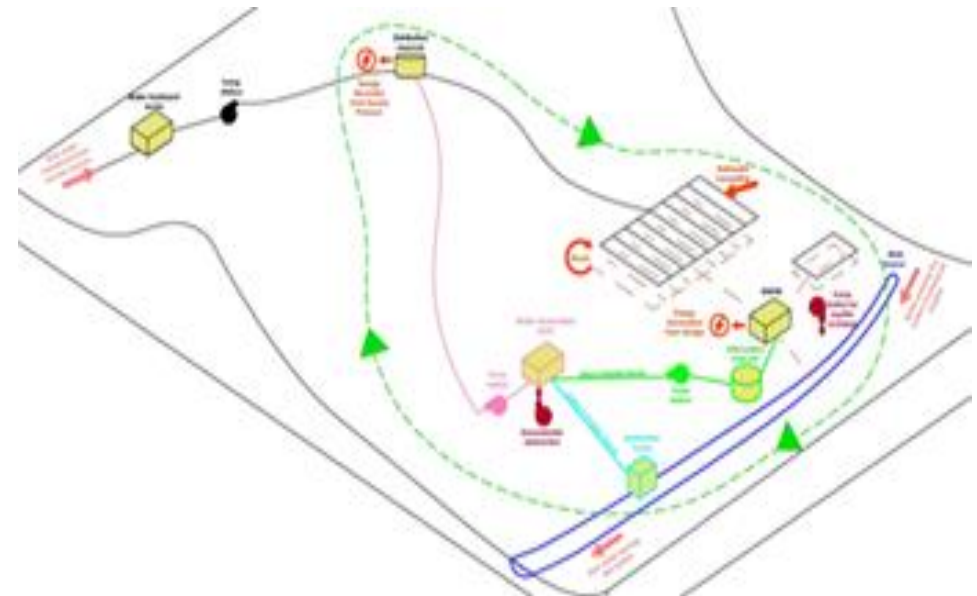


Figure 44 : Hypothetical urban stream flow plot including contributing components



Table 6: Summary of potential interventions

Intervention/Opportunity	Description	Main Benefits	Obstacles and Risks
<b>Water Reclamation via Direct Potable Reuse</b>	Temporary storage of effluent and subsequent transfer into a water reclamation plant for treatment to a potable standard for reintroduction into the bulk system.	<ul style="list-style-type: none"> <li>Reduces the amount of water that needs to be imported into a system.</li> <li>Prevention of potentially poor-quality effluent from entering the environment</li> </ul>	<ul style="list-style-type: none"> <li>Stigma surrounding wastewater reclamation on behalf of the end user.</li> <li>Potential potable water quality issues if effluent quality is poor.</li> <li>Establishment of these systems requires significant capital.</li> </ul>
<b>Water Reclamation via Indirect Potable Reuse</b>	Abstraction of effluent and surface water resources from natural system for subsequent transfer into a water reclamation plant for treatment to a potable standard for reintroduction into the bulk system.	<ul style="list-style-type: none"> <li>Reduces the amount of water that needs to be imported into a system.</li> </ul>	
<b>Rainwater Harvesting</b>	Capture and storage of rainwater on a domestic or larger scale for on-site non-potable use.	<ul style="list-style-type: none"> <li>Reduction in demand from bulk supply system</li> <li>Minimisation of stormwater infiltration into sanitation system</li> </ul>	<ul style="list-style-type: none"> <li>Requires investment from private individuals and private sector</li> <li>Yields are not consistent throughout the hydrological year (i.e. benefit varies with time).</li> </ul>
<b>Groundwater Resource Exploitation</b>	Abstraction of groundwater for treatment to a potable standard.	<ul style="list-style-type: none"> <li>Reduction in reliance on surface water resources.</li> <li>Lower volumes of environmental losses as compared to surface water resource losses (e.g. evaporation and seepage)</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater resources must be properly managed.</li> <li>Electricity-intensive if the water table is deep.</li> <li>Establishment of such systems requires significant capital.</li> </ul>
<b>Artificial Aquifer Recharge</b>	Transfer of surface water resources or effluent into the ground via pumping	<ul style="list-style-type: none"> <li>Lower volumes of environmental losses as compared to surface water</li> </ul>	<ul style="list-style-type: none"> <li>Pollution of groundwater if pumped water quality is poor.</li> </ul>

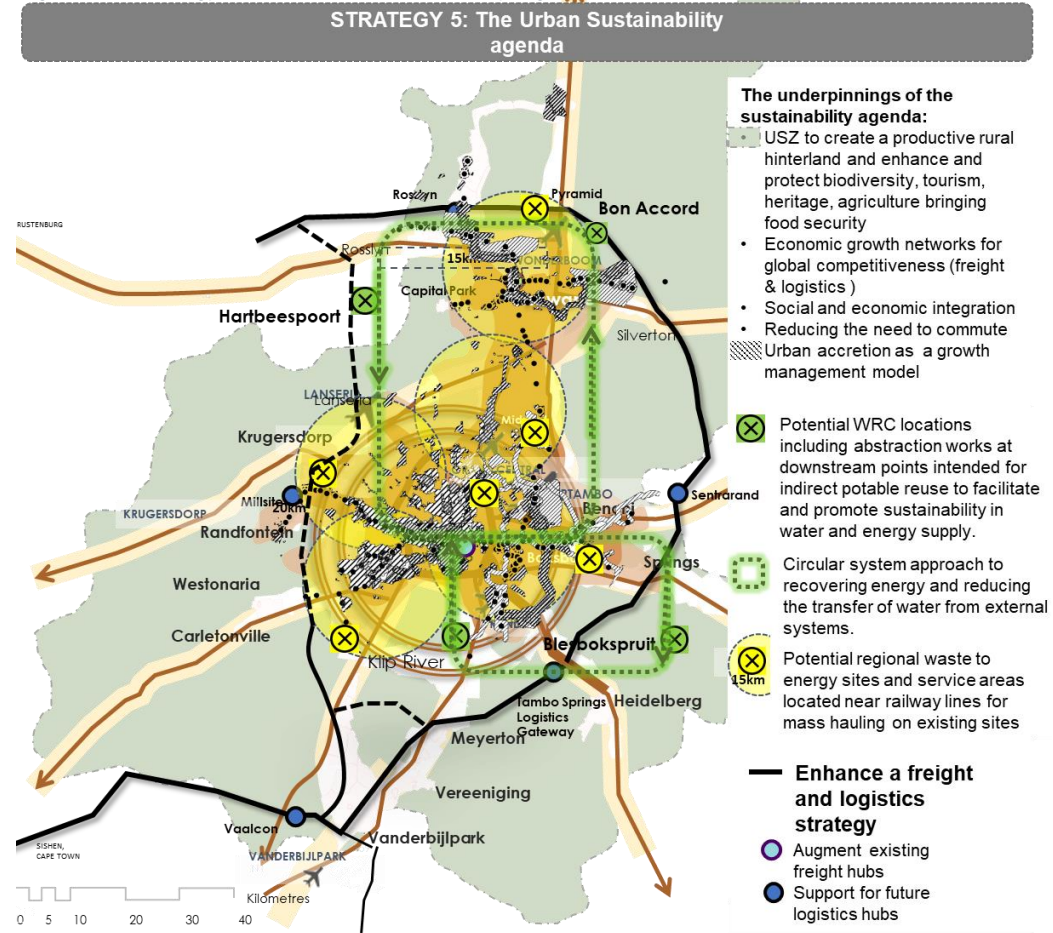


Intervention/Opportunity	Description	Main Benefits	Obstacles and Risks
		resource losses (e.g. evaporation and seepage) <ul style="list-style-type: none"> <li>Large storage capacities available depending on geohydrological conditions</li> </ul>	<ul style="list-style-type: none"> <li>Electricity intensive depending on geohydrological conditions and position of the water table</li> </ul>
<b>Provision of Sanitation Infrastructure</b>	Provision of either waterborne or dry sanitation services for previously unserved communities.	<ul style="list-style-type: none"> <li>Reduction in uncaptured raw sewage entering environment</li> <li>Increased dignity for previously unserved communities.</li> </ul>	<ul style="list-style-type: none"> <li>Investment required</li> <li>Difficult to implement sanitation infrastructure in sprawled and unstructured areas (i.e. reblocking may be required)</li> </ul>
<b>Energy Generation from Sludge</b>	Recovery of the calorific value of sludge that is a byproduct of wastewater treatment.	<ul style="list-style-type: none"> <li>Energy generation potentially exceeding the amount of energy required to treat the corresponding wastewater.</li> <li>Significant reduction in wastewater treatment costs.</li> <li>Solid waste diverted from landfill.</li> </ul>	<ul style="list-style-type: none"> <li>Capital expenditure required.</li> </ul>
<b>Energy Recovery from Excessive Pressure in Bulk System</b>	Conversion of excess pressure in a bulk distribution network at the downstream point into electricity via a turbine.	<ul style="list-style-type: none"> <li>Improved energy efficiency of system.</li> <li>Cost recovery.</li> </ul>	<ul style="list-style-type: none"> <li>Infrastructure cost element.</li> </ul>

### Waste-to-energy as regional win-win

Both nationally, and at a provincial level, development is by power shortages and restricts the economic growth of Gauteng. This must also be seen in context of the fact that, virtually throughout Gauteng, the strategies for domestic waste disposal are limited and stressed: very little capacity exists in the present facilities and there are severe challenges in making more land available for current strategies of disposal by landfill. International best-practice clearly points to waste-to-energy as a fundamental of the urban sustainability agenda yet it is, apart from the three metros, an issue that cannot be operationalised at the level of disparate local authorities: cross-jurisdictional thinking, even between the metropolitan councils, is crucial to a well-orchestrated waste-to-energy strategy and Province must accept the regional authority responsibility for ensuring that this becomes a bed-rock of policy going forward both in respect of the GCR's pressing domestic waste disposal pressures and its obvious energy production deficiencies.

Figure 45: Strategy 5: The Urban sustainability Agenda



## 6.6 16 SUPPORTING SPATIAL DEVELOPMENT INTERVENTIONS

### 6.6.1 Introduction

The outcome from the GSDF 2021 Review is that the essence of **Decisive Spatial Transformation** set out in the GSDF 2030, 2016 is sound: the 4 Spatial Strategies and the associated 10 cross-cutting spatial development intentions and the identification of the 5 Focus Areas, associated to GSDF 2030 Spatial Targeting Focus Areas linked to Budget Programmes is appropriate and correct.

Spatially since 2016, as mentioned in previous sections is that (a) far too much sprawl into Focus Area 4<sup>131</sup> (and to a lesser extent Focus Area 5) has already occurred; and (b) the GSRN has not been adequately reviewed through the years to align it with the wider understanding, from an urban structure point of view, of its role in consolidating the GCR and enabling the vigorous growth of the city-region's economy. This is exacerbated by the degradation of the Metro passenger rail service as a transportation backbone to the region and the GMA's planning and initiatives in this regard going forward will be vital both in coping with the deficiencies in passenger rail and in shaping and forming a cohesive city-region structure.

Taking the GSDF 2030 forward into a robust future of continued rapid urban growth will thus require, building on what the GSDF 2030, 2016 has already

put in place by **strengthening its spatial imperatives and directing these into a spatial sense that can, as a consolidating urban form over the years to and beyond 2030, satisfy the normative intentions of the GSDF 2030, 2016** (an urban region based on spatial justice, sustainability, resilience, quality and efficiency) in an unfolding urban logic that is unambiguous about where urban sprawl needs to be arrested and infrastructural investment re-directed as a basis for effective programmatic social and economic injections into the wider system. The Reviewed GSDF 2030, 2021 supports and incorporates the 10 High-priority spatial development proposals<sup>132</sup>, and aims to direct their intent into **16 Supporting Spatial Development Interventions (SSDIs)**.

### 6.6.2 The 16 Supporting Spatial Development Interventions (SSDIs) must achieved with the Reviewed GSDF 2030

**In all, 16 SSDIs have been set out to guide spatial intervention: the first 8 of these are clearly defined spatial strategies that have associated mapping (i.e. they are Spatially Targeted interventions having specific spatial focus and must be understood in the context of the mapping); the second set of 8 SSDIs making up the full 16 SSDIs are Policy & Process Support in nature and form the policy and process support**

131 In comments published on [www.wits.ac.za](http://www.wits.ac.za), although the GSDF 2030, 2016 was supported by Spatial Analysis & City Planning Department in principle: Professor Phillip Harrison, Professor Alison Todes, Professor Marie Huchzermeyer and Dr Margot Rubin, shared a concern that the balanced, polycentric model as well as 25% of new development may be permitted in low priority areas, could justify sprawl and suggested that, compact polycentricity, be a more appropriate term and to be far more specific on where new developments be supported.

132 10 interventions included (1) Major Road and Rail Network Enhancement; (2) Expanding and Integrating Municipal BRT Networks; (3) Municipal Nodal Development, Maintenance and Enhancement;

(4) Municipal Urban Growth Management; (5) Capitalising on Proximity to Major Nodes and Public Transport Routes and Stations;

(6) Spatial Integration and Township Regeneration; (7). Providing Multi-Pronged Sustained Support to Outlying Settlements; (8). Strengthening and Enhancing Agricultural Production and Agro-Processing;

(9). Actively Pursuing Environmental Management and Eco-System Protection;(10) Boosting and Optimising Provincial Tourism Opportunities

required for the implementation of the full suite of 16 SSDIs. The Supporting Spatial Development Interventions (SSDI), identified in the GSDF 2030, 2016 include:

#### SSDI-1:

**The GCR must be made more compact in extent:** The accommodation of population growth must be based on consolidation within the existing extents of the city region. Municipalities have introduced urban growth boundaries and it is imperative that national, provincial and local government adhere to these boundaries. It is recommended that management of urban development boundary becomes a provincial role, overseen by the UP & CoGTA as it has implications for the sustainability of all the municipalities and urban region. **PHSHDAs housing projects should be prioritised** within the municipality's priority areas and UDBs. Further approaches to compaction include intensification of nodes and public transport corridors and consolidating development within existing nodes (see related figure for **SSDI-1a, 1b, 1c**).

#### SSDI-2:

**Compaction of the GCR must be accompanied by complex intensification of the urban system:** This meaningful intensification (where people live, work, play, pray and learn) must be in the places most capable of offering urban prospect (see related figure for **SSDI-2**).

#### SSDI-3:

**The GCR must itself be re-defined and re-shaped to reflect a compact, complex pattern:** The GCR is a cohesive assembly of contiguous urban areas into a single conurbation, beyond whose limits other disparate urban areas and settlements occur but which are not included in the spatial extents of the GCR itself. There is merit in redefining the Gauteng city region and introducing a core city region (See related figure that follows for **SSDI-3**) where consolidation of development occurs. The Gauteng city region core would be defined by the (a) existing east-west urban corridor from roughly Roodepoort on the West Rand through Johannesburg to Boksburg in Ekurhuleni, and stretching from Midrand in the north down to the Southern Suburbs of Johannesburg<sup>133</sup>; (b) the historic Central Tshwane area (the city centre, its inner suburbs, its expanded activity system south of the Magaliesberg range, its south-western and south-eastern suburbs and as far south, more recently, to include Centurion); and (c) the more recently consolidating broadly defined north-south corridor aligned from the Johannesburg city centre to the Tshwane city centre via Sandton, Waterfall, Midrand, Samrand and Centurion. The peripheral areas in the Gauteng city region, with their corresponding initiatives in areas such as the Vaal / Vereeniging, Brokhorstspuit, Carltonville, can be considered as urban centres with increased focus on the trans-provincial relationships between the corresponding adjacent Provincial areas.

133 This is what, in the 1970s and pre-decentralisation from the Johannesburg urban core at scale, according to the Wits University Urban & Regional Research Unit, was termed the Central Witwatersrand

Metropolitan Area, being defined as the extent within which 80% or more of residents were dependent on the core city for economic opportunity and commuting to this core daily.



**SSDI-4:**

**Growth management and associated governance must eliminate urban sprawl and marginalisation of communities:** The provision of housing can no longer be an agent for urban sprawl. Projects and land provision that aren't aligned with Strategy 2: Accommodating New Settlement, must be abandoned.

**SSDI-5:**

**Resources that at present direct settlement into and beyond the urban fringes must be re-directed to urban compaction and complex intensification:** Areas for complex compaction are identified and must be upgraded in their provision of service and social infrastructure.

**SSDI-6:**

**The provision of lower-income rental accommodation through the formalisation of upgrading, re-purposing and re-development of sites in well-located areas must be encouraged:** Policies and incentives for achieving this ('Massive small': How new entrepreneurs are rebuilding our cities; 'backyard development' with dignity and secure tenure; re-purposing office and industrial building stock in inner-city areas; re-developing lower-density sites with more dense housing types) must be prepared for areas in and around existing and new nodes and suitable suburbs and townships. This is strongly related to SSDI-2 and SSDI-7, as areas identified for intensification (nodes, well-located neighbourhoods, TODs, and transport corridors) are areas that can also accommodate densification. This is best suited in the core city region (Strategy 2: Accommodating new settlement), as it offers a broad range of economic opportunities, infrastructure and public amenities.

**SSDI-7:**

**Bolster service infrastructure and social facilities in nodes, suburbs and townships identified for this densification:** Local authorities and social agencies (with appropriate resource re-deployment from national, provincial and municipal budgets) must ensure that this additional capacity is in place prior to densification.

**SSDI-8:**

**Inclusionary housing and social housing are to be encouraged in all new housing initiatives:** Existing local government policies and requirements in this regard are to be followed and further mechanisms and modalities investigated for inclusion into an Integrated Urban Development Model (IUDM).

### **SSDI-9:**

**Further intensification will be directed into Transport Oriented Development (TOD) nodes and public transport corridors:** TODs and appropriate transport corridors are to be identified for Integrated Corridor Management (ICM) within and along which urban intensification and densification will be encouraged (See related figure for **SSDI-1** which correlates with this position).

### **SSDI-10:**

**Transport infrastructure (road and rail) is to be re-thought as a primary shaper of urban form and extent:** The GSRN is to be reviewed on the basis of shaping an effective, sustainable urban form integrated with mass transportation and supported by an overall road and rail freight and logistics strategy<sup>134</sup>. As stated in Strategy 5: The Urban Sustainability Agenda, *Reducing the need to commute and providing a basis for integrated public transport* becomes central to transport planning. To reiterate, Key Transport Principles informing the GSDF include:

- Reducing the need to commute and the number of trips taken, shortening the trip lengths (create a more complex urban profile where people live, work, pray and play in the same area), and encouraging more sustainable travel (public transport preferable to private cars; trips outside peak hours preferable to high peaks etc.)
- Integrating Transport in Gauteng (move towards a fully integrated transport system where existing infrastructure is optimised and the most appropriate transport mode is selected based on hierarchy of modes to minimise the cost of travel).
- Making walking the primary mode of transport in the province, with a commitment from all agencies to achieve this. On a strategic level, non-motorised travel should be provided in support of public transport routes and corridors, around land uses expected to generate pedestrians, and should be prioritised in terms of the overall benefits and improved safety.

Refer to the figures that follow **SSDI-10a; SSDI-10b; SSDI-10c. for approaches to rail, road and freight proposals.** Despite several plans prepared by Prasa<sup>135</sup>, the Prasa passenger rail service and infrastructure has degraded to such an extent that the role it can and must play as a vital aspect of an integrated transport system can only be regarded, if at all, as a very long-term strategy.

### **SSDI-11:**

<sup>134</sup> A shared vision of the Growing Gauteng Together Through Smart Mobility

<sup>135</sup> The Prasa Corporate Plan 2021/2024; PRASA Presentation Restoring Train Services in various Priority Corridors Amid high levels of vandalism

**Historic peripheral townships (which have, over the years, become more integrated into the adjacent urban systems from which they were excluded) are to receive further direct integration focus:** This is to be in terms of improved spatial connectivity to other urban centres, the encouragement of new urban centres in these townships and through the intentions of the NDPs, Gauteng Township Economic Development Bill and Gauteng Economic Revitalisation Strategy. Transport infrastructure in the form of the outer radial corridor, the strategic road links and the enhanced public transport network illustrated in **SSDI-10** will improve economic access.

#### **SSDI-12:**

**Newer peripheral settlements that are not well located relative to urban integration are not to be expanded:** They will, however, continue to be supported in terms of upgraded and additional service infrastructure and social amenities and enterprise support.

#### **SSDI-13:**

**All development projects and economic investment programmes and initiatives are to be understood and directed in terms of the extent to which the precepts of the compact, complex city are being met and the multiplier effects that are likely to be generated:** At an early stage, public and private sector development projects and initiatives are to be assessed by a Development Review Panel (DRP) and recommended by the DRP for further detailed elaboration and approval subject to all environmental, transportation, social and economic aspects being compliant. Association with **SSDI-10** (transport becomes an enabler of economic development) and areas where transport initiatives are occurring and **SSDI-2** existing nodes and development corridors should be identified for further economic impetus.

#### **SSDI-14:**

**The 'provincial hinterland' (the present loose assembly of land having environmental significance and ecological sensitivities and principle, conservatories, land with heritage and tourism principle, and land having agricultural potential), is to be consolidated into a spatial entity regarded as the Urban Support Zone (USZ):** This USZ will be coded, in land-use and infrastructural terms, to protect these inherent principles as a support to a much more intensive urban system and indiscriminate intrusion of urban uses into this zone is not permitted.

#### **SSDI-15:**

**The USZ is to be interfaced with an interwoven bio-diversity system that is laced through the compact, complex urban system:** This bio-diversity system comprises the open space systems, conservatories, rivers, waterways, wetlands, ridges, grasslands, natural habitats, market gardens, urban agriculture areas and community commonages and is a 'green lattice' that, in turn, also supports this compact, complex urban system. Furthermore, it is important to create an integrated approach to the **green infrastructure system**, where transport, urban planners, communities infrastructure and environmental departments, share a vision to protect and enhance the natural ecosystem and create a compact, complex urban system, with the intention to:

- Improve the air and water quality,
- Manage and reduce human induced risks,
- Create quality of life for citizens,
- Improve the ecological linkages between the urban support zone,
- Encourage walking and cycling, improving connections between nodes and ecological and cultural areas, and
- Enhance biodiversity and ecological resilience.

There are many agencies that plan and protect the natural systems, however, a holistic approach to an interconnected layering of natural and manmade systems of green infrastructure into a compact, complex urban system is lacking in this planning. Introducing a green infrastructure framework that includes the natural and man-made system will enhance the public environment and add value. This framework should include:

- **A Hydrological Network** including natural and human-made, and waterbodies, with an aim to improve the quality of waterbodies along the system, and the demarcation of wetlands and waterbodies as connectors, rather than barriers for communities.
- **An Ecological Network**, including geomorphology, biodiversity, and ecological communities with an aim to protect the environment, promote social, cultural, recreational and education opportunities; improve the ecological value of watercourses and green corridors; and create a strong interface with the climate change corridors in the urban support zone.
- **A Recreational Network**, including open spaces for active and passive recreation, walking and cycling networks, urban open spaces, public domain and streetscapes. Focus should be placed on creating quality public environments, climate resilient buildings and green-cover strategies, improved access to road and rail systems, new spaces for urban regeneration and a greater diversity of recreational opportunities.
- **An Agricultural Network**, including rural, semi-rural and peri-urban landscapes, food and productive landscapes as well as those with scenic rural landscape values. This includes identifying areas for agricultural comanages and identify specific park areas, wetlands that can incorporate urban farming. Refer to plan that follows relating to **SSDI-15**.

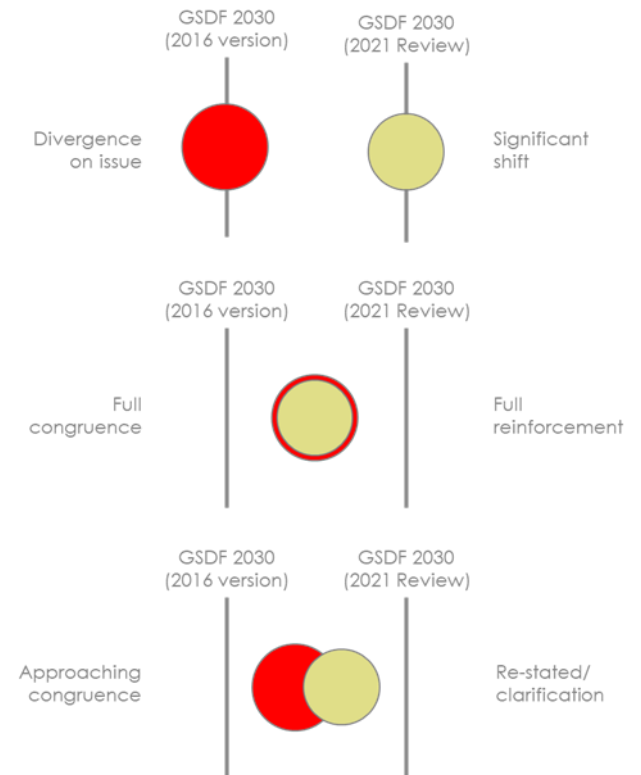
#### **SSDI-16**

***Many aspects of sustainable infrastructure supporting a vast urban system cannot be considered at a local municipal level and need to be conceived holistically at the Provincial level. The GSDF plays a vital role in this:*** Key aspects such as the holistic establishment and management of the ‘water cycle’ (combining the understanding of water provision, sanitation, harvesting, energy production) and ‘waste-to-energy’ (solid waste disposed of without emissions through the production of power and the value-capture of all by-products throughout the cycle) are essential to the GCR’s future but need to be understood and implemented regionally.

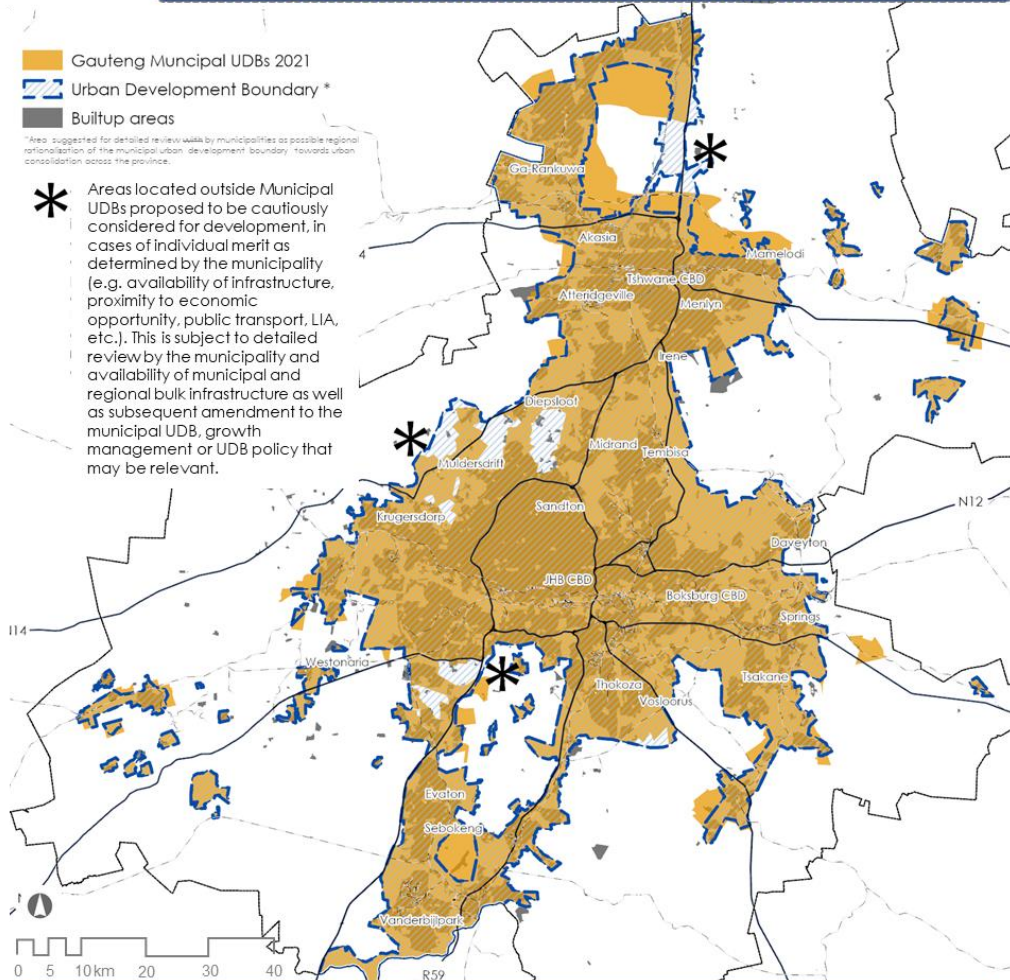


### Diagrams relating to the SSDIs

The matrices and diagrams that follow include a coding system to understand the level of congruence and divergence with the planning principles identified in the 2016 version of the GSDf and GSDf, 2021 /22. The matrix is illustrated below, the more convergent the principles are the closer the dots align. Moreover, in certain cases, the SSDI's cannot be mapped or graphically illustrated, but are cross-cutting and correlate to the other SSDIs that can be illustrated. These correlating SSDIs are referred to in the alignment/correlation section on the figures that follow.



**SSDI 1 a** **Compaction of the GCR must be accompanied by complex intensification of the urban system**  
**Management of municipal urban development boundaries**



\* Area suggested for detailed review walk by municipalities as possible regional rationalisation of the municipal urban development boundary towards urban consolidation across the province.

\* Areas located outside Municipal UDBs proposed to be cautiously considered for development, in cases of individual merit as determined by the municipality (e.g. availability of infrastructure, proximity to economic opportunity, public transport, LIA, etc.). This is subject to detailed review by the municipality and availability of municipal and regional bulk infrastructure as well as subsequent amendment to the municipal UDB, growth management or UDB policy that may be relevant.

Each of the municipalities in the province have demarcated an urban growth boundary intended contain development and reduce urban sprawl, manage infrastructure expenditure and ensure better socio-economic integration.

Continued enforcement of all municipal urban development boundaries (UDB) boundaries is required for the GCR to remain sustainable;

National and provincial sector departments must recognize and adhere to these boundaries when investing in municipal areas as regulated by SPLUMA and the IUDF.

PHSHDAs housing projects should be prioritised within the municipality's priority areas and UDBs.

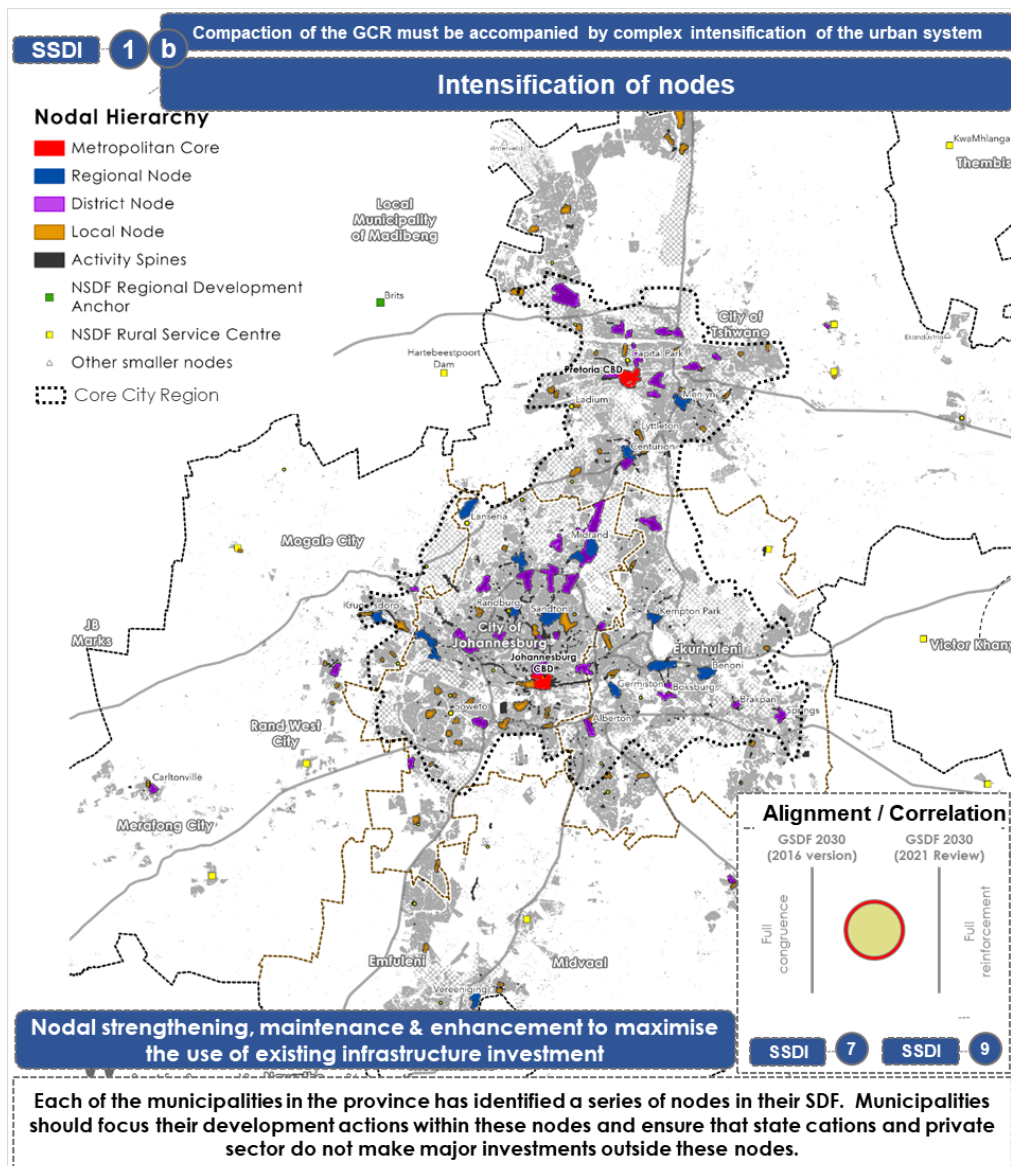
The private sector must be prevented from investing in areas outside these boundaries in i.e. residential estates, manufacturing, and businesses. Instead, concerted effort should be geared towards identifying attractive land within the UDB for private investment, preferably brownfield sites.

National and provincial sector departments must adhere to when investing in municipal space as regulated by SPLUMA & IUDF

**Alignment**

	GSDf 2030 (2016 version)	GSDf 2030 (2021 Review)
Approaching congruence	Red circle	Yellow circle
Re-stated/clarification		

**SSDI 2**      **SSDI 3**



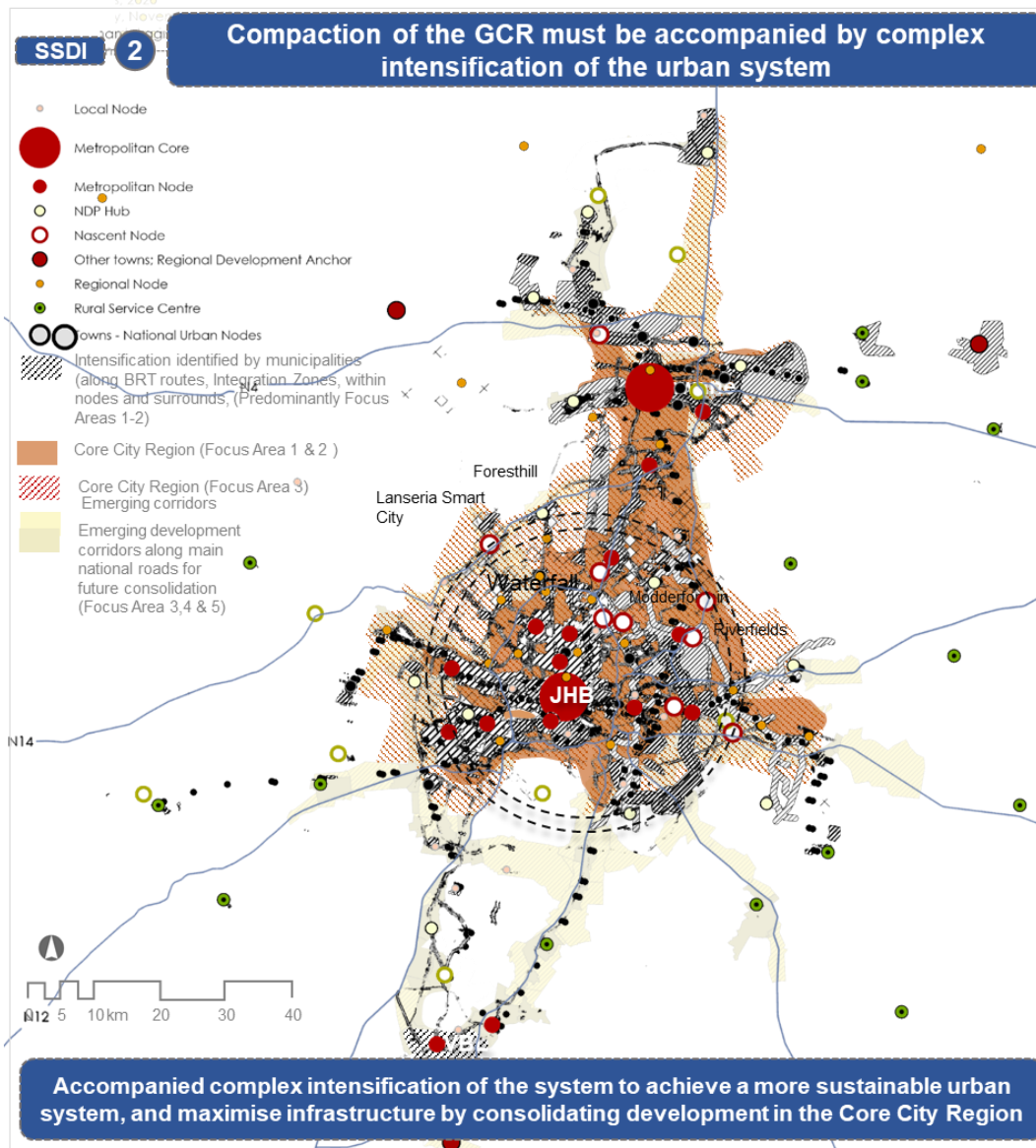
State agencies and the private sector should target these nodes with major urban investments;  
(although areas within the core city region, show economic potential within development corridors, activity spines, public transport routes and should be planned for). Municipalities should focus economic development in nodes within the Core City Region, and limit urban development outside the Core City Region

**Action:** New city initiatives on the outskirts of the Core City Region must be considered with care, contribute to a consolidating pattern of urban development and infrastructural investment, be serviceable by public transport and based on proven economic multipliers, (ie. Lanseria / the Vaal). They must be located within the municipal growth boundaries. They should not compromise the access to bulk infrastructure by development targeting the poor, or take the form of exclusive enclaves for the rich. Newer peripheral settlements that are not well located relative to urban integration are not to be expanded.

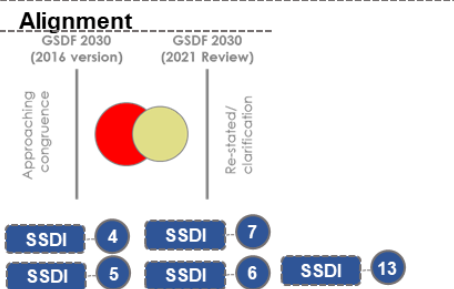
- Action:** The GSDP proposes the following nodal interventions:
- Continued support for the expanded growth of Rosslyn and Vereeniging, the two major employment nodes in the north and south of the province
  - Further policy support the GLMP should be undertaken. Since 2016, the LRSP and the GLMP have been prepared. The OOP is setting up an SPV for bulk infrastructure to unlock development and should receive policy support
  - New nodes within the Core City Region identified by municipality's for policy support, i.e. Riverfields, Carnival Junction, Modderfontein, Aero-Blaaupan, must receive policy support to achieve mixed-use walkable town centres, based around public infrastructure, which promote inclusive environments.
  - Support for and revitalization of existing industrial areas within Focus areas 1, 2 & 3 where there is sufficient private sector interest.
    - Further support for mixed use nodes in the Neighbourhood Development Partnership programme) NDP Hubs, Gautrain and Metrorail stations,
  - Long-term effects of the pandemic may change the demand for office space, transportation flows and the level of activity in CBDs, policy should facilitate this change

Urban renewal must take place in CBDs that are in decline to ensure their survival and to capitalize on existing infrastructure and investment, continued incentives for private sector investment (i.e. SARs Urban Development Zone taxi incentives of historic CBDs)  
Keep institutional departments and agencies within these and rather encourage investment in existing offices and surrounding areas.

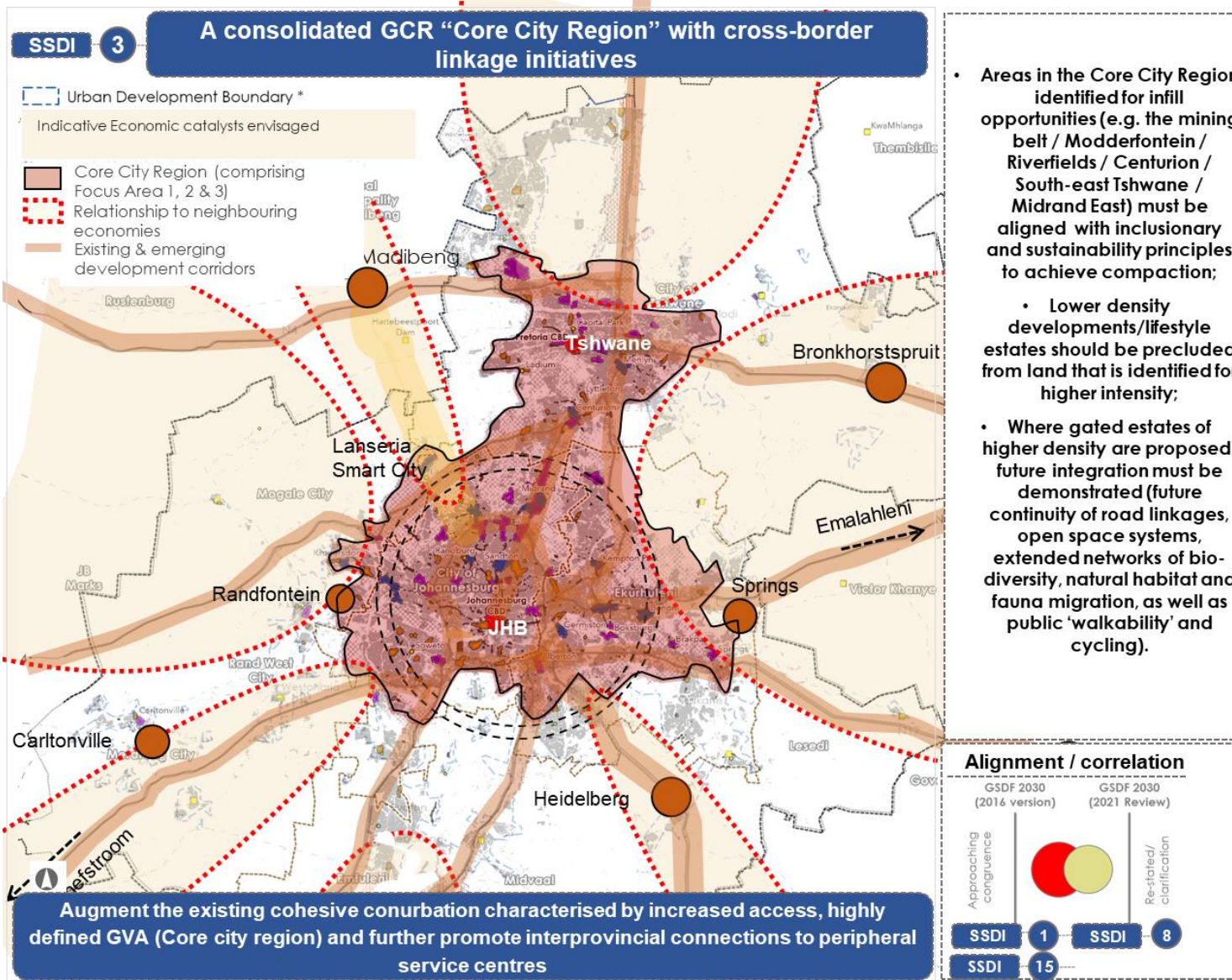




- Municipal SDFs have identified strategic areas for densification along public transport routes, within nodes, along activity spines (with public transport potential/ between key nodes, and development guidelines being put in place for infill development.
- The GSDF supports and promotes this, so that compact and complex development can be achieved throughout these defined areas.
- Further zones for intensification should be identified through Integration zones (National Treasury) BRT routes, railway stations, main arterials, certain neighbourhoods in close proximity to economic activities. Well located neighbourhoods can begin to respond to intensification. Such as Bellvue, Malvern, Yeoville and can accommodate the growth in the GCR etc.
- Lower density developments/lifestyle estates should be precluded from land that is identified for higher intensity,







- Areas in the Core City Region identified for infill opportunities (e.g. the mining belt / Modderfontein / Riverfields / Centurion / South-east Tshwane / Midrand East) must be aligned with inclusionary and sustainability principles to achieve compaction;
  - Lower density developments/lifestyle estates should be precluded from land that is identified for higher intensity;
- Where gated estates of higher density are proposed, future integration must be demonstrated (future continuity of road linkages, open space systems, extended networks of bio-diversity, natural habitat and fauna migration, as well as public 'walkability' and cycling).

**SSDI 4**

Compaction of the GCR must be accompanied by complex intensification of the urban system

**Intensification of nodes TOD nodes and public transport corridors**

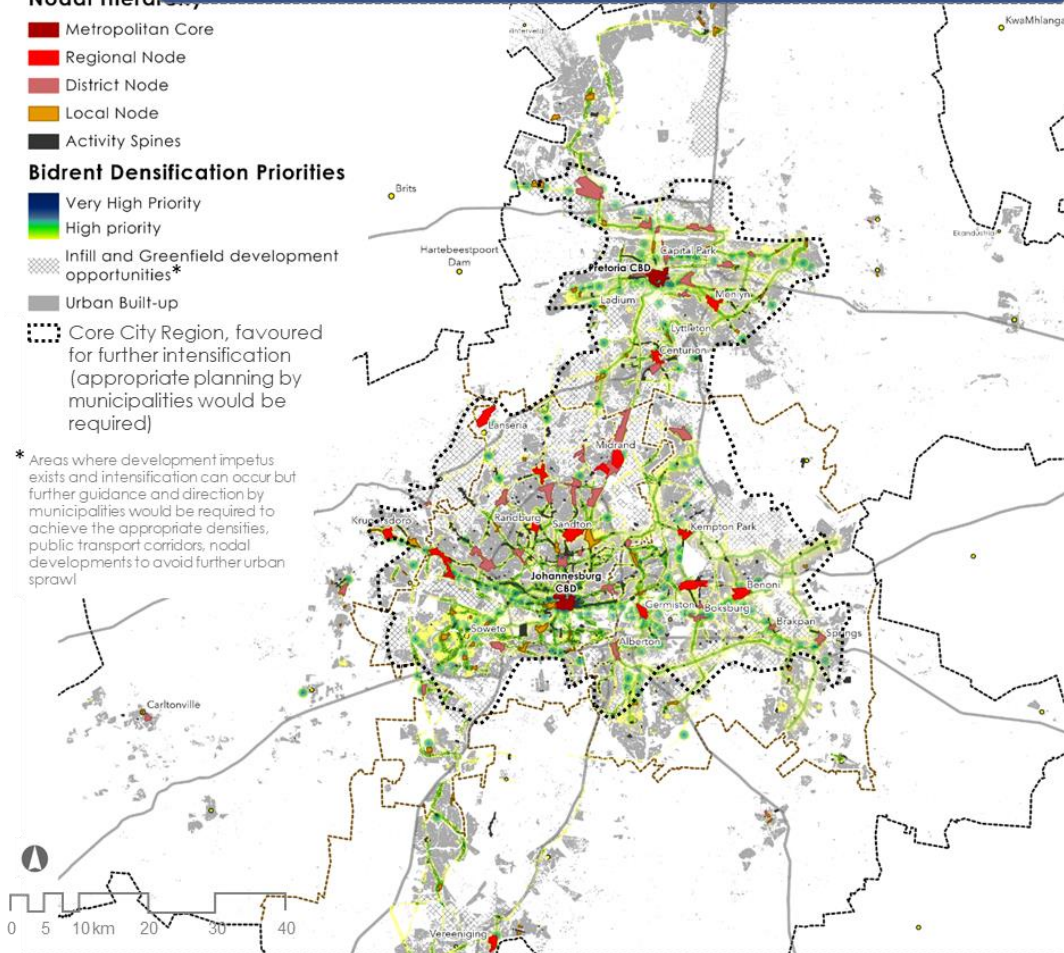
**Nodal Hierarchy**

- Metropolitan Core
- Regional Node
- District Node
- Local Node
- Activity Spines

**Bidrent Intensification Priorities**

- Very High Priority
- High priority
- Infill and Greenfield development opportunities\*
- Urban Built-up
- Core City Region, favoured for further intensification (appropriate planning by municipalities would be required)

\* Areas where development impetus exists and intensification can occur but further guidance and direction by municipalities would be required to achieve the appropriate densities, public transport corridors, nodal developments to avoid further urban sprawl



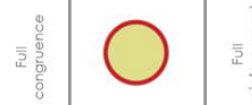
**Optimise & build on existing infrastructure and municipalities intensions for intensification within nodes, rail stations and along public transport routes**

Municipal SDFs have identified areas for densification along public transport routes, and near public transport interchanges (creating TODs) and within nodes.

- Potential exists for activity spines to receive public transport, and opportunity exists for further intensification within these. The GSDF supports this and promotes further TOD, mixed use, high density, high intensity, resilient environments within these well located areas.
- Appropriate resource re-deployment is necessary to ensure that additional social and physical infrastructure capacity is in place prior to densification, and private sector incentives should further support this strategy.
- Further investment around the Gautrain and railway stations (intense drive for Metrorail to be reinstated) and interchange zones (rail/bus/taxi) must be supported for mixed use development, appropriate densities. Gautrain stations with vacant land that can be developed in mixed-use higher density i.e. Rhodesfield; Marlboro, Midrand stations.
- Development within District municipalities should aim at consolidating development within existing nodes, and within major activity spines/development corridors, that are proximity to these nodes.

**Alignment**

GSDf 2030 (2016 version)      GSDf 2030 (2021 Review)

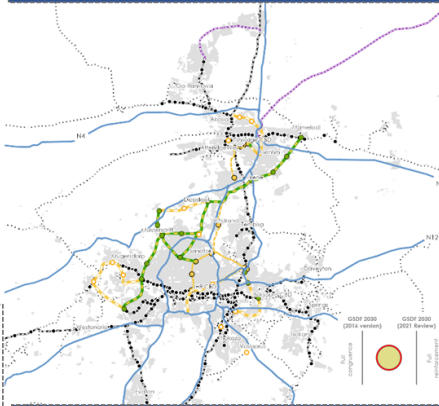
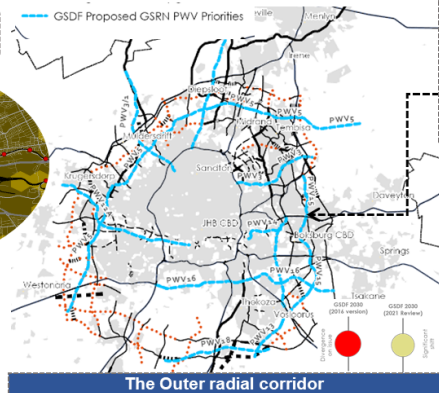
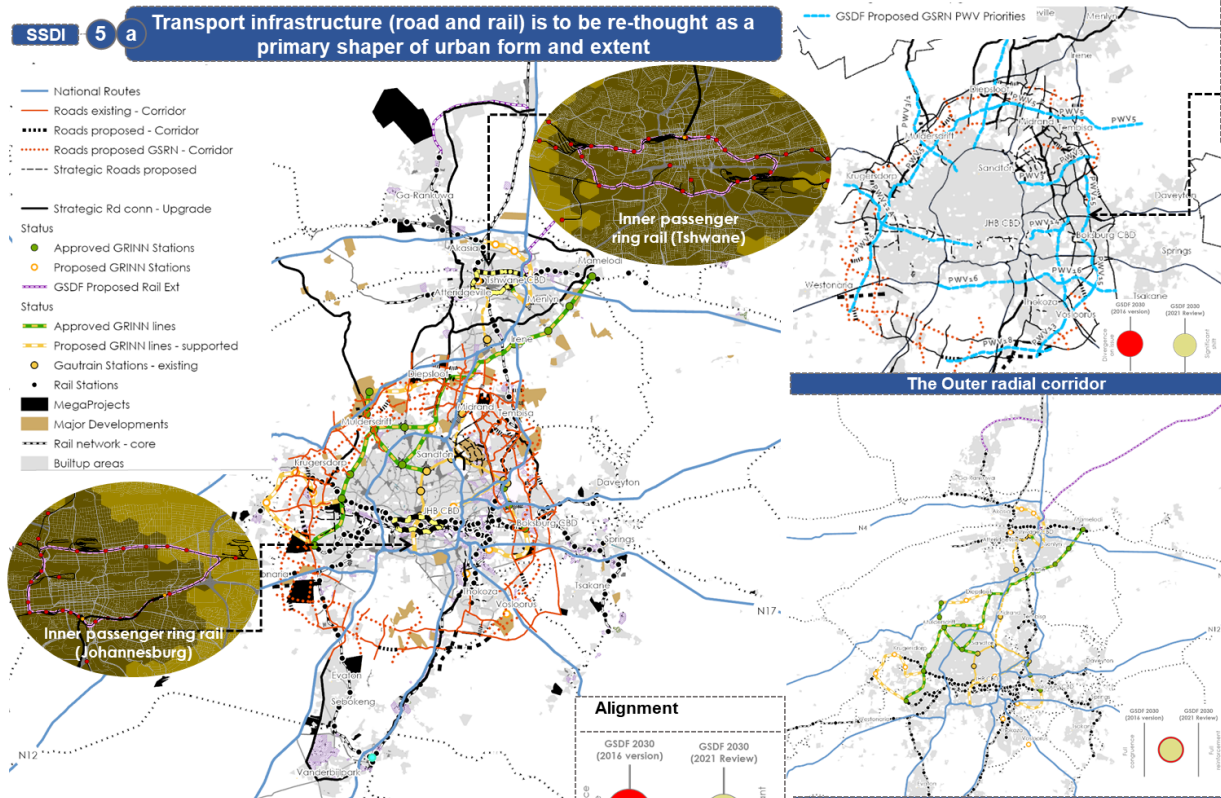


**SSDI 5**



**SSDI 5 a** Transport infrastructure (road and rail) is to be re-thought as a primary shaper of urban form and extent

- National Routes
- Roads existing - Corridor
- Roads proposed - Corridor
- Roads proposed GSRN - Corridor
- Strategic Roads proposed
- Strategic Rd conn - Upgrade
- Status
- Approved GRINN Stations
- Proposed GRINN Stations
- GSDf Proposed Rail Ext
- Status
- Approved GRINN lines
- Proposed GRINN lines - supported
- Gautrain Stations - existing
- Rail Stations
- MegaProjects
- Major Developments
- Rail network - core
- Builtup areas



**THE OUTER RADIAL CORRIDOR**  
Is not inherent in the GSDf 2016 and now put forward to create a spatial structure where investments can be made, creating a sustainable logic into the city region that can connect the mega projects and new development initiatives into the GCR.

To augment the Radial corridor:

- The PWV15 & PWV16 connection between the N12 and the R21
- The PWV5 that extends from Tembisa/Ivory Park westwards through the western parts of Johannesburg to Soweto.
- The PWV9 between Soshanguve and Johannesburg
- Several GSRN K-Routes, including The K220-link between the R21 and the N1 (Midrand)
- Enhancement of existing roads

**COMMUTER RAIL**

- The PRASA connection between Johannesburg and Ekurhuleni to reinforce the redevelopment of the mining belt should be protected
- Improve and protect PRASA's Existing Rail Network
- Reinforce the Tshwane and Johannesburg inner passenger rail loops

Many existing PRASA links and rolling stock require refurbishment and improvement before new links are introduced.

Rail infrastructure plays a significant role as a connector for high volume rail corridors connecting from areas located far from economic areas such as Johannesburg and Pretoria. These areas are:

- a) Soshanguve to the North;
- b) Daveyton, Vosloorus, Springs, Mamelodi to the East;
- c) Vereeniging, Lenasia, Soweto to the South; and
- d) Roodepoort, Krugersdorp and Randfontein to the West.

BRT's connecting the above-named areas to economic nodes has been planned and even implemented. These services sometimes run in parallel to existing rail passenger corridors thereby duplicating commuter passenger services. Before investing in new high-capacity Public Transport modes where rail lines exist, consider the rehabilitation of rail before introducing new modes. Further concerted effort to integrating these services becomes necessary for the Gauteng Integrated Transport plan review.

**Integrated transport network intended to consolidate development into a compact polycentric urban form**

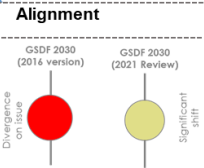
Strategic road connections (north/south & east/west) introduced to improve access and reinforce development initiatives such as:

- the mining land between Randfontein and Brakpan
- Well-located greenfield and infill opportunities such as Lanseria, Modderfontein, Frankenwald, Midrand, Centurion, Kyalami
- Development corridors to be augmented with further eastwest / northsouth connections include (a) North/ South: N1 and R21 from Johannesburg to Tshwane; (b) Eastern: N12 and N17; Western: Main and Ontdekkers
- Areas identified for township regeneration – Tembisa, Vosloorus, Soweto, Diepsloot

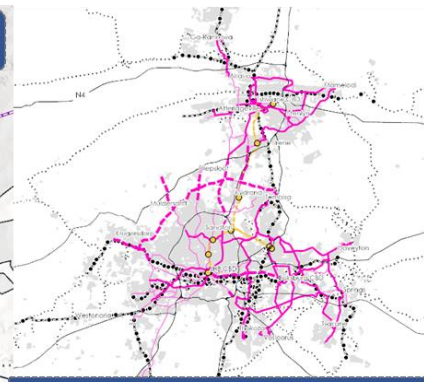
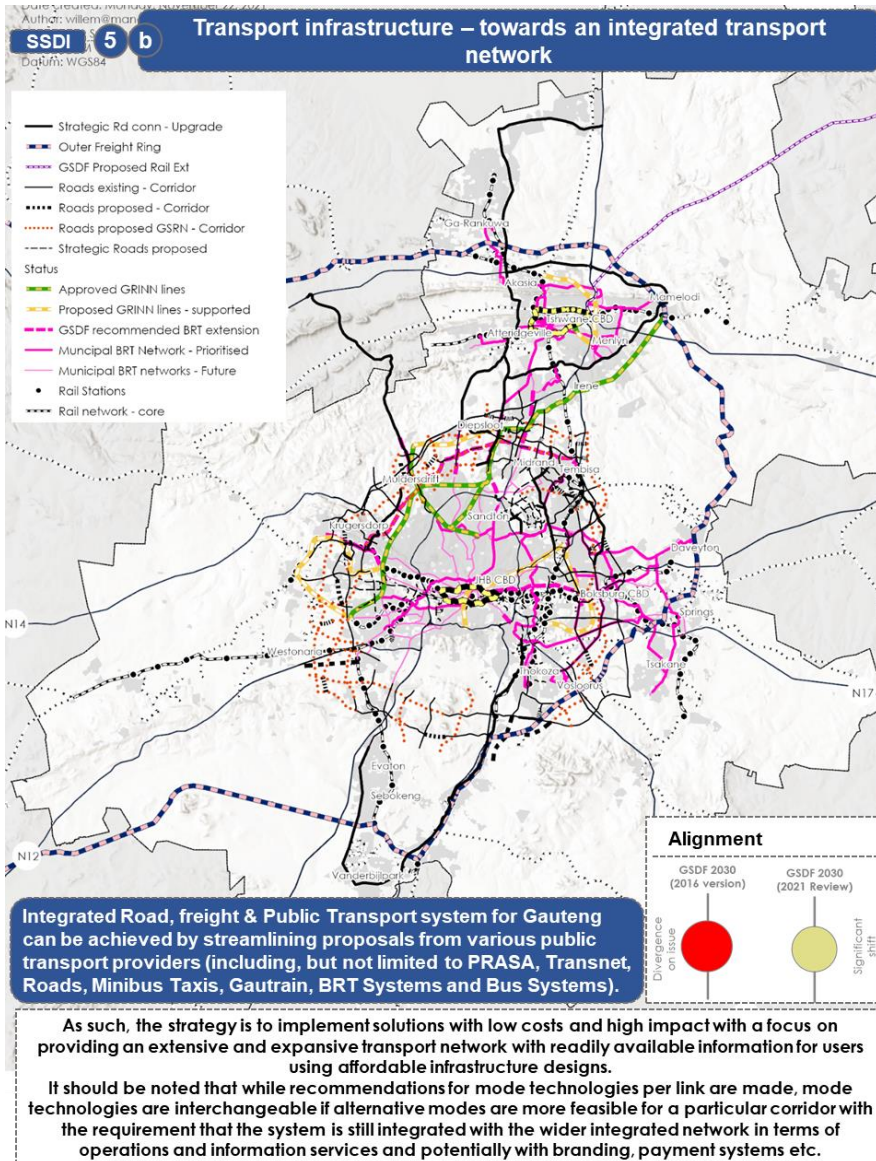
**Rail and Gautrain proposals**  
Rail is seen as the backbone of the public transport system in the long-term

**GAUTRAIN (supported)**

- The connection between the Tshwane and Johannesburg networks along Old Pretoria Road (Midrand) (Gautrain Route prioritized)
- Approved lines from Soweto to Mamelodi with links to Sandton and Muldersdrift
- The link along the PWV5-route between Tembisa and Soweto, connecting several planned Gautrain Stations along the way
- Other lines are under review with some supported





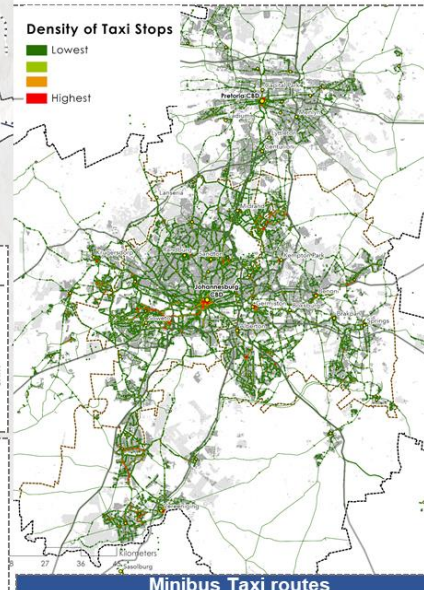


**BRT Proposals / ICMS**

The PWV5-route between Tembisa and Soweto, connecting several planned Gautrain Stations along the way

The extension along Malibongwe Drive towards Lanseria node & the Lion Park (Gautrain Route prioritized)

The extension along Voortrekker Street between Tshwane & Johannesburg



**BRTs** Have added a high-quality option of public transport to the city, however, inefficiencies in terms of cost (especially for lower density areas), high space utilisation and severance of communities have been identified as issues of concern. Some of these concerns have emerged due to the slow and disjointed deployment of systems because the full economic value of IPTNs can only be realized once fully connected. As such, certain municipalities have been investigating alternative options for the phased implementation of Integrated Public Transport Systems. The investigation and potential implementation of lower cost options in the short-term are supported to allow for wider network coverage with lower initial infrastructure costs. Public transport must become the backbone of the GCR, and should be safe, reliable and affordable even if it may not be able to immediately meet the operational efficiencies of BRT. These systems should be operationally integrated with other public transport in terms of branding, transfer points, information services and potentially payment systems.

A concept of Integrated Corridor Management (ICM) as an approach to transport corridors is being investigated in the CoJ. This type of alternative approach is to ensure an integrated public transport network with wider coverage than fragmented implementation of BRT trunk routes. Once patronage has matured, these should be considered for full BRT implementation.

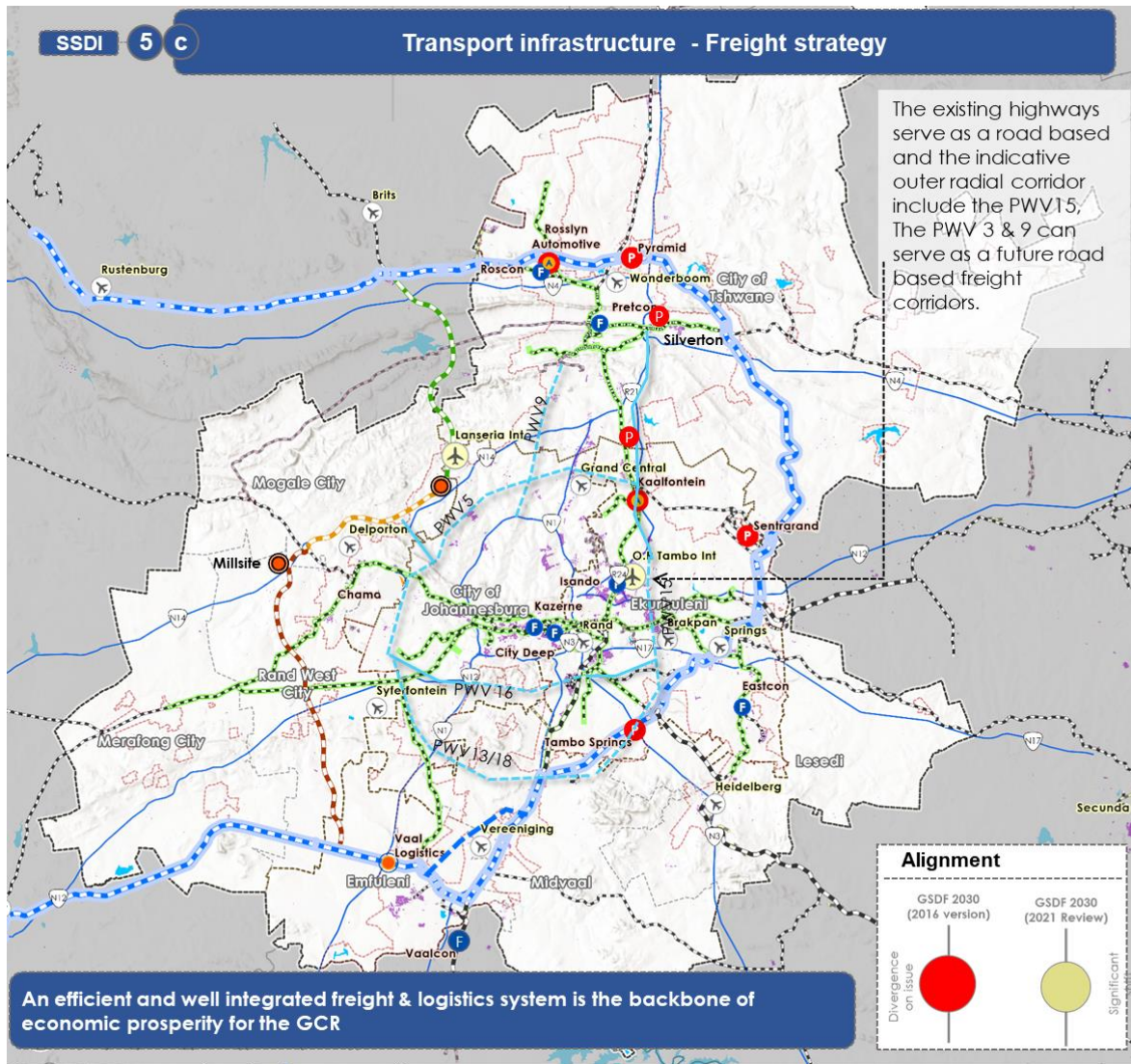
**Minibus taxis** have provided highly accessible public transport services within the province for decades and have been the primary provider of public transport for many areas. While the services provided by minibus taxis are critical to the functioning of the economy of the province, the largely unregulated nature of the service has introduced safety concerns for passengers and other road users.

The investigation of alternative methods to improve and minibus taxi services are encouraged. In the medium to long-term MBTs will need to perform a defined role as part of the Integrated Public Transport System.

**Provincially Subsidised and Municipal Bus systems** must be reviewed to become part of an integrated Public Transport Network

**Walking and cycling** must become the default mode of transport. Be provided in support of public transport routes and corridors





Freight should be optimised into an efficient supply-chain based on a hierarchy of modes and many commodities currently supported by road could be more efficiently transported by rail. An integrated freight strategy for road and rail is required to ensure the most appropriate mode is used for different bulk cargo and portions of a trip. Rail will typically serve long haul to logistic hubs while road will serve short haul and distribution from logistic hubs.

Over time, commuter and rail freight will likely require separate networks due to capacity constraints with increasing commuter demands.

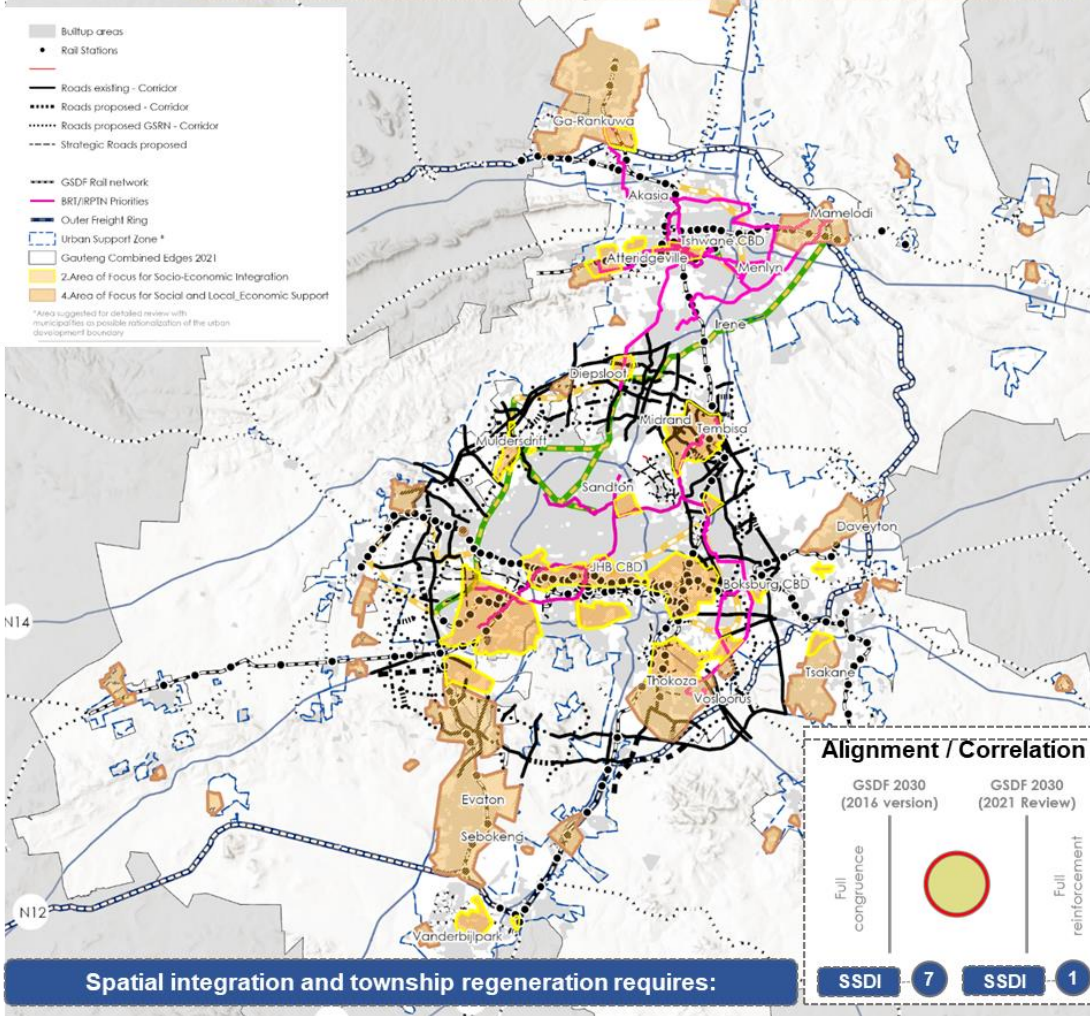
A Gauteng Freight Ring Rail is supported as a Freight Strategy:

- The eastern portion of the Freight Ring Rail should be prioritised for implementation due to its proximity to port routes while land for the western portion should be reserved for use in the long term
- The eastern portion of the Freight Ring Rail route has 2 options, namely one from Vereeniging to Kaalfontein via Isando and the other via Tambo Springs to Sentrarrand. The Kaalfontein link of the ring road is prioritised over the Sentrarrand route in the short to medium term due to its proximity to existing industrial and freight activity
- While City Deep logistics hub forms a critical part of the Gauteng logistics system, its future expansion is limited due to geographical factors and freight growth will need to be accommodated at alternative hubs.
- Pyramid, Rosslyn and Silverton Transport Hubs are supported as priorities given current economic activity.

The nature of micro-distribution is evolving with new modes and technologies being introduced. As this reduces the number of private vehicle trips on the road network these changes are supported, however new regulatory policies are required to ensure these modes and technologies are safely.



**SSDI 6** Historic peripheral townships (which have, over the years, become more integrated into the adjacent urban systems from which they were excluded) are to receive further direct integration focus

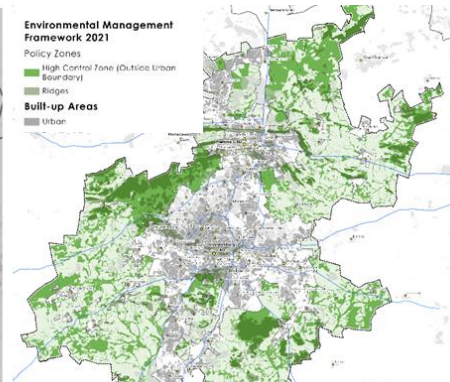
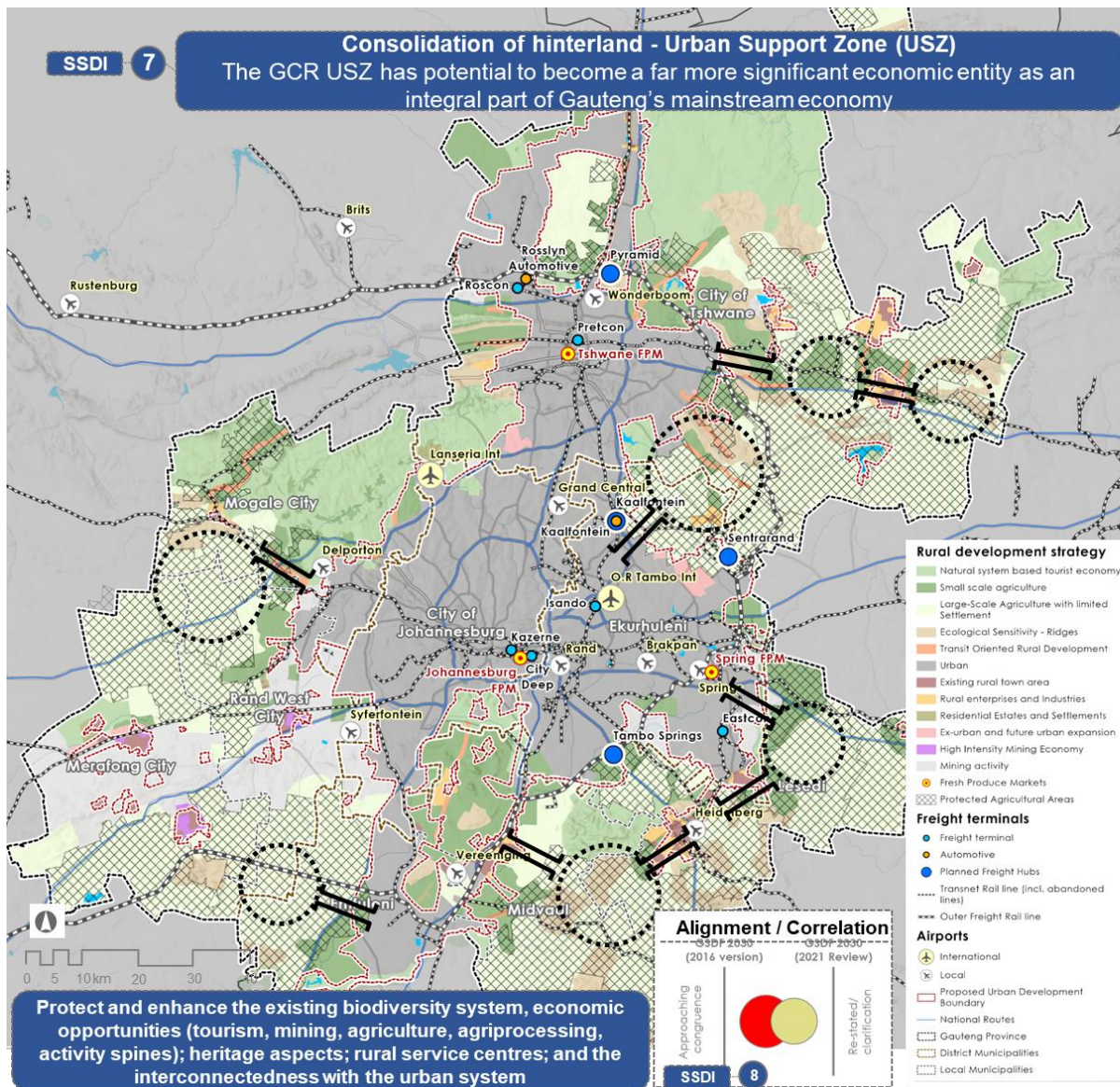


- The following, was identified in 2016, and should be continued:
- Focus on township regeneration through support for urban hubs in accordance with the NDPPs Urban Network strategy
  - Exploit agglomeration advantages in the urban hubs, and nodes connected to these hubs through public transport
    - Prioritise investment in Urban Hubs and public transportation networks to ensure and enable efficient and effective urban centres for surrounding townships
  - Develop detailed precinct plans and urban design frameworks for areas prioritized for integration, (i) Atteridgeville area (ii) Thembisa/Ivory Park/Alexandra (iv) the larger Katlehong area;
  - Provincial policy and municipal plans are now in place for the (i) mining belt (ii) Vereeniging areas and further policy support for unlocking development opportunities in these areas should continue
  - Use government land assets and land banking as a means of achieving spatial transformation.

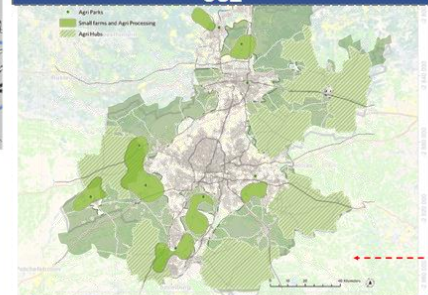
NDPPs Urban Network strategy – Identified urban hubs

Municipality	Township	Hub Name	Recommendations
CoJ	Diepsloot	Diepsloot (future hub)	Plans are underway but more needs to be done in implementing projects and ensuring that projects have multiplier effects. I.e. a new hospital, / taxi rank can generate a local economy.
CoJ	Soweto/Meadowlands	Jabulani Mall Area	
CoT	Atteridgeville	Saulsville Station	
CoT	Ga-Rankuwa	Ga-Rankuwa Hospital	
CoT	Hammanskraal	Hammanskraal Station	
CoT	Mabopane	Mabopane/Soshanguve Station	
CoT	Mamelodi	Denneboom Station	
CoE	Daveyton	Daveyton/Etswatwa	
CoE	Kwa-Thema	Kwa-Thema/Tsakane/Duduza	
CoE	Tembisa	intersection 2nd October/Andrew Mapheto Drive	
CoE	Vosloorus	Katlehong/Thokoza/Vosloorus	Regional connections within these areas is often poor due to apartheid planning of single/entry exit and improved regional connectivity will further integrate these areas into the urban system.

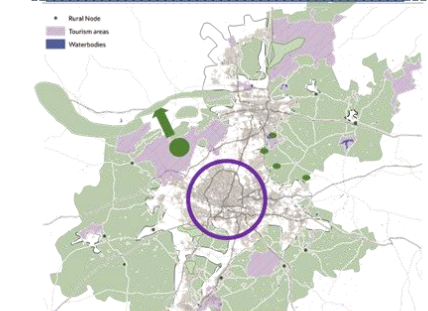




**Environmental preservation within the USZ**

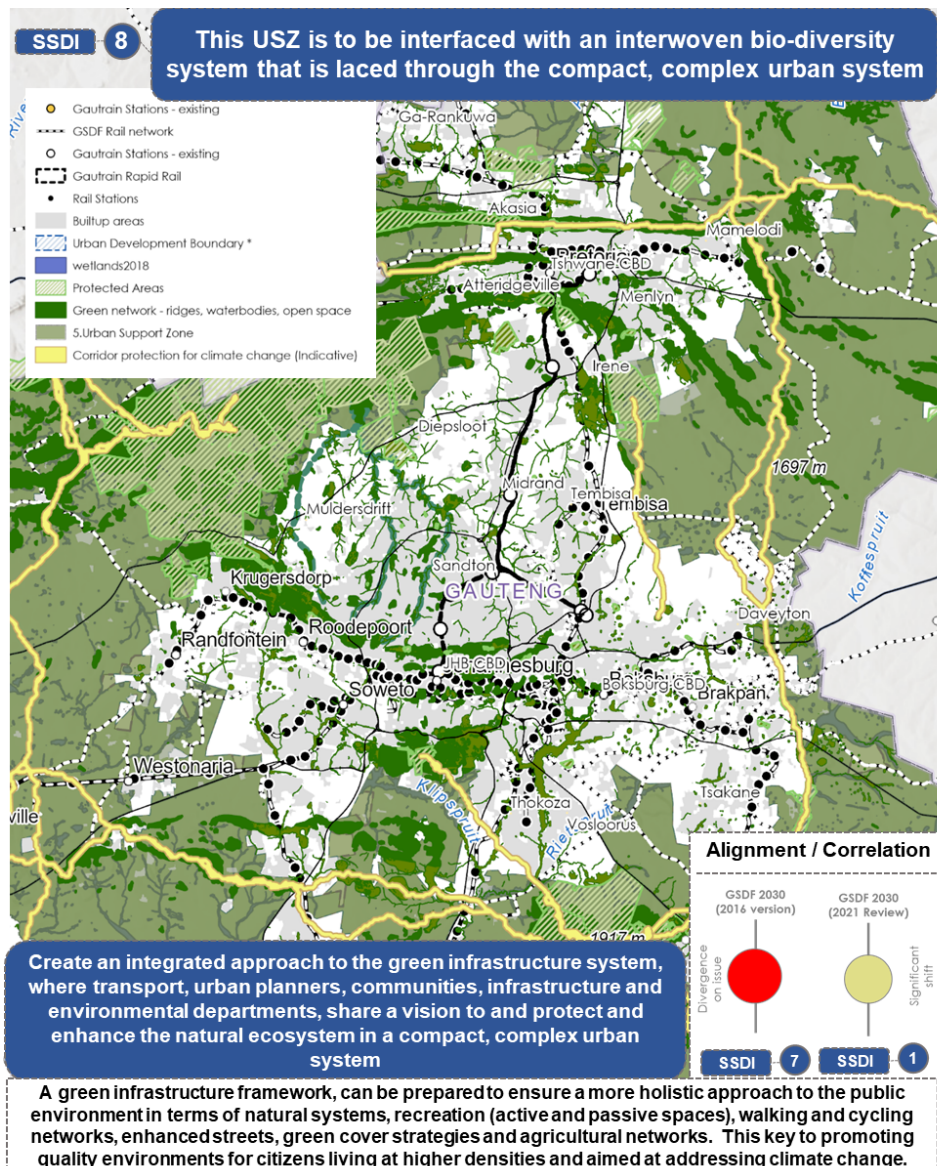


**Strengthening agricultural production and agri-processing**



**Strengthening heritage and tourism opportunities**





Intent	Intervention
<p>Create an integrated approach to the green infrastructure system, where transport, urban planners, communities infrastructure and environmental departments, share a vision to and protect and enhance the natural ecosystem and create a compact, complex urban system, with the intention to:</p> <ul style="list-style-type: none"> <li>• Improve the air and water quality</li> <li>• Manage and reduce human induced risks,</li> <li>• create quality of life for citizens,</li> <li>• Improve the ecological linkages between the urban support zone</li> <li>• Encourage walking and cycling, improving connections between nodes and ecological and cultural areas, and</li> <li>• Enhancing biodiversity and ecological resilience.</li> </ul>	<p><b>Introduction of a Green infrastructure framework</b> A holistic approach to an interconnected layering of natural and manmade systems of green infrastructure into a compact, complex urban system.</p> <p><b>Hydrological network</b> including natural and human-made, and waterbodies</p> <ul style="list-style-type: none"> <li>• Improve the quality of the waterbodies along the entire system,</li> <li>• Wetlands &amp; waterbodies should be designed to be connectors rather than barriers for communities.</li> </ul> <p><b>Ecological network</b>, including geomorphology, biodiversity, and ecological communities</p> <ul style="list-style-type: none"> <li>• Protection of the natural environment</li> <li>• Promote the social, cultural, recreational, and educational opportunities within natural, cultural, and heritage landscapes.</li> <li>• Improve the ecological value of watercourses and green corridors along major and minor waterways, include walking and cycling trails along them.</li> <li>• A strong interface with the climate change corridors in the urban support zone</li> </ul> <p><b>Recreational network</b>, including open spaces for active and passive recreation, walking and cycling networks, urban open spaces, public domain and streetscapes</p> <ul style="list-style-type: none"> <li>• Create a quality public environments of public squares, street trees, quality shaded sidewalks, promote the built form to respond to this.</li> <li>• Create resilient built forms and green cover adapt to extreme weather conditions (street trees, rooftop gardening, green buildings) conditions through coordinated planning and design of <b>green-cover strategies</b> including street trees, green walls and roofs, canopy trees, cool pavements, and water sensitive urban design.</li> <li>• Encourage walking and cycling through enhancing cycling and walking networks supported cover strategies.</li> <li>• Improve access to open space across main roads and railway systems.</li> <li>• Create new open spaces as a part of urban regeneration, infill and infrastructure schemes and continue to invest in improving existing parks for the benefit of districts, towns, urban centres</li> <li>• Improve the diversity of recreational opportunities available throughout a district, city, or region, with a particular focus on higher density areas.</li> </ul> <p><b>Agricultural network</b>, including rural, semi-rural and peri-urban landscapes, food and productive landscapes as well as those with scenic rural landscape values.</p> <ul style="list-style-type: none"> <li>• Identify areas for agricultural comanages and identify specific park areas, wetlands that can incorporate urban farming.</li> <li>• Further economic support through community</li> </ul>



Table 7: Supporting Spatial Development Interventions 1-8 measured against the Areas of Focus identified as the areas for spatial targeting

SUPPORTING SPATIAL DEVELOPMENT INTERVENTIONS (SSDI)	FOCUS AREAS					SPATIAL DEVELOPMENT PRINCIPLES						GSDP 2030 (2016 version)	GSDP 2030 (2021/2 version)	Alignment of GSDP 2016 & crosscutting spatial interventions
	1. SHARED ECONOMIC PROSPERITY	2. SOCIO-ECONOMIC INTEGRATION	3. ECONOMIC CONSOLIDATION	4. SOCIAL & LOCAL ECONOMIC SUPPORT	5. URBAN SUPPORT ZONE	CONNECTIVITY	VIABILITY	DIVERSITY	LIVEABILITY	CONCENTRATION	CONSERVATION			
SSDI 1: The GCR must be made more compact in extent	●	●	●	○		◆	◆	◆	◆	◆	◇	●	●	GSDP 2030 (2021 Review)  (3) Municipal nodal development, maintenance and enhancement: (5) Capitalising on proximity to major nodes and public transport routes and stations  (1) Major road and rail network enhancement; (2) Expanding and integrating municipal BRT networks  (4) Spatial integration and township regeneration  (8) Strengthening and enhancing agricultural production and agri-processing; (9) Actively pursuing environmental management and ecosystem protection; (10) Boosting and optimising Provincial tourism opportunities  Mainly focused on the rural hinterland, more opportunity exists for an holistic approach to environmental systems within the urban core
SSDI 2: Compaction of the GCR must be accompanied by complex intensification of the urban system	●	●	●	○		◆	◆	◆	◆	◆	◇	●	●	
SSDI 3: The GCR must itself be re-defined and re-shaped to reflect a compact, complex pattern	●	●	●	○		◆	◆	◆	◆	◆	◇	●	●	
SSDI 4: Further intensification to be directed into TOD nodes & public transport corridors	●	●	●	○		◆	◆	◆	◆	◆	◇	●	●	
SSDI 5: Transport infrastructure (road & rail) is to be re-thought as a primary shaper of urban form & extent	●	●	●	○		◆	◆	◆	◆	◆	◇	●	●	
SSDI 6: Historic peripheral townships are to receive further direct integration focus		●	●	○	●	◆	◆	◆	◆	◆	◇	●	●	
SSDI 7: The 'provincial hinterland' (the present loose assembly of land having environmental significance & ecological sensitivities & value, conservatories, land with heritage and tourism value, & land having agricultural potential), is to be consolidated into a spatial entity regarded as the Urban Support Zone (USZ)					●	◆	◆	◆	◆	◆	◇	●	●	
SSDI 8: This USZ is to be interfaced with an interwoven biodiversity system that is laced through the compact, complex urban system	●	●	●	○	●	◆	◆	◆	◆	◆	◇	●	●	

## Supporting Spatial Development Interventions dealing with Spatial Targeting



Note: As Spatial Targeting SSDIs, each SSDI is reflected in related spatial mapping

Table 8: Supporting Spatial Development Interventions 9-16 measured against the Areas of Focus identified as the areas for spatial targeting

SUPPORTING SPATIAL DEVELOPMENT INTERVENTIONS (SSDI)	FOCUS AREAS					SPATIAL DEVELOPMENT PRINCIPLES						ALIGNING WITH THE GSDF 2016 PLANNING
	1. SHARED ECONOMIC PROSPERITY	2. SOCIO-ECONOMIC INTEGRATION	3. ECONOMIC CONSOLIDATION	4. SOCIAL & LOCAL ECONOMIC SUPPORT	5. URBAN SUPPORT ZONE	CONNECTIVITY	VIABILITY	DIVERSITY	LIVEABILITY	CONCENTRATION	CONSERVATION	
SSDI 9 The provision of lower-income rental accommodation through the formalised upgrading, re-purposing and re-development of sites in well-located areas must be encouraged	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 10 Bolster service infrastructure & social facilities in nodes, suburbs & townships identified for this densification	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 11 Newer peripheral settlements that are not well located relative to urban integration are not to be expanded	○	○	○	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 12 Growth management & associated governance must avoid urban sprawl & marginalization of communities	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 13 Resources directed to peripheral settlement must be re-directed to urban compaction/intensification	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 14 Inclusionary & social housing are to be encouraged in all new housing initiatives	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 15 All development projects economic investment programmes & initiatives are to be understood & directed in terms of the extent to which the precincts of the compact, complex city are being met and the multiplier effects that are likely to be generated	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●
SSDI 16 Many aspects of sustainable infrastructure supporting a vast urban system can't be considered at a municipal level & need to be conceived holistically at the Provincial level & this is a vital role the GSDF must play	●	●	●	○	○	◆	◆	◆	◆	◆	◆	●

## Supporting Spatial Development Interventions dealing with Policy & Process Support



Note: As Policy & Process Support SSDIs, these are not directly reflected in related mapping

The areas of focus for spatial prioritization can be found on **Figure 46**

## 7 Implementation Framework

### 7.1 STRATEGIC SPATIAL DEVELOPMENT GUIDELINES

The guidelines set out in 2016 to support the provincial spatial development strategies, and intended for use by all three spheres of government, but are primarily intended for use by municipalities when undertaking their mandated spatial planning activities and when making decisions on land development applications, infrastructure investments and development spending, have been reviewed and are presented as follows.

#### 7.1.1 Guidelines for Developing within Economic Proximity

##### Guidelines for developing within economic proximity

Focus densification and intensification actions in areas that are close to and/or well connected to primary and secondary municipal nodes in the province.

Prioritise densification along existing Integrated Management Corridors (ICMS), BRT Routes and (improved cross connections) rather than planned future BRT routes, as construction often takes longer than anticipated.

Develop future Gautrain stations as integrated, mixed-use, high-density and accessible urban nodes as Transit Oriented Developments (TODs).

##### Identification of Integrated Corridor Management Zones

Enable strategic emerging nodal developments in well-located areas of townships, to build the compact polycentric provincial network.

Enable higher density land developments and housing typologies in and around nodes, with the aim of creating integrated, accessible, permeable, mixed-use and high-intensity environments.

Discourage new low-density residential developments in and around core economic areas, as well as the spatial fragmentation resulting from private estate development (i.e. higher-density mixed-use development strongly promoted).

Redirect housing subsidies towards the development of affordable housing close to employment and public transport.

### Guidelines for developing within economic proximity

New *'mega-developments'* must only be considered if real economic drivers are available and in place, or in close proximity to economic opportunities, public and private-mobility transport (e.g. Lanseria Smart City, which is close to the economic core, infrastructure and an International Airport, is merit-worthy)

Introverted, exclusive and isolated new developments should be avoided, and be integrated with (and capable of being integrated into) surrounding areas. Areas in transition, such as agricultural holdings, should not be developed as piece-meal, isolated packages but made to be part of an overall development framework including movement networks, open space networks, and clear guidelines on environmentally sensitive development principles and integration into a wider urban system.

Prioritise the provision and maintenance of bulk infrastructure in areas where it enhances economic redevelopment and transformation of the apartheid space economy.

Leverage strategic land assets and land banking to achieve decisive spatial transformation.

## 7.1.2 Guidelines for Accommodating new settlement

### Guidelines for accommodating new settlement

When developing new settlements, shift the focus to infill (i.e. following an 'urban accretion model') rather than simply further outward expansion of the urban footprint.

Develop new settlements close to urban areas, to optimise existing infrastructure investment and social services, and to promote population thresholds required for sustainable service delivery and economic growth.

Plan and develop new settlements as functional, integrated units of the larger urban structure, and not based only on the availability of land.

Integrate and align the movement networks of new settlements with adjacent settlements, to ensure multiple, fine-grained transport linkages and ease of movement between settlements.

Enforce municipal urban growth management, including municipal urban edges/growth boundaries.



### Guidelines for accommodating new settlement

Where 'mega-developments' are envisaged, housing developments may not lead such initiatives but should only follow on from substantial investment into economic drivers and having these drivers up and running.

At a regional level urban accretion policy should be put in place that enable intensification of mixed-use activity patterns within and along connections between nodes, as well as signification densification within a 10-minute walk of existing main roads that either have existing public transport or offer potential for future transport system. In these areas both the development of vacant land and policies that enable formal backyard rental should be applied. In addition formalized, institutionalized and assisted programmes of re-development in well-located suburbs and townships should be undertaken including the timeous increase in infrastructural and social services across all agencies involved (engineering, health, education etc)

These workshops should include measures for formalized, institutionalized and assisted programmes of re-development in well-located suburbs and townships and noting the need for timeous increases in infrastructural and social services across all agencies involved (engineering, health, education, etc.)

## 7.1.3 Guidelines for Reinforcing economic networks

### Guidelines for reinforcing economic networks

Encourage the clustering of economic activities in selected nodes to create and promote the benefits of agglomeration.

Intensify infrastructure investment and economic development for all primary municipal nodes in the province.

Prioritise pedestrian movement, cycling, safety, security, quality open spaces, well-defined public-private interfaces, mixed-use high-intensity and high-density urban environments for all primary municipal nodes in the province.

Direct urban renewal initiatives to CBDs in decline, to ensure their survival and to capitalise on existing infrastructure and investment in these areas.

Encourage infrastructure investment support for secondary municipal nodes, to support and strengthen their role as development anchors for areas beyond the core.

Promote agro-processing, intensive agriculture, and other agriculture-related economic activities close to secondary municipal nodes and rural nodes, to ensure access to essential services, infrastructure and markets.

### Guidelines for reinforcing economic networks

Continuously strengthen and improve public transport services and options between primary municipal nodes, and improve connectivity with areas of major population concentration but limited economic opportunities.

Connect and integrate the BRT networks and transport linkages of the three metropolitan municipalities, to ensure seamless movement throughout the province.

Improve connectivity between new residential developments and the province's existing well-located nodes ; forge stronger spatial connectivity between historically disconnected townships and their adjacent urban systems; enable strategic nodal development in these historically disadvantaged townships.

Accelerate development of existing SEZs, prioritising those where investment achieves economic multiplier effects most effectively.

Seek specific opportunities for industrial development, identify private sector interests, and collaborate to develop tailored interventions.

Discourage government departments and agencies from relocating out of the CBDs and rather encourage investment in existing offices and surrounding areas.

In planning for the development of business nodes, consider the long-term effects of the pandemic on the demand for office space, transportation flows and the level of activity.

Enable the development of township-based enterprise by partnering with non-government partners to deliver support, market access and funding.

Use selective prioritization of GSRN links to re-frame the urban system into a cohesive, spatially disciplined entity: these priorities include the radial corridor as noted and greater road connectivity to integrate Thembisa/Ivory Park into a consolidated urban system between the N1 and R21 corridors.

Prioritise and support the GLMP and Vaal City initiatives as economic programmes for the GCR.

## 7.1.4 Guidelines for Creating a Productive Hinterland

### Guidelines for creating a viable and productive hinterland

Elevate agricultural potential as the deciding factor (veto) on any nonagricultural land development proposal or application in the hinterland.

Promote and support intensive agricultural activities, to improve food security in the province and noting the importance of technologically advanced farming on small plots.

Enforce municipal urban growth management, including municipal urban edges/growth boundaries.

Encourage small-scale agricultural activities, agro-processing and agriculture and tourism-related economic activities, close to secondary municipal nodes and rural nodes in order to strengthen forward-backward linkages.

Promote high-output sustainable agricultural technologies and practices to increase yields and the profitability of farming, and to limit negative externalities from the sector.

Protect the character and attractiveness of agriculture and tourism areas from development that may subtract from their functional value or compromise their unique irreplaceable qualities.

Discourage the privatisation of water resources with recreational and tourism potential through private estate development.

Protect water resources from pollution by urban activities and broaden the representivity of those included in the monitoring processes: notable in this regard are acid mine water, pollution of the Vaal with poorly treated effluent and nutrient overload into the Jukskei/Crocodile system.

Promote rehabilitation of degraded terrestrial habitats, to ensure the optimum functioning of ecosystem services.

Exploit the increase in demand for local tourism activities caused by the pandemic, protecting and encouraging existing tourism nodes.

Increase the barriers in the hinterland zone to all development of an urban nature and giving priority only to those activities and uses coded as compatible with this 'urban support zone: ecology, heritage, tourism, leisure, agriculture and agri-processing.

Prepare a comprehensive, integrated agricultural support programme with institutional backing for detailed and focused initiatives, including the development of several properly administered agri-villages.

## 7.1.5 Guidelines for the Sustainability Agenda

### Guidelines for the Sustainability Agenda

Sustainable urban forms must become the underpinning of all systems within the GCR into achieving:

- Compact and complex mixed-use urban patterns that promote pedestrian and cycling movement as the default mode of transport
- Social and economic integration through spatial integration and consolidation

Promote integrated urban infrastructure sustainability: water, energy, mobility, and land use are inter-connected and no single component can be planned or implemented in isolation. Province can play a leading role in this sphere

Foster economic growth through the green economy with opportunities for Science & Hi-tech initiatives in the Greater Lanseria, Vaal and Syferfontein areas.

Profoundly important thinking at the overall provincial level is needed to achieve a holistic grasp and management of the 'Water Cycle' in order to achieve sustainable development in an increasingly water-constrained planning environment.

Far greater research and implementation of less water-intense methods of sanitation (reticulation and treatment) are needed at the enabling level of Provincial planning and interfacing with the various stakeholders.

Waste-to-energy not dominates international 'best practice' and deals with three of the greatest constraints on growth management in the GCR: a lack of capacity for solid-waste disposal; the need for comprehensive waste sorting and recycling; and the generation of energy with very limited emissions. By understanding this in functional zone terms rather than jurisdictionally, Provincial planning can make one of the greatest breakthroughs in modern urban growth management.



## 7.2 GSDF 2030 SPATIAL PRIORITISATION/ SPATIAL TARGETING

In 2016, areas were identified within Gauteng for spatial targeting. This was intended to spatially guide, direct, coordinate and align all public social and infrastructure investment and spending in the province; and to ensure rapid, sustainable and inclusive provincial economic growth, township redevelopment and decisive spatial transformation. The intension remains with even more commitment required to achieve greater returns on investment in relation to economic strain and limited budgets available to municipalities and the state. The areas for spatial targeting have been revised, but with the same intentions as set out in 2016, and these revisions are illustrated in Figure 46 and the tables that follow:

**Focus areas 1: Shared economic prosperity:** This is the economic generator of the region's and the nation's wealth; this area would be the most responsive to investment, as this is based on the DTC, and where most of the resources should be targeted, especially to accommodate future growth.

**Focus areas 2: Shared economic prosperity:** Initial townships historically making up Soweto; the initial extent of the 'Katorus' area (the townships of Katlehong, Tokosa and Vosloorus) are highly accessible to the provincial economic core, but in need of further integration. Possibilities associated with these 'township economies' has now become an express area of provincial economic planning and enablement and proposed legislative. The correlation between the 5 Strategies and the areas of focus is illustrated on the matrix below

amendments to enhance, regularize and streamline these is now well advanced. The prospect is, going forward, that better socio-economic integration will tend to yield higher multipliers than in the past. Focus area 2 would also be in the confines of Focus Area 1 or 3.

**Focus areas 3: Economic consolidation:** Spatially distinct from the core GCR, these areas retain highly productive economies and are often or have lost some of their erstwhile economic robustness. These areas should also be prioritised.

**Focus area 4: Social and economic support:** Far too much has already been committed to peripheral land identification and projects. This has already brought with it sprawl, very extensive pressures on service infrastructure, poorly serviced public transport areas and associated poor socio-economic performance and social dysfunction. Resources should be focused on improved connections between different economies, social and economic upliftment. New settlements should not occur in these areas and economic initiatives should be very carefully considered. Resources should be limited in these areas.

**Focus area 5: Urban support zone:** Being defined as an entity in its own right, further resources should be on bolstering existing economies (tourism, agri-processing etc.), maintaining and preserving its natural assets of culture, heritage, and biodiversity; building on agricultural potential.

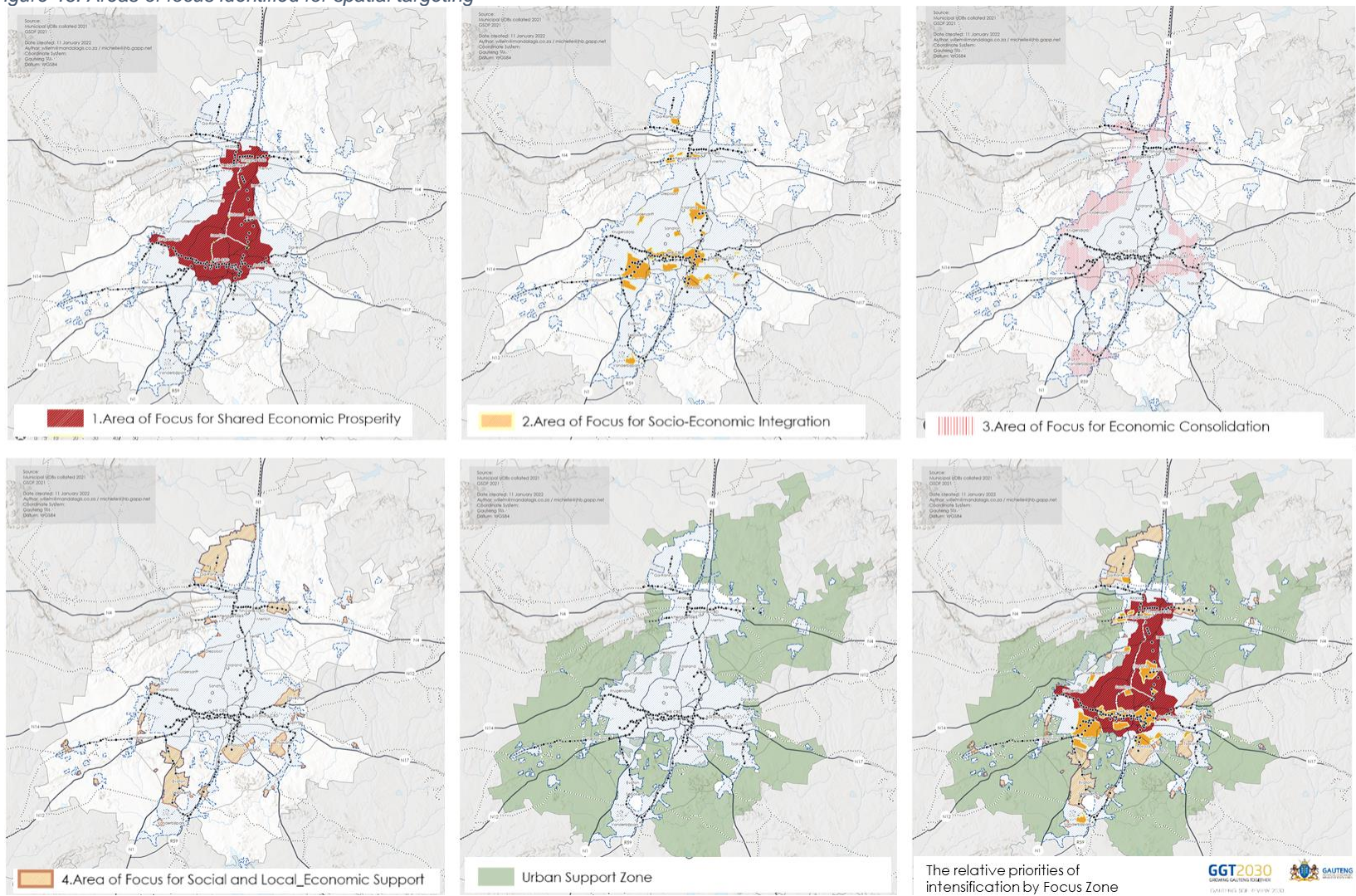
Table 9: Matrix showing the relationship between the 5 spatial strategies, the 5 Areas of Focus and SSDIs

PROVINCIAL SPATIAL STRATEGIES	FOCUS AREAS					SPATIAL DEVELOPMENT PRINCIPLES					
	1. SHARED ECONOMIC PROSPERITY	2. SOCIO-ECONOMIC INTEGRATION	3. ECONOMIC CONSOLIDATION	4. SOCIAL & LOCAL ECONOMIC SUPPORT	5. URBAN SUPPORT ZONE	CONNECTIVITY	VIABILITY	DIVERSITY	LIVEABILITY	CONCENTRATION	CONSERVATION
STRATEGY 1: CAPITALISING ON PROXIMITY	●	●	●			◆	◆	◆	◆	◆	◆
STRATEGY 2: MANAGING NEW SETTLEMENT DEVELOPMENT	●	●	●	○	○	◆	◆	◆	◆	◆	◆
STRATEGY 3: BUILDING AN ECONOMIC NETWORK	●	●	●	○	●	◆	◆	◆	◆	◆	◆
STRATEGY 4: CREATING A VIABLE AND PRODUCTIVE HINTERLAND				●	●	◆	◆	◆	◆	◆	◆
STRATEGY 5: BUILD ON SUSTAINABILITY & INNOVATION	●	●	●	●	●	◆	◆	◆	◆	◆	◆

Contain development. Limit new housing development within this area

Strong correlation ● ◆  
Moderate ● ◆  
Weak correlation ○ ◆  
No correlation — ◆

Figure 46: Areas of focus identified for spatial targeting





## 7.2.1 Spatial Targeting Focus Area 1: Shared Economic Prosperity

Table 10: Focus Area 1: Shared economic prosperity

Focus Area 1	Promoted	Discouraged	Areas identified /Implementation
<p><b>Focus area 1: Shared economic prosperity</b> Areas identified as best opportunity for shared economic prosperity. These areas represent the anchors of the provincial and, by implication, national economy.</p> <p>Drawing on economic growth trends over the past two decades, the areas are delineated based on their contributions to provincial economy as well as their relative accessibility and connectivity to the rest of the province.</p> <p>The Focus Area include areas that are close to economic potential but are under-developed. It also contains a sizeable number of income-poor households. As the core of the current provincial spatial form, the sustained growth of these areas is imperative for the wellbeing of the entire province. Government and the private sector need to adopt a thoroughly coordinated and collaborative approach when investing in these areas.</p>	<p><b>Land use and Economy</b></p> <ul style="list-style-type: none"> <li>Acceleration of economic growth commitment to enhance and diversify economic activity within this (achieving urban competitiveness)</li> <li>Economic investment and economic growth - enabling development corridors through land use rights, infrastructure and access to facilitate economic growth: N1, R21, Ontdekkers/Main roads, bolster existing economically viable nodes, areas with private sector interest, opportunities that create multiplier effects;</li> <li>Promotion of a broad social economic profile</li> <li>Municipalities must leverage long-term infrastructure planning, and maintenance, as well as progressive land-use policies to make these areas work</li> <li>Promote compaction and clustering</li> <li>Increase densities around public transport, supported by infrastructure, to meet housing needs</li> </ul> <p><b>Nodal support and infill</b></p> <ul style="list-style-type: none"> <li>Municipalities must identify areas for intensification - compact, complex urban systems (along activity spines / existing and new nodes / corridors / public transport etc.) supported by infrastructure as a growth management tool.</li> </ul>	<p>Low density sprawl, gated communities that cannot be integrated into a wider urban system.</p>	<p>Main areas identified in this geographic boundary, <i>inter alia</i>:</p> <p>Johannesburg Roodepoort Johannesburg South Randburg Sandton Alexandra Midrand Pretoria Brooklyn Samrand Centurion Kempton Park Parts of Boksburg ORTIA Germiston Cleveland Malvern Mayfair Industria Bosmont Roodepoort</p> <ul style="list-style-type: none"> <li>Bolster existing nodes</li> <li>Further investment around the Gautrain and Metro Rail stations (commitment from Prasa required) and interchange zones (rail/bus/taxi) must be supported</li> </ul>



Focus Area 1	Promoted	Discouraged	Areas identified /Implementation
	<ul style="list-style-type: none"> <li>• Economic stimulus required for historic CBDs in need of regeneration (i.e. Brakpan, Boksburg, Randburg etc), safety, urban management, and security becomes key to its success</li> <li>• Identify well-located neighbourhoods where backyard and infill opportunities can be augmented (service and social infrastructure must be augmented to respond to this)</li> <li>• Municipalities must guide areas that are not ‘supported’ as priorities but are in transition with suggested public investment for road networks, open space networks and urban performance criteria to avoid sprawl and lifestyle estates (i.e. townhouses being developed on agricultural holdings)</li> <li>• Support for BEPP Integration Zones</li> <li>• Sharing of social facilities (schools, sports fields to be permitted in wetland buffers)</li> <li>• Informal settlements prioritized for full upgrades</li> <li>• Private sector development must be guided to providing higher residential densities, diverse mix of land-uses and opportunities for socio-economic diversification</li> <li>• Municipalities must direct growth in areas that are in transition (i.e. well-located agricultural holdings, vacant land that may not necessarily be supported for development but where township applications are being approved on an incremental basis): this must include an open space network; a fine-grained road network for pedestrian connectivity and a</li> </ul>		<p>for mixed-use development and increased densities</p> <ul style="list-style-type: none"> <li>• New nodes – Riverfields, Modderfontein, Aero-Blaaupan, must receive policy support to achieve mixed-use walkable town centres, based around public infrastructure, to promote inclusive environments</li> <li>• Promote economic initiatives: ORTIA, universities, innovation hubs, CSIR, etc.</li> </ul>

Focus Area 1	Promoted	Discouraged	Areas identified /Implementation
	<p>review of the RAMS road guidelines to achieve these results; introduction of performance criteria</p> <p><b>Environmental protection, and the public environment,</b></p> <ul style="list-style-type: none"> <li>• Environmental protection and the public realm</li> <li>• Protection of aquifers and a green infrastructure framework</li> <li>• Fine balance between development and environment (important to consolidate development, making wetlands and open spaces integrators of communities rather than barriers to connectivity)</li> <li>• Identification of public open space and the value of pocket parks</li> <li>• Urban agriculture supported in identified open spaces</li> <li>• Investment in the public environment so that it becomes a springboard for economic opportunity (public spaces for markets, quality environments for the private sector to respond to)</li> <li>• Intensive water management and protection programs</li> </ul> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Green infrastructure and sustainable infrastructure promoted: innovative and stronger collaboration between engineering and urban design</li> <li>• Maintenance and upgrading of infrastructure is crucial to enable continued prosperity</li> </ul>		

Focus Area 1	Promoted	Discouraged	Areas identified /Implementation
	<ul style="list-style-type: none"> <li>• Specific measures required to ensure that the poor do not lose out insofar as new technologies are concerned and that such technologies do not result in new and even deeper forms of fragmentation and segregation</li> <li>• Innovative and stronger collaboration between engineering and urban design</li> </ul> <p><b>Mobility and access</b></p> <ul style="list-style-type: none"> <li>• Urban densification, access to opportunities, and fewer, shorter private car trips are encouraged</li> <li>• Provision of integrated, safe, affordable public transport including Gautrain, Metro Rail, BRTs, taxis</li> <li>• Intensification of Integrated Corridor Management supported with appropriate densities and access</li> <li>• Road patterning to become economic generators (fine-grained intersection spacing to promote pedestrian permeability)</li> <li>• Emphasis on pedestrian movement, cycling and public transport increases the resilience of the province insofar as natural disasters, shortages and changes in economic conditions are concerned</li> </ul>		

## 7.2.2 Spatial Targeting Focus Area 2: Socio-Economic Integration

Table 11: Focus Area 2: Socio economic integration

Focus area 2, coincides with either Focus area 1 or Focus 3, depending on it's locality.

Focus area 2	Promoted	Discouraged	Areas identified /Implementation
<p><b>Focus area 2: Socio-economic integration</b></p> <p>Areas that show the most opportunity for socio-economic integration These areas include parts of the province that have high levels of unemployment and poverty, and high dependency ratios, but are close to the provincial core economic areas. Spatial analyses of socio-economic, demographic and accessibility data was used to delineate the areas.</p> <p>These areas offer the highest prospect for social and economic integration on a provincial scale because of their high population densities and relative connectedness with the provincial economic core. Public investment needs to be targeted at these areas over a sustained period of time, together with incentives and a supportive regulatory framework that encourages the consolidation of private sector investment.</p>	<p><b>Land-use and Economy</b></p> <ul style="list-style-type: none"> <li>Facilitate local economic development, managed trading areas, backyard economy, etc.</li> <li>Provincial government must focus on developing health and education infrastructure, building capacity, developing skills, and developing initiatives aimed at youth and women. Higher residential densities and a diverse mix of land uses and opportunities for a broader mix of people of various income and social groups should be encouraged.</li> <li>Identify well located neighbourhoods where backyard and infill opportunities can be augmented (service and social infrastructure must be augmented to respond to this</li> <li>Safety, security and urban management</li> </ul> <p><b>Environmental protection &amp; Public environment</b></p> <ul style="list-style-type: none"> <li>Introduce a green infrastructure framework as part of the urban system</li> <li>Municipalities and citizens should be encouraged to focus on improving quality through education and green coverage strategies through innovative urban design and making the area attractive for people from the wider provincial area</li> <li>Intensive water management and protection programs</li> </ul>	<ul style="list-style-type: none"> <li>Informal structures</li> <li>Crime and grime, urban neglect and decay</li> </ul>	<p>Comprises: Roodepoort to Randfontein Soweto Boksburg Springs <b>Socio-economic integration</b> Katorus Thembisa Ivory Park East Midrand Mamelodi Atteridgeville</p>



Focus area 2	Promoted	Discouraged	Areas identified /Implementation
	<p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Municipalities should prioritise long-term bulk infrastructure planning and maintenance for these areas</li> <li>• Infrastructure should be maintained; promote infill and brownfield opportunities</li> <li>• Transport infrastructure must be maintained and public transport and strategic road infrastructure be extended to these areas.</li> </ul> <p><b>Mobility and access</b></p> <ul style="list-style-type: none"> <li>• Rail and BRT routes should become connectors rather than dividers</li> <li>• The implementation of the proposed outer-radial corridor will further improve connectivity between Focus Areas 1, 2 and 4</li> <li>• Strategic road connections to integrate areas</li> <li>• Improve access to training within existing urban nodes and in proximity to new developments (e.g. SEZs)</li> <li>• Improve connectivity through transport investment and improved affordability</li> </ul>		

## 7.2.3 Spatial Targeting Focus Area 3: Economic Consolidation

Table 12: Focus Area 3: Economic Consolidation

Focus area 3	Promoted	Discouraged	Areas identified /Implementation
<p><b>Focus area 3: Economic Consolidation</b></p> <p>Delineated based on spatial analyses of non-residential property development and economic growth trends over the last two decades, as well as their contributions to the provincial economy, and relative accessibility and connectivity to the rest of the province. Although relatively marginal to the provincial core, these areas retain highly productive economies; are often more recent creations or may have lost some of their erstwhile economic vigour; developable land is more readily available; the State owns significant tracts of land; and land prices are less prohibitive than in the core areas.</p> <p>They are ideal sites for integrating functions in an unequal, unjust and fractured spatial economy. This area can serve as an economic connector between the economic heartland and the periphery of the Apartheid City, bringing the erstwhile margins into the economic heart of the province.</p>	<p><b>Land use and Economy</b></p> <ul style="list-style-type: none"> <li>• The provincial government needs to support the development of nodes and linkages in the desired network with the necessary transport infrastructure, suitable housing, land identification, land-banking as well as safety and security</li> <li>• Augment urban growth nodes such as Lanseria, Riverfields, Foresthill, etc.</li> <li>• Accelerate the development of SEZs where there is sufficient private sector interest</li> <li>• Address the most critical barriers to investment first (i.e. water, electricity, poor road networks)</li> <li>• Revitalise the CBDs</li> <li>• Municipalities need to identify suitable land; carry out nodal master planning; plan transit oriented development; plan, provide and upgrade long-term bulk infrastructure planning; and manage progressive land use and innovative urban design.</li> <li>• Municipalities must ensure that the private sector is intimately involved in the economic consolidation of these areas, providing a broad mix of compatible land-uses, high-density residential developments and creating opportunities for a broader mix of people of various income and social groups.</li> </ul>	<ul style="list-style-type: none"> <li>• Gated lifestyle estates without integration into the urban system.</li> <li>• New cities unless merit exists</li> </ul>	<p>Vaal (Vanderbijlpark, Vereening) Midvaal Heidelberg Nigel Bronkhorstspuit Cullinan Magaliesberg Fochville Carltonville</p> <ul style="list-style-type: none"> <li>• <b>Further policy support for implementing the GLMP:</b> Since 2016, the LRSP and the GLMP have been prepared. The OOP is setting up a SPV for bulk infrastructure to unlock development</li> <li>• Continued support for the expanded growth of Rosslyn (building of the PWV 9) boosting the logistics hubs into Africa and surrounds</li> <li>• Vereening and Vanderbijlpark.</li> <li>• New nodes – Carnival Junction, Aero-Blaaupan, to receive policy support to achieve mixed-use walkable town centres, based around public infrastructure, to promote inclusive environments.</li> </ul>

Focus area 3	Promoted	Discouraged	Areas identified /Implementation
<p>All three spheres of government and the private sector need to collaborate.</p>	<p><b>Environmental protection &amp; Public environment</b></p> <ul style="list-style-type: none"> <li>• Protection of aquifers and implementation of a green infrastructure framework</li> <li>• Fine balance between development and environment (important to consolidate development, making wetlands and open spaces integrators of communities rather than barriers of connectivity)</li> <li>• Identification of public open space and the value of pocket parks</li> <li>• Urban agriculture supported in identified open spaces</li> <li>• Investment in the public environment so that it becomes a springboard for economic opportunity (public spaces for markets, quality environments for the private sector to respond to)                             <ul style="list-style-type: none"> <li>• Intensive water management and protection programs</li> </ul> </li> </ul> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Municipalities should prioritise long-term bulk infrastructure planning and maintenance for these areas</li> <li>• Infrastructure should be maintained; promote infill and brownfield opportunities</li> <li>• Transport infrastructure must be maintained and public transport and strategic road infrastructure be extended to these areas.</li> </ul> <p><b>Mobility and access</b></p> <ul style="list-style-type: none"> <li>• Rail and BRT routes should become connectors rather than dividers</li> </ul>		<ul style="list-style-type: none"> <li>• Support for and revitalization of existing industrial areas to attract private sector interest</li> </ul>

Focus area 3	Promoted	Discouraged	Areas identified /Implementation
	<ul style="list-style-type: none"> <li>• The implementation of the proposed outer-radial corridor will further improve connectivity between Focus Areas 1, 2 and 4</li> <li>• Strategic road connections to integrate areas</li> <li>• Improve access to training within existing urban nodes and in proximity to new developments (e.g. SEZs)</li> <li>• Improve connectivity through transport investment and improved affordability</li> <li>• Emphasis on pedestrian movement, cycling and public transport increases the resilience of the province insofar as natural disasters, shortages and changes in economic conditions are concerned</li> </ul>		

## 7.2.4 Spatial Targeting Focus Area 4: Social and Economic Support

Table 13: Focus Area 4: Social and Economic Support

Focus Area 4	Promoted	Discouraged	Areas included
<p><b>Focus Area 4: Social and Economic support</b></p> <p>The objective is to determine which locations in Gauteng require targeted social and local economic support (Map 40). These areas include parts of the province that have high levels of unemployment and poverty and high dependency ratios, but are comparatively poorly integrated with the province's socio-economic prosperity.</p>	<p><b>Land use and Economy</b></p> <ul style="list-style-type: none"> <li>• Schools and health facilities in existing and new areas</li> <li>• Strict planning application approvals be applied to all new developments, both by public and private sector agencies; very detailed business plans and spatial strategy conformance are to accompany any and all funding applications to Treasury.</li> </ul>	<p>Further housing projects (new developments / mega cities, etc.) should not be encouraged in these areas</p>	<p>KwaTsaDuza Parts of Vosloorus Ekangala Orange Farm Poortjie Shoshanguve Daveyton Zandspruit</p>



Focus Area 4	Promoted	Discouraged	Areas included
<p>Long-term integration of these areas with adjacent economic-consolidation focus areas is crucial.</p> <p>All three spheres of government need to coordinate their localised interventions over the medium to long term in order to lay a foundation for economic redevelopment and transformation. Provincial government should focus on early childhood development, basic health care, quality primary and secondary education, community-based research and planning, sports infrastructure development, skills development, food security initiatives, sustainable livelihood initiatives, substance abuse prevention, treatment and rehabilitation, as well crime prevention and support. Provincial government should also support and nurture emerging local transport businesses in these areas. Municipalities should review old inhibitive by-laws and ensure responsive land release to support local economic development. However, municipalities should cautiously manage settlement expansion in these areas and ensure place-making from the outset, through innovative urban design, to lay a foundation that will enable these areas to grow in a sustainable fashion over the longer term.</p>	<p><b>Environmental protection &amp; Public environment</b></p> <ul style="list-style-type: none"> <li>Intensive water management and protection programs</li> </ul> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>Municipalities should prioritise long-term bulk infrastructure planning and maintenance for these areas</li> <li>Infrastructure should be maintained; development should consolidated within existing nodes</li> <li>Transport infrastructure must be maintained and public transport and strategic road infrastructure be extended to these areas.</li> </ul> <p><b>Mobility and access</b></p> <ul style="list-style-type: none"> <li>The implementation of the proposed outer-radial corridor will further improve connectivity between Focus Areas 1, 2 and 4</li> <li>Enhancement of Freight and logistics to promote economic proximity</li> <li>Secure energy supply through City Power and private energy producers</li> <li>Emphasis on pedestrian movement, cycling and public transport increases the resilience of the province insofar as natural disasters, shortages and changes in economic conditions are concerned.</li> </ul>		

## 7.2.5 Spatial Targeting Focus Area 5: Rural Enterprise Support

Focus Area 5	Promoted	Discouraged	Areas included
<p><b>Focus area 5: Urban support zone</b> A loose assembly of conservancies, ecological, geological and heritage 'zones' and areas of varying agricultural potential to be understood as being vital as an <b>urban support zone</b>. The objective is to manage this as a single spatial entity to enhance environmental biodiversity, leisure and tourism, and targeted rural enterprise support.</p> <p>This focus area is delineated based on all areas outside the urban development boundary, comprising farms and agri-parks, mining areas (minerals and quarries), conservancies, protected areas, identified ecological corridors .</p> <p>The three spheres of government need to coordinate their interventions over the medium to long-term in order to radically transform the face of the rural economy and ensure the creation of modern, globally competitive rural settlements. Provincial government should focus on building the capacity of SMMEs and cooperatives (so they can participate in mainstream economy), increasing trade investment and export opportunities, developing tourism and creative enterprises, and maintaining and upgrading road infrastructure. It</p>	<p><b>Land use and Economy</b></p> <ul style="list-style-type: none"> <li>• Agri-villages</li> <li>• Tourism and leisure activities</li> <li>• Conservation and protection</li> <li>• Agriculture (of all scales and intensities) – both production and processing</li> <li>• Green industries</li> <li>• Freight and logistics as a support to productive agro-industries</li> <li>• No urban development, other than extremely low-intensity transition uses are permitted without a full merit-based appraisal</li> <li>• the emphasis should move from simply 'protecting' these assets to a position of establishing, coding and specifying the role, scope and nature of what this profoundly important spatial entity is obliged to perform</li> <li>• Provide support to, and coordinate the actions of all agencies operating in this zone (public, private, NGO &amp; NFP)</li> </ul> <p><b>Environmental protection &amp; Public environment</b> Whilst it is obviously vital to protect these assets, its value needs, overall, to be understood as being vital as an <b>urban support zone</b>:</p> <ul style="list-style-type: none"> <li>• It is vital in terms of the ecological, biodiversity and environmental value it adds, particularly against a backdrop of continued rapid urban growth in Gauteng;</li> <li>• It provides overlaps with all adjacent provinces and it is essential that this planning be tied in with adjacent functional areas and provinces;</li> <li>• It is particularly important in heritage terms (the Cradle of Humankind World Heritage Site), geological</li> </ul>	<p>Urban uses that are not of a low-intensity transitional nature and do not satisfy a full merit-based appraisal Agriculture that does not satisfy appropriate agricultural management principles Further housing projects (new developments / mega cities, etc.) are not encouraged in these areas</p>	<p>All areas outside municipal urban development boundaries. Includes parts of the province that contain dense clusters of smallholding farms and agro-processing parks and are close to rural townships and/or tourism resources.</p> <p>Includes: Cradle of Humankind Dinokeng Crocodile River Reserve Diepsloot Nature Reserve Klipriviersberg Suikerbosrand Parts of the Magaliesburg</p> <p>Rural centers linked to: Parts of the Magaliesburg Westonaria Ekangala/Rethabiseng Bronkhorstspuit Heidelberg Nigel</p>

Focus Area 5	Promoted	Discouraged	Areas included
<p>should also provide land-care support, extension and advisory services, agri-business development, climate change management, environmental capacity development and support, social relief, care and services to older persons, youth and women development, etc. National government should target these areas for the implementation of the Agricultural Policy Action Plan (APAP) and the Comprehensive Rural Development Programme (CRDP), further supported by local economic development interventions by respective municipalities.</p>	<p>formations and many historic sites which must be protected and enhanced;</p> <ul style="list-style-type: none"> <li>• It has outstanding natural beauty, is important from many conservation points of view (including aquifers), and is an essential recreational and leisure asset for a vast urban population;</li> <li>• It is already, and will, increasingly in the future, continue to be an asset in terms of Gauteng’s tourism industry, an industry with particularly high levels of economic multipliers;</li> <li>• It is agriculturally important, both in terms of extensive and specialized high-intensity farming and provides an important component to the GCR’s food security as an ‘urban bread-basket’;</li> <li>• More particularly, it is an as yet underutilized aspect of Gauteng’s economic planning in respect not only of agricultural production (both extensive and intensive agriculture) but in terms of agri-processing, be this in connection with agricultural production in the region as well as processing product from surrounding provinces and regions, on the doorstep of the biggest single market in Southern Africa: agriculture must not be seen simply as some rural pursuit – it is an integral part of a city-region’s activity patterning and urban economy;</li> <li>• As an entity, it provides space reserve for many aspects in a fast-changing technological world for initiatives in reducing carbon footprint or adapting to fast-changing and uncertain markets: many of these are partially emerging (an SEZ, for example, for essence extraction – cannabis amongst others -, wind farming as efficiencies improve, many green industries) whilst other are still too nascent or, indeed, not as yet dreamt of: without knowing what space economy we require adjacent to this vast Gauteng market and beyond, this urban</li> </ul>		

Focus Area 5	Promoted	Discouraged	Areas included
	<p>support zone is, in essence, also land-banking for resilience and future proofing in spatial planning.</p> <ul style="list-style-type: none"> <li>• Being defined as an entity in its own right, it is also vital that it be seen against the extent it feeds into and is in turn fed by the myriad networks of bio-diversity tendrils and linkages of ridges and river systems, flood-areas and flood-plains, wetlands, environmentally sensitive areas, conservancies, community commonage, parks and open space, cemeteries, market gardens and urban farming, heritage sites and areas that permeate the built-up urban areas of all descriptions.</li> <li>• Protect and celebrate natural features as collective spaces and merit-worthy places</li> <li>• Enhance the rural and ecological make-up of the area, especially, within rural/ecological landscapes and rural/natural or urban interfaces.</li> <li>• Mining reclamation, rehabilitation and enhancement of expanding mines</li> </ul> <p><b>Water management and monitoring</b></p> <ul style="list-style-type: none"> <li>• Impose and monitor stringent controls relative to acid mine drainage</li> <li>• Take control of river and waterway pollution through inadequate and poorly managed effluent treatment</li> <li>• Ensure that the discharge of overloaded treatment works is adequately processed prior to discharge into rivers and waterways</li> <li>• Implement more stringent monitoring of water quality and expand the representivity of monitoring groups</li> </ul> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Sustainable infrastructure approaches should be promoted</li> <li>• Improvement of freight and logistics with the rural / urban interface</li> </ul>		



Focus Area 5	Promoted	Discouraged	Areas included
	<p><b>Mobility and access</b></p> <ul style="list-style-type: none"> <li>• Integrate and enhance access /mobility between different areas of agricultural clustering,</li> <li>• Protect, promote and maintain historically significant resources, places, landscapes, and enhance public space and movement routes (becoming scenic routes) within these areas (Magaliesburg Biosphere, Crocodile River Reserve, Suikerbosrand, Rietvlei, Dinokeng).</li> </ul>		

Figure 47: Associated Areas of focus identified for spatial targeting

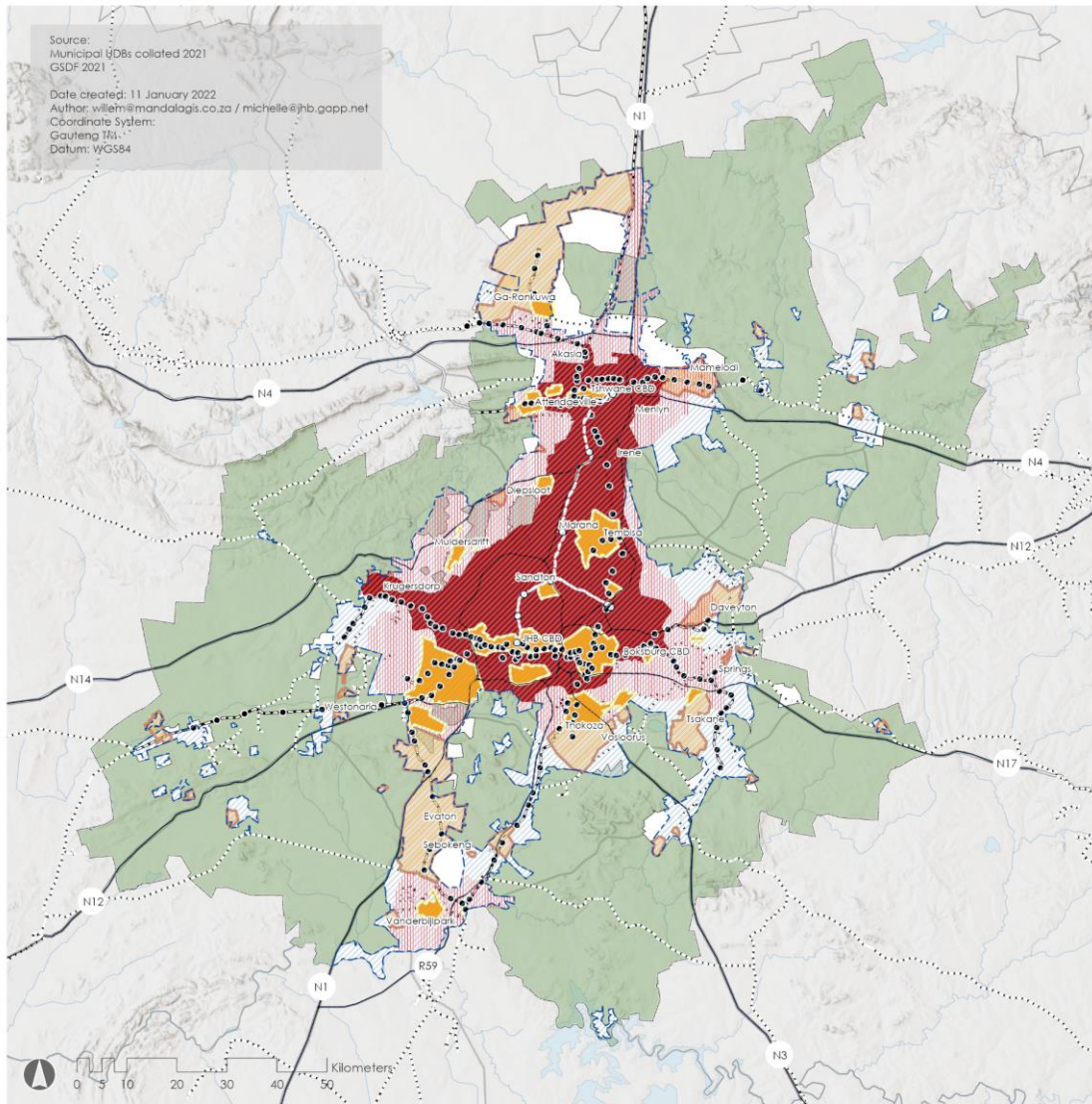


Figure 48: High-priority Spatial Development Proposals

### GSDf 2030 Review

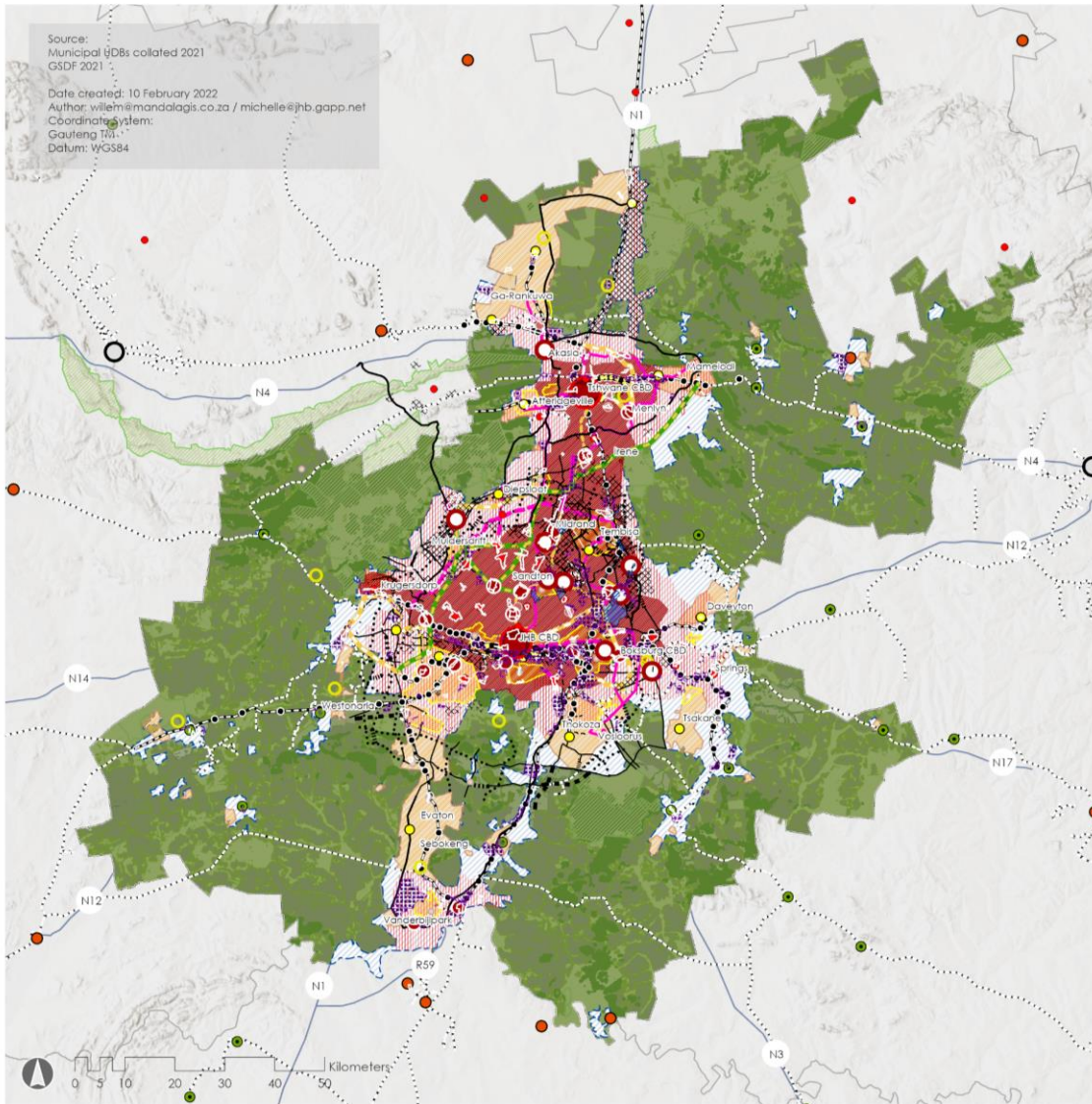
- Gautrain Stations - existing
- Rail network - core
- Rail Stations
- 1. Area of Focus for Shared Economic Prosperity
- 2. Area of Focus for Socio-Economic Integration
- 3. Area of Focus for Economic Consolidation
- 4. Area of Focus for Social and Local Economic Support
- Development permitted within the Urban Development Boundary \*

\*Area suggested for detailed review by municipalities as possible regional rationalization of the municipal urban development boundary towards urban consolidation across the province

**GGT2030**  
GROWING GAUTENG TOGETHER



GAUTENG SDF REVIEW 2030



Source: Municipal iDBs collated 2021  
GSDP 2021  
Date created: 10 February 2022  
Author: wille@mandalagis.co.za / michelle@jhb.gapp.net  
Coordinate system:  
Gauteng TM  
Datum: WGS84

- Gautrain Stations - existing
  - Roads existing - Corridor
  - ..... Roads proposed - Corridor
  - ..... Roads proposed GSRN - Corridor
  - Strategic Roads proposed
  - Rail network - core
  - BRT/IRPTN Priorities
  - Gautrain Stations - existing
  - ▭ Gautrain Rapid Rail
  - Rail Stations
  - ▨ Protected Areas
  - Green network - ridges, waterbodies, open space
- Gautrain Recommendations**
- Approved GRINN lines
  - Proposed GRINN lines - supported
- Nodal Hierarchy**
- Agri Park
  - District Node
  - Local Node
  - Metropolitan Core
  - Metropolitan Node
  - NDP Hub
  - Nascent Node
  - Other towns; Regional Development Anchor
  - Regional Node
  - Rural Service Centre
  - Towns - National Urban Nodes
  - 2.Area of Focus for Socio-Economic Integration
  - 1.Area of Focus for Shared Economic Prosperity
  - 3.Area of Focus for Economic Consolidation
  - 4.Area of Focus for Social and Local Economic Support
  - 5.Urban Support Zone
  - ▨ Development permitted within the Urban Development Boundary \*
- Nodal Hierarchy**
- ▨ Commercial
  - ▨ District Node; Node; Local Node
  - ▨ Industrial
  - Metropolitan Core
  - NSDF Rural Service Centre
- \*Area suggested for detailed review with municipalities as possible rationalization of the urban development boundary



## 8 Conclusion

A review team of professionals, under direction of a Gauteng COGTA Technical Steering Committee, has reviewed the GSDF 2030 as prepared in 2016 and assessed: (a) the extent to which its contents remain valid in the light of change over the ensuing 5 years; (b) the extent to which its core principles and policies have been effective; (c) whether adjustments to these principles and policies (or re-focus and amendment/re-affirmation of these) may be appropriate. The purpose of this exercise was not to establish a new plan but to review and assess the efficacy of the existing plan as formulated in 2016. The review has been the subject of a series of sector-based group discussions (urban planning and environmental performance, economic development, transportation, infrastructure, housing, social infrastructure), the outcomes of which were then presented and debated in an open plenary session;

The document now set out is the essence of the draft reviewed GSDF 2030 and will be presented for detailed scrutiny, comment and input from all stakeholders: national, provincial and municipal departments, branches and agencies and SOEs; the public in general, including individuals, ratepayer groupings, any and all professional groupings and institutions, pre-school, primary, secondary and tertiary educational institutions, health institutions, organized labour, organized business, institutional sectors (whether local, continental or international), economic groupings, research groupings, NGOs, interest groups, faith-based groups, etc.

The GSDF as set out is intended to coordinate, integrate and align<sup>136</sup> the following:

- Provincial plans and development strategies with national government policies;
- Plans, policies and development strategies of provincial departments; and
- Plans, policies and development strategies of municipalities.

An inherent part of this integration, from a spatial point of view, involves bringing people into closer proximity to those parts of the urban system that offer urban prospect and planning for the provision of affordable, reliable and safe public transport. Notwithstanding the polycentric model adopted as a basis for the GSDF 2030 (as opposed to compaction only around primary metropolitan cores, one of the most important priorities of the GSDF must be to shape and form a pattern of urban growth that is nevertheless compact in its extents, complex in its activity patterns and inclusionary in its spatial, social and economic policies, which is the intent of the GSDF.

The GSDF Review incorporates an overview of the policy frameworks on an international, national and municipal level. It also gives a synopsis of the situational analysis, which includes settlements and housing, the drivers of spatial form, the space economy, connectivity, infrastructure and the environment and hinterland.. From this, several issues and criticalities were drawn out, strongly informed by targeted stakeholder engagement sessions. This has informed the review of the GSDF's Strategies, and Supporting Spatial Development Interventions, and the approach to the balanced polycentric mode. The 5 Strategies introduced in 2016, and now augmented

<sup>136</sup> As required in Section 15(3) of SPLUMA



include: Strategy 1: Developing within Economic Proximity; Strategy: Accommodating new settlement; Strategy 3: Reinforcing economic networks; Strategy 4: Creating a Productive Hinterland; and Strategy 5: Driving the urban sustainability agenda. From this 16 Supporting Spatial Development Interventions are set out intended to further direct the spatial form into a compact and complex urban structure. The five focus areas have been refined to a greater extent and include: Focus areas 1: Shared economic prosperity; Focus areas 2: Shared economic prosperity; Focus areas 3: Economic consolidation; Focus area 4: Social and Economic support and Focus area 5: Urban support zone, with reviewed development guidelines

Whilst the GSDF covers the full geographic extent of the Gauteng Province, it needs to identify and focus in on priority areas (i.e. spatial targets). These may be where the province's socio-economic development needs are most pressing, or where economic development prospects are greatest. Spatial targeting serves to channel public investment into priority areas and align the capital investment programmes of different government departments, which will become the implementation framework, and will be completed in the next 4 months.

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