



PROJECT INFRASTRUCTURE PLANNING

PROJECT DETAILS

Project Name	Smart and Sustainable Infrastructure for Future Cities
Location	Bergvliet Local Municipality
Sector	Social
Department	Department Of Infrastructure
Project Owner	Poonam Yawalkar
Project Manager	Poonam Yawalkar

BACKGROUND & JUSTIFICATION

Urban centres across the world are experiencing rapid population growth, increased economic activity, and rising pressure on existing infrastructure systems. Traditional infrastructure models are no longer sufficient to meet the evolving needs of modern cities, particularly in the face of climate change, resource scarcity, congestion, and environmental degradation. As cities expand, the demand for efficient transport networks, reliable utilities, sustainable energy systems, and resilient public services continues to intensify.

Smart and sustainable infrastructure presents a transformative opportunity to address these challenges. By integrating digital technologies—including IoT sensors, real-time data platforms, artificial intelligence, and automation—with green and energy-efficient design principles, cities can significantly improve operational efficiency and environmental performance.

Investing in smart and sustainable infrastructure is justified because it enables:

- **Optimised resource management** (energy, water, waste)
- **Reduced operational and maintenance costs** through predictive monitoring
- **Improved mobility and reduced congestion** via intelligent transport systems
- **Resilience to climate risks** such as heatwaves, floods, and extreme weather
- **Enhanced quality of life** for residents through safer, cleaner, and more accessible urban spaces
- **Support for economic growth and innovation**, attracting investment and skilled talent

This approach aligns with global sustainability commitments, including the UN Sustainable Development Goals (SDGs), and national priorities for low-carbon, climate-resilient development.

PROJECT SCOPE

The Scope of Work outlines the key activities, tasks, and deliverables required to plan, design, and implement smart and sustainable infrastructure for future urban development. The project scope includes the following components:

1. Baseline Assessment & Data Collection

- Analyse existing infrastructure systems, including transport, energy, water, waste, ICT, and public services.
- Conduct site surveys, environmental assessments, and socio-economic studies.
- Identify gaps, inefficiencies, constraints, and opportunities for improvement.

2. Smart Infrastructure Planning

- Develop an integrated master plan for smart mobility, utilities, buildings, and public spaces.
- Identify smart technologies such as IoT, smart meters, sensors, automation, and digital twins.
- Propose data management frameworks, cybersecurity measures, and connectivity requirements.

3. Sustainability & Resilience Design

- Incorporate renewable energy systems, energy-efficient design principles, and low-carbon materials.
- Integrate climate resilience measures including flood management, heat mitigation, and disaster preparedness.
- Evaluate environmental impacts and propose mitigation strategies.

OBJECTIVES & KEY FOCUS AREAS

OBJECTIVE	KEY FOCUS AREA
Consistent Public-Private strategic value for all WC infrastructure stakeholders	• Prioritising Infrastructure for Maximum Impact • Enhancing Private Sector Partnerships • Addressing Climate Change & Sustainability
Infrastructure & Governance & Standards (IMC ITC RPG)	• Strengthening Municipal Infrastructure • Innovation & Futures Planning
Infrastructure Monitoring & Evaluation	• Strengthening Municipal Infrastructure • Enhancing Private Sector Partnerships

PROJECT TIMELINE & COST

Estimated Duration	3 Year(s) & 6 Month(s)
Estimated Start Date	29 Nov 2025
Estimated Cost	R 7,000,000,000

PROJECT STAGE-0 SUBMISSION & APPROVAL

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ENVIRONMENTAL & SOCIAL CONSIDERATIONS

ENVIRONMENTAL CONSIDERATIONS	SOCIAL CONSIDERATIONS
• Air, water, and soil pollution from industrial and agricultural activities • Overuse of natural resources leading to scarcity and degradation • Deforestation causing habitat loss, soil erosion, and climate impacts • Sustainable water management to protect quality and prevent scarcity	• Assessment of community impacts such as displacement and livelihood loss • Preservation of cultural heritage sites and artifacts • Engagement with stakeholders throughout the project lifecycle • Support and compensation for involuntary resettlement • Other_1

REGULATORY & ENVIRONMENTAL APPROVALS

NATIONAL LEVEL	PROVINCIAL AND LOCAL LEVELS	OTHER RELEVANT ENTITIES
• Department of Forestry, Fisheries and the Environment (DFFE): Responsible for environmental management, conservation, and protection in South Africa • Environmental Management Inspectors (EMIs): Responsible for compliance and enforcement of environmental regulations • Environmental Management Frameworks (EMFs): Strategic planning tools for land-use and environmental management decisions • Other_1 • Other_2	• Provincial Environmental Departments: Implement and enforce environmental regulations within provinces • Municipalities: Play a role in environmental management, especially in land-use planning and development applications • Other_1 • Other_2	• Environmental Assessment Practitioners Association of South Africa (EAPASA): Voluntary certification body for Environmental Assessment Practitioners • Wildlife and Environment Society of South Africa (WESSA): Non-profit organization involved in environmental conservation and education • Future demand will be projected using current and emerging growth patterns, including demographic shifts, urban expansion rates, economic development projections, and technological adoption trends. This allows the model to anticipate future pressures on infrastructure.

IDENTIFY KEY STAKEHOLDERS

Government

NAME	ENGAGEMENT STRATEGY
Department of Agriculture	
Education	
Provincial Treasury	
Department of Mobility	
Premier	
Social Development	
Western Cape Liquor Authority	
Department of Cultural Affairs and Sport	
Western Cape Government	
Other_1	

State-Owned Entities

NAME	ENGAGEMENT STRATEGY
Development Bank of Southern Africa (DBSA)	The DBSA is a leading development finance institution focused on accelerating infrastructure development across South Africa and the broader Southern African region. The bank provides funding, technical assistance, and project preparation support for initiatives in transport, energy, water, sanitation, ICT, and urban development. DBSA's mandate is to promote sustainable socio-economic growth and improve the quality of life by enabling infrastructure-led development.
Industrial Development Corporation (IDC)	The IDC is a national development finance institution dedicated to supporting industrial capacity, economic diversification, and job creation. It provides funding for manufacturing, mining, green industries, agro-processing, and strategic infrastructure. The IDC plays a major role in supporting transformational and high-impact projects that stimulate innovation, competitiveness, and inclusive economic growth.

NAME	ENGAGEMENT STRATEGY
Eskom	Eskom is South Africa's state-owned electricity utility responsible for the generation, transmission, and distribution of electrical power. It is one of the largest utilities in Africa and plays a critical role in national energy security. Eskom provides technical expertise, grid integration support, infrastructure investment, and operational capabilities essential for energy planning, renewable energy deployment, and large-scale infrastructure development.

Private Entities

NAME	ENGAGEMENT STRATEGY
Construction Companies	Construction companies are responsible for executing physical works related to infrastructure development. Their scope includes site preparation, civil works, building construction, installation of utilities, and implementation of smart infrastructure components. These companies ensure that designs are translated into completed structures that meet quality, safety, and regulatory standards. They play a critical role in project delivery, cost control, and timely execution.
Engineering Firms	Engineering firms provide specialist technical expertise across civil, structural, electrical, mechanical, environmental, and digital engineering disciplines. Their responsibilities include feasibility studies, detailed designs, technical specifications, system integration planning, and construction supervision. They ensure that infrastructure solutions are technically sound, compliant with regulations, and aligned with sustainability and smart-city objectives. Engineering firms also support risk assessments, quality assurance, and performance testing.
Financial Institutions	Financial institutions support project development by offering funding, investment products, loan facilities, guarantees, and financial advisory services. These institutions help structure viable financial models, assess project bankability, and ensure long-term financial sustainability. Their involvement may include project finance, public–private partnership (PPP) funding, capital investment, and risk mitigation instruments. They play a key role in enabling affordable and sustainable infrastructure delivery.

Civil Entities

NAME	ENGAGEMENT STRATEGY
Civil society organizations advocating for community needs	Civil society organizations (CSOs) play a vital role in representing the interests, concerns, and priorities of local communities. These groups advocate for inclusive development, equitable access to services, environmental protection, and social well-being. Their engagement ensures that infrastructure planning and implementation reflect community needs, cultural considerations, and social impacts. CSOs also contribute to transparency, accountability, and participatory decision-making by facilitating dialogue between citizens, government entities, and project developers.
Other_1	Their involvement may include project finance, public–private partnership (PPP) funding, capital investment, and risk mitigation instruments. They play a key role in enabling affordable and sustainable infrastructure delivery.

Other Stakeholders

NAME	ENGAGEMENT STRATEGY
Local Development Finance Institutions (DFIs)	Local DFIs provide financing, technical expertise, and advisory support for infrastructure and economic development projects within South Africa. Their role includes offering concessional loans, blended finance, guarantees, and project preparation facilities. By supporting sustainable and socially beneficial initiatives, DFIs help bridge funding gaps, de-risk large projects, and ensure long-term financial viability. They are key partners in enabling inclusive growth and infrastructure-led development.
Sustainable Infrastructure Development Symposium - South Africa (SIDSSA)	SIDSSA is a national platform established to coordinate, promote, and accelerate strategic infrastructure projects across South Africa. It brings together government, private sector, DFIs, investors, and technical experts to align infrastructure priorities with national development goals. SIDSSA supports project pipeline development, investment mobilisation, and policy alignment, ensuring that sustainable, resilient, and economically impactful infrastructure projects receive visibility and support. The platform plays a crucial role in shaping infrastructure investment strategies for the country.
Other	A customizable category for additional stakeholders, institutions, or partners relevant to the specific project. This may include sector-specific agencies, research institutions, or private investors depending on the project needs.

NAME	ENGAGEMENT STRATEGY
Other_1	Another placeholder intended for project-specific entities such as innovation hubs, regional development agencies, technology partners, or international organizations that may support project planning, implementation, or financing.

WCG SECTOR PRIORITIES

OUTCOMES	SOCIAL	ENERGY & WATER	ECONOMIC	TECHNOLOGY	ECOLOGICAL
Households have increased access to basic services and improved shelter	Short Term 1-5 YRS (Up to 2030)		Short Term 1-5 YRS (Up to 2030)	Medium Term 5-15 YRS (Up to 2040)	Medium Term 5-15 YRS (Up to 2040)
Infrastructure investment drives spatial transformation and improves spatial resilience		Short Term 1-5 YRS (Up to 2030)	Long Term 15-30 YRS (Up to 2050)	Short Term 1-5 YRS (Up to 2030)	Short Term 1-5 YRS (Up to 2030)
Investment in social infrastructure improves access to health, education, social development, and recreation opportunities	Medium Term 5-15 YRS (Up to 2040)	Medium Term 5-15 YRS (Up to 2040)			Long Term 15-30 YRS (Up to 2050)
Mobility systems and transportation corridors provide safe and efficient connectivity to opportunities, services, and facilities	Medium Term 5-15 YRS (Up to 2040)			Short Term 1-5 YRS (Up to 2030)	Short Term 1-5 YRS (Up to 2030)

INFRASTRUCTURE TYPE

- **Hard**

Hard infrastructure refers to the physical, tangible systems required for the functioning of a city or region. These include transportation networks, energy systems, water supply, sanitation, communication networks, and built structures. Hard infrastructure supports daily operations, economic growth, and service delivery by providing essential physical assets.

Sub Types

- **Soft**

Soft infrastructure includes the institutional, social, and human systems that support community well-being and effective governance. Examples include educational institutions, healthcare services, regulatory frameworks, financial systems, public administration, social services, and community

programs. Soft infrastructure strengthens societal resilience and ensures efficient operation of hard infrastructure.

Sub Types

- **Critical**

Soft infrastructure includes the institutional, social, and human systems that support community well-being and effective governance. Examples include educational institutions, healthcare services, regulatory frameworks, financial systems, public administration, social services, and community programs. Soft infrastructure strengthens societal resilience and ensures efficient operation of hard infrastructure.

PROJECT STAGE-1 SUBMISSION & APPROVAL

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