Western Cape Government

Prefeasibility Executive Summary Report

1. Project Details

Project Name	Creation of a regulatory sandbox to position the Western Cape as a Global Hub for Drone Innovation.
Location	Saldanha Bay Local Municipality
Sector	Technology
Department	Department of Economic Development and Tourism
Project Owner	Fernel Abrahams Hendrickse
Project Manager	Fernel Abrahams Hendrickse

1.1 Project Scope

The scope of work for the WC Drone and UAV Regulatory Sandbox covers the full lifecycle of designing, establishing, operating, and scaling a mission-oriented regulatory innovation platform. The project includes structured stakeholder engagement with regulators, industry, municipalities, research institutions, and communities, supported by a documented engagement plan and research methodology. It entails close collaboration with nationel aviation authorities to define sandbox-specific regulatory frameworks, trial authorisations, and alternative compliance mechanisms aligned with risk-based aviation principles. The scope further includes technical planning for ground and airspace requirements, enabling phased operations from VLOS and EVLOS to BVLOS and future Unmanned Traffic Management integration. A comprehensive site identification and feasibility process underpins the selection of viable locations, alongside infrastructure planning for a minimum viable sandbox with scalable expansion capability. Governance and institutional arrangements are established through multi-stakeholder oversight bodies and an operational management team. The project also includes operationalisation of sandbox activities, digital compliance and monitoring systems, financial and comercial structuring, performance tracking, and a phased transition towards public-private partnership models and long-term operational sustainability.

1.2 Justification

The Western Cape Government (WCG) is establishing a Regulatory Sandbox for Drones and UAVs to position the Province as a global hub for drone innovation. This initiative, aligned with the Growth for Jobs (G4J) strategy and WCIF 2050 Principles, aims to provide a controlled environment for testing, regulatory adaptation, and commercialisation of unmanned aviation technologies.

Spanning 2024 to 2025, the project follows a six-phase development model that includes stakeholder engagement, technical requirements, site selection, operational design, and governance finalisation. Viable locations such as Saldanha, Atlantis, and George have been shortlisted based on airspace, infrastructure, and community impact criteria.

The sandbox supports a phased implementation model, progressing from VLOS and EVLOS to BVLOS and UTM-integrated operations, with a long-term goal of enabling fully functional drone corridors. It offers direct engagement with SACAA, ATNS, DoT, and includes frameworks for trial authorisations, exemptions, and real-time compliance monitoring.

The project is designed to de-risk investment and attract participation from drone operators, manufacturers, technology firms, and research institutions. It also supports job creation, STEM education, and inclusive economic growth through gender responsive procurement and local enterprise development.

As the sandbox transitions into a public-private partnership (PPP), investors are offered clear pathways to co-develop infrastructure, manage operations, and commercialise drone services. With regulatory alignment, scalable infrastructure, and structured governance in place, the sandbox presents a compelling investment opportunity to lead Africa's drone innovation landscape.

1.3 Sector Specific Analysis

- **Technology & Regulatory features**
  Interaction between technology, regulation, and public safety

1.4 Market Size And Demand Analysis

1.4.1 Total Addressable Market (TAM)

- **Population served by a transport corridor**
  Primary Population Served

  1. Drone and UAV Operators

  Commercial drone operators (VLOS, EVLOS, BVLOS)
  Start-ups and SMMEs entering the unmanned aviation market
  Established firms testing advanced operations
  Firms requiring regulatory validation before commercial deployment

  This group represents the core demand base for the regulatory sandbox.

  2. Technology Developers and Service Providers

  Drone manufacturers and hardware developers
  Software, data analytics, and sensing companies
  Unmanned Traffic Management (UTM) solution providers
  Safety, detect-and-avoid, and compliance technology firms
  These users require real-world testing, validation, and regulatory learning environments.

  3. Investors and Private Sector Partners

  Venture capital and strategic investors

  Infrastructure and technology investors
  Firms interested in PPP participation or concessions
  The sandbox serves them by reducing regulatory and operational risk, improving investment readiness.

- **Data sources**
  - **Geographic**

    ### Site Selection and Geographic Analysis

    - Assessment of six candidate sites and shortlisting of three viable locations.
    - Consideration of:
      - Proximity to industrial zones
      - Innovation ecosystems
      - Research institutions
      - Logistics and infrastructure nodes
    - This informed the **geographic scope of the TAM** (provincial, scalable nationally).
  - **Other Data sources Methods**
    The Total Addressable Market was determined through a combination of stakeholder engagement, sector and value-chain analysis, regulatory assessment, site feasibility analysis, and policy alignment, rather than through a standalone quantitative market sizing exercise. Demand is defined by ecosystem participation

and regulatory need rather than consumer volumes.

1.4.2 Served Available Market (SAM)

- **Location**

  Location

  - The project's SAM is geographically constrained by the availability of suitable airspace and compatible land use.
  - Six sites were assessed; three locations shortlisted (Saldanha, Atlantis, George).
  - Location determines:
    - Type of operations permitted (VLOS, EVLOS, BVLOS)
    - Proximity to controlled airspace
    - Environmental and community constraints
  - As a result, only operators and use cases compatible with these locations are immediately serviceable.

  Conclusion: Location is a primary determinant of the Served Available Market.

- **Capacity**

  Capacity

  - The sandbox is designed as a Minimum Viable Sandbox (MVS) initially.
  - Capacity is constrained by:
    - Available airspace slots and time windows
    - Operational management capacity
    - Safety and regulatory oversight limits
  - The number of concurrent tests, operators, and trials is therefore finite and managed.
  - Capacity expands over time through phased scaling and potential PPP transition.

  Conclusion: Capacity constrains the SAM in early phases, with planned scalability.

- **Are there any envisaged Operational constraints?**

  Operational Constraints

  - Operations are constrained by:
    - Aviation safety rules and approval conditions
    - Phased progression (VLOS ? EVLOS ? BVLOS)
    - Environmental and community impact limits
    - Availability of regulatory oversight and monitoring systems
  - Not all technologies or use cases can be accommodated simultaneously or immediately.

  Conclusion: Operational constraints are central to defining which market segments are serviceable at each phase.

- **Which of the following criteria is being used to support this analysis in terms of Segmentation?**
  - **Region**

    Region
    Region is explicitly used to support the scale and complexity analysis.
    - The project is segmented by geographic location, with:
      - Six candidate sites assessed
      - Three shortlisted regions (Saldanha, Atlantis, George)
    - Regional characteristics affect:
      - Airspace availability
      - Environmental constraints
      - Municipal readiness
      - Community impact
    - The sandbox is designed as multi-site and scalable, making regional segmentation central to understanding complexity.

    Conclusion: Region is a core segmentation lens.
  - **Service level**

Service Level
Service level is explicitly used, through phased operational capability.

- The project segments users and operations by:
  - VLOS
  - EVLOS
  - BVLOS
  - Future corridor and UTM-enabled operations
- Each service level has different:
  - Regulatory requirements
  - Safety constraints
  - Infrastructure needs
  - Market accessibility

This segmentation explains:

- Why the project must be phased
- Why complexity increases over time
- Why not all users can be served simultaneously

Conclusion: Service level is a key segmentation driver.

- **Regulatory risk, user type, maturity**
  Regulatory Complexity / Risk Profile Segmentation by: Risk level of operations Safety-critical vs low-risk use cases This directly informs: Approval processes Operational sequencing Governance intensity b) User Type / Market Role Operators Technology developers Regulators Researchers Public-sector users c) Operational Readiness / Maturity Early-stage innovators vs advanced operators Trial-stage vs near-commercial deployments

1.4.3 Demand Forecasting

- **Projections of usage over time**
  - **Phased Operational Capability**
    Usage growth is directly linked to the phased expansion of permitted operations: Initial phase: VLOS / EVLOS Subsequent phases: BVLOS Longer term: corridors and UTM-enabled operations Each phase unlocks new user segments and use cases, driving step-changes in demand rather than linear growth.
  - **Regulatory Readiness and Approval Throughput**
    Number of trial authorisations that can be processed and overseen safely. Maturity of sandbox regulatory processes and digital systems. Increasing confidence of regulators in approving more complex operations. Demand increases as regulatory throughput and certainty improve.
  - **Capacity Constraints**
    Available airspace slots and time windows. Operational management and monitoring capacity. Safety oversight limits. Demand forecasts must reflect managed capacity ceilings, especially in early years.
- **Informed by**
  - **Stakeholder Engagement Data**
    Results from the initial stakeholder engagement survey and consultations with: Drone operators Technology developers Industry bodies Regulators and research institutions This data provides: Indications of latent demand Types of operations sought (VLOS, EVLOS, BVLOS) Expected frequency and intensity of sandbox usage
  - **Operational Phasing Assumptions**
    Defined project phases (Minimum Viable Sandbox ? expanded operations ? PPP model). Each phase introduces: New service levels Increased operational capacity Broader user eligibility These phasing milestones serve as anchors for step-change increases in usage.

2. Project Status & Implementation

2.1 Regulatory & Environmental Approvals

2.1.1 National Level

2.1.2 Provincial and Local Levels

- 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

2.1.3 Other Relevant Entities

- Council for Scientific and Industrial Research (CSIR)
- UAS Sandbox Task Force (UAS-SB-TF)

2.2 Identify Key Stakeholders

2.2.1 Government

- Department Of Infrastructure
- Department of Environmental Affairs and Development Planning
- Western Cape Government
- Department of Economic Development and Tourism

2.2.2 State-Owned Entities

- Western Cape Archives and Records Service (WCARS)

2.2.3 Private Sector

- Financial Institutions

2.2.4 Civil Society

- Civil society organizations advocating for community needs

2.2.5 Other Stakeholders

3. Governance, Policy & Enabling environment

3.1 Legal and Regulatory Framework

3.1.1 Financial Feasibility

- Capex and Opex by phase
- PPP option analysis and risk allocation

3.1.2 Legal and Regulatory Feasibility

- Site-specific aviation approvals and airspace declarations
- Zoning, land-use rights, servitudes, and municipal approvals
- PPP legal structuring and procurement compliance

3.1.3 Environmental and Land Use Planning

- Environmental Impact Assessment (EIA)
- Western Cape Land Use Planning Act (LUPA)

3.2 Governance policies

- National Development Plan (NDP)
- Infrastructure South Africa (ISA)
- Western Cape Infrastructure Framework 2050 (WCIF 2050); Western Cape Infrastructure Strategy (WCIS)
- Provincial Land Transport Framework (PLTF)
- Growth for Jobs (G4J)
- Relevant Integrated Development Plans (IDPs)
- Aviation and Airspace Regulatory Frameworks
- Innovation and Industrial Policy [White Paper on Science, Technology and Innovation (STI) (2019)]

3.3. Investment Needs

3.3.1 Infrastructure Development

- Digital and Operational Infrastructure
- Logistics & Commercial Precinct Infrastructure

3.3.2 Education

- STEM education support
- Research and innovation capacity
- Industry–academia collaboration

3.3.3 Green Economy

- Low-Carbon and Resource-Efficient Mobility
- Green Innovation and Technology Development
- Digitisation-Enabled Environmental Efficiency
- Climate Resilience and Adaptation Support
- Green Finance & ESG Alignment

3.3.4 SMME and Entrepreneurship Support

- Lowering Barriers to Market Entry
- De-Risking Early-Stage Innovation
- Access to Shared Infrastructure
- Market Validation and Credibility
- Pathways to Commercialisation
- Regional and Spatial Inclusion of Enterprises

3.4 Policy Incentives

3.4.1 Sector-Focused Incentives

- Technology and Innovation: Support for ICT hubs, fintech, and digital startups.
- Inclusive Infrastructure Development
- Public-Private Partnerships (PPP)
- Economic Inclusion
- Advanced Manufacturing & Aerospace
- Freight logistics and export competitiveness incentives

3.4.2 Investment Ecosystem Support

- Western Cape Infrastructure Pipeline / DOI support
- Provincial Treasury PPP and project preparation support
- WCIF 2050 Panoptic Evaluation framework
- Development finance institution (DFI) technical assistance
- National PSP and rail reform support mechanisms

3.4.3 Business Support and Facilitation

- Site selection assistance
- Regulatory guidance
- PPP and concession advisory support
- Stakeholder coordination
- Internal project preparation and pipeline support
- Regulatory sandbox facilitation
- Development Finance Institution (DFI) Engagement

3.4.4 National Incentives Accessible in the Western Cape Via the Department of Trade, Industry and Competition (DTIC)

- Indirect DTIC Alignment (Not Incentive-Based) [around inclusive economic participation, formalisation of informal sectors, SMME participation through procurement and concessions]
- Technology and Innovation Support
- ational rail reform and open-access policy enablement

3.4.5 Investment Summits: Hosted by the Premier to connect investors with opportunities and funding partners

4. Financial requirements & Funding strategies

4.1 Project Guestimate

Estimated Cost	R 2.1M

5. Delivery Mechanism & procurement strategy

5.1 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	

5.2 Current Planning Phase