



Prefeasibility Executive Summary Report

1. Project Details

Project Name	Karwyderskraal Waste Facility
Location	Overberg
Sector	Social
Department	Department of Environmental Affairs and Development Planning
Project Owner	Richard Bosman
Project Manager	Richard Bosman

1.1 Project Scope

This project proposes the next phase of development of the existing Karwyderskraal Landfill Facility viz.:

- . Construction of the next disposal cell (Cell 5A);
- . Construction of a new Organic Waste Diversion Plant;
- . Extension of the composting facility; and
- . Extension of Entrance Road.

1.2 Justification

Background and Justification

The Karwyderskraal Regional Landfill Facility is a **Class B regional waste disposal site** owned and operated by the **Overberg District Municipality (ODM)**. It has served the waste disposal needs of Overstrand, Theewaterskloof and Cape Agulhas Municipalities since **2002** and forms a critical component of the district's solid waste management system. The facility's permitting history reflects compliant, long-term operation under evolving environmental legislation, with its initial permit issued in **2000**, amended in **2002**, **2005** and most recently **2018** to align with the National Environmental Management: Waste Act norms and standards.

1. Background

1.1 Regional Importance of the Facility

Karwyderskraal is the **only regional landfill** serving three municipalities, with waste transfer stations in place to support regional operations. The landfill diverts a significant portion of organics through composting but still receives over **53,000 tonnes of general waste annually**, with increasing trends (12.3% year-on-year as of 2024).

1.2 Historical Development and Capacity Status

Four disposal cells (Cells 1-4) have been constructed and filled progressively since operations began:

- Cell 1 (2002-2005)
- Cell 2 (2005-2011)

- **Cell 3 (2015-2019)**
- **Cell 4 (2019-present)** with remaining airspace **178,620 m3** (Oct 2024 survey) and projected to reach capacity by **Nov 2026** at a 3% growth rate.

Failure to commission **Cell 5A by October 2026** will result in complete landfill closure for waste acceptance, creating an urgent infrastructure requirement for uninterrupted service delivery across the district.

1.3 Strategic and Legislative Context

Under the Municipal Structures Act, district municipalities must operate regional waste disposal sites serving multiple local municipalities, regulate disposal activities, and ensure compliance with environmental standards. The IDP for 2025/26 identifies **solid waste management and regional infrastructure** as a key district responsibility and strategic priority, emphasising environmental sustainability and service continuity for the Overberg region.

In addition, the Waste Licence conditions require the ODM to divert **100% of organic waste by 2027**, necessitating the planned **Organic Waste Diversion Plant** and expansion of the composting site that form integral components of the Cell 5 development package.

2. Justification for Cell 5A Development

2.1 Impending Airspace Shortage and Service Continuity Risks

Cell 4 will reach capacity by **late 2026**, and without construction of Cell 5A, there will be **no legal disposal airspace** for the district. Overfilling is prohibited by licence conditions, making new cell development a regulatory and operational imperative rather than a discretionary project.

2.2 Regional Demand and Growing Waste Volumes

Three local municipalities currently depend on Karwyderskraal, with Cape Agulhas recently added through a 2024 SLA. Waste volumes are increasing due to both population growth and the closure of smaller, non-compliant local landfills, as highlighted in the IDP's environmental and infrastructure assessments.

2.3 Environmental Compliance and Risk Mitigation

The design of Cell 5 complies with the Class B liner standards of the 2013 Norms & Standards, incorporating:

- Composite liners
- HDPE geomembranes
- Leachate drainage systems
- Groundwater and stormwater protection measures

These are required to prevent contamination of sensitive downstream ecosystems such as the Botrivier Lagoon, as confirmed by the geotechnical, geohydrological and water quality monitoring assessments.

Long-term monitoring shows **no significant deterioration** in groundwater quality since 2002, and the continued protection of this aquifer requires uninterrupted, engineered containment capacity for future waste streams.

2.4 Alignment with Strategic Planning (IDP, WCIF2050, G4J)

The project supports:

- **District IDP 2025/26** priorities on waste management, environmental resilience and infrastructure development.
- **WCIF 2050** principles of sustainable infrastructure, climate resilience and integrated regional systems.
- Provincial **Growth for Jobs (G4J)** strategy through green economy transitions (organic waste diversion, engineered regional waste capacity).

2.5 Economic and Operational Justification

Cell 5 provides **1.5 million m3** of airspace, securing 14-15 years of regional disposal capacity based on updated master planning, population growth and increasing regional waste generation.

The regional shared-services model is cost-effective, reduces duplication of infrastructure, and ensures stable revenue streams through SLAs. The landfill's strong audit performance (98.97% compliance in 2024) further supports continued investment in well-managed waste infrastructure.

2.6 Consequences of Not Proceeding

If Cell 5A is not constructed:

- ODM will breach waste licence conditions.
- Municipalities will have **no compliant regional landfill**, causing operational disruption and environmental violations.
- Waste may need emergency diversion to distant landfills at significant financial and environmental cost.
- Non-compliance with the Waste Act, Municipal Structures Act and IDP obligations becomes unavoidable.

This constitutes a critical municipal service risk.

Conclusion

The development of **Cell 5A at Karwyderskraal** is **urgently required** to ensure regional waste disposal capacity, maintain environmental protection, comply with statutory obligations, and support sustainable development across the Overberg District. The need is well-documented in engineering reports, environmental assessments, and strategic district planning instruments, with a hard deadline of **October 2026** for commissioning to avoid service disruption.

1.3 Sector Specific Analysis

• Waste Management and Environmental Infrastructure Sector Sector Mandate

The Waste Management sector ensures:

- Safe disposal of general waste at licensed facilities.
- Protection of natural resources (surface water, groundwater, ecosystems).
- Implementation of the waste hierarchy: **avoid ? reduce ? reuse ? recycle ? recover ? dispose.**

Alignment with national, provincial, and municipal environmental objectives.

• Drivers of Demand

Sector Trends and Drivers

2.1 Increasing Waste Generation and Urban Growth

Waste volumes in the Overberg are rising due to:

- Population growth (359 446 residents in 2022 census, exceeding MERO projections).
- Urban expansion in Overstrand, Theewaterskloof, and Cape Agulhas.
- Pressure on smaller municipal landfills nearing closure.

Evidence:

Waste volumes at Karwyderskraal increased by **12.3%** between 2023 and 2024.

2.2 Transition Toward Organic Waste Diversion

National and provincial policy requires:

- **100% diversion of organic waste from landfill by 2027.**
- Development of mechanical separation, composting, and alternative treatment infrastructure.

Evidence:

ODM currently achieves **±49% organic diversion** and must intensify efforts by developing the Organic Waste Diversion Plant.

2.3 Strengthening Environmental Safeguards

Environmental governance requires:

- Composite liners, leachate capture, and stormwater controls.
- Groundwater and surface water monitoring.

- Gas emissions tracking.

Evidence:

20 years of monitoring show **no significant deterioration** in groundwater quality at Karwyderskraal.

2.4 Infrastructure Aging and Capacity Limits

Older municipal landfill sites face:

- Non-compliance issues.
- Reduced capacity due to age and insufficient engineering.
- High rehabilitation and closure liabilities.

Evidence:

Karwyderskraal is the only compliant, permitted regional site available to absorb waste growth.

- **Risks and Challenges**

Sector Challenges

3.1 Imminent Loss of Disposal Capacity

Cell 4 will reach capacity by **November 2026**, threatening:

- Waste service interruption.
- Non-compliance with licence conditions.
- Need for emergency waste transfer to distant landfills.

Evidence:

Prospectus warns that **Karwyderskraal would close for waste acceptance** without Cell 5A readiness.

3.2 Financial Constraints Across Municipalities

Smaller municipalities have limited capital to develop their own engineered landfills, increasing reliance on shared infrastructure.

Evidence:

Prospectus notes that ODM must secure loans and tariff structures to fund capital works.

- Class B engineered cells.
- Leachate and stormwater improvements.
- Independent external audits.

Evidence:

Karwyderskraal achieved **98.97% compliance** in its latest audit, requiring continued investment.

3.4 Climate Vulnerabilities

Flooding, extreme rainfall, and increased organic waste decomposition can elevate:

- Leachate generation.
- Erosion risk.
- Greenhouse gas emissions.

Evidence:

IDP emphasises climate resilience as a key component of infrastructure planning.

- **Sector Opportunities**

Sector Opportunities

4.1 Regional Integration and Economies of Scale

Karwyderskraal serves three municipalities under SLAs, enabling:

- Affordability through shared fixed costs.
- Consolidated waste processing and diversion programmes.
- Reduced duplication of infrastructure.

Evidence:

Prospectus highlights shared infrastructure efficiencies and the new SLA with Cape Agulhas.

4.2 Green Economy and Job Creation

Waste diversion, composting, and infrastructure development generate local jobs and emerging-sector opportunities:

- Compost production.
- Waste sorting services.
- Construction and engineering employment.

Evidence:

Prospectus emphasises local labour uptake during construction.

4.3 Climate-Resilient Infrastructure

Engineered stormwater channels, composite liners, and monitoring networks reduce climate-related risks.

Evidence:

Design Report details engineered solutions to protect surface and groundwater.

4.4 Strengthening District Environmental Governance

Consistent monitoring, compliance reporting, and community engagement build public trust.

Evidence:

IDP and Prospectus outline mechanisms for public participation and reporting.

1.4 Market Size And Demand Analysis

1.4.1 Total Addressable Market (TAM)

1.4.2 Served Available Market (SAM)

1.4.3 Demand Forecasting

2. Project Status & Implementation

2.1 Regulatory & Environmental Approvals

2.1.1 National Level

- Department of Forestry, Fisheries and the Environment (DFFE): Responsible for environmental management, conservation, and protection in South Africa
- South African National Biodiversity Institute (SANBI): Plays a leading role in biodiversity management and research
- Environmental Management Inspectors (EMIs): Responsible for compliance and enforcement of environmental regulations
- National Environmental Management Act (NEMA): Governs environmental management and authorization processes, including Environmental Authorizations (EAs)
- Environmental Management Frameworks (EMFs): Strategic planning tools for land-use and environmental management decisions

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

- Environmental Assessment Practitioners Association of South Africa (EAPASA): Voluntary certification body for Environmental Assessment Practitioners
- Councils for the Built Environment Professions (CBEP): Regulates professions involved in the built environment
- Wildlife and Environment Society of South Africa (WESSA): Non-profit organization involved in environmental conservation and education

2.2 Identify Key Stakeholders

2.2.1 Government

- Department Of Infrastructure
- Provincial Treasury
- Local Government
- Department of Environmental Affairs and Development Planning

2.2.2 State-Owned Entities

2.2.3 Private Sector

- Construction Companies
- Engineering Firms
- 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 Procurement and Supply Chain Management

- Preferential Procurement Policy Framework Act (PPPFA)
- Western Cape Procurement Regulations
- Compliance with tender procedures and transparency requirements
- Competition Act
- Environmental Feasibility

3.1.2 Environmental and Land Use Planning

- Environmental Impact Assessment (EIA)

3.1.3 Public Finance and Governance

- Public Finance Management Act (PFMA)
- Provincial Treasury Instructions and Budget Guidelines
- National Treasury PPP Framework & Practice Notes

3.1.4 Environmental Compliance

- Requires Environmental Impact Assessments (EIAs) for certain developments
- Must comply with waste management and biodiversity regulations

3.2 Governance policies

- Relevant Integrated Development Plans (IDPs)
- Budget Facility for Infrastructure (BFI)
- Western Cape Infrastructure Framework 2050 (WCIF 2050); Western Cape Infrastructure Strategy (WCIS)
- National Development Plan (NDP)
- Strategic Infrastructure Projects (SIPs)
- WCIF 2050

- Municipal Planning By-Laws
- National Environmental Management Act (NEMA)
- Environmental Impact Assessment (EIA) Regulations
- National Biodiversity Offset Guideline (2023)
- Financial Mechanisms
- Stakeholder Engagement

3.3. Investment Needs

3.3.1 Green Economy

- Waste-to-energy and recycling initiatives.

3.4 Policy Incentives

3.4.1 Sector-Focused Incentives

- Green Economy: Incentives for renewable energy, water efficiency, and waste-to-energy projects.

3.4.2 Investment Ecosystem Support

- Municipal Investment Readiness Programme: Helps municipalities prepare for and attract investment.
- Western Cape Infrastructure Pipeline / DOI support
- Provincial Treasury PPP and project preparation support
- WCIF 2050 Panoptic Evaluation framework

4. Financial requirements & Funding strategies

4.1 Project Guestimate

Estimated Cost	R 80.195M
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5. Delivery Mechanism & procurement strategy

5.1 WCG Sector Priorities

Outcomes	Social	Energy & Water	Economic	Technology	Ecological
Investment in social infrastructure improves access to health, education, social development, and recreation opportunities	Long Term 15-30 YRS				

5.2 Current Planning Phase