



Executive Summary Report

1. Project Description & Strategic Case

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

- Municipalities
- Municipal Planning, Engineering, Transport, and Environmental Units

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

3.3.1 Sector-Focused Incentives

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

3.3.2 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 Cost-Effectiveness Analysis (CEA)

4.2 Cost-Benefit Analysis (CBA)

4.3 Risk Evaluation

Risk Category	Likelihood	Impact Severity	Risk Score	Timeframe
Technical	2	5	10	Construction
Technical	3	5	15	Construction
Financial	3	3	9	Operation
Environmental	4	3	12	Operation
Technical	3	3	9	Operation
Environmental	4	4	16	Planning

4.4 Economic Multipliers

4.5 Macro-Economic Benefits

5. Financial requirements & Funding strategies

5.1 Project Guestimate

Estimated Cost	R 80.195M
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5.2 Total Project cost breakdown

5.2.1 Capital Expenditure (CAPEX)

Description	Estimated Cost (ZAR)	Notes
Land Acquisition & Site Prep	R 0	
Design & Engineering	R 0	
Construction & Civil Works	R 0	
Equipment & Materials	R 0	
Utility Connections	R 0	
Contingency	R 0	

5.2.2 Development Costs

Description	Estimated Cost (ZAR)	Notes
Feasibility Studies	R 0	
Legal & Regulatory Compliance	R 0	
Stakeholder Engagement	R 0	
Project Management	R 0	

5.2.3 Operational Expenditure (OPEX)

Description	Estimated Cost (ZAR)	Notes
Staffing & Operations	R 0	
Maintenance & Repairs	R 0	
Utilities & Consumables	R 0	
Insurance & Monitoring	R 0	

5.2.4 Financing Costs

Description	Estimated Cost (ZAR)	Notes
Interest During Construction	R 0	
Financial Fees	R 0	

5.2.5 Lifecycle & Decommissioning

Description	Estimated Cost (ZAR)	Notes
Asset Replacement	R 0	
Decommissioning	R 0	

5.2.6 Inflation & Escalation

Description	Estimated Cost (ZAR)	Notes
Adjustments based on Treasury guidelines	R 0	

5.3 Funding sources

[Funding Strategy Guide for Infrastructure Projects](#)

5.4 Revenue Model

Revenue Model Category	Description	Specify
Traditional Municipal Revenue Models	Conventional sources of municipal income including service charges and government transfers.	Municipal Infrastructure Grant (MIG)

5.4 Innovative financing mechanisms

[Innovative Financing Mechanisms for Infrastructure Projects](#)

6. Project feasibility, approvals & infrastructure planning

6.1 Technical Feasibility

1) Project Feasibility

1.1 Technical Feasibility (Feasible, with defined safeguards)

- **Design standard & scope:** Cell?5 is engineered as a **Class?B** facility in line with the 2013 National Norms & Standards, with staged construction (**5A ? 5B**) to match demand and budget. The design includes composite liner (1.5?mm HDPE mono?textured), **4×150?mm compacted clay layers**,

geotextiles, 38mm stone leachate drainage, under-drain leakage detection, clean/contaminated stormwater systems, and stability specifications for **global** and **veneer reinforcement** (including a 60 kN/m grid on long slopes). FoS targets are met for all critical interfaces and sections (Morgenstern-Price), and no global or layerwork stability issues are foreseen.

- **Hydrology & geohydrology:** The site's aquifer potential is poor, groundwater quality is historically unsuitable for domestic/agricultural use, and travel time to the Bot River lagoon is very long; ongoing **bi-annual groundwater/surface water monitoring** shows **no significant deterioration trends** (noting expected high values in leachate and contaminated stormwater points).
- **Airspace need:** External audit confirms current **Cell 4** remaining airspace and a **full by ~Nov 2026** projection, reinforcing the schedule for Cell 5 availability by **end 2026**.
- **Quantities & constructability:** Defined bill of quantities (earthworks 395,000 m³; 93,000 m² HDPE; 165,000 m² geotextile; 14,000 m³ stone; pipes, sumps, channels) and a full CQA/CQC specification set (SANS, GRI) enable tendering and QA oversight.

1.2 Environmental & Social Feasibility (Feasible, compliant)

- **Licence & compliance:** The facility operates at **~98.97% compliance** (Green status) across administration, operations, and monitoring; annual external audits and quarterly internal audits are established routines.
- **Diversion & organics:** Composting and organic waste diversion are active (±14,879 t diverted in the last year); ensure annual update and submission of the **Organic Waste Diversion Plan** to close the partial compliance finding.
- **Community oversight:** The Monitoring Committee (residents & authorities) is functioning; minutes and audit reports are shared per permit, and virtual meetings are accepted.
- **Alignment to IDP:** The IDP 2025/26 embeds climate resilience, waste management as a district function, and infrastructure planning; Karwyderskraal's long-term master plan to **~2076** is noted, including airspace governance and financial provisioning.

1.3 Financial Feasibility (Feasible, with staged funding)

- **MTREF context:** ODM's budget shows a modest surplus and substantial operational transfers; waste management is a defined revenue line, with tariff reviews and ring-fenced closure funding already practiced.
- **Staging & affordability:** Splitting Cell 5 into **5A (±42,000 m²)** and **5B** reduces upfront capital exposure and aligns commissioning with capacity targets and revenues retained from regional disposal (vs external haulage).
- **Cost control levers:** CQA/CQC embedded in specs, strict procurement standards (SANS/GRI), and annual tariff recalculation for the closure fund mitigate overruns and long-term liabilities.

2) Approvals Roadmap (Who signs what, and when)

Goal: Achieve design approval, maintain licence compliance, and ensure transparent, timely reporting.

2.1 Statutory & Licence Compliance

- **Waste Management Licence conditions:** Continue full compliance across operations, monitoring, auditing, and committee engagement; ensure quarterly internal audits and annual external audit submission to the **Director** and Monitoring Committee within stipulated timeframes.
- **Organic Waste Diversion Plan:** Submit **annually** with targets and progress; the audit flagged the need to restore the annual update cadence.
- **IPWIS reporting**:** Maintain monthly submissions for waste volumes/types per licence and departmental

requirements.

2.2 Design Approval & Technical Clearances

- **DWS Design Approval:** The design report is prepared for submission to the Department of Water and Sanitation and signed off by registered professionals; approval is required before construction of further cells per licence Condition 4.3.
- **CQA/CQC documentation:** Provide third-party conformance tests (geomembrane & geotextiles), interface shear results, subgrade acceptance certificates, and anchor trench details per PSX specifications before installation; maintain daily QA logs and issue acceptance certificates post-cover.

2.3 Governance & IDP Linkages

- **IDP/MTREF alignment:** Table the project phases and budget in the annual IDP review cycle, aligning with ODM Strategic Goals, climate resilience, and the solid waste function.
- **Monitoring Committee:** Schedule the post-audit meeting (3 months after external audit finalisation) and circulate minutes within 30 days.

3) Infrastructure Planning (How we plan, procure, build, and commission)

3.1 Programme & Timeline (indicative, tied to licence and audit)

- **Q1–Q2 2026:**
 - Finalise **DWS approval**; conclude detailed design and tender documentation (PSX specs).
 - Update **Organic Waste Diversion Plan** and publish 3-year ramp.
- **Q3 2026:**
 - Award contractor(s); mobilise CQA team; commence **Cell 5A** earthworks and layerworks following winter window (as per design report intent).
- **Q4 2026:**
 - Complete liner system and appurtenances; install leachate pumps/sumps; tie stormwater channels into existing network; commission **Cell 5A**.
- **2027–2028:**
 - Monitor operations, leachate volumes, stormwater performance, and diversion %; proceed to **Cell 5B** when capacity triggers and budget allow; maintain annual audits and IDP reporting.

3.2 Procurement & Contracts (risk-weighted)

- **Two-package strategy:**
 1. **Bulk earthworks & civil** (stormwater channels, gabions, trenches, pumps/sumps).
 2. **Geosynthetics supply & installation** (HDPE liner, geotextiles, grids) with stringent **installer qualifications** (Master Seamer exp., panel/seam layout control, destructive/non-destructive testing).

Quality & measurement: Payment by $\text{m}^2/\text{m}^3/\text{m}$ for supply/installation per PSX; testing costs embedded; no extras for QA essentials.

3.3 Operations Integration

- **Leachate & stormwater:** Maintain redundant leachate drain lines, pump setpoints to avoid **head build-up** on the liner, and concrete-lined stormwater channels sized for **1:50, 24-hr** events; tanker fallback to Hermanus WWTW retained.

- **Monitoring cadence:** Bi-annual groundwater/surface water & gas monitoring; annual airspace survey; monthly IPWIS; quarterly internal audits; annual external audit.
- **Diversion & composting:** Integrate diversion targets and contamination management into SDBIP/KPIs; use the diversion plan to stretch airspace and reduce OPEX/CO₂e.

6.2 Master plan integration

6.3 Alternative Evaluation

6.4 Infrastructure Planning Prioritization

7. Delivery Mechanism & procurement strategy

7.1 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				

7.2 Community Participation

7.3 Procurement methods

- **Procurement Strategy**

Procurement Strategy

Two-Package Tender Model

- **Package 1: Civil Works & Earthworks**
 - Scope: Excavation, shaping, stormwater channels, gabion seepage curtain, leachate sump installation.
 - Contract Type: **Unit Rate Contract** (m³/m² basis) with clear BOQ and escalation clauses.
- **Package 2: Geosynthetics Supply & Installation**
 - Scope: HDPE liner (1.5?mm mono-textured), geotextiles (GT12/GT13), reinforcing grids, anchor trenches.
 - Requirements:
 - Installer qualifications (Master Seamer certification).
 - Mandatory destructive and non-destructive seam testing.
 - Compliance with **SANS 1526**, **GRI-GM13**, and PSX specifications.
- **QA/QC Contract**
 - Independent oversight for conformance testing, permeability checks, and daily logs.

- **Bidding Process**

Governance & Transparency

- Align procurement with **MFMA** and **ODM Supply Chain Policy**.
- Publish tender notices and evaluation criteria on municipal platforms.
- Include **Monitoring Committee** in oversight of award and progress reporting.

• **Supplier Selection**

Risk Management in Procurement

- **Prequalification:**
 - Require proven landfill liner experience and ISO-certified QA systems.
- **Performance Bonds & Retentions:**
 - 10% retention until successful commissioning and audit clearance.
- **Contingency Planning:**
 - Include escalation clauses for geosynthetics price volatility.
 - Wet-season risk mitigation (pump redundancy, tanker fallback).

7.4 Risk sharing mechanisms

Risk Sharing Strategy for the Karwyderskraal Regional Landfill Facility

A risk-sharing strategy allocates responsibilities, liabilities, and mitigation actions among the **Overberg District Municipality (ODM)**, **operation and maintenance contractors**, **design engineers**, **regulators (DEADP/DWS)**, and **participating municipalities** to minimise financial, operational, environmental, and compliance risks.

This strategy is based on the following identified risks:

- Leachate generation and management risks
- Stormwater and contaminated runoff risks
- Airspace consumption and waste-volume uncertainty risks.pdf
- Liner integrity and seepage/leakage risks (Cell 5)
- Compliance and monitoring risks from the 2024 external audit [\[External Audit Nov 2024 | PDF\]](#) [\[Master Plan Report \(Final\) | PDF\]](#) [\[Karwyderskraal DWS Final | PDF\]](#)

1. Strategic Risk Categories & Allocation

1.1 Environmental Protection Risks

Primary risks:

- Leachate overflow or tank failure
- Liner leakage and groundwater contamination
- Contaminated stormwater discharge
- Gas migration
- Uncontrolled waste fires

Risk Ownership:

Risk	Primary Holder	Shared With	Allocation Rationale
Leachate generation, pumping & disposal	O&M Contractor	ODM	Contractor manages pumps and tanks; ODM ensures infrastructure and compliance.

Risk	Primary Holder	Shared With	Allocation Rationale
Liner leakage / seepage	ODM (as permit holder)	Design engineers (professional indemnity), Contractor (CQA)	ODM retains regulatory responsibility; engineers/contractors share design- and construction-related liability.
Contaminated stormwater	ODM	Contractor	Channels/dams are municipal assets; contractor maintains operational compliance.
Groundwater quality exceedances	ODM	DWS/DEA	ODM monitors; DWS prescribes corrective action.
Gas migration	ODM	Contractor	Annual monitoring by ODM; O&M ensures daily operations limiting gas build-up.

2. Financial Risk Sharing

2.1 Capital Development Risks (Cell 5 and future cells)

Risks: cost overruns, delays, material failure, insufficient clay, design non-compliance.

Allocation:

- **ODM:** budget approval, procurement, permitting, unforeseen geological conditions.
- **Consulting Engineers (JPCE):** design accuracy, compliance with Norms & Standards, stability modelling, quantities estimation.
- **Contractor:** construction quality, CQA/CQC compliance, schedule delivery (weather exceptions).

Risk Sharing Mechanisms:

- Penalties for delays not due to weather or force majeure
- Professional indemnity for design defects
- Performance bonds (10-20%)
- Provisional sums for material variability (e.g., clay permeability variations).

2.2 Operational Cost Risks

Key uncertainties:

- Variable waste volumes from external municipalities (TWK, CAM, SM)
- Airspace consumption fluctuations.
- Fuel increases and mechanical breakdown.
- Organic waste diversion impacts (2027 ban).

Risk Sharing:

- **ODM:** Sets tariffs, absorbs revenue fluctuations, adjusts long-term cell planning.
- **Participating Municipalities:** Pay per-ton disposal plus rehabilitation levy.
- **Contractor:** Fixed operational cost with CPI adjustments; major breakdowns excluded unless due to negligence.

3. Regulatory & Compliance Risk Sharing

3.1 Waste Licence Compliance

ODM legally responsible for:

- Reporting (IPWIS, groundwater, gas, audits).
- Environmental protection
- Permit conditions adherence

Contractor shares risk by:

- Daily operational compliance (cover, compaction, waste acceptance clause 2.1, 2.3).
- Proper stormwater controls and record-keeping
- Implementing the Organic Waste Diversion Plan

Risk Sharing Tools:

- KPI-based deductions
 - Non-compliance penalties
 - Mandatory corrective-action plans
-

4. Technical & Infrastructure Risk Sharing

4.1 Liner Integrity (Cell 5)

Cell 5 includes high-spec HDPE liner, leakage detection, clay layers, and reinforced slopes.

Risks:

- Damage during installation
- Wrinkling and long-term leakage
- Clay permeability variability

Allocation:

- **Contractor:** installation damage, CQA errors, liner handling.
- **Engineer:** design assumptions, stability modelling, leakage estimation.
- **ODM:** long-term performance, operation-induced damage.

Mitigation:

- Warranty on geomembrane materials
 - Independent CQA oversight
 - 12-month defects liability
 - Periodic leakage monitoring
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5. Service-Delivery & Capacity Risks

5.1 Waste Volume Changes

Incoming waste from new transfer stations (Caledon, Riviersonderend), Swellendam, Cape Agulhas, and Gansbaai (2034).

Risk: cells fill sooner than expected.

Allocation:

- **ODM:** adjust master plan, expand infrastructure.
 - **Participating municipalities:** provide accurate projections; pay surcharges for significant deviations.
 - **Contractor:** none (unless negligently compacting waste).
-

6. Emergency & Incident Risk Sharing

Incidents:

- Fire
- Major leachate spill
- Stormwater overflow
- Hazardous waste illegally received
- Environmental non-compliance

Responsibilities:

- **Contractor:** first response, containment, reporting within 24 hours.
- **ODM:** regulatory reporting, long-term remediation costs if not caused by contractor negligence.

- **Regulators:** oversight, directives, enforcement.
-

7. Long-Term Closure & Rehabilitation Risks

ODM is solely responsible for:

- Rehabilitation funding (ring-fenced account)
- 30-year post-closure groundwater and gas monitoring

Contractor responsibilities end after defects-liability period unless negligence is proven.

8. Formal Risk Sharing Instruments

8.1 Contracts

- Performance-based operational contracts
- MEIBC/Construction guarantees for major works
- Insurance: public liability, pollution liability, plant & equipment

8.2 Financial Instruments

- Rehabilitation levy per ton
- Reserve fund for cell development
- Contingency reserves for design changes

8.3 Governance Instruments

- Monitoring Committee (multi-stakeholder) functioning annually
- Quarterly internal audits
- Annual external audits by JPCE

8. Special (eg. gender) procurement actions and social impact

8.1 Social Benefits

8.1.1 Inclusive Economic Development

- Encourages job creation through public procurement and infrastructure projects
- Supports SMMEs, women- and youth-owned enterprises

8.1.2 Public Participation and Equity

- Ensures community involvement in planning and decision-making
- Promotes equitable access to services and opportunities

8.1.3 Expanded Public Works Programme (EPWP)

- Provides short-term employment and skills development
- Targets vulnerable groups including youth, women, and persons with disabilities

8.2 Sustainability And Environmental Compliance

8.2.1 Environmental and Land Use Planning

- Environmental Impact Assessment (EIA)