BRIEF

Health Impact assessment of an Engineered landfill, waste-picker integration and material recovery in Nemamwa Growth Point, Masvingo Rural District Council, Zimbabwe[1]

October 2026

Key Messages

Health Impact Assessment (HIA) is a tool using internationally recognised methods to assess health impacts of and recommend improvements to economic activities and policies for sustainable development. This HIA, implemented during the 2026 Regional HIA training, assessed a proposed upgrading of an existing open dumpsite at Nemamwa Growth Point, Masvingo district, into an engineered landfill incorporating waste-picker formalisation and material recovery/recycling facilities. The proposal is at the pre-feasibility stage, providing an important opportunity to integrate health protection measures into project design before implementation. The HIA The study focused on three elements:



Project locality at Nemamwa Growth Point. Source: Google earth 2026

1. Engineered landfill design and operation.
2. Waste management and leachate/emissions control.
3. Waste-picker formalisation and material recovery processes.

While the proposed landfill has the potential to generate positive health and environmental benefits, the HIA identified four prioritised health impacts that need active management:

a. Air pollution and the respiratory ill health from open burning/emissions and construction dust;
b. Groundwater/leachate contamination and associated risk of waterborne disease;
c. Occupational injuries and infection arising from dust, ergonomic and heat-related factors among waste pickers and material-recovery workers; and
d. Livelihood, income, stigma, social-protection determinants affecting mental-wellbeing

The HIA recommends that the Masvingo Rural District Council (RDC), EMA and MoHCC:

- Supress dust from vehicle movement and prohibit open burning of waste at the dumpsite.
- Integrate an engineered liner, leachate collection and appropriately designed treatment/evaporation system in the landfill, with groundwater monitoring.
- Formalise existing waste pickers in an inclusive registration/cooperative system, with PPE, WASH facilities, training, safe sorting areas, and access to health services.

The policy context

Nemamwa Growth Point is approximately 25 km from Masvingo City. The current waste disposal area operates as an open dumpsite and has been associated with uncontrolled waste burning, leachate generation, offensive odours, disease vectors, occupational hazards and public complaints. This HIA, undertaken in accordance with Zimbabwe's Public Health Act [Chapter 15:17] and the Environmental Management Act and regulations assessed a proposal to upgrade this open dumpsite into an engineered landfill incorporating waste-picker formalisation and material recovery/recycling facilities. The principal audiences for the HIA are Masvingo RDC, EMA, MoHCC, Zimbabwe National Water Authority (ZINWA), and waste-picker representatives.


Existing dumpsite conditions considered in the screening and scoping. Source: project team2026

[1] This policy brief was produced by Bhekimpilo Ndlovu, Odette Chipunza, Tapiwa Dube, Daisy Changadeya, Environmental Management Authority (EMA) Zimbabwe and Pamela Dengu and Brenda Jura Ministry of Health and Child Care (MoHCC), Zimbabwe, with mentor review from Dr Rene Loewenson, Training and Research Support Centre (TARSC) in EQUINET, Dr Carlos Dora, Universidad Federal Rio Grande do Sul and Mr Nathan Banda: SATUCC.

The Health Impact Assessment

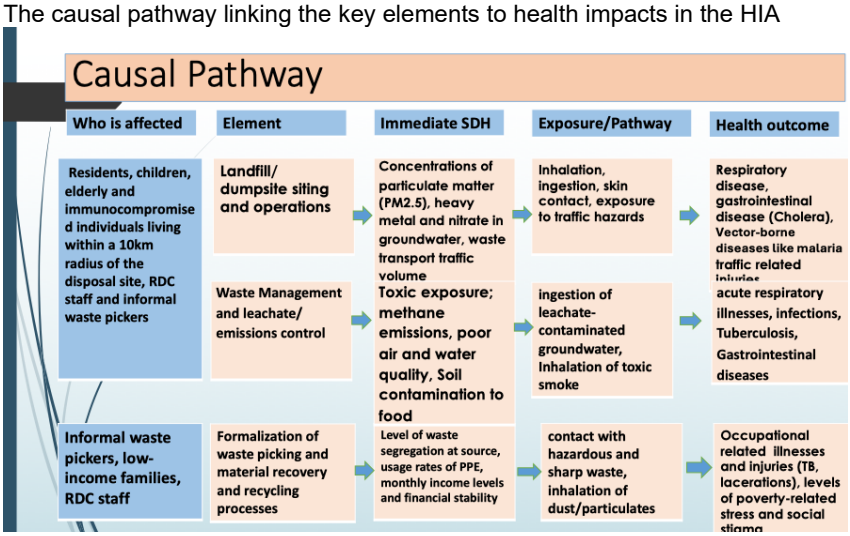
With the landfill not yet in progress, this prospective HIA, implemented between July and October 20206 during the 2026 EQUINET regional training programme on HIA, used an internationally recognised five-stage method: screening to identify feasibility, the causal pathways and focus of the HIA; scoping to identify the sources and forms of evidence; a profiling and assessment stage to identify the direction, magnitude, severity, likelihood and on this basis the significance of the health impacts assessed; and the setting of recommendations for significant impacts; and steps to report and communicate the HIA and propose areas for monitoring impacts and of implementation of the recommendations.

From the screening and scoping stages, the HIA focused on three key elements:

1. Engineered landfill design and operation.
2. Waste management and leachate/emissions control.
3. Waste-picker formalisation and material recovery processes.

A causal pathway shown in the figure below was developed from background information and used as a framework for data collection. The assessment drew evidence from a desk review of the national legislation, official reports, and peer-reviewed publications. While there were gaps in local data, focus group discussions, key Informant Interviews and community-level information addressed data gaps, giving reasonable confidence in the findings.

The causal pathway linking the key elements to health impacts in the HIA



Findings of the HIA on health impacts

The HIA pointed to health impacts for the pathways in each of the four areas assessed, prioritising impacts based on their positive or negative impact on health, magnitude (numbers affected), and severity and likelihood of the impacts to judge their significance. Four areas of impact were prioritised, affecting 7768 people in the ward (4202 females and 3566 males):

Air pollution and respiratory health was assessed as a high-priority impact due to repeated exposure and vulnerable receptor groups including children and workers. The sources include: open waste burning; landfill gas emissions; construction dust and vehicle movements. Projected health impacts are respiratory irritation; asthma exacerbation; chronic respiratory disease and nuisance and reduced quality of life for the community.

Groundwater and leachate contamination was rated as highly significant because contamination may persist for extended periods and affect populations beyond the landfill boundary. Potential contamination of groundwater and surface water may occur through poorly managed leachate. The identified health impacts included: waterborne disease; gastrointestinal illness and long-term environmental contamination.

Occupational injuries and health risks were prioritised, as although the project can substantially improve working conditions compared to existing informal waste picking, robust safety measures are essential. Workers and waste pickers were projected to experience: sharps injuries; dust exposure; ergonomic strain; heat-related illness and machinery and vehicle accidents.

Social well-being, livelihoods and equity was prioritised as the new project can improve: income security; social inclusion; access to social protection and occupational dignity. However, the HIA also identified a potential for exclusion of existing waste pickers if registration and access systems are not managed equitably. Waste pickers represent a highly affected but relatively low-influence stakeholder group.

Overall, the new landfill proposal was noted to have the potential to improve health by replacing open dumping, controlling leachate and emissions, organizing safer work and increasing material recovery. Those benefits are conditional. Without effective design, inclusive implementation and monitoring, the project could maintain environmental exposure, create machinery and traffic hazards, or shift costs onto informal collectors and their households. The highest negative impacts are therefore rated high or medium–high where controls are absent or fail.

The challenges identified did not affect all the residents evenly. The HIA identified several population groups likely to experience disproportionate impacts. These included waste pickers and their households; and landfill and material recovery facility workers. In the community, children, elderly persons and immunocompromised individuals were identified as more vulnerable to impacts, while groundwater-dependent households and residents living nearest to the landfill were noted to be more exposed. With benefits and risks not equally distributed equally, the HIA recommends meaningful participation of affected communities and waste pickers throughout project planning and operation.

Recommendations from the HIA

Based on the findings, various actions are recommended for the impacts identified as most significant due to their direction, magnitude, severity and likelihood and taking the input from local key informants and focus groups into account. These are shown in the Table below.

Recommendations are grouped by priority impact, with responsible actors named by the HIA team.

Recommendations	Responsible and timing
In the engineered landfill design and operation	
Construction and traffic controls- Use wet suppression where dust is generated; cover loads; enforce safe speeds and routes; separate pedestrians; set working hours near sensitive receptors; report incidents and near misses.	Include in tender and contractor plan before mobilization MRDC/contractor (lead); roads/police and nearby institutions
Closure and post-closure- Approve final contour, cap, drainage, gas and leachate management, land-use restrictions, financial provision and long-term inspection/monitoring plan.	Before operation; update during operation and before closure MRDC (lead); EMA; ZINWA; MoHCC
Safe MRF design and fair operation – Design separation of people and vehicles, machine guarding and emergency stops, ventilation/dust control, safe sharps handling, ergonomic workstations and secure storage; establish transparent market and payment arrangements.	Verify design before procurement/commissioning; review quarterly in year 1 MRDC/MRF operator (lead); EMA; labour authority; collector representatives
To improve waste management and leachate/emissions control	
Engineered containment and water protection – Finalize liner, leachate collection/treatment, storm water separation and monitoring-well design. Establish pre-construction baseline and verify performance before commissioning.	Design: before approval; baseline: before works and commissioning MRDC engineer (lead); EMA and ZINWA review; MoHCC advice
Air, gas, fire and odour control- Prohibit open burning; specify waste acceptance, compaction and cover; install appropriate gas controls; maintain fire equipment and drills; log odour and smoke complaints.	Operating procedures approved before commissioning; continuous implementation. MRDC operations (lead); EMA; fire services; MoHCC

Recommendations	Responsible and timing
On waste-picker formalisation and material recovery processes	
Inclusive formalization and livelihood transition- Register and consult existing adult collectors before access changes; agree transparent eligibility, representation, material access/payment, and transition support and grievance procedures. Do not generalise income from the single earlier informant.	Begin before construction; agreement before access rules change MRDC social services (lead); labour/social welfare; collector representatives
Child safeguarding and gender equity- Assess child access and household dependence; prevent hazardous child work; establish referral and family-support links; collect sex- and age-disaggregated participation data; ensure women's representation and safe sanitation.	Safeguarding plan before site access changes; ongoing review MRDC/social welfare (lead); MoHCC; schools/community; collector representatives
Occupational health and safety – Complete task hazard assessments; use engineering and administrative controls; provide induction, hygiene/WASH, incident reporting, first aid and health surveillance. Select gloves, boots, high-visibility clothing, eye/respiratory and other PPE according to task and fit.	Before work starts; refresher training and routine supervision MRDC/contractor or operator (lead); MoHCC; labour authority

The HIA recommends that a monitoring committee convened by MRDC complete a receptor map and baseline programme before construction; publish a contact point and response time for complaints; and share monitoring summaries and corrective actions with affected groups.

Overall, the HIA concludes that replacing the existing open dumpsite with an engineered landfill integrated with waste-picker formalisation and material recovery has substantial potential to improve environmental quality, public health, occupational safety and livelihoods. However, these benefits are conditional upon effective engineering design, regulatory oversight, inclusive stakeholder participation and continuous monitoring. The project should therefore move forward only after implementation of the recommended baseline studies, environmental safeguards, worker protection measures and equity-focused interventions**.**

References

1. Boadu, E.F., Okeke, S.R., Boadi, C., Bonsu, E.O. and Addo, I.Y. (2023). Work-related respiratory health conditions among construction workers: a systematic narrative review. BMJ Open Respiratory Research, 10(1), e001736. https://doi.org/10.1136/bmjresp-2023-001736
2. Government of Zimbabwe (2007). Environmental Management (Effluent and Solid Waste Disposal) Regulations, Statutory Instrument 6 of 2007. Harare: Government of Zimbabwe.
3. Government of Zimbabwe (2018). Public Health Act [Chapter 15:17]. Harare: Government of Zimbabwe.
4. International Labour Organization (2019). The cooperative model for the informal economy: formalization of waste pickers' cooperatives in South Africa and Brazil. Geneva: ILO.
5. International Labour Organization (2025). Policy guidelines for the promotion of decent work in recycling. Geneva: ILO.
6. Kasinja, C. and Tilley, E. (2018). Formalization of informal waste pickers' cooperatives in Blantyre, Malawi: a feasibility assessment. Sustainability, 10(4), 1149. https://doi.org/10.3390/su10041149
7. Key informants 1-3- key informants from EMA, MRDC and informal waste pickers, September 2026
8. Masvingo Rural District Council (2017). Environmental impact assessment material for the proposed Nemamwa disposal project. Unpublished project document reviewed by the HIA team.
9. World Health Organization (2021). WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide. Geneva: WHO.
10. World Health Organization (2022). Guidance on solid waste and health. Geneva: WHO.
11. World Health Organization Regional Office for Europe (2023). Assessing the health impacts of waste management in the context of the circular economy. Copenhagen: WHO Regional Office for Europe.
12. World Health Organization (2025a). Throwing away our health: the impacts of solid waste on human health—evidence, knowledge gaps and health sector responses. Geneva: WHO.
13. World Health Organization (2025b). Open waste burning: sectoral solutions for air pollution and health. Geneva: WHO.