IMPACT ASSESSMENT REGISTER – Tonkmeter Resource Facility, Area E (Basic Assessment)

IMPACT IDENTIFICATION							1. FIRST EVALUATION – WITHOUT MITIGATION / ENHANCEMENT										2. MITIGATION / ENHANCEMENT		3. WITH MITIGATION APPLIED – reversibility, replaceability, degree of mitigation			4. RESIDUAL RATING – informed by step 3										5. OVERALL SIGNIFICANCE	EFFECT		CUMULATIVE	
Impact ID	Project phase	Environmental aspect / receptor	Activity / cause	Nature of impact (what is affected and how)	Status	Type	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Significance score	Significance rating	Mitigation / enhancement measures	EMPr / EA condition reference	Reversibility (with mitigation)	Irreplaceable loss of resources (with mitigation)	Degree impact can be avoided / managed / mitigated	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Residual score	OVERALL SIGNIFICANCE (final)	Change in score (1st – residual)	% change	Cumulative impact considerations	Cumulative significance
VEG-C-01	Construction	Flora / vegetation	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Permanent loss of vegetation and terrestrial habitat within the footprint of the proposed MRF expansion site. The vegetation is completely transformed, dominated by coppiced Eucalyptus camaldulensis and other alien and invasive species, and no longer resembles Endangered Tsakane Clay Grassland; Site Ecological Importance is Very Low (Venter, 2026, pp. 19-21). The site is nevertheless mapped as CBA 1 in Gauteng C-Plan 4.	Negative	Direct	Footprint	1	Long term	4	Low	2	Definite	5	7	35	Medium	Ground-truthing by the terrestrial biodiversity specialist confirmed that the footprint of the proposed MRF expansion is disturbed and unlikely to fulfil CBA function. Confine clearing to this confirmed, demarcated footprint; maintain good vegetation cover in all areas not used for infrastructure; areas outside the footprint are no-go areas (Venter, 2026, pp. 19–23).	EMPr Part B §17	Partly reversible	No irreplaceable loss	Can be partly managed	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	21	60%	Incremental loss of a mapped CBA 1 area within the facility, in addition to the landfill footprint already authorised; the CBA 1 mapping is disputed by the specialist as incorrect for this site.	Low
VEG-C-02	Construction	Flora / vegetation	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Loss of plant species of conservation concern or protected plant species. None were recorded and none are expected; no suitable habitat exists for Khadia beswickii, flagged by the Screening Tool (Venter, 2026, p. 21).	Negative	Direct	Footprint	1	Permanent	5	Low	2	Improbable	1	8	8	Negligible	EAP-proposed precaution (not in specialist report): if any protected or threatened plant is found during clearing, stop work in that area and obtain specialist advice and any GDEnv permit before proceeding.	EMPr Part B §17	Irreversible	No irreplaceable loss	Can be avoided	Footprint	1	Permanent	5	Low	2	Improbable	1	8	8	Negligible	0	0%	None identified.	Negligible
VEG-C-03	Construction	Flora / vegetation	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Habitat fragmentation and reduced ecological connectivity. The site lies inside the operational facility and is already disturbed; the specialist notes it may still provide some habitat for fauna (Venter, 2026, p. 22).	Negative	Indirect	Site	2	Long term	4	Low	2	Possible	2	8	16	Low	Restrict clearing to the demarcated footprint; keep areas outside the footprint vegetated and as no-go areas.	EMPr Part B §17	Partly reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	2	13%	The 2012 study identified the western portion of Area D, not this site, as the important connecting corridor between the Klein Blesbokspruit and Withokspruit (BKS, 2012).	Low
VEG-C-04	Construction	Soils & land capability	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Erosion of cleared and bare soils and sedimentation of downslope areas, including the adjacent pollution control dam, until the MRF surfaces are stabilised (Venter, 2026, p. 23).	Negative	Direct	Site	2	Short to Medium term	2	Low-Medium	4	Likely	3	8	24	Low	Apply erosion and sediment control; install sediment fences around erosion-prone areas; monitor the whole site for erosion and rehabilitate erosion features as soon as possible (Venter, 2026, p. 23).	EMPr Part B §17; §8	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low	2	Possible	2	4	8	Negligible	16	67%	The Area E stormwater management plan (SW-01) does not cover the proposed MRF expansion site; MRF stormwater and sediment control must be added (EAP).	Low
VEG-C-05	Construction	Flora / vegetation	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Establishment and spread of alien and invasive plant species on disturbed soils, and spread of seed off site on vehicles. Six listed invasive species occur on site, including Eucalyptus camaldulensis (Category 1b) and Acacia decurrens (Category 2) (Venter, 2026, pp. 20-21).	Negative	Direct	Site	2	Long term	4	Medium	6	Highly likely	4	12	48	Medium	Compile and implement an alien and invasive species control and monitoring plan; control invasive populations on the landfill site; prevent spread from the site; clear seed from vehicle tyre treads and grills before vehicles leave the site (Venter, 2026, p. 23). Category 2 invasive species (Acacia decurrens) may remain on site only if a permit is obtained (Venter, 2026, p. 23, revised October 2026).	EMPr Part B §17	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short to Medium term	2	Low	2	Possible	2	5	10	Low	38	79%	Alien infestation is already widespread across the facility and surrounding mined land.	Low
VEG-C-06	Construction	Surface water & stormwater	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Pollution of soil and water resources by hydrocarbons (fuel, oil) and litter during clearing and construction (Venter, 2026, p. 23).	Negative	Direct	Site	2	Short to Medium term	2	Low-Medium	4	Likely	3	8	24	Low	Store hydrocarbons only in an approved storage area; vehicles in good condition with no leaks; no refuelling or maintenance in the clearing area; spill kits on site; report and clean up spills immediately; sufficient marked bins; no littering; no use of natural areas as ablutions (Venter, 2026, pp. 22-24).	EMPr Part B §17; §11; §12	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low	2	Possible	2	4	8	Negligible	16	67%	Adds to existing pollution risk at an operating landfill; managed through the facility-wide EMPr.	Low
VEG-C-07	Construction	Flora / vegetation	Clearing of vegetation on the proposed MRF expansion site (east of the pollution control dam, west of the solar PV installation) and construction of the MRF	Removal of listed alien and invasive species (Eucalyptus camaldulensis and other Category 1b/2 species) from the proposed MRF expansion site, which is a legal duty of the landowner under the NEM:BA Alien and Invasive Species Regulations (Venter, 2026, pp. 20, 22).	Positive	Direct	Footprint	1	Long term	4	Low	2	Likely	3	7	21	Low	Enhancement: kill coppicing Eucalyptus stumps to prevent regrowth, and extend alien control under the site-wide control and monitoring plan beyond the MRF footprint.	EMPr Part B §17	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low	2	Highly likely	4	8	32	Medium	-11	-52%	Contributes to reducing invasive species pressure in the area.	Low
VEG-O-01	Operation	Flora / vegetation	Operation of the MRF and maintenance of the cleared area	Re-infestation of disturbed and unpaved areas around the MRF by alien and invasive plants during operation (Venter, 2026, Table 10, operation phase).	Negative	Direct	Site	2	Long term	4	Medium	6	Highly likely	4	12	48	Medium	Implement the alien and invasive species control and monitoring plan for the operational life of the MRF.	EMPr Part B §17	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	34	71%	As VEG-C-05.	Low
VEG-O-02	Operation	Soils & land capability	Operation of the MRF and maintenance of the cleared area	Erosion and sedimentation from runoff off hardened MRF surfaces onto adjacent unpaved areas (Venter, 2026, Table 10, operation phase).	Negative	Direct	Site	2	Long term	4	Low-Medium	4	Likely	3	10	30	Medium	Monitor the site for erosion and rehabilitate erosion features as soon as possible; maintain vegetation cover outside the infrastructure footprint (Venter, 2026, p. 23).	EMPr Part B §17; §8	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	16	53%	The Area E stormwater management plan (SW-01) does not cover the proposed MRF expansion site; runoff from MRF hardstanding must be included in a stormwater plan (EAP).	Low
CC-O-01	Operation	Climate change (GHG & vulnerability)	Disposal of additional waste over the extended operating life created by the Area E height increase (about 39 more years at 7 500 t/month, or 19 more years at 15 000 t/month)	Contribution to climate change from the incremental greenhouse gas emissions of the height increase: 1 211 005 tCO2e (Scenario 1) or 1 091 358 tCO2e (Scenario 2) without mitigation, of which about 99.4% is landfill methane, plus diesel and grid electricity. Adds to global warming and depletes the remaining carbon budget (Brugman, 2026, pp. iv, 39–40).	Negative	Direct	National	5	Permanent	5	Medium-High	8	Definite	5	18	90	Extreme	Landfill gas monitoring (to continue after closure); install landfill gas collection and flaring once gas volumes are sufficient (modelled from about 2030 at 75% collection); optimise collection efficiency; good compaction and daily cover; divert organic waste where practicable; diesel efficiency; less generator use; more solar PV; energy-efficient lighting and cooling; consider credible offsets for residual emissions; annual facility-level GHG inventory (Brugman, 2026, pp. 48–50).	EMPr Part B §6; Part A §8.2	Irreversible	Possible irreplaceable loss	Can be partly managed	National	5	Permanent	5	Medium	6	Definite	5	16	80	Medium	10	11%	Whole-facility emissions with the height increase: 3 279 262 tCO2e (Scenario 1) or 2 687 068 tCO2e (Scenario 2) without mitigation; 849 231 or 710 832 tCO2e with mitigation (Brugman, 2026, p. 39). The adjacent Rietfontein landfill was not quantified; GHGs are globally mixed, so the specialist addresses cumulative effect through the carbon-budget comparison (Brugman, 2026, p. 45).	High
CC-O-02	Operation	Climate change (GHG & vulnerability)	Operation of the facility under a changing climate (physical climate hazards)	Hotter, drier fire weather increases the risk of veld fires spreading onto the site and of surface or subsurface landfill fires. Fires cause uncontrolled emissions and smoke affecting staff and KwaThema, and can damage the liner, cover, leachate and gas infrastructure and baled recyclables. Wildfire hazard rated High (Brugman, 2026, p. 51).	Negative	Indirect	Local	3	Short term	1	Medium-High	8	Likely	3	12	36	Medium	Identify fire-vulnerable areas; maintain firebreaks and vegetation management; maintain fire-fighting equipment and water supplies; emergency response and evacuation procedures; minimise uncontrolled waste fires through compaction and cover; maintain backup power (Brugman, 2026, p. 56).	EMPr Part B §13	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Medium	6	Possible	2	9	18	Low	18	50%	Smoke from any fire adds to a regional air-quality baseline that already exceeds PM standards.	Medium
CC-O-03	Operation	Climate change (GHG & vulnerability)	Operation of the facility under a changing climate (physical climate hazards)	Water scarcity reduces water available for dust suppression and fire-fighting, increasing dust exposure; drought followed by intense rain can crack cover material, increasing fugitive methane and odour. Water scarcity rated High; water depletion in the region is extremely high (Brugman, 2026, p. 52).	Negative	Indirect	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	Water scarcity management plan; increase water storage; reduce use and improve efficiency; secure alternative supply sources; monitor consumption during drought (Brugman, 2026, p. 56).	EMPr Part B §5; §13	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Possible	2	10	20	Low	19	49%	Regional water stress affects all water users in the catchment.	Medium
CC-O-04	Operation	Climate change (GHG & vulnerability)	Operation of the facility under a changing climate (physical climate hazards)	More intense rainfall may overwhelm stormwater drains, increase leachate generation and erode daily and intermediate cover, exposing waste. Urban flood hazard rated Low, but may increase with climate change (Brugman, 2026, p. 55).	Negative	Indirect	Site	2	Short term	1	Medium	6	Possible	2	9	18	Low	Maintain drainage infrastructure; design infrastructure and layout for more intense rainfall; flood emergency and evacuation procedures; backup power (Brugman, 2026, p. 57).	EMPr Part B §8; §13	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low-Medium	4	Improbable	1	6	6	Negligible	12	67%	Checked against SW-01: channels sized for the 1:50-year and storage for the 1:100-year 24-hour storm using historical station statistics, with no allowance for the more intense rainfall projected in the CCIA (DMV Consultants, 2026, pp. 17, 21).	Low
CC-O-05	Operation	Climate change (GHG & vulnerability)	Operation of the facility under a changing climate (physical climate hazards)	Extreme heat causes heat stress for staff at the open face, faster odour generation and vector breeding, more dust, and faster waste decomposition. Extreme heat hazard rated Low (Brugman, 2026, p. 54).	Negative	Indirect	Site	2	Short term	1	Low-Medium	4	Possible	2	7	14	Low	Heat-stress procedures (hydration, shade, avoid hottest hours); equipment rated for higher temperatures; early-warning for heatwaves; efficient cooling of buildings (Brugman, 2026, pp. 56–57).	EMPr Part B §13	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low	2	Improbable	1	5	5	Negligible	9	64%	None identified.	Negligible
CC-PC-01	Post-closure / aftercare	Climate change (GHG & vulnerability)	Decomposition of the larger waste body after waste acceptance ends	Landfill methane continues to be generated for decades after waste acceptance stops. The height increase enlarges the waste body, so post-closure emissions also increase. These emissions were not quantified (Brugman, 2026, pp. 25, 38).	Negative	Direct	National	5	Permanent	5	Medium	6	Definite	5	16	80	High	Continue landfill gas monitoring, collection and flaring after closure; address gas management in the closure and post-closure plan (Brugman, 2026, pp. 38, 49).	EMPr Part B §6; §21; §22	Irreversible	Possible irreplaceable loss	Can be partly managed	National	5	Permanent	5	Low-Medium	4	Definite	5	14	70	Medium to High	10	13%	As CC-O-01.	High
SW-O-01	Operation	Surface water & stormwater	Landfilling in open (uncapped) cells of Area E over the extended operating life, and progressive capping	Contamination of clean stormwater and downstream surface water if the separation of clean and contaminated water fails – berm overtopping, pump failure or storms beyond the design event – so that runoff that has contacted waste leaves the site (DMV Consultants, 2026, pp. 6, 11–16).	Negative	Direct	Local	3	Short to Medium term	2	Medium-High	8	Likely	3	13	39	Medium	Uncontaminated stormwater collects in the undeveloped quarry areas of Area E, kept apart from the operating cell by separation berms, and is sampled before it is pumped to the municipal stormwater system (DMV Consultants, 2026, pp. 12, 20; EA condition 4.10.1(f) as proposed). Implement the stormwater management plan: berms, cut-off drains, temporary channels and storage ponds for each cell phase; clean water pumped to the clean system; contaminated water contained in cells and the contaminated water pond; channels sized for the 1:50-year and storage for the 1:100-year 24-hour storm (DMV Consultants, 2026, pp. 11–24).	EMPr Part B §8	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low-Medium	4	Possible	2	7	14	Low	25	64%	Clean water is discharged to the municipal stormwater system that also serves surrounding land uses.	Low

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Impact ID	Project phase	Environmental aspect / receptor	Activity / cause	Nature of impact (what is affected and how)	Status	Type	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Significance score	Significance rating	Mitigation / enhancement measures	EMPr / EA condition reference	Reversibility (with mitigation)	Irreplaceable loss of resources (with mitigation)	Degree impact can be avoided / managed / mitigated	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Residual score	OVERALL SIGNIFICANCE (final)	Change in score (1st – residual)	% change	Cumulative impact considerations	Cumulative significance
SW-O-02	Operation	Surface water & stormwater	Landfilling in open (uncapped) cells of Area E over the extended operating life, and progressive capping	Rain on open cells becomes leachate. The height increase keeps cells open for longer, so more contaminated water must be stored, pumped and discharged; a 1:50-year storm produces about 3 800 m³ (Cell 1) to 19 080 m³ (Cells 7 & 8) needing drawdown at 15–74 l/s (DMV Consultants, 2026, pp. 23–24).	Negative	Direct	Site	2	Long term	4	Medium	6	Highly likely	4	12	48	Medium	Size pumps for a 72-hour drawdown per cell and upgrade them as cells are added; maintain the contaminated water pond and leachate tank; discharge leachate to sewer only under the municipal permit; cap cells progressively to reduce leachate (DMV Consultants, 2026, pp. 16, 23–24; Peter Legg Consulting, 2026, pp. 29–30, 36–37).	EMPr Part B §8; §9	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Possible	2	10	20	Low	28	58%	Adds to the load on the municipal sewer and wastewater treatment works.	Low
SW-O-03	Operation	Soils & land capability	Landfilling in open (uncapped) cells of Area E over the extended operating life, and progressive capping	Erosion of capped side slopes, drains and chutes and sediment carried to the municipal stormwater system. Design velocities reach about 3.3 m/s in chutes and 2.6–2.7 m/s in collector drains, and some sections need extra erosion protection (DMV Consultants, 2026, pp. 21–22).	Negative	Direct	Site	2	Long term	4	Medium	6	Likely	3	12	36	Medium	Erosion-protected, flexible linings that tolerate settlement; contour drains and lined down-chutes every 100 m; 1 m plateau perimeter berm; vegetated cover; slope adjustment where velocities are high (DMV Consultants, 2026, pp. 7–8, 21–22).	EMPr Part B §8; §21	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	22	61%	None identified.	Negligible
SW-O-04	Operation	Surface water & stormwater	Landfilling in open (uncapped) cells of Area E over the extended operating life, and progressive capping	The site lies in a worked-out quarry with no natural outflow, so stormwater is trapped and can only be removed by pumping or evaporation (DMV Consultants, 2026, p. 12). Pump failure or undersized storage could flood working areas or let clean water become contaminated.	Negative	Direct	Site	2	Short term	1	Medium	6	Likely	3	9	27	Medium	Temporary clean-water storage facilities sized for the 1:100-year storm; pumping to the clean system; berms separating cells (DMV Consultants, 2026, pp. 12–14, 21); standby pumping capacity and pump maintenance (EAP-proposed).	EMPr Part B §8	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low-Medium	4	Possible	2	6	12	Low	15	56%	None identified.	Negligible
SW-O-05	Operation	Surface water & stormwater	Landfilling in open (uncapped) cells of Area E over the extended operating life, and progressive capping	Progressive capping reduces infiltration and leachate; a fully capped facility produces virtually no leachate, and runoff from capped areas can be treated as clean (DMV Consultants, 2026, pp. 6, 16).	Positive	Direct	Site	2	Long term	4	Low-Medium	4	Likely	3	10	30	Medium	Enhancement: cap each section as soon as it reaches final height, and maintain the cap and its drains.	EMPr Part B §8; §21	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Medium	6	Highly likely	4	12	48	Medium	-18	-60%	Reduces long-term load on the sewer and the risk to groundwater.	Low
SW-PC-01	Post-closure / aftercare	Soils & land capability	Runoff from the capped 25 m landform after closure	Erosion of the cap and drains and blockage of chutes after closure, exposing waste and allowing infiltration, if aftercare maintenance stops. Drain linings must tolerate settlement of the waste body (DMV Consultants, 2026, p. 8).	Negative	Direct	Site	2	Long term	4	Medium	6	Likely	3	12	36	Medium	Post-closure inspection and maintenance of the cap, contour drains, chutes and toe drains under the closure plan.	EMPr Part B §22	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	22	61%	None identified.	Negligible
ENG-O-01	Operation	Geology & dolomite stability	Raising the Area E waste body to 25 m above natural ground level (total waste depth about 40 m) and accepting all Type 2 wastes	Slope failure of the waste body or along the liner interface on the 38 m-high internal operating slope (1:2) or the final outer slope (1:3), damaging the liner and exposing waste (Peter Legg Consulting, 2026, pp. 32–36).	Negative	Direct	Local	3	Long term	4	High	10	Possible	2	17	34	Medium	Build to the design slopes (operating 1:2, final 1:3 with benches); keep the leachate head low; review the stability analysis for each new cell using laboratory interface shear test results (Peter Legg Consulting, 2026, pp. 32–36).	EMPr Part B §14; §15	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Medium-High	8	Improbable	1	14	14	Low	20	59%	None identified.	Negligible
ENG-O-02	Operation	Groundwater (geohydrology)	Raising the Area E waste body to 25 m above natural ground level (total waste depth about 40 m) and accepting all Type 2 wastes	Leachate leakage through the liner to soil and groundwater, made more likely by the higher load (about 400 kPa at 40 m of waste) and the longer operating life of Area E (Peter Legg Consulting, 2026, pp. 24–26).	Negative	Direct	Local	3	Permanent	5	Medium-High	8	Possible	2	16	32	Medium	Class B barrier with 1.5 mm HDPE geomembrane, protection geotextile and leachate drainage layer; leachate pumped to keep the head low (design 200 mm); subsoil drainage water quality monitored for leakage; construction quality assurance for each cell (Peter Legg Consulting, 2026, pp. 22–28, 38–39).	EMPr Part B §9; §14; §20	Partly reversible	Possible irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Improbable	1	10	10	Low	22	69%	Groundwater already affected by historical gold tailings; adjacent Rietfontein landfill (Peter Legg Consulting, 2026, pp. 14–15).	Medium
ENG-O-03	Operation	Groundwater (geohydrology)	Raising the Area E waste body to 25 m above natural ground level (total waste depth about 40 m) and accepting all Type 2 wastes	Reduced performance of the geosynthetic clay liner (GCL) that replaces the compacted clay liner in Cell 2 onwards, through cation exchange or chemical attack by wastes high in calcium or magnesium, which become more likely once all Type 2 wastes may be accepted (Peter Legg Consulting, 2026, pp. 23, 26–27).	Negative	Indirect	Site	2	Permanent	5	Medium	6	Possible	2	13	26	Medium	Assess GCL chemical compatibility before use; avoid wastes with significant calcium or magnesium; 150 mm compacted clayey soil under the GCL for support and hydration (Peter Legg Consulting, 2026, pp. 26–27); waste acceptance checks (EMPr).	EMPr Part B §14; waste acceptance procedure	Partly reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Permanent	5	Low-Medium	4	Improbable	1	10	10	Low	16	62%	Linked to the related application to broaden the waste types accepted.	Low
ENG-O-04	Operation	Air quality (dust & odour)	Raising the Area E waste body to 25 m above natural ground level (total waste depth about 40 m) and accepting all Type 2 wastes	Unacceptable odours if industrial Type 2 wastes that are chemically incompatible with decomposing municipal waste are accepted (Peter Legg Consulting, 2026, p. 6).	Negative	Indirect	Local	3	Short term	1	Medium	6	Likely	3	10	30	Medium	Precautionary compatibility checks on industrial Type 2 wastes before acceptance (Peter Legg Consulting, 2026, p. 6).	EMPr waste acceptance procedure	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low-Medium	4	Possible	2	7	14	Low	16	53%	KwaThema residents are already exposed to odour from the adjacent Rietfontein landfill.	Medium
ENG-O-05	Operation	Community health & safety	Raising the Area E waste body to 25 m above natural ground level (total waste depth about 40 m) and accepting all Type 2 wastes	Build-up or migration of landfill gas to working areas or beyond the site, creating fire, explosion and asphyxiation hazards, from a larger and deeper waste body (Peter Legg Consulting, 2026, p. 39).	Negative	Direct	Local	3	Long term	4	Medium-High	8	Possible	2	15	30	Medium	Horizontal gas wells in the first layers, pin-well nests once waste is about 10 m above the liner, a ring main to the gas plant, passive venting under the cap, and regular gas monitoring during operation and after closure (Peter Legg Consulting, 2026, p. 39).	EMPr Part B §6	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Improbable	1	10	10	Low	20	67%	None identified.	Negligible
ViA-O-01	Operation	Visual & sense of place	Progressive raising of Area E to a 25 m-high final landform (reached in about 39 years at 15 000 t/month)	Visual intrusion of the raised landfill on residents of KwaThema and surrounding areas, businesses and motorists (including the N17). The landform is visible from about 26% of the 10 km zone of influence (91% within 2.5 km); excluding areas already affected by the 10 m Rietfontein landfill, the additional visibility is about 7% (11% within 2.5 km). A high landfill does not fit the mining landscape and "will stand out" (van Zyl, 2026, pp. 20, 26).	Negative	Direct	Local	3	Permanent	5	Medium	6	Definite	5	14	70	Medium to High	Green the slopes with indigenous grasses; shape the final landform with curved rather than straight lines where practicable within the approved design; progressive capping and grassing; dust suppression on access roads (van Zyl, 2026, p. 28).	EMPr Part B §21; §5	Partly reversible	No irreplaceable loss	Can be partly managed	Local	3	Permanent	5	Low-Medium	4	Definite	5	12	60	Medium to High	10	14%	Combined landform with the adjacent Rietfontein landfill, authorised to 10 m; the specialist assesses Area E against that baseline (van Zyl, 2026, p. 8).	Medium
ViA-O-02	Operation	Visual & sense of place	Security and operational lighting	Sky glow and glare from site lighting seen by nearby residents and motorists (van Zyl, 2026, pp. 28–29).	Negative	Direct	Local	3	Long term	4	Low-Medium	4	Possible	2	11	22	Low	Shield lights so that no light spills into the night sky; aim main beams at less than 70° towards any observer; use higher mountings with lower beam angles (van Zyl, 2026, pp. 28–29).	EMPr Part B §4	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low	2	Improbable	1	8	8	Negligible	14	64%	Adds to existing urban and industrial lighting.	Negligible
GEO-O-01	Operation	Geology & dolomite stability	Landfilling and storage of liquids (leachate tank, contaminated water pond, ponded stormwater) on dolomite land under a higher waste load	Sinkhole or subsidence formation triggered by concentrated water ingress (leaks, ponding) or by groundwater drawdown, damaging the liner and releasing leachate towards the dolomite aquifer. Inherent Hazard Class 1/2//1, Design Hazard Class 2, Dolomite Area Designation D3 (IntraSolutions, 2026, pp. 1, 25).	Negative	Indirect	Local	3	Permanent	5	High	10	Possible	2	18	36	Medium	Dolomite Risk Management Plan; water precautionary measures certified by the professional team; liquid-retaining structures designed so leaks can be detected and remedied; stormwater diverted away; standard lining system; visual inspections for cracks and ponding; site-specific dolomite groundwater level monitoring (IntraSolutions, 2026, pp. 26–30).	EMPr Part B §10; Part C	Partly reversible	Possible irreplaceable loss	Can be mitigated	Site	2	Permanent	5	Medium-High	8	Improbable	1	15	15	Low	21	58%	None identified.	Negligible
GEO-O-02	Operation	Geology & dolomite stability	Future cell development over the backfilled southern part of Area E	Differential settlement of uncompacted backfill and concentrated infiltration of water to the dolomite aquifer, with potential subsurface erosion, where cells are built over the backfill area (IntraSolutions, 2026, p. 30).	Negative	Direct	Site	2	Long term	4	Medium-High	8	Possible	2	14	28	Medium	Footprint-specific dolomite stability assessment, and a check that cell leaks could not affect dolomite stability, before any cell is approved over backfill (IntraSolutions, 2026, p. 30).	EMPr Part B §15; Part C	Partly reversible	No irreplaceable loss	Can be avoided	Footprint	1	Long term	4	Medium	6	Improbable	1	11	11	Low	17	61%	None identified.	Negligible
AQ-C-01	Construction	Air quality (dust & odour)	Construction of future cells in Area E (earthworks, lining, cover stockpiles)	Fugitive dust from earthworks and exposed ground during the phased construction of each cell; intermittent and short-term, and not modelled (Mafusire, 2026, pp. iv, 121–122).	Negative	Direct	Site	2	Short term	1	Low-Medium	4	Likely	3	7	21	Low	Limit and stage clearing; retain vegetation; avoid earthworks in strong winds; pre-water areas to be disturbed; wind barriers at least 2 m high with porosity of 50% or less where needed (Mafusire, 2026, pp. 173–174).	EMPr Part B §5	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low	2	Possible	2	4	8	Negligible	13	62%	Adds briefly to regional particulate levels that already exceed standards.	Low
AQ-O-01	Operation	Air quality (dust & odour)	Landfill operations in Area E at up to 500 t/day (15 000 t/month) over the extended operating life, with the final landform at 25 m	Dust (dustfall, PM10, PM2.5) from haul roads, tipping, compaction and wind erosion of the workface and the raised landform. Incremental PM10 and PM2.5 at the boundary are below the national standards; maximum cumulative dustfall at the boundary is about 660 mg/m²/day, below the 1 200 non-residential limit but marginally above the 600 residential limit along limited parts of the boundary. Background PM10 and PM2.5 already exceed the standards (Mafusire, 2026, pp. iii–v, 115).	Negative	Direct	Local	3	Long term	4	Medium	6	Highly likely	4	13	52	Medium to High	Water the unpaved disposal route routinely (50% control efficiency assumed in the model); spread, compact and cover waste daily (30% control assumed); dustfall monitoring; complaints register (Mafusire, 2026, pp. 124–125).	EMPr Part B §5	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Likely	3	10	30	Medium	22	42%	The study area is in the Highveld Priority Area and background PM10/PM2.5 already exceed the standards; adding the maximum predicted increment to the maximum background gives daily PM10 352 µg/m³ against 75 (Mafusire, 2026, p. 115).	High

IMPACT IDENTIFICATION							1. FIRST EVALUATION – WITHOUT MITIGATION / ENHANCEMENT										2. MITIGATION / ENHANCEMENT		3. WITH MITIGATION APPLIED – reversibility, replaceability, degree of mitigation			4. RESIDUAL RATING – informed by step 3									5. OVERALL SIGNIFICANCE	EFFECT		CUMULATIVE	
Impact ID	Project phase	Environmental aspect / receptor	Activity / cause	Nature of impact (what is affected and how)	Status	Type	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Significance score	Significance rating	Mitigation / enhancement measures	EMPr / EA condition reference	Reversibility (with mitigation)	Irreplaceable loss of resources (with mitigation)	Degree impact can be avoided / managed / mitigated	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Residual score	OVERALL SIGNIFICANCE (final)	Change in score (1st – residual)	% change	Cumulative impact considerations	Cumulative significance
AQ-O-02	Operation	Air quality (dust & odour)	Landfill operations in Area E at up to 500 t/day (15 000 t/month) over the extended operating life, with the final landform at 25 m	Hydrogen sulphide (H2S) and reduced sulphur compounds near the landfill: localised exceedances of the Alberta 1-hour and 24-hour screening guidelines along parts of the Tonkmeter boundary; ethyl and methyl mercaptan reach or exceed odour-recognition thresholds. Most of the H2S comes from the Rietfontein leachate dam; Tonkmeter stores leachate in a closed tank (Mafusire, 2026, pp. v, 118).	Negative	Cumulative	Local	3	Long term	4	Medium-High	8	Likely	3	15	45	Medium	Daily cover and compaction; closed leachate storage; landfill gas and odour monitoring; gas collection and flaring when monitoring shows it is needed; formal landfill gas management plan if extraction is ineffective or odour complaints persist (Mafusire, 2026, pp. 124–125).	EMPr Part B §6; §9; §19	Reversible	No irreplaceable loss	Can be partly managed	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	6	13%	Dominated by the adjacent Rietfontein landfill leachate dam (Mafusire, 2026, p. v).	Medium
AQ-O-03	Operation	Air quality (dust & odour)	Landfill operations in Area E at up to 500 t/day (15 000 t/month) over the extended operating life, with the final landform at 25 m	Landfill odour nuisance: maximum predicted incremental odour at the boundary is about 7.45 OU/m³ (1-hour) and 10.66 OU/m³ (10-minute), above the 5 OU/m³ annoyance threshold, under worst-case weather; odour falls off quickly with distance (Mafusire, 2026, p. v).	Negative	Direct	Local	3	Long term	4	Medium	6	Highly likely	4	13	52	Medium to High	Small active workface; prompt spreading, compaction and daily cover; covering putrescible waste on arrival; strict waste acceptance; complaints register with corrective action (Mafusire, 2026, pp. 124–125).	EMPr Part B §6; §19	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Possible	2	10	20	Low	32	62%	KwaThema residents are already exposed to odour from the Rietfontein landfill.	Medium
AQ-O-04	Operation	Community health & safety	Landfill operations in Area E at up to 500 t/day (15 000 t/month) over the extended operating life, with the final landform at 25 m	Exposure to hazardous air pollutants in landfill gas (benzene, toluene, ethylbenzene, xylene, chlorinated compounds, ammonia). Predicted incremental concentrations remain well below the applicable guidelines (Mafusire, 2026, p. v).	Negative	Direct	Local	3	Long term	4	Medium	6	Possible	2	13	26	Medium	Strict waste acceptance; daily cover; landfill gas monitoring; gas collection and flaring (Mafusire, 2026, pp. 124–125).	EMPr Part B §6	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low	2	Improbable	1	8	8	Negligible	18	69%	None identified.	Low
AQ-O-05	Operation	Air quality (dust & odour)	Operation of the enclosed landfill gas flare (9 m stack, 98% destruction)	Combustion emissions (SO2, NO2, CO, PM10) from the flare; predicted concentrations are low and well below the national standards at receptors (Mafusire, 2026, pp. v, 80–82).	Negative	Direct	Site	2	Long term	4	Low	2	Likely	3	8	24	Low	Operate the flare at about 1 100 °C with at least 98% destruction efficiency; maintain the flare (Mafusire, 2026, p. 82).	EMPr Part B §6	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low	2	Possible	2	8	16	Low	8	33%	Background SO2 and NO2 are within the standards.	Negligible
GW-C-01	Construction	Groundwater (geohydrology)	Construction of Cells 2 to 8 of Area E (quarry dewatering, shaping, earthworks and lining)	Damage to, or loss of, monitoring boreholes during quarrying, dewatering and earthworks for new cells, leaving gaps in the monitoring record. Two exploration boreholes on the northern side of the Area E quarry have already been lost to quarrying (Peter Lee Consulting, 2026, p. 15).	Negative	Indirect	Site	2	Medium term	3	Medium	6	Possible	2	11	22	Low	Mark, number and lock all monitoring boreholes (GDARD, 2017, condition 4.10.1(c)); show them on construction drawings with a protection zone; replace any damaged or lost borehole, at a position confirmed by a groundwater specialist, before the next monitoring round.	EMPr Part B §20	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low	2	Improbable	1	5	5	Negligible	17	77%	None identified.	Negligible
GW-O-01	Operation	Groundwater (geohydrology)	Disposal of waste in Cells 1 to 8 of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month)	Late detection of leachate contamination from Cells 2 to 8, because the existing network (TM-1 to TM-4) was sited for Cell 1 only (Meyer, 2024, p. 1; Tonkmeter Specialist Workshop, 2026). Future cells are planned in the quarries south of Cell 1, towards the background position TM-1 (about 500 m south of TM-2 and TM-3; EAP calculation from Meyer, 2024, Table 2), so TM-1 may not remain a valid background borehole as the landfill advances.	Negative	Indirect	Local	3	Long term	4	Medium-High	8	Likely	3	15	45	Medium	Cell 1 continues to be monitored by the existing TM network. A groundwater specialist to provisionally site additional background and detection borehole pairs for the future cells (and confirm whether the TM network also covers Cell 2), to be submitted with the application (Tonkmeter Specialist Workshop, 2026); before each new cell is lined, the specialist confirms the positions and the applicant drills, surveys and samples them, with baseline results before any waste is placed; construction to DWAF (1998b); TM-1 to be reviewed as background as cells advance south.	EMPr Part B §20	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Medium term	3	Medium	6	Improbable	1	11	11	Low	34	76%	The adjacent Rietfontein landfill and historical gold tailings also affect groundwater; the IEA requires a network that can tell contamination sources apart (GDARD, 2017, condition 4.10.1(b)).	Medium
GW-O-02	Operation	Groundwater (geohydrology)	Disposal of waste in Cells 1 to 8 of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month)	Changes in groundwater quality already recorded at detection boreholes since the November 2024 baseline: sulphate at TM-3-S 20.6 → 92.0 → 118 mg/l and at TM-3-D 43.5 → 174 → 112 mg/l; EC at TM-3-S 30.3 → 41.2 → 50.6 mS/m; ammonium (as N) at TM-3-S 0.028 → 0.417 mg/l and TM-3-D 0.022 → 0.139 mg/l; a single ammonium result of 9.45 mg/l at TM-4-D in November 2025 (Tonkmeter (Pty) Ltd, 2026c; Tonkmeter Specialist Workshop, 2026). If leachate-related, more waste and a higher leachate head would aggravate the impact.	Negative	Direct	Local	3	Long term	4	Medium-High	8	Possible	2	15	30	Medium	Investigative monitoring under IEA condition 4.10.4 (monthly, Annexure II variables) until no increasing trend; sampling by a suitably qualified person to the DWAF (1998b) minimum requirements; sample the leakage detection (subsoil drainage) system; review the Ekurhuleni Rietfontein monitoring data; investigate under condition 4.10.6 and remediate under 4.10.1(g) if a landfill source is confirmed (GDARD, 2017; Tonkmeter Specialist Workshop, 2026).	EMPr Part B §20	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Medium term	3	Medium	6	Improbable	1	11	11	Low	19	63%	Sulphate is also a legacy indicator of historical gold tailings on the property (Meyer, 2013), and the Rietfontein landfill adjoins the site; the source of the changes is not yet known.	Medium
GW-O-03	Operation	Groundwater (geohydrology)	Disposal of waste in Cells 1 to 8 of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month)	Monitoring that does not meet the IEA, reducing the ability to detect an impact early and to show that none has occurred: the IEA requires quarterly detection monitoring of Annexure I variables (GDARD, 2017, condition 4.10.3), but monitoring is six-monthly (Tonkmeter Specialist Workshop, 2026) and the results supplied show only three rounds in 21 months; dissolved organic carbon, strontium and nitrite (Annexures I and II) are not in the analytical suite (Tonkmeter (Pty) Ltd, 2026c; Tonkmeter Specialist Workshop, 2026).	Negative	Indirect	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	Monitor quarterly for Annexure I and at least as required for Annexure II, or at a frequency approved in writing by the Department or DWS (GDARD, 2017, condition 4.10.3(c)); add the missing variables; follow SANS methods at an accredited laboratory (condition 4.11); internal audits (condition 4.12).	EMPr Part B §20	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low-Medium	4	Improbable	1	7	7	Negligible	32	82%	As GW.-O-01.	Low
GW-PC-01	Post-closure / aftercare	Groundwater (geohydrology)	Aftercare of the larger, taller Area E waste body after closure	Continued leachate generation from the larger, taller waste body after closure, with the risk that a liner defect or long-term liner ageing leads to groundwater contamination after active management has reduced. The higher waste body increases the volume of leachate-generating waste and the load on the liner (Peter Legg Consulting, 2026, pp. 24–26).	Negative	Direct	Local	3	Permanent	5	Medium-High	8	Possible	2	16	32	Medium	Post-closure groundwater monitoring for 30 years (GDARD, 2017, condition 4.10.5) covering all cells; maintain the monitoring boreholes and leachate extraction; low-permeability capping; further investigation if trends appear (condition 4.10.6).	EMPr Part B §20; §21; §22	Partly reversible	Possible irreplaceable loss	Can be partly managed	Site	2	Long term	4	Low-Medium	4	Improbable	1	10	10	Low	22	69%	As GW.-O-01.	Medium
GEN-C-01	Construction	Noise	Construction of Cells 2 to 8 of Area E and clearing and construction of the MRF	Noise from earthmoving plant, compaction and tipper trucks, and construction traffic on the access road, causing nuisance to road users and the nearest receptors.	Negative	Direct	Local	3	Short term	1	Low-Medium	4	Possible	2	8	16	Low	Restrict noisy work to daytime hours; maintain plant and silencers; warning signs for heavy vehicles; no unauthorised access to the construction area (GDARD, 2017, condition 4.3(d)).	EMPr Part B §7; §18	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low	2	Possible	2	5	10	Low	6	38%	Adds to traffic and noise from the adjacent Rietfontein landfill.	Low
GEN-C-02	Construction	Soils & land capability	Construction of Cells 2 to 8 of Area E and clearing and construction of the MRF	Contamination of soil and water by fuel, oil or other hazardous substances, and by construction waste, during the construction of each new cell.	Negative	Direct	Site	2	Short term	1	Medium	6	Possible	2	9	18	Low	Store fuel and hazardous substances in bunded areas (GDARD, 2017, condition 4.3(a)); spill kits; refuel on hardstanding; remove construction waste to the working face or a licensed facility.	EMPr Part B §11; §12	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low	2	Improbable	1	4	4	Negligible	14	78%	None identified.	Negligible
GEN-C-03	Construction	Heritage & palaeontology	Construction of Cells 2 to 8 of Area E and clearing and construction of the MRF	Damage to archaeological, historical or palaeontological material uncovered during clearing of the proposed MRF expansion site or shaping of the quarry walls for new cells.	Negative	Direct	Site	2	Permanent	5	Medium	6	Improbable	1	13	13	Low	Stop work and notify SAHRA or a heritage specialist if any heritage resource is uncovered (GDARD, 2017, condition 4.3(g); National Heritage Resources Act 25 of 1999, s 35).	EMPr Part B §16	Irreversible	Possible irreplaceable loss	Can be mitigated	Site	2	Permanent	5	Low	2	Improbable	1	9	9	Negligible	4	31%	None identified.	Negligible
GEN-C-04	Construction	Community health & safety	Construction of Cells 2 to 8 of Area E and clearing and construction of the MRF	Injury or drowning risk to workers, trespassers or children in the deep quarry, ponded stormwater compartments and around heavy plant during cell construction.	Negative	Direct	Site	2	Short term	1	High	10	Possible	2	13	26	Medium	Fence and sign excavations and ponded water; PPE for all personnel (GDARD, 2017, condition 4.3(e)); safe working procedures under the Occupational Health and Safety Act 85 of 1993 and the Construction Regulations; no unauthorised access.	EMPr Part B §1; §4; §15	Irreversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	High	10	Improbable	1	13	13	Low	13	50%	None identified.	Negligible
GEN-C-05	Construction	Fauna	Clearing of vegetation on the proposed MRF expansion site	Displacement or death of small animals (for example reptiles, small mammals and ground-nesting birds) during clearing of the proposed MRF expansion site.	Negative	Direct	Footprint	1	Long term	4	Low	2	Likely	3	7	21	Low	Walk-through before clearing; clear in one direction to let animals move away; relocate animals found by a competent person; no killing or harassment of animals.	EMPr Part B §17	Partly reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Long term	4	Low	2	Possible	2	7	14	Low	7	33%	None identified.	Negligible
GEN-O-01	Operation	Waste management	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Windblown waste from the working face, haul road and MRF reaching fences, vegetation, roads and neighbouring land. A working face up to 25 m above ground level is more exposed to wind than one at 1 m.	Negative	Direct	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	Working face no larger than 30 m by 30 m (Mafusire, 2026, Table 6-6; Tonkmeter pers. comm., 2026); daily cover of at least 100 mm under condition 4.8(f) as proposed for amendment (150 mm until the amendment is granted) (GDARD, 2017; Tonkmeter pers. comm., 2026); measures to control windblown waste, including hand collection (condition 4.9(c) as proposed); perimeter fences, the access road and the vegetation around the working face inspected at least twice a week, and on any day on which litter is seen blowing beyond the working face, with windblown litter removed during each inspection (condition 4.8(b) as proposed); area outside the site kept clear of waste and litter (condition 4.8(g) as proposed); where litter is seen to escape the working face, additional containment measures applied immediately (such as reducing or relocating the working face, covering exposed waste early or suspending tipping in strong wind) and extra litter picking until the escaping litter is under control; covered or netted loads.	EMPr Part B §3; §14	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Possible	2	10	20	Low	19	49%	The adjacent Rietfontein landfill also generates windblown litter, which makes the source hard to tell apart.	Medium
GEN-O-02	Operation	Community health & safety	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Flies, rodents, scavenging birds and stray animals attracted to exposed putrescible waste, causing nuisance and a disease risk to workers and neighbours.	Negative	Indirect	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	Cover putrescible waste immediately in a special cell or at the base of the working face (GDARD, 2017, condition 4.8(c)); daily cover; pest and vector control programme by a registered pest control operator; keep fences intact; no feeding of animals.	EMPr Part B §14	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Possible	2	10	20	Low	19	49%	Adds to vectors from the adjacent Rietfontein landfill.	Medium
GEN-O-03	Operation	Noise	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Noise from compactors, dozers, trucks, reverse alarms and the MRF, over a longer operating life; noise from plant working high on the landform may carry further.	Negative	Direct	Local	3	Long term	4	Low-Medium	4	Possible	2	11	22	Low	Keep within the authorised operating hours; maintain plant and silencers; if noise complaints relating to reverse alarms are received, tonal alarms on site plant replaced with broadband alarms where consistent with safety requirements; record and investigate complaints; measure noise at the nearest receptor if complaints arise.	EMPr Part B §7	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low	2	Possible	2	8	16	Low	6	27%	Adds to noise from the Rietfontein landfill and Tonk Meter Road.	Low
GEN-O-04	Operation	Traffic	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Road safety, congestion, road wear and spillage of waste and mud from waste vehicles on Tonk Meter Road and the access road, at up to 15 000 t/month and over a longer life.	Negative	Direct	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	Use the existing entrance road accepted at the construction completion meeting (GDARD, 2017, condition 4.7.4(a) as proposed for amendment; Tonkmeter pers. comm., 2026); keep roads free of waste (condition 4.7.4(d)); covered loads; waiting area off the public road; review traffic effects with the City of Ekurhuleni if throughput approaches 15,000 t/month.	EMPr Part B §3; §18	Reversible	No irreplaceable loss	Can be mitigated	Local	3	Long term	4	Low-Medium	4	Possible	2	11	22	Low	17	44%	Waste vehicles also serve the adjacent Rietfontein landfill (about 18 500 t/month until about 2029).	Medium
GEN-O-05	Operation	Waste management	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Disposal of waste not permitted by the IEA (Annexure III) or prohibited or restricted under the landfill norms and standards (for example liquid waste, whole or quartered tyres, lead-acid batteries, untreated health care risk waste), which can harm the liner and leachate system, cause fires, odours or gas, and harm workers.	Negative	Direct	Local	3	Long term	4	Medium-High	8	Possible	2	15	30	Medium	Strict waste acceptance procedure with weighbridge control and waste spotters (GDARD, 2017, conditions 4.7.4(e) and 4.7.5); waste classified and assessed under GN R634 and GN R635 before acceptance; GN R636 section 5 restrictions applied; rejected loads logged; reporting on GWS.	EMPr Part B §3; §14	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Medium	6	Improbable	1	12	12	Low	18	60%	See ENG-O-03 and ENG-O-04 for liner and odour effects of particular wastes.	Low

IMPACT IDENTIFICATION							1. FIRST EVALUATION – WITHOUT MITIGATION / ENHANCEMENT										2. MITIGATION / ENHANCEMENT		3. WITH MITIGATION APPLIED – reversibility, replaceability, degree of mitigation			4. RESIDUAL RATING – informed by step 3									5. OVERALL SIGNIFICANCE	EFFECT		CUMULATIVE	
Impact ID	Project phase	Environmental aspect / receptor	Activity / cause	Nature of impact (what is affected and how)	Status	Type	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Significance score	Significance rating	Mitigation / enhancement measures	EMPr / EA condition reference	Reversibility (with mitigation)	Irreplaceable loss of resources (with mitigation)	Degree impact can be avoided / managed / mitigated	Extent	E	Duration	D	Intensity	I	Probability	P	Consequence (E+D+I)	Residual score	OVERALL SIGNIFICANCE (final)	Change in score (1st – residual)	% change	Cumulative impact considerations	Cumulative significance
GEN-O-06	Operation	Community health & safety	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Injury or ill-health of workers from plant movements, work on high slopes, landfill gas, sharps, infectious or hazardous waste, dust and heat, over a longer operating life and a taller landform.	Negative	Direct	Site	2	Long term	4	High	10	Possible	2	16	32	Medium	Full set of PPE for all employees and annual medical check-ups (GDARD, 2017, condition 4.9(e)); safety data sheets on site (condition 4.9(f)); safe working procedures on slopes and the working face; gas monitoring (condition 4.10.7); heat-stress procedures.	EMPr Part B §1; §6; §12; §13	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	High	10	Improbable	1	16	16	Low	16	50%	None identified.	Negligible
GEN-O-07	Operation	Soils & land capability	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Contamination of soil, stormwater and groundwater by fuel, oil and chemicals from plant, the generator and workshop areas.	Negative	Direct	Site	2	Medium term	3	Medium	6	Possible	2	11	22	Low	Bunded storage; refuelling on hardstanding with spill trays; spill kits; clean-up and reporting of spills; contaminated soil disposed of as hazardous waste.	EMPr Part B §12	Reversible	No irreplaceable loss	Can be mitigated	Footprint	1	Short term	1	Low	2	Improbable	1	4	4	Negligible	18	82%	None identified.	Negligible
GEN-O-08	Operation	Socio-economic	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Injury or death of authorised waste pickers who recover recyclables directly from the working face (Tonkmeter pers. comm., 2026), or of trespassers, from moving trucks and plant, unstable or steep waste slopes on a taller landform, fires, sharps and hazardous material.	Negative	Direct	Site	2	Long term	4	High	10	Possible	2	16	32	Medium	Only registered, inducted waste pickers with PPE; a demarcated picking zone kept apart from tipping trucks and compaction plant; no picking during tipping or compaction, on unstable slopes or outside operating hours; no minors; 1.8 m fence and manned, locked gates (GDARD, 2017, condition 4.7.4); move picking progressively to the MRF, as the applicant intends (Tonkmeter pers. comm., 2026), in line with the Waste Picker Integration Guideline (DFFE and DSI, 2020).	EMPr Part B §4; §14; §19	Irreversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	High	10	Improbable	1	16	16	Low	16	50%	Reclaimers work at the adjacent Rietfontein landfill and have asked for the activity to be formalised (Springs Advertiser, 2024).	Medium
GEN-O-09	Operation	Socio-economic	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Additional disposal airspace for the region within an already-authorised, lined footprint, avoiding or delaying the need for a new landfill site at a time when municipal airspace in Ekurhuleni is decreasing.	Positive	Direct	Regional	4	Long term	4	Medium	6	Likely	3	14	42	Medium	Enhancement: continue to divert recyclables through the MRF so that airspace is used efficiently; report tonnages on GWIS.	EMPr Part B §14	Reversible	No irreplaceable loss	Can be mitigated	Regional	4	Long term	4	Medium	6	Likely	3	14	42	Medium	0	0%	Positive cumulative effect on regional disposal capacity as Rietfontein approaches closure (about 2029).	Medium
GEN-O-10	Operation	Socio-economic	Operation of Area E up to 25 m above natural ground level over the extended operating life (about 39 years at 15 000 t/month or 77 years at 7 500 t/month), and operation of the MRF	Jobs and local procurement retained over the extended operating life of Area E and at the MRF.	Positive	Direct	Local	3	Long term	4	Low-Medium	4	Likely	3	11	33	Medium	Enhancement: local employment and procurement where skills allow; skills training.	EMPr Part B §19	Reversible	No irreplaceable loss	Can be mitigated	Local	3	Long term	4	Medium	6	Likely	3	13	39	Medium	-6	-18%	None identified.	Low
GEN-CL-01	Decommissioning & closure	Land use	Final capping, decommissioning of infrastructure and rehabilitation of Area E at closure	Final capping, rehabilitation and aftercare of the larger landform not completed or funded, leaving exposed waste, erosion, leachate and gas problems and a long-term liability.	Negative	Indirect	Local	3	Permanent	5	Medium-High	8	Possible	2	16	32	Medium	Progressive capping and rehabilitation; closure plan kept current; notify the Department one year before closure (GDARD, 2017, condition 4.17); renew the IEA before it expires (condition 4.19).	EMPr Part B §21; §22	Partly reversible	No irreplaceable loss	Can be mitigated	Site	2	Long term	4	Low-Medium	4	Improbable	1	10	10	Low	22	69%	See SW-PC-01, GW-PC-01 and CC-PC-01.	Medium
GEN-CL-02	Decommissioning & closure	Noise	Final capping, decommissioning of infrastructure and rehabilitation of Area E at closure	Dust, noise and truck traffic while final capping soils are imported or moved and infrastructure is removed.	Negative	Direct	Local	3	Short term	1	Low-Medium	4	Likely	3	8	24	Low	As for construction: dust suppression, daytime working hours, maintained plant and covered loads.	EMPr Part B §5; §7; §21	Reversible	No irreplaceable loss	Can be mitigated	Site	2	Short term	1	Low	2	Possible	2	5	10	Low	14	58%	None identified.	Negligible