Tronox KZN Sands (Pty) Ltd

INTEGRATED ENVIRONMENTAL AUTHORISATION FOR THE PORT DURNFORD MINE, KWAZULU-NATAL

Final Rehabilitation, Decommissioning and Mine Closure Plan

Image 111730 - Eucalyptus growing on rehabilitated mined land at Tronox, Hillendale

41106008-REP-00003
MARCH 2025

CONFIDENTIAL

Tronox KZN Sands (Pty) Ltd

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Final Rehabilitation, Decommissioning and Mine Closure Plan

REPORT (VERSION 00) CONFIDENTIAL

PROJECT NO. 41106008

OUR REF. NO. 41106008-REP-00003

MARCH 2025

QUALITY CONTROL

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Project number	41106008
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CONTENTS

TABLES

FIGURES

APPENDICES

Abbreviations	
ABA	Acid Base Accounting
AIS's	Alien and invasive plants species
CBAs	Critical Biodiversity Areas
CPC	the Central Processing Complex
CVB	The channelled valley bottom
DEA	Department of Environmental Affairs
DMRE	Department of Mineral Resources and Energy
DTMUs	dozer trap mining units
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Independent Environmental Assessment Practitioner
EI	Importance
EIA	Environmental Impact Assessment
EIS	Ecological importance and sensitivity
EMPr	Environmental Management Programme Report
EMS	Environmental Management System
ERA	Environmental risk assessment
ES	Sensitivity
ESAs	Ecological Support Areas
FCP	Final rehabilitation, decommissioning and mine closure plan
FEPA	Freshwater Ecosystem Priority Area
HMC	Heavy mineral concentrate
I&APs	Interested and affected parties
IDP	Integrated development planning
LOM	Life of mine
MAP	Mean Annual Precipitation
MAR	Mean Annual Runoff
MPRDA	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
MR	Mining Right
MRA	Mining rights area
MSP	Mineral Separation Plant
NEM: WA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMA	National Environmental Management Act (Act 107 of 1998)

Abbreviations	
NMD	Neutral Mine Drainage
P&Gs	Preliminary and general
PCD	Pollution control dam
PES	Present Ecological State
PFS	Pre-feasibility study
PR	Prospecting Right
PWP	Primary Wet Plant
ROM	Run of mine
RSF	Residue storage facility
S & EIR	Scoping and Environmental Impact Reporting
SCC	Species of conservation concern
SD	Saline Drainage
SDF	Spatial Development Framework
SEI	Site Ecological Importance
SQR	Sub-Quaternary Reach
SWOT	Strengths, weaknesses, opportunities and threats
Tronox	Tronox KZN Sands (Pty) Ltd
VH	Very high
VL	Very low
WCD	Water Control Dam
WML	Waste management license
WSP	WSP Group Africa (Pty) Ltd

Units of measure	
°C	degree Celsius
%	Percent
ha	hectare
kg	kilogram
km	kilometre
km^2	square kilometres
m	meter
mamsl	metres above mean sea level
mbgl	metres below ground level
mm	millimetre
mt	million tonnes
mta	million tonnes per annum
mg/kg	milligrams per kilogram
t	ton
tpa	tonnes per annum

EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

Tronox KZN Sands (Pty) Ltd (herein referred to as Tronox) currently operates the Fairbreeze mine where the heavy mineralised sand dunes mined south-west of Mtunzini in the Greater Richards Bay area. This is supported by a Tronox Mineral Separation Plant (MSP) and Smelter (collectively known as the Central Processing Complex (CPC)) in the Empangeni area. Tronox's previous mining operation, Hillendale, is currently in the mine closure phase.

The proposed project is for the mining of heavy minerals including ilmenite, rutile, zircon and heavy minerals within the proposed Port Durnford Mining Rights Area (MR). It is proposed that the mining activities will be undertaken in two phases. As part of the proposed project Tronox has applied to convert their existing Prospecting Rights into a consolidated Mining Right and seeks environmental authorisation to mine for Heavy minerals (general), Garnet (Abrasive), Kyanite, Leucoxene (heavy mineral), Monazite (heavy mineral), Rutile (heavy mineral), Silica Sand and Zirconium ore. A Scoping and Environmental Impact Reporting (S&EIR) Process is required to support this Mining Right (MR) Application. Given that this project is a mining project, the Department of Mineral Resources and Energy (DMRE) is the Competent Authority for the Environmental Authorisation Application in terms of the National Environmental Management Act, 1998 (Act No, 107 of 1998) (NEMA).

The project area is situated in the uMlalazi and uMhlathuze Local Municipalities, under the King Cetshwayo District Municipality. It is located approximately 15km south-west of Richards Bay and is adjacent to the following settlements/towns at different points along the boundaries; Mtunzini, Port Dunford, Esikhawini, Gobandlovu; and KwaDlangezwa.

PROJECT DESCRIPTION

The proposed Port Durnford Mine mining activities will be undertaken in two phases:

- Phase 1 (2025-2035) will be a low-rate mining operation at approximately 70 400 tpa (tons per annum) and an overall footprint of less than 10 ha. The run-of-mine (ROM) material will be mined by front end loader mechanically and hauled via trucks to the existing Fairbreeze mine as makeup ROM feed to the Fairbreeze PWP. The Phase 1 mining operation will only occur for five working days in the month, and will entail the development of minimal supporting infrastructure.
- The Phase 2 full scale mining footprint is 1 132 hectares which will be mined over a 33-year period (2036-2069) which will be conducted at a design production rate of 3 000 tonnes per hour, and will be continuous 24 hours per day, 365 days a year, and will operate until close of mine in 2070. The proposed Phase 2 mining operations will be similar to the current Tronox Fairbreeze operation; however, mobile skid mounted dozer trap mining units will be used within the active mining areas.

Once mined, the heavy mineral concentrate will be trucked off site to the existing Tronox MSP at the Empangeni CPC where it is further beneficiated to yield the target minerals, whereby the mineral products are separated from the concentrate. The non-product reject portion of the HMC (called MSP tailings) is returned to the mine site and disposed of together with coarse sand tailings. The fine sand tailings will be pumped to one of two residue storage facilities (RSF) for disposal. Coarse sand tailings will be used as backfill into mined out areas, to build the containment walls of the RSFs, as a RSF

sand capping layer before final closure of each RSF or disposed of in sand dumps located outside the mining footprint.

PURPOSE OF THIS REPORT

This report serves as a Final Rehabilitation, Decommissioning and Closure Plan (FCP) which forms part of a suite of specialist studies undertaken in support of the S&EIA process. In accordance with Section 24P of the NEMA Tronox must, before the Minister responsible for mineral resources issues the EA, comply with the prescribed financial provision for the rehabilitation, closure and on-going post decommissioning management of negative environmental impacts. This FCP aims to meet this requirement and has been prepared in accordance with the requirements of the NEMA Financial Provisioning Regulations (2022) (NEMA GNR 1147), as amended, (NEMA Financial Provisioning Regulations).

The main purpose of the plan is to provide Tronox and the DMRE with a measurable and auditable closure plan that takes into consideration the proposed post-mining or end land use of the proposed Port Durnford Mine as a whole. The plan has been compiled largely with the use of information provided as part of the S&EIA, and associated specialist investigations undertaken. It also considers the stakeholder engagement process followed during these assessments with relevance to closure planning.

CLOSURE VISION

The current vision for closure the proposed project is:

“To render a sustainable post-closure utilisation of land which is integrated into the current land uses aimed at leaving behind a positive post-mining legacy for the receiving community and our shareholders and ensuring the affected environment is non-polluting, stable, aesthetic and safe”.

POST-CLOSURE LAND USE

The site is currently occupied by forestry activities and will return to these operations upon completion of mining and subsequent rehabilitation. The construction and operation of Port Durnford will impact natural vegetation, soils, and land capability, with additional effects on groundwater and surface water resources. Monitoring programs during operations are essential to define the extent and severity of these impacts. The closure strategy aims to ensure long-term sustainability through environmental rehabilitation, determining next land use based on land status, rehabilitation feasibility, long-term success, and alignment with surrounding land uses.

The proposed next land use includes forestation, crops, and grazing land. Mined-out areas will undergo substantial topographic changes, with RSF sites and sand tails deposition areas creating permanent elevated features. These areas will be reinstated to forestation where possible; otherwise, they will be converted to arable or grazing land based on post-closure land capabilities. Rehabilitation efforts focus on improving the physical and nutritional properties of surface soil layers, enhancing water retention, and intercepting rainfall to support timber yields. Concerns about the reforestation potential and management of large RSF areas will be addressed in future closure plan updates.

Post-closure, the majority of mining areas will be returned to the landowner, who currently leases the land to Mondi for commercial afforestation. These areas will be rehabilitated to primary grazing land capability, with a growth medium cover of 300 mm for revegetation using commercial timber or indigenous species. It is a recommendation of the soil specialist and the EIA that to improve land capability and land use potential capping with150cm (minimum) reconstituted 'soil' layer (mixing ratio: 33% Fines : 77% Sand) prior to placement of 300 mm of topsoil is required to improve the long-term production potential of the post-mining landscape. Furthermore, that Tronox should aim for maximum side-slopes of less than 1:5, with less than 1:7 being optimal, to ensure productive and financially viable land capabilities and uses post-mining. The outcome of further feasibility studies and EIA is needed to confirm the viability of the specified growth medium depth and slopes for successful reforestation. This approach aims to achieve long-term sustainability and align with regional land use, ensuring the affected environment can be rehabilitated effectively.

RISK ASSESSMENT

Table below provides the risk analysis that has been developed for the various risks associated with the decommissioning, rehabilitation and closure phase. This is the first closure plan submitted for the mine as a whole and therefore the risk assessment provided below does not contain an explanation of any changes to the risk assessment results, as required by the Regulation. Subsequent risk assessments undertaken as part of Port Dunford Mine closure planning will need to provide motivation for adjustments to the risk ranking or other changes to the risks assessment. Only the moderate physical, bio-physical and social risks identified from the risk assessment process (Appendix B) are presented in Table below. No significant post mitigation risk has been identified, after the mitigation measures have been applied.

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Post-mitigation risk (Residual Risk)
Soil, Land Capability, and Land Use	▪ Rehabilitation of backfilled RSF C mining cells (repurposed Mining Pit) [Note: other Mining Pits were already rehabilitated during the Operational Phase	▪ Unacceptable soil erosion / depth due to proposed 1:3 (18.4º, terraced) side slopes and capping with 30cm of Topsoil (orthic A-horizon) only [directly overlying the sand capping proposed by the Mine for levelling and trafficability purposes]. ▪ Also, poor soil properties (fertility, compaction). ▪ Consequently, reduced Land Capability / Land Use potential, as compared with the pre-mining potential. ▪ Note: RSF C is situated very close to the LOM boundary (thus also influencing Extent of Impact).	**High**	**Moderate**

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Post-mitigation risk (Residual Risk)
Hydropedology & Hydrology	▪ Rehabilitation of backfilled RSF C mining cells (repurposed Mining Pit) [Note: other Mining Pits were already rehabilitated during the Operational phase]	▪ Reduced vol. of infiltrated water reporting to the base of the Pit (vs. that pre-disturbance) due to: increased surface area (raised above surface) vs. that of the footprint, thus higher evapotranspiration losses from vegetation / wind. ▪ The Recharge and Interflow (derived from rainfall) flow pathways will vary within the RSF, based upon the grade of material utilised for backfilling as follows: • Fines grades sections. Interflow will dominate close to the surface on top of the fines grades (probable slow-mod infiltration rate in the dry state), a greater proportion of this moisture moving laterally downslope to the previous Pit edge, until encountering the surrounding Recharge (deep) soils whereafter this moisture will move vertically downwards. However, a Recharge (slow) component will also exist within the Fines grades; ▪ Sand grades (internal starter walls, now buried) sections. Moisture will move rapidly downward as Recharge, thereafter, reconnecting with the underlying existing moisture flow pathways.	**High**	**Moderate**
Soils, Land Capability, Land Use, and Hydropedology	▪ Whole Mine site - post closure	▪ Failure to achieve pre-defined closure objectives, and Tronox's Key Aims as follows: • safe and healthy post-mining environment,	**Moderate**	**Moderate**

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Post-mitigation risk (Residual Risk)
		• economically viable and sustainable post-mining land use, • limited residual environmental Impacts, and • optimal post-mining social opportunities. ▪ Note: Mining Pits (Sand Tailings), RSF C and 9, and Sand Tails Dumps 8B and A-2 are all situated very close to the LOM boundary (thus also influencing Extent of Impact).		
Socio-economic	▪ Decommissioning of the Port Durnford mine	▪ The major social implication associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. ▪ Social and labour unrest because of dissatisfaction at loss of employment followed by economic hardship and physical displacement of employees and/or exacerbated employment loss. ▪ Conflict in desired post-closure land use/s and unalignment with municipal SDF. ▪ Forced closure of suppliers, with further cumulative impact of loss of jobs / contracts and income	**Minor**	**Moderate**

SCHEDULED CLOSURE COST

The financial provision quantum has been estimated for the planned (scheduled) closure situation, considering each zone that forms part of the Port Durnford, as per the infrastructure bill of quantities (BOQ) developed. The closure costs are structured according to the format routinely used for the presentation of closure costs for mine sites as per the following categories:

- Infrastructural areas
- Mining areas
- General surface rehabilitation
- Surface water reinstatement
- Ps&Gs, Contingencies and additional allowances
- Pre-site relinquishment monitoring and aftercare

The final closure (scheduled) liability considers a planned mine closure event according to the overall mine plan. The scheduled closure of operations considered the following LoM projections:

- LOM operation: 2069
- It is anticipated that RSF Site C will be operational for 27.5 years and reach full capacity in 2064. Thereafter, the site will be backfilled in 2069, affording the facility 4 years to dry out and stabilise. Once backfilled the site will be rehabilitated with topsoil and returned to the Landowner (lessee) thereafter.

Scheduled closure cost allows for areas mined and backfilled between 2063-2071. However, it does not include any provisions for coarse sand capping of the RSF site. Once the feasibility design is completed, an update of the closure cost will need to be undertaken. Including a coarse sand capping layer offers several benefits, such as providing an additional protective barrier and enhancing the rooting depth for plants, which is crucial if the areas are to be restored to commercial forestation. This measure would be essential if current soil profiles are found to be inadequate for meeting the relinquishment/success criteria for the desired next land use. However, if the feasibility design and EIA studies determine that this coarse sand capping layer is necessary, it could impact the current closure criteria and result in associated cost increases. This requirement will need to inform future revisions of the closure plan.

The scheduled closure costs for Tronox Port Dunford, as of November 2024, is summarised in Table below. The scheduled closure liability quantum assumes successful implementation of concurrent rehabilitation of disturbed areas during LOM and the decommissioning of mining operations at the end of their respective planned LOM.

Scheduled LOM Closure cost summary at closure

	Closure Component	Scheduled closure
1	**Infrastructural aspects**	R14 924 765.83
2	**Mining areas**	R307 043 155.28
3	**General surface rehabilitation**	R6 660 645.45
4	**Surface water reinstatement**	R144 921.26
	Sub-Total 1:	**R328 773 487.82**

	Closure Component	Scheduled closure
5	**Pre-site relinquishment aspects**	
5.1	Surface water quality monitoring	R572 035.20
5.2	Groundwater quality monitoring	R1 633 311.43
5.3	Rehabilitation monitoring of rehabilitated areas	R1 988 048.01
5.4	Care and maintenance - low intensity	R11 238 245.20
5.5	Care and maintenance - high intensity	R0.00
	Sub-Total 2:	**R15 431 639.84**
6	**P&Gs, Contingencies and Additional Allowances**	
6.1	Preliminary and general	R49 316 023.17
6.2	Contingencies	R32 877 348.78
	Sub-Total 3:	**R82 193 371.96**
	Grand Total Excl. VAT. (Sub-total 1 + 2 + 3):	**R410 966 859.78**

CONCLUSION STATEMENT AND RECOMMENDATIONS

Closure planning is a dynamic process that is to be aligned and integrated with overall mine planning and mine operations, requiring regular review and development to consider changes in legal obligations, corporate requirements, community expectations, technical knowledge, as well as in terms of advancements in the mine closure discipline. To ensure that closure planning remains consistent and integrated, a Closure Steering Committee should be established after the commencement of operations. This committee will, at minimum, have the following responsibilities:

- Implementing the closure strategy and integrating closure planning into the overall project and mine planning
- Ensuring that the FCP is developed, resourced, implemented and revised as necessary
- Ensuring suitable focus is given in the closure planning process to rehabilitation research, socio-economic and community development and to stakeholder consultation.

If mine and closure planning can be proactively undertaken, this will not only facilitate seamless transfer from operations to closure, but also has the potential to yield substantial benefits to the communities in terms of community development programs aimed to facilitate self-sustaining livelihoods and related services for community functioning post mine closure, and the re-skilling and training of mine employees to pursue alternative employment or career opportunities during the closure period in preparation for closure.

If capacity building and jointly agreed assistance programmes have been agreed to from the start, and if the sustainability prospects or aspects of social interventions have been carefully considered, then when the challenges emerge at closure there should be few unpleasant surprises and a well-established working relationship between the project and the community will be in place to address these as they arise.

Key recommendations of the closure plan:

- This closure plan will need to be reviewed and updated annually, to include new information made available through new studies and improved understanding of operations and the planned transition to the next land use.
- Only the scheduled closure cost for areas mined and backfilled between 2063-2071 have been provided in this report. However, it does not include any provisions for final coarse sand capping of the RSF site. Once the feasibility design and EIA is completed, an update of the closure cost will need to be undertaken. Including a coarse sand capping layer offers several benefits, such as providing an additional protective barrier and enhancing the rooting depth for plants, which is crucial if the areas are to be restored to commercial forestation. This measure would be essential if current soil profiles are found to be inadequate for meeting the relinquishment/success criteria for the desired next land use. However, if the feasibility design and EIA studies determine that this coarse sand capping layer is necessary, it could impact the current closure criteria and result in associated cost increases. This requirement will need to inform future revisions of the closure plan.
- Tronox should aim for maximum side-slopes rehabilitation of mineral residue deposits of less than 1:5, with less than 1:7 being optimal, to ensure productive and financially viable land capabilities and uses post-mining. If slopes are designed with angles less than 1:5, this would pose a significant risk post-closure concerning the post-mining land use and issues arising from increased runoff and erosion, which could further impact the environment. Although not recommended, if slope angles are to be designed with slopes of less than 1:5 in certain areas, special attention must be given to the rehabilitation measures adopted for these slopes. These measures should include specific erosion control strategies to prevent long-term risks from manifesting. This requirement will need to inform future revisions of the closure plan.

Contact name Roelof Letter

Contact details 0835626455 | roelof.letter@wsp.com

1 INTRODUCTION

Tronox KZN Sands (Pty) Ltd (Tronox) holds a prospecting right under the Department of Mineral Resources and Energy ("DMRE") Reference: KZN 30/5/1/1/2/296 PR in respect of ilmenite, rutile and zirkon on the farms [Sub 1 and Remainder of Lot 102 uMlalazi No. 13860, Sub 1,2 and Remainder of Lot 131 uMlalazi No. 14098, Sub 1 and Remainder of Lot 103 uMlalazi No. 13880, Sub 2,3 and Remainder of Lot 104 uMlalazi No. 13853 and Sub 1 and Remainder of Lot Hibbert No. 15714] measuring 843.72 hectares in extent in the uMlalazi Municipality, KwaZulu-Natal Province (the "**Waterloo PR**"), which prospecting right was renewed by the DMRE pursuant to section 18 of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA).

Historically, Tronox held the following two prospecting rights in terms of section 17 of the MPRDA:

- DMRE Ref: KZN 30/5/1/1/2/10708 PR (formerly 771 PR) in respect of ilmenite, rutile, zirkon and heavy minerals on the farms measuring 3 945.95 hectares in extent in the uMhlathuze Municipality, KwaZulu-Natal Province (the "Port Durnford PR"); and
- DMRE Ref: KZN 30/5/1/1/2/279 PR in respect of ilmenite, rutile, zirkon and heavy minerals on the farms measuring 258.27 hectares in extent in the uMlalazi Municipality, KwaZulu-Natal Province (the "Penarrow PR")

Tronox is now applying to convert these Prospecting Rights into a consolidated Mining Right and seeks environmental authorisation to mine for Heavy minerals (general), Garnet (Abrasive), Kyanite, Leucoxene (heavy mineral), Monazite (heavy mineral), Rutile (heavy mineral), Silica Sand and Zirconium ore. A Scoping and Environmental Impact Reporting (S&EIR) Process is required to support this Mining Right (MR) Application in terms of the legislation detailed above. Given that this project is a mining project, the Department of Mineral Resources and Energy (DMRE) is the Competent Authority for the EA Application.

The Prospecting Rights area is situated in the uMlalazi and uMhlathuze Local Municipalities, under the King Cetshwayo District Municipality. It is located approximately 15km south-west of Richards Bay and is adjacent to the following settlements/towns at different points along the boundaries; Mtunzini, Port Dunford, Esikhawini, Gobandlovu; and KwaDlangezwa (Figure 2-1).Since this is a mining project, the DMRE is the Competent Authority for the EA Application. This report serves as a Final Rehabilitation, Decommissioning and Closure Plan (FCP) which forms part of a suite of specialist studies undertaken in support of the EIA process. In accordance with Section 24P of the NEMA Tronox must, before the Minister responsible for mineral resources issues the EA, comply with the prescribed financial provision for the rehabilitation, closure and on-going post decommissioning management of negative environmental impacts. This FCP aims to meet this requirement and has been prepared in accordance with the requirements of the NEMA Financial Provisioning Regulations (2022) (NEMA GNR 1147), as amended, (NEMA Financial Provisioning Regulations).

1.1 PURPOSES OF THIS REPORT

This report provides the closure input supporting the EA application for the proposed new infrastructure and mining development project at the Port Durnford mine. It addresses the requirements of the NEMA Financial Provisioning Regulations and summarizes information pertinent to the authorisation process, without replacing the ongoing closure planning processes.

The main purpose of the plan is to provide Tronox and the DMRE with a measurable and auditable closure plan that takes into consideration the proposed post-mining or next land use of the proposed Port Durnford Mine as a whole. The plan has been compiled largely with the use of information provided as part of the S & EIA, and associated specialist investigations undertaken. It also considers the stakeholder engagement process followed during these assessments with relevance to closure planning.

1.2 OBJECTIVES OF THE REPORT

The objectives of this FCP, as stated in Appendix 4 of the NEMA Financial Provision Regulations, are to identify actions and measures required to safely address all material mining-related impacts by the time of mine closure and to thereafter reinstate an appropriate post mining land use, through a process that is measurable and auditable, through undertaken of the following:

- Assessment of relevant available background information regarding Port Durnford, and specifically the additional infrastructure that will be built.
- Establishment of a preliminary understanding of the baseline legal and environmental context.
- Formulation of the foundational aspects that guide closure planning, including the closure vision and the envisaged next land use.
- Identification of closure-related risks associated with the mine development project.
- Establishment of the closure scenario that provides the closure planning battery limits and the key assumptions related to the baseline environmental information, commencement of mining activities until cessation of operations, and the closure period and beyond.
- Formulation of the closure objectives and closure measures to be implemented to achieve the closure vision, the next land use and to mitigate the potential closure risks identified.
- Development of appropriate monitoring and maintenance guidelines.
- Estimating the cost to implement the closure measures as devised.
- Recommendation of several key principles and activities to be undertaken to ensure quality concurrent rehabilitation and the achievement of the closure vision, next land use and necessary risk mitigation.
- Compilation of a succinct report that documents the approach followed in developing the closure input for the EIA process.

1.3 PROJECT APPROACH

The process followed to develop this FCP for Tronox was aligned to Regulation 62 of the MPRDA Regulations; Appendix 5 of the EIA Regulations, 2014 (GN R. 982 of 2014), as amended and Appendix 3 and 4 of the NEMA Financial Provisioning Regulations, 2015. To address these requirements this document includes only the FCP, and an environmental risk assessment, as proposed Port Durnford mine is not yet operational and mining activities are still planned for execution.The content of this plan, as required by the aforementioned regulations, and where each requirement is addressed within this report is provided in Appendix A.

1.4 DETAILS OF THE SPECIALISTS

The details of the professionals who contributed to the preparation of the FCP are provided in Table 1-2.

Table 1-1 – Specialist contact details

Team member	Contact Number	Email Address	Company / Location
Johan Bothma	+27 11 254 4800	Johan.bothma@wsp.com	WSP South Africa / Midrand Offices
Roelof Letter	+27 11 254-4800	Roelof.letter@wsp.com	WSP South Africa / Midrand Offices
Dennis Komape	+27 11 254 4800	Dennis.komape@wsp.com	WSP South Africa / Midrand Offices

Table 1-2 - Details of Specialist[2] Role and qualifications

Team member	Role / Study Discipline	Qualifications and Experience
Dennis Komape	Report compilation and costing	MSc Environmental Sciences. ~9 years mine closure, rehabilitation & environmental SACNASP – Member No. 119325
Roelof Letter	Report compilation and costing	LLM Professional Masters Specialising in Environmental law, University of Cape Town BSc (Hons) Environmental Management, University of South Africa (Cum Laude) BSc Geography & Environmental Management, University of Johannesburg 13 years' experience
Johan Bothma	Project management, closure planning and costing review	Director: Mine Closure PrLArch, ML(Prof) SACLAP 18 years' experience

[2] According to the 2015 Financial Provisioning Regulations, "specialist" means an independent person or persons who is qualified by virtue of his or her demonstrable knowledge, qualifications, skills or expertise in the mining, environmental, resource economy and financial fields.

2 LOCATION OF THE PROJECT SITE

The project area is situated in the uMhlathuze and uMlalaziLocal Municipality that falls under the King Cetshwayo District Municipality (Figure 2-1 - Locality Map of Port Durnford Project Site). It is located approximately 15km south-west of Richards Bay and is adjacent to the following settlements/towns at different points along the boundary:

- Mtunzini.
- Port Durnford.
- Esikhawini.
- Gobandlovu; and
- KwaDlangezwa.

The N2 highway as well as the R102 traverse the length of the proposed mining area; the R102 being located to the northwest and the N2 running through the centre.

Table 2-1 provides a list of the properties within the proposed Port Durnford Mining Rights boundary.

Table 2-1 – Description of properties

<table>
<tr><td>Farm Name</td><td>Port Durnford
Portion 0 of Farm Richard 16802
Portion 0 of Farm Birkett 16832
Portion 0 of Farm Ruth 16833
Waterloo
Portion 0 of Farm Umlalazi 14098
Portion 1 of LOT 131 uMlalazi 14098
Portion 2 of Farm Umlalazi 14098
Portion 0 of Farm Umlalazi 13853
Portion 0 of Farm Umlalazi 13880
Penarrow
Portion 0 of Farm Umlalazi 13602
Portion 1 of LOT 132 Umlalazi 13602</td></tr>
<tr><td>Application area (hectares)</td><td>4682</td></tr>
<tr><td>Magisterial District</td><td>King Cetshwayo District Municipality</td></tr>
<tr><td>Distance and direction from the nearest town</td><td>The Port Durnford study project area is adjacent to the following towns at different points along the Mining Right (MR) application boundary:
200 m North-East from Mtunzini.
60 m North-North-West from Port Durnford.
200 m North-West from Esikhawini; and
200 m North-East from Gobandlovu</td></tr>
<tr><td>21 digit surveyor general code for each farm portion</td><td>
<table>
<tr><th>Port Durnford</th><th></th></tr>
<tr><td>Portion 0 of Farm Richard 16802</td><td>N0GU00000001680200000</td></tr>
<tr><td>Portion 0 of Farm Birkett 16832</td><td>N0GU00000001683200000</td></tr>
<tr><td>Portion 0 of Farm Ruth 16833</td><td>N0GU00000001683300000</td></tr>
<tr><th>Waterloo</th><th></th></tr>
<tr><td>Portion 0 of Farm uMlalazi 14098</td><td>N0GU00000001409800000</td></tr>
<tr><td>Portion 1 of Farm uMlalazi 14098</td><td>N0GU00000001409800001</td></tr>
<tr><td>Portion 2 of Farm uMlalazi 14098</td><td>N0GU00000001409800002</td></tr>
<tr><td>Portion 0 of Farm Umlalazi 13853</td><td>N0GU00000001385300000</td></tr>
<tr><td>Portion 0 of Farm uMlalazi 13880</td><td>N0GU00000001388000000</td></tr>
<tr><th>Penarrow</th><th></th></tr>
<tr><td>Portion 0 of Farm Umlalazi 13602</td><td>N0GU00000001360200000</td></tr>
<tr><td>Portion 1 of Farm Umlalazi 13602</td><td>N0GU00000001360200001</td></tr>
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Figure 2-1 - Locality Map of Port Durnford Project Site (WSP, Integrated Environmental Authorisation for the Port Durnford Mine, Kwazulu-Natal - Draft Scoping Report, 2024a)

3 LEGAL AND GOVERNANCE FRAMEWORK

This section discusses the legal requirements involved in mine closure.

Section 41(1) of the MPRDA has been repealed. In terms of Section 24(P) of the NEMA, as amended, requires that the holder of a MR must make financial provision for rehabilitation of negative environmental impacts. The financial provision must guarantee the availability of sufficient funds to undertake the following:

- Rehabilitation of the adverse environmental impacts of the listed or specified activities.
- Rehabilitation of the impacts of the prospecting, exploration, mining or production activities, including the pumping and treatment of polluted or extraneous water.
- Decommissioning and closure of the operations.
- Remediation of latent and/or residual environmental impacts which become known in the future.
- Removal of building structures and other objects; and/or
- Remediation of any other negative environmental impacts.

Furthermore, Regulations pertaining to the financial provision for prospecting, exploration, mining, or production operations were promulgated on the 20 November 2015 (GN R1147) (NEMA Financial Provisioning Regulations). For the purposes of this report, the financial provision estimates, and respective report are in line with the requirements GN R 1147, as amended.

On the 24 June 2022 the National Environmental Management Law Amendment Act, 2022 (Act No. 5 of 2022) (NEMLAA4) was promulgated. This Act provides clarity on what is to be audited in relation to financial provisioning.

Regulation 11 of GN R 1147 requires the holder of a mining right to determine the quantum of the financial provision through detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for:

- Annual rehabilitation as reflected in the ARP as per the minimum content prescribed by Appendix 3 of GN R 1147.
- Final rehabilitation, decommissioning and closure as reflected in a Closure Plan as per the minimum content prescribed by Appendix 4 of GN R 1147; and
- The remediation of latent and / or residual environmental impacts including but not limited to the pumping and treatment of polluted or extraneous water, as reflected in the ERR, as per the requirements of Appendix 5 of GN R 1147.

There are several guideline documents which provide recommendations on how rehabilitation and closure should be undertaken. For the purpose of the plan, the following guideline documents were considered:

- Best Practice Guidelines (BPGs) series developed by the Department of Water Affairs; and
- Integrated Mine Closure, good practice guideline 2nd edition. International Council of Mining and Metals, 2019 (ICMM, 2019).

The legislation pertinent to mine closure is summarised in Table 3-1.

Table 3-1: Applicable Closure Related Legislation

Legislation and Guidelines	Applicability
Section 24 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) The Constitution that states that everyone has the right to an environment that is not harmful to their health or wellbeing. It also states that the environment must be protected for the benefit of present and future generations through responsible legislative measures.	▪ The FCP has been conducted as part of the EA) ▪ An Environmental Management Programme and Monitoring Programme is included in the Environmental Impact Assessment phase; and ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated.
National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA, 1998) The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) was set in place under Section 24 of the Constitution. Certain environmental principles under NEMA must be adhered to, to inform decision making for issues affecting the environment. Section 24 of NEMA states that: *"The potential impact on the environment and socio-economic conditions of activities that require authorisation or permission by law, and which may significantly affect the environment must be considered, investigated and assessed before their implementation and reported to the organ of state charged by law with authorising, permitting, or otherwise allowing the implementation of an activity."* The NEMA requires that pollution and degradation of the environment be avoided, or, where it cannot be avoided be minimised and treated. Section 24(2)(a) of NEMA provides that: *"(2) The Minister, or a Member of the Executive Council with the concurrence of the Minister, may identify –* *(a) activities which may not commence without Environmental Authorisation from the Competent Authority;* *(b) …."*. Section 24F (1) of NEMA provides that *"(1) Notwithstanding any other Act, no person may –* *(a) commence an activity listed or specified in terms of Section 24 (2) (a) or (b) unless the Competent Authority or the Minister responsible for mineral resources, as the case may be, has granted an Environmental Authorisation for the activity; or*	▪ The FCP has been conducted as part of the EA; and ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated.

Legislation and Guidelines	Applicability
(b) commence and continue an activity listed in terms of Section 24 (2) (d) unless it is done in terms of an applicable norm or standard".	
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA, 2004) The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA) regulates the management and conservation of the biodiversity of South Africa within the framework provided under NEMA. This Act also regulates the protection of species and ecosystems that require national protection and also considers the management of alien and invasive species. The following regulations which have been promulgated in terms of the NEM:BA are also of relevance: ▪ Alien and Invasive Species Lists under Section 97(1) of the NEM:BA (Government Notice Regulation (GN R) 1020 in Government Gazette (GG) 43735 of 25 September 2020); and • National list of Ecosystems Threatened and in need of Protection under Section 52(1) (a) of the NEM:BA (GN R 1002 in GG 34809 of 9 December 2011).	▪ The FCP has been conducted as part of the EA; and ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated.
National Water Act, 1998 (Act No. 36 of 1998) (NWA, 1998) The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides for the sustainable and equitable use and protection of water resources. It is founded on the principle that the National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, and that a person can only be entitled to use water if the use is permissible under the NWA. GN R 704 was published in June 1999 and aims to regulate the use of water for mining and related activities for the protection of water resources and states the following: ▪ Regulation 4: No residue deposit, reservoir or dam may be located within the 1:100-year flood line, or less than a horizontal distance of 100 m from the nearest watercourse. Furthermore, person(s) may not dispose of any substance that may cause water pollution. ▪ Regulation 5: No person(s) may use substances for the construction of a dam or impoundment if that substance will cause water pollution. ▪ Regulation 6 is concerned with the capacity requirements of clean and dirty water systems, minimum freeboard, flood designs, and ▪ Regulation 7 details the requirements necessary for the protection of water resources.	▪ The FCP has been conducted as part of the Integrated Water Use License application process. ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated.

Legislation and Guidelines	Applicability
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA, 2004) The prevailing legislation in the Republic of South Africa with regard to the air quality field is the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA). According to the Act, the Department of Environmental Affairs (DEA), the provincial environmental departments and local authorities (district and local municipalities) are separately and jointly responsible for the implementation and enforcement of various aspects of NEM:AQA. A fundamental aspect of the new approach to air quality regulation, as reflected in the NEM:AQA is the establishment of National Ambient Air Quality Standards, 2009 (NAAQS) (Government Notice Regulation (GN. R) 1210 published in Government Gazette (GG) 328166). These standards provide the goals for air quality management plans and also provide the benchmark by which the effectiveness of these management plans is measured. The NEM:AQA provides for the identification of priority pollutants and the setting of ambient standards with respect to these pollutants.	▪ The FCP has been conducted as part of the EA; and ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated.
The Conservation of Agricultural Resources, 1983 (Act No. 43 of 1983) (CARA, 1983) The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) states that the degradation of the agricultural potential of soil is illegal and requires that protection of land against soil erosion and the prevention of water logging and salinisation of soils means of suitable soil conservation works to be constructed and maintained.	▪ The FCP has been conducted as part of the EA. ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated, and ▪ Recommendations have been provided to rehabilitate the land back to a predetermined state and targets set for such.
Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA, 2002) The Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA) aims to "*make provision for equitable access to, and sustainable development of, the nation's mineral and petroleum resources*". The MPRDA outlines the procedural requirements that need to be met to acquire mineral and petroleum rights in South Africa. The MPRDA governs the sustainable utilisation of South Africa's mineral resources. Further, the MPRDA also requires adherence to related legislation, amongst such is the NEMA, the NEM:WA, the NWA and the NEM:AQA. One of the most recent amendments of the	▪ The FCP has been compiled to comply with the requirements of the MPRDA and GN R 1147, (as amended), with respect to the structure and content of this FCP.

Legislation and Guidelines	Applicability
MPRDA, Section 38A, requires that all mining related activities follow the requirements of NEMA.	
National Noise Control Regulations, GN R 154 of 1992 (the Noise Regulations) promulgated in terms of Section 25 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989) The National Noise Control Regulations (GN R 154 in GG No. 13717 dated 10 January 1992) (NCR) form part of the Environmental Conservation Act and these Regulations apply to external noise. The NCR differentiates between Disturbing Noise levels (which is objective and scientifically measurable which are generally compared to existing ambient noise level) and Noise Nuisance (which is a subjective measure and is defined as noise that "*disturbs or impairs or may disturb or impair the convenience or peace of any person*"). Local Authorities use Controlled Areas to identify areas with high noise levels. Restrictions have been set out for development that occurs in these Controlled Areas. These regulations make provision for guidelines pertaining to noise control and measurements. The regulations refer to the use of the South African National Standards (SANS) 10103 guidelines for the Measurement and Rating of Environmental Noise with Respect to Land Use, Health, and Annoyance and to Speech Communication. As such, a Noise Impact Assessment in accordance with the NCRs must be undertaken for submission to determine the potential disturbing and nuisance noise levels associated with a particular development.	▪ The FCP has been conducted as part of the EA; and ▪ Possible impacts were assessed, recommendations to prevent, avoid, and rehabilitate the anticipated impacts were formulated, and the required financial provision was calculated.

4 MINE DESCRIPTION AND CONTEXT

The description of the proposed Port Durnford mining project, as outlined in the following section, is adapted from the scoping report compiled by WSP (WSP, 2024a).

4.1 PROJECT BACKGROUND

Tronox currently operates the Fairbreeze Mine southwest of the Port Durnford MRA. Here, mineralised sand dunes are mined by hydraulic mining using a high-pressure hose that turns the in-situ sand into slurry. The slurry is then pumped to the plant for processing. This is supported by a Tronox Mineral

Separation Plant (MSP) and Smelter, collectively known as the Central Processing Complex (CPC) in the Empangeni area.

Fairbreeze Mine will reach the end of its life span within fifteen years. Tronox's previous mining operation, Hillendale, is currently in the mine closure stage. Tronox intends to develop a low-rate mining-only operation at the Port Durnford MRA, initially producing a run of mine (ROM) to be sent to Fairbreeze for primary beneficiation and then expanding to provide heavy mineral concentrate (HMC) for the KZN MSP once mining at Fairbreeze is complete.

It is intended that the HMC produced at Port Durnford will be used to replace Fairbreeze mine commitments to the MSP and the Empangeni Smelter. The mineral suite in the Port Durnford ore body closely matches that of the Fairbreeze ore bodies, with all previous test work showing that Port Durnford mineral products would effectively be a 'like for like' replacement for Fairbreeze mineral products. The Port Durnford Project will thus secure continued feed to the CPC in Empangeni, allow for the continued supply to customers and realise sustained economic benefits.

This project was conceptually planned for in 2007 and formally planned in 2015 when Tronox appointed Hatch (Pty) Ltd (Hatch) to complete a concept study for developing a mining operation at Port Durnford. Following the concept study, Tronox appointed Hatch to conduct a Pre-Feasibility Study (PFS) on the Port Durnford site, which concluded in November 2020. The concept study assessed multiple mining options and rates. The technical and financial evaluations determined that the Port Durnford mining operation should be stand-alone, mined in two phases (Phase 1 and Phase 2) (Hatch (Pty) Ltd, 2020).

4.2 PROPOSED PORT DURNFORD MINING

The proposed Port Durnford Mine mining activities will be undertaken in two phases. The following sections summarise Phase 1 (Section 4.2.1) and Phase 2 (Section 4.2.2) of the project, respectively. It is important to note that these descriptions focus on the expected visual impact aspects of the project and are therefore not meant to provide a comprehensive project overview. For more detail on specific aspects of the project, please refer to the Draft Scoping Report (WSP, 2024a).

4.2.1 PHASE 1

Phase 1 mining operations will be conducted on the remainder of Richards 16802. This land is currently under commercial forestry, leased by Mondi and owned by the Phalani Community Trust. The proposed location for the Phase 1 operation and infrastructure is indicated in Figure 4-1, while a 3D visualisation of the site is provided in Figure 4-2.

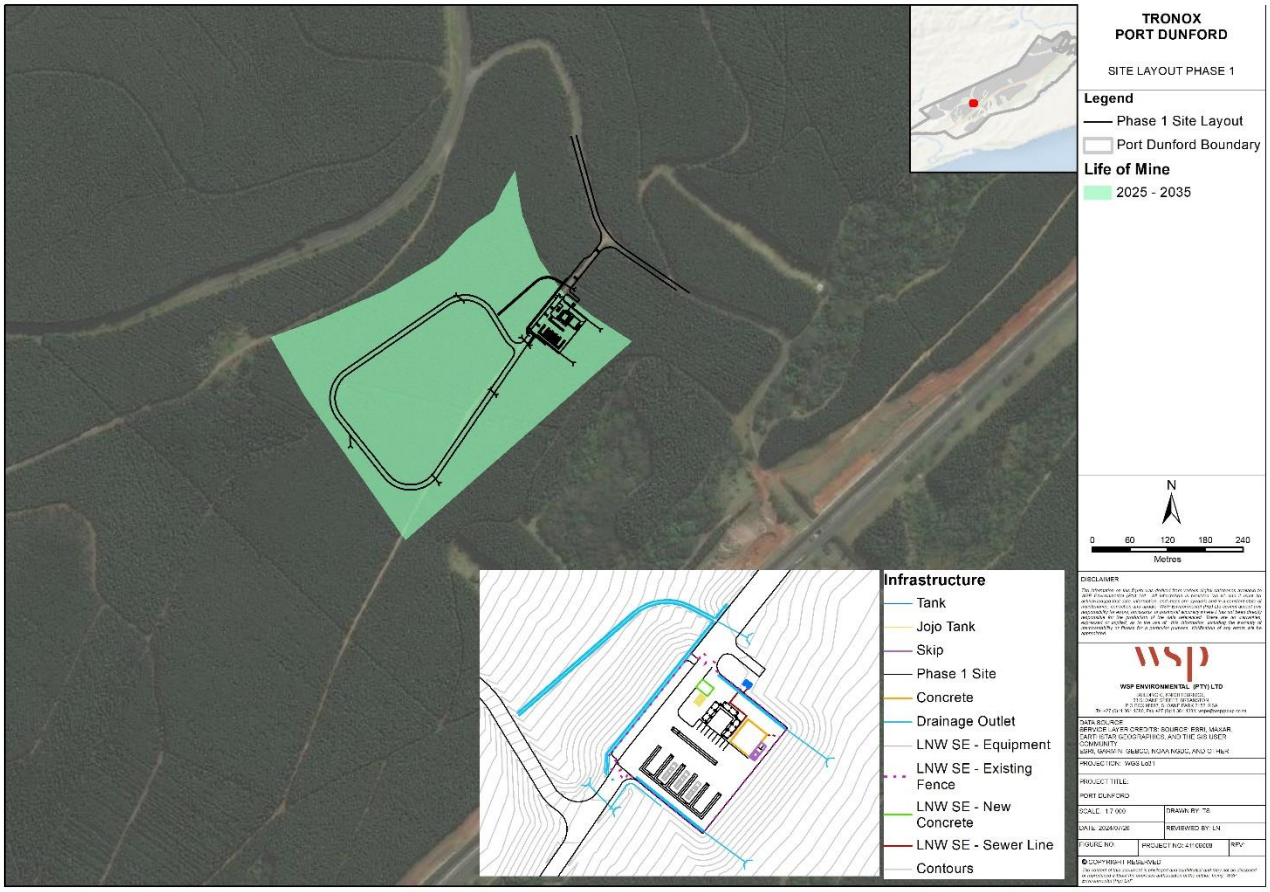

Figure 4-1 - Proposed Phase 1 Layout and Infrastructure

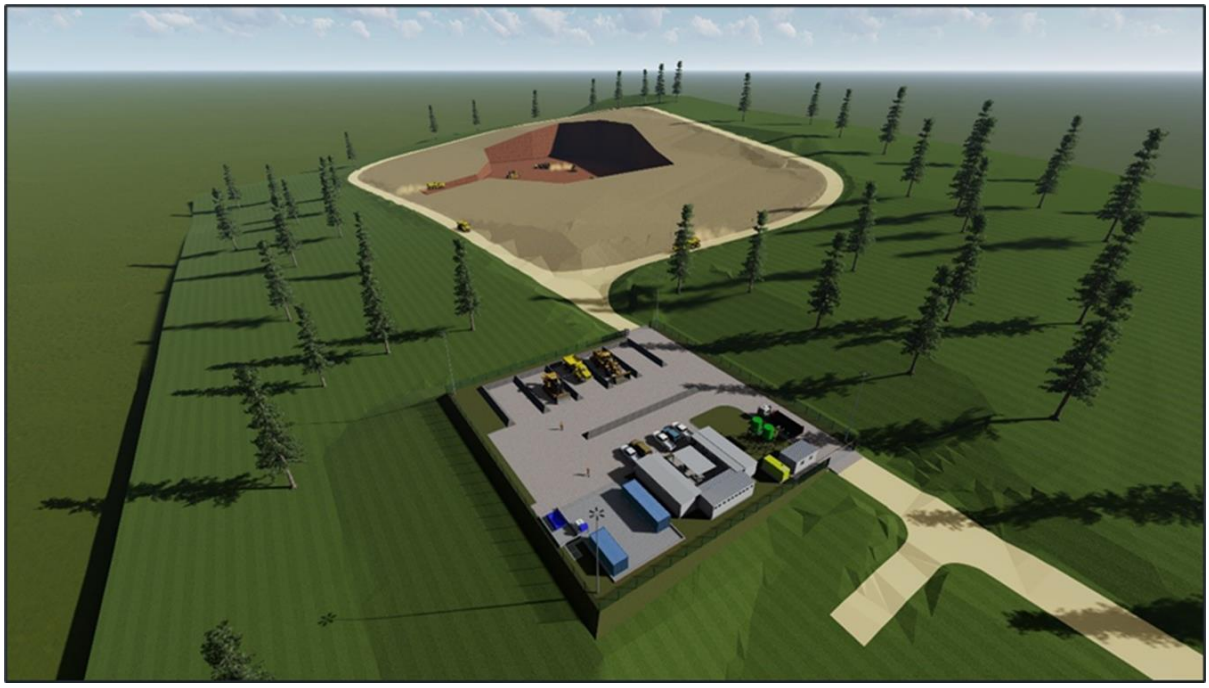

Figure 4-2 - A 3D Visualisation of the Phase 1 Layout

4.2.1.1 Mine Plan and Process

Phase 1 will have a mining footprint of less than 10 ha and will be located on Portion 1 of Richard 16802, over a ten-year period, between 2025-2035. The mining will operate at 100 tons per hour (tph) and 70 400 tons per annum (tpa). Active mining will occur five days a week per month, 12 hours a day.

The ROM material will be mined mechanically and hauled to the Fairbreeze mine via trucks for stockpile and processing. No processing on site is proposed for the Phase 1 mining operation. ROM will be transported to Fairbreeze Mine by truck on public roads (the R102 and N2) for further processing. It is expected that 4 x 30 t trucks will be used to transport the mined material from Port Durnford to Fairbreeze Mine. It is anticipated that 9 truck cycles will be used daily for the five days each month the site is being actively mined.

The mined-out ore bodies at Fairbreeze Mine will be used for pit infill from the Port Durnford Phase 1 operation for the first 11 years of mining. The hydraulic mining process at the Fairbreeze Mine will continue as per current practice, and the process will continue to process the stockpiled material. Hydraulically reclaimed ROM slurry will be pumped to the existing Fairbreeze Primary Wet Plant (PWP) for processing. The processed material will then be trucked to the existing MSP located at the CPC in Empangeni as part of the Fairbreeze product.

The Phase 1 infrastructure and mining related disturbances will not be relevant at the time of scheduled mine closure, as reflected in this closure plan. However, regular future updates of the mine closure plan and associated closure costs will be required once Phase 1 (and subsequent Phase 2) mining operations commence and will reflect the day-of-assessment (unscheduled) mine scenario at the time of each respective closure planning update, including that of the Phase 1 operations. To this end, the Phase 1 infrastructure is summarised below. Figure 4-3 illustrates the process flow during Phase 1 operations.

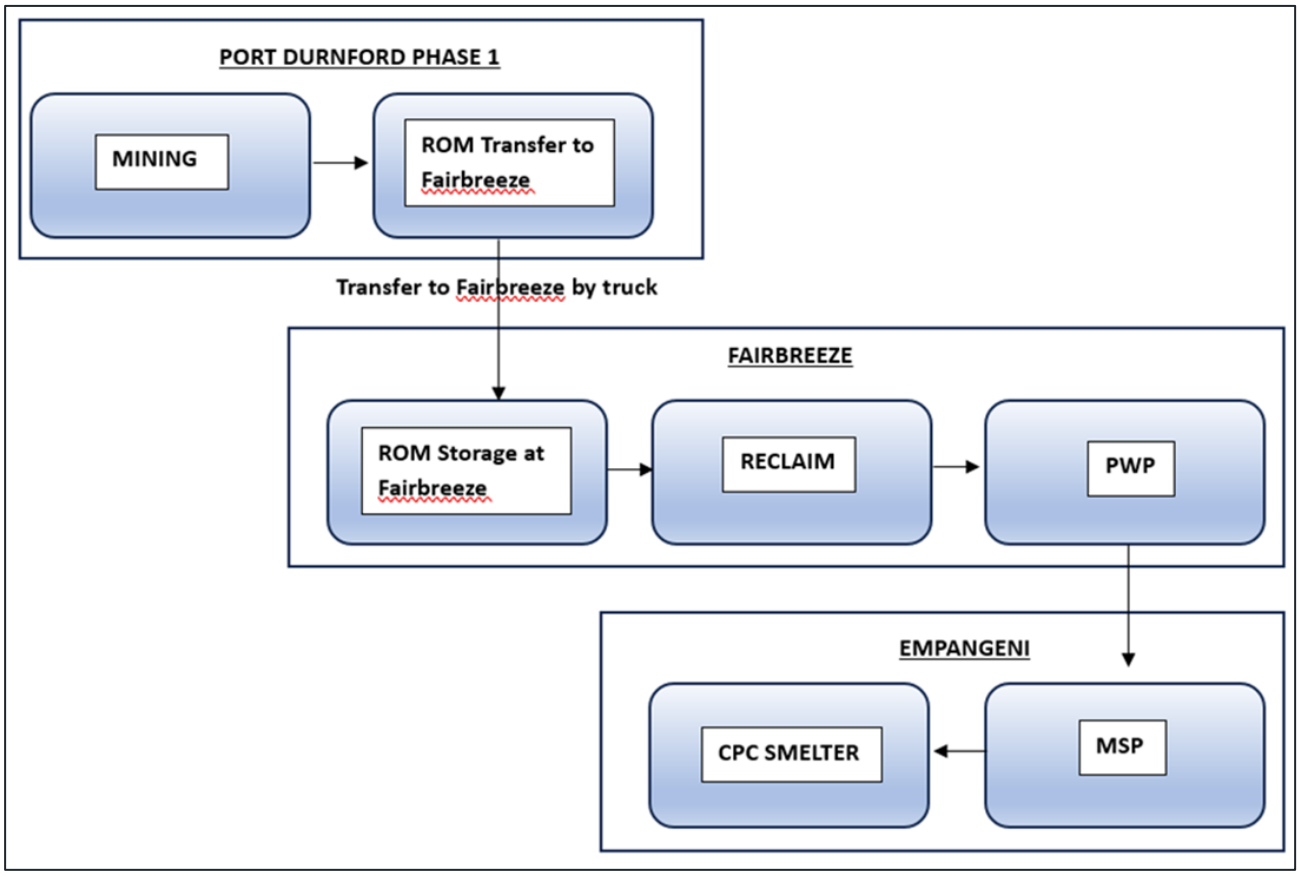

Figure 4-3 - Phase 1 Process Flow Diagram

4.2.1.2 Phase 1 Infrastructure

- Site camp and laydown yard infrastructure: This laydown yard will have no hardstand stockpile area, as the material will be mined, loaded and transported directly to Fairbreeze. The infrastructure associated with the Phase 1 laydown yard, as depicted in Figure 4-1 will include the following aspects:
  - Conservancy septic tank system - 2 x 6 000 L JoJo tanks placed underground.
  - Mining equipment parking area (gravel with 2 x layers & in situ).
  - Workshop laydown area (concrete stand with 2 x steel containers).
  - Water storage tanks (2 x 10 kL tanks).
  - Internal water reticulation (reticulation to offices & ablutions).
  - Offices and ablution and septic tank (2 x 12 m units & 1 x 9 m unit).
  - Internal electrical reticulation (estimated ADMD to be 14.7 kW).
  - External lighting.
  - LDV parking area (1 x G6 layer with RIP & compacted base).
  - Guardhouse (concrete stand with 1 x steel container).
  - Security fence (2.1 m high fence & 1.2 m parameter fence).
  - A gravel access road (200 m) connects the laydown yard to the district road, which connects to the R102.
  - A general and hazardous waste storage area.

- Fuel and lubricant storage: Fuel tanks will be supported on a concrete surface bed with edge thickenings. A concrete bund wall will be constructed surrounding the fuel tanks. A 23 m^3 storage tank is anticipated to be provided, and it is estimated that 153 422 litres will be utilised per annum.
- This laydown yard will have no hard stand stockpile area. The mined material will be mined, loaded and transported directly to Fairbreeze.

- Water supply: The primary water use on site will be dust suppression. It is anticipated that 4 800 m^3 per annum will be required for this project phase. The water supply options include connecting to the nearest municipal supply point, installing a borehole, or utilising water carts to supply the Phase 1 site. Tronox has opted to utilise 10-18 kilolitre (kl) water trucks to cart 6 kl of municipal water to the site, to be stored in 2 x10 kl JoJo tanks. The JoJo tanks will be elevated on a steel structure. The municipal water supply points considered are:
  - Potable water sourced from the Port Durnford clinic: 28°54'57.15"S 31°49'42.06"E – 2.3 km from the Phase 1 laydown yard.
  - Alton bulk water point: 28°44'45.38"S 32° 1'29.68" E – 34 km from Phase 1 laydown yard.
  - Empangeni bulk water point: 28°44'58.29"S 31°53'6.88"E – 23 km from Phase 1 laydown yard.
- Electrical supply: Power will be required to service the administration offices. The average monthly consumption required for the Laydown yard is expected to be 2 741 kWh. Tronox plans to utilise an Eskom overhead power line connection with an inverter and batteries for a backup power supply. A miniature substation (MSS) will be required to step down the Eskom 22 kV to 400 V for the mine office distribution
- Haulage routes: Three possible transport routes were considered for the Phase 1 operation to transport mined material between the mining area and Fairbreeze Mine. However, this aspect will not have an impact on the project closure planning requirements.

4.2.2 PHASE 2

4.2.2.1 Location and Overview

The infrastructure for Phase 2 will be constructed during the Phase 1 mining period (2025-2036). However, mining and processing for Phase 2 will only commence in 2036.

The proposed Phase 2 operation comprises opencast mining, on-site processing of ROM material in a PWP, the on-site backfill and disposal of both coarse and fine sand tailings from the PWP and the transport of heavy mineral concentrate to the existing Tronox mineral MSP located in Empangeni within the Tronox CPC. At the MSP the concentrate is further beneficiated to yield the target minerals. Coarse sand tailings that are not separated at the PWP and thus transported to the MSP as part of the concentrate but do not yield product are returned to the mine and reintroduced into the coarse sand tailings backfill stream. The Port Durnford mining footprint is 1 132 hectares, which will be mined over a 33-year period between 2036 and 2069. The planned mining rate will be 3 000 tph, 24 hours a day, 365 days a year. The Phase 2 layout is presented in Figure 4-4.

4.2.2.2 Mining Operation Plan

The planned mining schedule (mine block plan including time sequencing) is presented in Figure 4-5. The mining schedule is also presented with mining blocks grouped into 5-year units for ease of interpretation of mine progress through time. In this plan, the position of the fine residue storage

facilities (RSFs in orange outline) and the sand dumps (in beige outline) are also indicated, along with the position of the PWP (orange rectangle).

Mining commences in Phase 2 in 2035 at the site of the Phase 1 pit to complete mining that block. Thereafter, the active mining window moves to a position immediately east of the PWP and sequentially progresses easterly until the eastern extent of the mine is reached in 2061. Mining is also initiated in the western extent of the proposed mining footprint in 2051 and progresses easterly towards the PWP. The final block, which lies immediately north of the PWP, will be mined in 2069.

From Figure 4-4, it can be seen that RSF 9 in the west of the site will be developed on unmined ground while RSF C in the east of the site will be developed sequentially on the pit floor as each corresponding five-year mining block has been completed and space becomes available. During these periods, the washed sand tailings cannot be backfilled into the pit and, consequently, must sometimes be deposited on the surface. All pit areas will be backfilled with either coarse sand tailings or fine residue (within the RSF). The sand dump positions (beige outline) reflect where a sand dump will be developed above the current ground surface and remain a permanent aboveground feature on the post-mining landscape. Similarly, RSF Site C will also end above the current ground surface.

Figure 4-4 -Proposed Phase 2 Infrastructure Layout

Figure 4-5 - Proposed Phase 2 Life of Mine (LOM) Plan

Figure 4-6 -Proposed Phase 2 Mining Block Plan Showing 5-year Mining Windows

4.2.2.3 Sequence of Mining Activities

The basic sequence of mining activities is as follows and includes provision for progressive rehabilitation throughout LOM:

- Before mining starts, a minimum of 0.3 m of topsoil will be stripped. This material will preferably be placed directly in an area available for rehabilitation, or it will be placed in a stockpile for later use if that is not possible.
- Then, the in-situ sands are mined. In the Port Durnford mine, the sands are mineralised from the surface to the base of the economic mining limit within the pit. Consequently, there is mineralisation even in the topsoil that is set aside.
- After a pit has reached the economic limit for mining, it becomes available to be backfilled. Backfill material comprises the washed course tailings.
- Once the pit is backfilled to the design height, it becomes available for rehabilitation, topsoil is replaced, and
- The topsoil areas are revegetated.

4.2.2.4 Mining Method

The proposed Port Durnford heavy mineral sands mine will be an opencast sand mine, similar to the current Tronox Fairbreeze operation. The mining method will, however, differ. At Port Durnford, mobile skid-mounted dozer trap mining units (DTMUs) will be used in active mining areas. The mining process entails dozing the sand material down to the DTMU, which is combined with water and pumped to the PWP. Each DTMU is anticipated to be fed by two D11 dozers and a CAT390 excavator. A DTMU is equipped with a vibrating screen to separate oversized material and is accompanied by a primary pump. Each DTMU is connected to a raw water feed pipeline, a ROM slurry delivery pipeline, and a power connection.

4.2.2.5 Mineral Processing

The ROM material is processed at the PWP to remove fine material from the plant feed and separate the non-mineralised sand fraction to produce a heavy mineral concentrate. The ROM feed at Port Durnford is typically comprised of 76% coarse sand tails and 20% sand tail fines, with the remaining 4% being HMC, which is then transported off-site to the MSP in Empangeni. The primary processing entails:

- Mined material is deslimed and placed through a spiral circuit to separate the coarse sand tailings (+45 µm).
- The coarse sand tailings will be used for backfilling and establishing the walls of the RSF facilities.
- The spiral concentrate is put through a magnetic separation circuit to remove the reject magnetite and fed back into the coarse tailings circuit.
- The non-magnetic material forms the HMC.
- The fine tailings (-45 µm) are collected from the desliming process, a thickener is added, and process water is retrieved before disposal at the residue storage facilities.

The PWP will be designed to process 22 866 000 t/annum ROM at a nominal rate of 3 000 t/h. The PWP layout includes:

- ROM feed preparation and fines removal area.
- Gravity and magnetic separation areas.
- Fine tails dewatering, treatment and pumping area.

- 33 kV sub-station and power factor correction (PFC) yards and Eskom yard.
- Raw and process water storage and distribution area: Raw water will be stored in a single 10 000 m^3 raw water dam. Process water will be stored in two 7 500 m^3 dams connected by a common overflow sump.
- Compressed air plant: The PWP will be serviced by a single compressed air facility comprising two compressors, air receivers, and air dryers.
- Potable water treatment plant: A standalone packaged potable water plant capable of supplying sufficient water for the total estimated personnel complement.
- Sewage treatment plant: A plant will be developed to accommodate the onsite personnel. Processed effluent from this treatment plant will be pumped to the process water dam.
- Workshop and stores.
- HMC dewatering, stockpiling and reclaiming area.
- MSP tails handling where non-mineralised sand tails returning from the MSP are received to be reincorporated into the course tailings backfill stream.
- Gypsum plant.
- Mine complex includes administration offices with parking, a control room, a change house, a mess, a security office, a laboratory and a sample room.
- The raw water dam will feed directly into a fit-for-purpose and legally compliant fire water pumping station and distribution system at the PWP.

The PWP layout is indicated in Figure 4-7 and process flow for Phase 2 activities is summarised in Figure 4-8

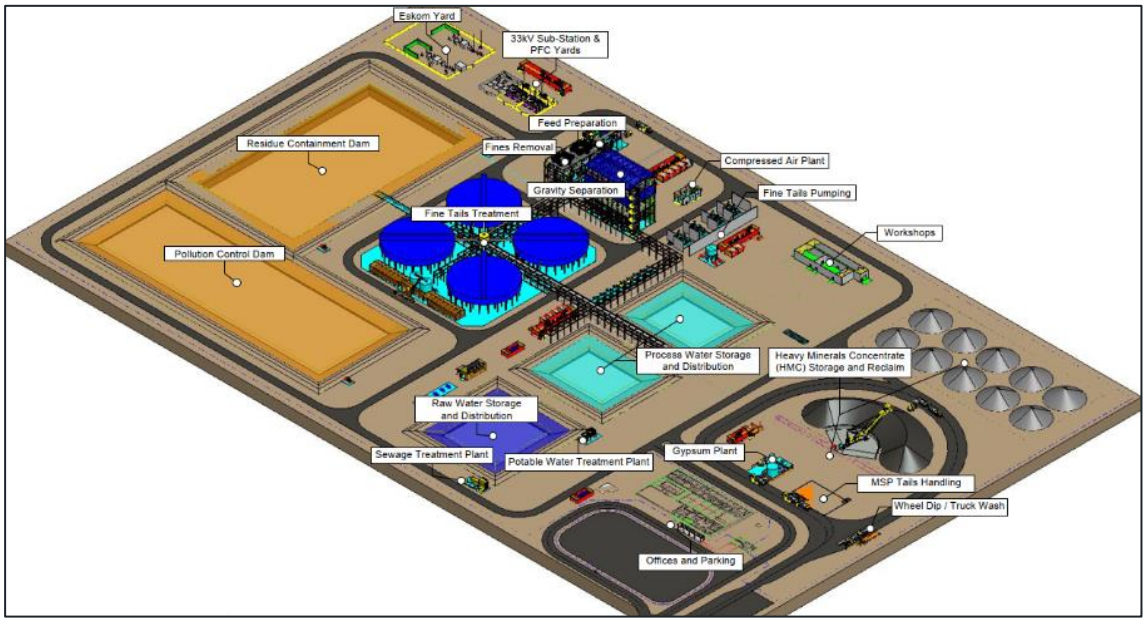

Figure 4-7 – Proposed Phase 2 PWP Layout

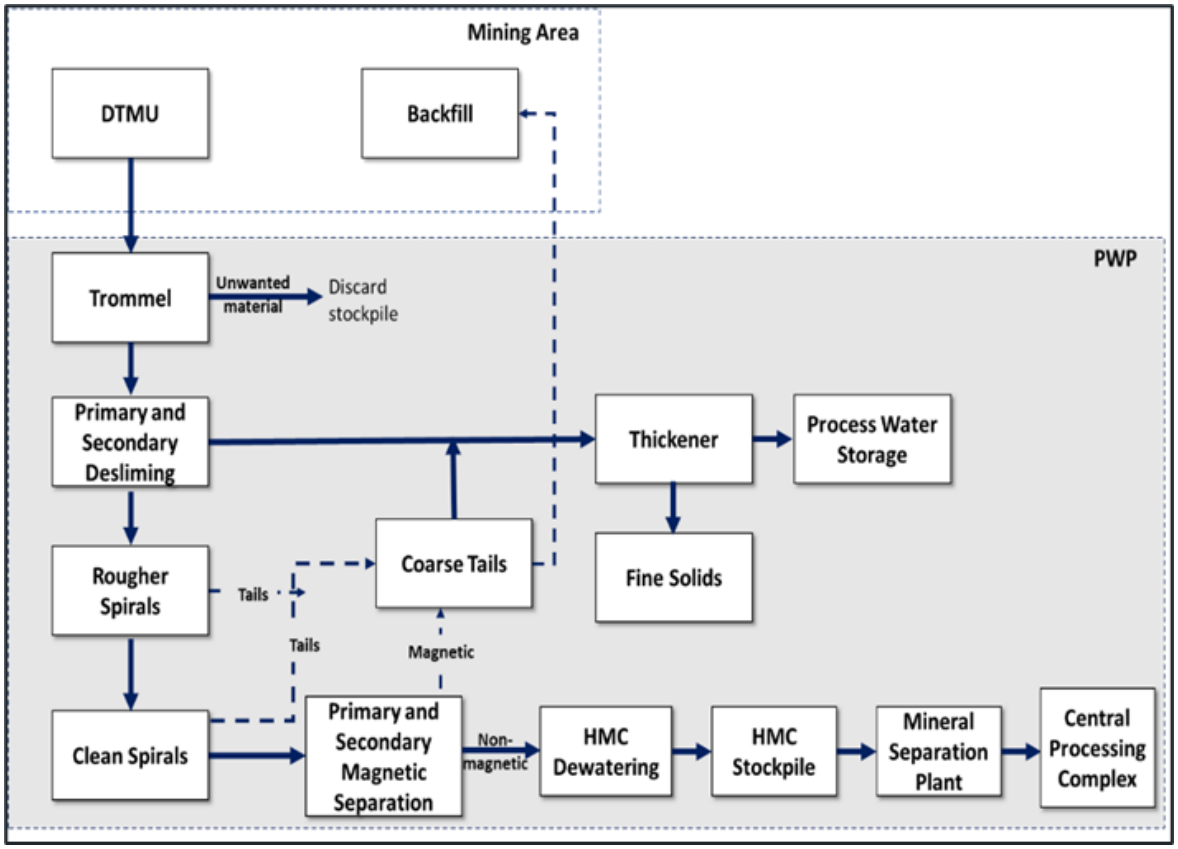

Figure 4-8 – Proposed Phase 2 Process Flow Diagram

4.2.2.6 Supporting Infrastructure

- Water Supply: Raw water will be supplied to Port Durnford from the existing uMhlatuze bulk water supply station directly to the PWP raw water dam via a take-off from the main pipeline currently supplying water to Fairbreeze.
- Power Supply: The site's power supply will come from the adjacent Eskom grid via two 88 KV incoming overhead lines to the Port Durnford 33 kV substation, passing through two 88/32 kV step-down transformers. Power will be distributed from the substation to points within the site where it is needed via local powerlines.
- Internal Haulage Routes: Twenty-four kilometres (24 km) of haulage routes have been conceptually designed within the Mining Boundary. These haulage routes have been given a 40m wide road servitude. They cater for haulage within the mining areas and pipeline service infrastructure. Existing haulage routes will be used and upgraded where possible to accommodate the larger road servitudes. Where the haulage routes cross water courses, crossing structures will be designed and built across the water course.

4.2.2.7 Waste Streams

The proposed mining operation produces three “waste streams”: coarse sand tails, fine residue and gypsum filter cake. The following tails products are received from the CPC (Empangeni) for disposal with the various tails products at the PWP at Port Durnford:

- MSP coarse tails are received by tip truck from the MSP in Empangeni. These are tipped directly into a slurry hopper, which is slurried before being pumped directly into the rougher sand tails tank

for disposal with the sand tails at the PWP at Port Durnford. Approximately 678 Mt of sand tails will be deposited during the planned LOM. Large sand tail stockpiles will be utilised for sand tails disposal from 2036 within the Port Durnford mining boundary.

- The CPC receives gypsum filter cake from the MSP in Empangeni via truck. The gypsum cake is fed into a material handling facility for re-slurrying before being fed to the thickener underflow tank for disposal with the fines to the RSF. It is estimated that between 4 800 and 9 600 t/annum of gypsum will be disposed of into the RSF feed stream each year.
- Coarse Sand Tails Disposal: The Port Durnford mining operation is anticipated to have a sand tails material balance of approximately 678 Mt over the full LOM, requiring handling and management between 15.6 and 18.5 million tons of sand per annum. The current mine plan has accounted for all 678 Mt of coarse sand tails over a planned 34-year mining period. Approximately 63 Mt of coarse sand tailings will be used for RSF dam wall construction, and the remaining 615.2 Mt will be used for pit backfill, RSF capping, or permanently deposited onto sand dumps.

4.2.2.8 Topsoil Management:

For all areas used for mining and mine infrastructure at Port Durnford, 0.3 m of topsoil within the “project footprint” will be removed and kept aside for rehabilitation. This standard practice applies to the RSF Site 9, the mining footprint, sand tails dump areas and the PWP plant site. Wherever possible, within the mining areas, topsoil will be stripped and placed directly in areas available for rehabilitation. When space has been depleted in the designated 44 ha of topsoil stockpile areas, the topsoil will be stockpiled and used as stormwater runoff berms around the sand tail deposition areas.

Prior to mining or stockpiling, the top 0.3 m of soil will be stripped and stockpiled in designated topsoil stockpile sites within the Port Durnford mining right boundary.

The topsoil stockpiles will be afforded a 30 m buffer from the edge of the nearest wetland or delineated sensitive environmental area. Each area will be cleared of large trees or tree stumps prior to the placement of soil. The height of stockpiles should not exceed 3 m wherever possible, and stockpiles will be protected from stormwater erosion by diversion berms. No road development over the surface of the topsoil stockpiles will be permitted to avoid unintended compassion for the valuable topsoil resource.

The topsoil stockpiles will be grassed with a mix of indigenous grass seed, containing the following grass types:

- *Eragrostis tef* (Teff).
- *Eragrostis curvula* (Weeping lovegrass).
- *Cynodon dactylon* (Bermuda grass).
- *Cenchrus ciliaris* (Bloubuffels grass).
- *Panicum maximum* (Guinea grass).
- *Chloris gayana* (Rhodes grass).
- *Digitaria eriantha* (Smuts finger grass); and
- *Paspalum notatum* (Bahia grass).

A vegetation canopy cover of 30-50% will be achieved on the topsoil stockpiles.

4.2.2.9 Fine Residue Deposition

Fine residue will need to be managed throughout the life of mine. The RSF capacity for Port Durnford has been designed for a 28-year LOM between 2036 and 2064. It is understood that RSF capping and shaping of the sand tails dump sites with the remaining sand tails will occur between 2064 and 2069. The RSF facilities will be constructed using a phased approach. The RSF dam walls will be constructed with coarse sand tails from the mining operation and be compacted. The dam walls will be erected to the designed heights to create a "holding shell" for the incoming fine residue. Each RSF facility has a determined lifespan of RSF disposal. Each RSF site will have a maximum height and storage capacity. Once the RSF facility has reached its design capacity (design capacity in terms of storage volume and height), the facilities will be capped with coarse sand tailings and vegetated.

RSF Site 9 will have a Water Control Dam (WCD) to receive water from the RSF dams and intercept stormwater falling within the managed RSF area. Excess water will be recovered from the surface of the RSF and the under-drainage system and returned for reuse in mining. The RSF dams will use a barge/turret system for excess water removal. The RSF sites will be installed with herringbone, toe, and blanket drainage systems to assist in dewatering the fine tailings to aid stability, manage seepage, and control the phreatic surface within RSF. Stormwater control berms and trenches will be used to manage external water, with toe paddocks to control material eroded from the RSF outer slopes.

- RSF Site 9
    - Overview: RSF Site 9 will be built from the sand tailings material from the Phase 2 mining activity. After 11 years of Phase 1 mining, Phase 2 mining will start adjacent to the then-constructed PWP plant in 2037. The sand tails produced in the first block of Phase 2 mining will be used to construct the dam walls of RSF Site 9. RSF Site 9 will be situated on the southwestern side of the proposed mining footprint, on Portion 1/13602 and the remaining portion of 13602 of Port Durnford Lot 132. This property is leased by Mondi and owned by the Phalane Community Trust. This RSF facility will be used for the first 6 years of mining in Phase 2. RSF Site 9 will be 268 ha and have a final height of approximately 55 m above average ground level. The facility will be designed to store up to 26.9Mt of fine residue and 18.2Mt of sand residue. The terminal Rate of Rise for Site 9 is 3.3 m/yr, meaning that the RSF facility can safely increase in height by 3.3m per year.
    - Supporting Infrastructure: The WCD for RSF Site 9 was redesigned to avoid environmentally sensitive areas. This dam will be approximately 19 ha in extent and have an 870 000 m^3 storage capacity. A barge/ turret system will transport water from the RSF to the water control dam.
    - RSF Closure: It is anticipated that RSF Site 9 will be operational for 6 years and reach full capacity in 2042. Thereafter, capping of the RSF surface with coarse sand tailings site will commence in 2046, assuming that the surface of the RSF has dried out and stabilised sufficiently by that stage. Once backfilled, the site will be topsoiled in 2048. Outer slopes of the RSF will be topsoiled and vegetated as areas become available to stabilise the side slopes against erosion. The RSF will be returned to the landowner once Tronox is satisfied that the facility and the chosen vegetation cover have stabilised. A conceptual design has been provided in Figure 4-9 below.

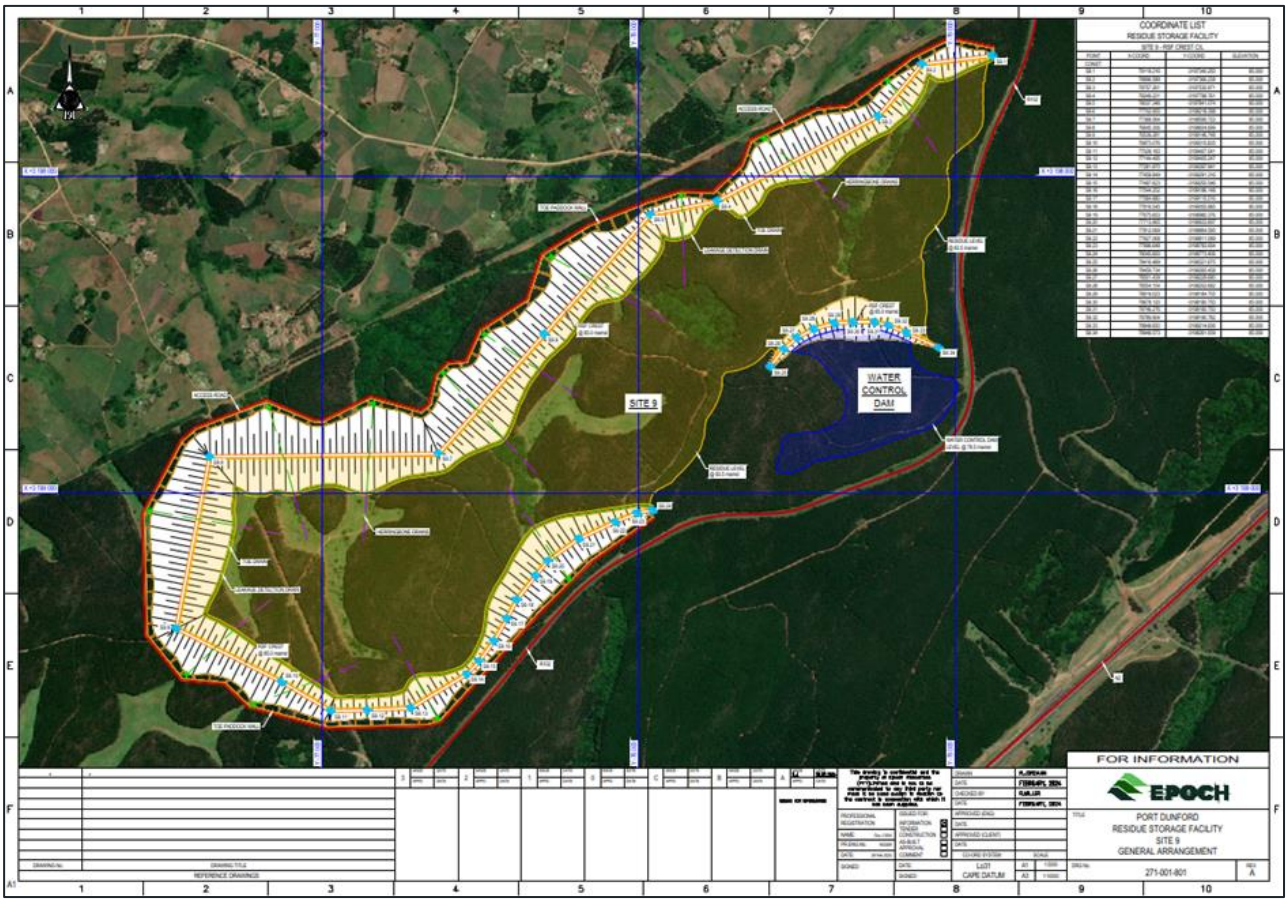

Figure 4-9 - RSF Site 9 General Arrangement Design Indicating Impoundment Walls and Inundation Area

- RSF Site C
  - Overview: RSF Site C will be utilised during the Phase 2 mining activity. It will be located immediately east of the PWP plant. It will be built in sequential phases (Phase 1-4). RSF Site C will utilise mined-out pits for RSF dam storage capacity. Mining here is expected to last approximately 27.5 years before Phases 1- 4 are completed. The four planned RSF cells for RSF Site C will be converted to RSF storage space as each RSF cell reaches capacity. The phased development of RSF Site C is as follows:
    - Phase 1 is expected to operate for 2.9 years and store 12.7 Mt of fines and 18 Mt of sand tails. Phase 1 will be approximately 78 ha in size. This facility will be built at a Rate of Rise (RoR) of 9.8 m/yr.
    - Phase 2 is expected to operate for 8.1 years and store 35.2 Mt of fines and 21 Mt of sand tails. Phase 2 will be approximately 121 ha in size. This facility will be built at a RoR of 5.1 m/yr.
    - Phase 3 is expected to operate for 8.1 years and store 40.2 Mt of fines and 21 Mt of sand tails. Phase 2 will be approximately 147 ha in size. This facility will be built at a RoR of 5 m/yr.

- Phase 4 is expected to operate for 8.3 years and store 39.1 Mt of fines and 4 Mt of sand tails. Phase 2 will be approximately 162 ha in size. This facility will be built at a RoR of 3.5 m/yr.

RSF Site C will be designed to store up to 127.3 Mt of fine residue and 64.5 Mt of sand residue. The total footprint area of RSF Site C is expected to be 670 ha and will have a final height of approximately 50 m above the current average ground level.

- Supporting infrastructure: A 13.75 ha, 540 000 m^3 WCD has been planned for RSF Site C. The dam will be between RSF Site C's Phase 1 RSF compartment and the PWP plant. The dam will be 500 m long, 275 m wide and will be 9 m high at its highest point
- REF Closure: RSF Site C is anticipated to be operational for 27.5 years and reach full capacity in 2064. The site will be backfilled in 2069, allowing the facility 4 years to dry out and stabilise. Once backfilled, the site will be rehabilitated with topsoil and returned to the landowner (lessee). A conceptual design has been provided in Figure 4-10 below.

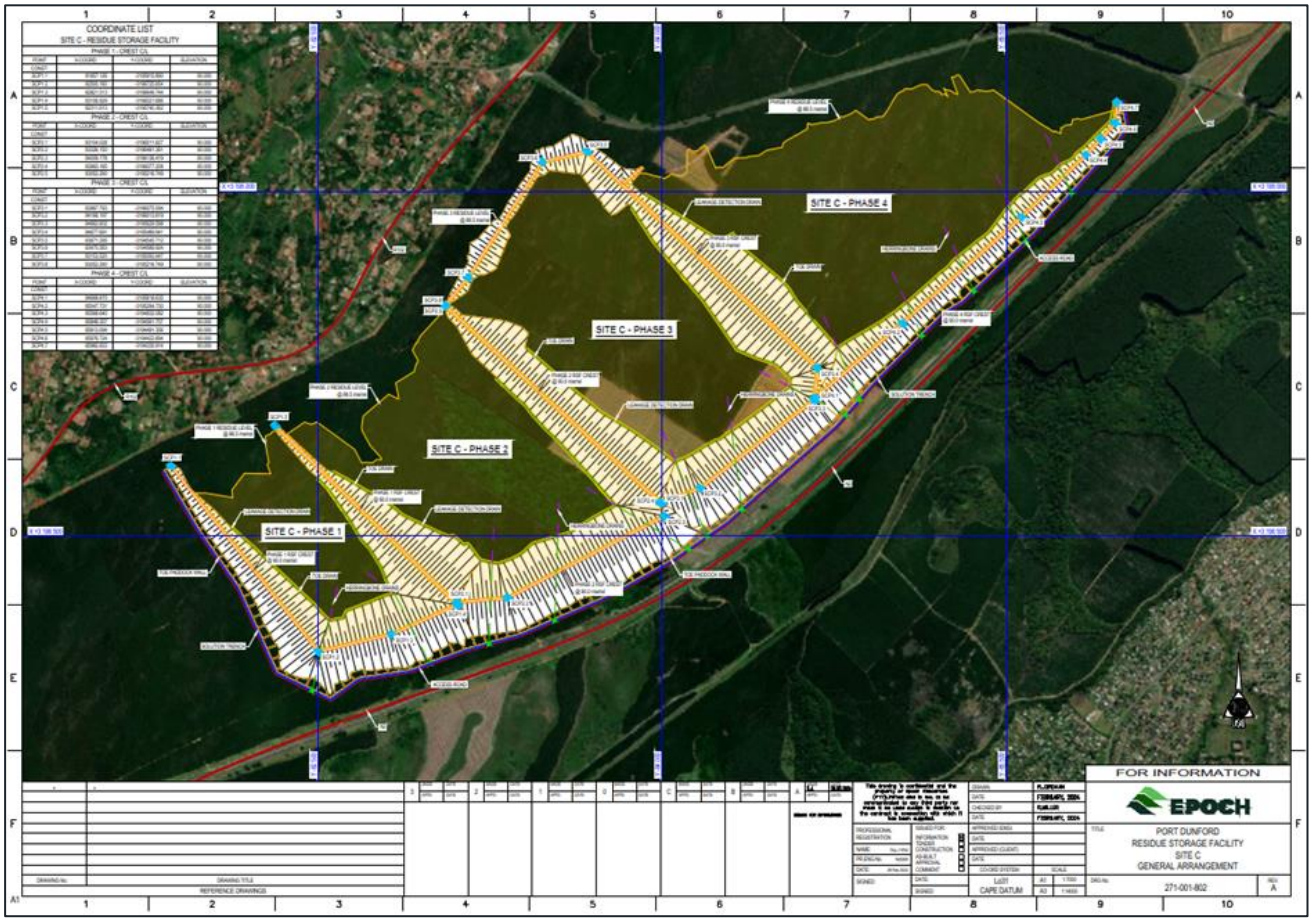

Figure 4-10 - RSF Site C General Arrangement Design indicating Impoundment Walls and Inundation Area

4.3 PROJECT ACTIVITIES

Table 4-1 presents the Project's activities, separated into the construction, operation, decommissioning/rehabilitation, closure, and post-closure phases of the Project's life cycle. This report only addresses the decommissioning/rehabilitation, closure, and post-closure phases of the Project's life cycle.

Table 4-1 – Project Activities

Phase	Activity
Construction	▪ Prior to site establishment, all authorisations need to be in place. ▪ Forestry activities on the site to cease. ▪ Bush clearing will then commence two years prior to construction. ▪ Bulk earthworks (in case of Phase 2). ▪ Development of required service infrastructure on the site. ▪ Development and upgrade of access roads. ▪ Site establishment. ▪ Topsoil stripping; and ▪ Construction of project components
Operation	▪ Mining will commence. One DTMU mines a 200 m by 100 m block at a time. Progressive backfilling and rehabilitation will then take place. It is anticipated that four years after the commencement of mining in a block, the mined area will be subject to rehabilitation. The RSF areas are the exception. These blocks will be rehabilitated post-mining once the RSF has completed its lifespan. ▪ Ongoing processing and supporting activities. ▪ Disposal of wastes from the mining process.
Decommission/rehabilitation	▪ Plant to be demolished and materials to be removed. ▪ Termination of all services to the area. ▪ Rehabilitation of all areas to be completed sufficiently to meet relevant commitments of the closure plan.
Closure and Post Closure	▪ Ongoing monitoring of post-closure impacts and rehabilitation success as required in the closure plan. ▪ Monitoring programs will continue post-closure, where applicable.

5 BASELINE ENVIRONMENTAL CONTEXT

Table 5-1 provides a summary of the physical, biophysical, and social context, to assist in the understanding of key issues that need to be addressed during rehabilitation, decommissioning and ultimately closure of the Port Dunford Mine. The description and definition of the pre-mining environmental context is critical to ensure that the ultimate closure objectives and associated end land-use are achieved. In this regard, please refer to the EIA report and relevant specialist's studies for a detailed description of the receiving environment applicable to this specific project. The summary of the baseline environment (on site and surrounding) was obtained from the studies undertaken by the specialist team as part of the EA process.

Table 5-1 – Environmental and Social Context

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
ENVIRONMENTAL ASPECTS SUMMARY	
CLIMATE (WSP, 2024c)	
▪ Temperature: • Seasonal trends show higher temperatures in summer (Dec-Feb) and lower in winter (Jun-Aug). • World Bank data (1991-2020): Mean temperatures range from 13.7°C (July) to 22.4°C (Feb). • Mtunzini station data (2020-2022): Temperatures range from 15.8°C (June) to 24.5°C (Jan). ▪ Precipitation: • Seasonal trends show higher precipitation in summer and lower in winter. • World Bank data (1991-2020): Precipitation ranges from 16.4 mm (June) to 135.6 mm (Jan). • Mtunzini station data (1991-2020): Precipitation ranges from 44.2 mm (Aug) to 139.5 mm (Nov). • Average annual precipitation: World Bank (867 mm), Mtunzini station (1159 mm). • Extreme precipitation days (>20 mm) more frequent in summer. ▪ Wind: • Northeast winds prevail overall, with variations in direction and speed depending on time of day and season. • Mtunzini station: Calm conditions ~22% of the time, average wind speed 3 m/s. • WRF modelled data: Calm conditions ~1% of the time, average wind speed 5 m/s. • eSikhawini station: Calm conditions ~11% of the time, average wind speed 3 m/s. • Stronger wind speeds observed during spring.	▪ The Port Durnford mine extension is located in a region with distinct seasonal climate patterns and significant biodiversity. Utilizing endemic flora species in rehabilitation efforts where warranted is crucial to promote the re-establishment of local biodiversity and achieve visual and aesthetic closure objectives. ▪ Further, the climate is favourable for various agricultural practices and timber production and would support these as target post mining land uses ▪ The following closure impacts and risks can be expected: • Summer rainfall: While the summer period offers a good growing season for rehabilitated areas, intense rainfall could increase the risk of erosion on steeper slopes and areas with poor vegetation cover. This includes impacts on the success of rehabilitation on windward slopes. • Vegetation establishment: The success of vegetation establishment on rehabilitated areas may be impacted by seasonal variations in temperature and precipitation. • Climate variability: Higher temperatures, lower annual rainfall, and more erratic rainfall patterns (including increased likelihood of drought and flood events) could affect the potential success of vegetation establishment on rehabilitated areas.
TOPOGRAPHY & VISUAL (WSP, 2024a)	
▪ Topography: • Moderately to strongly sloping incised valleys (average slopes of 13%) west of the project area. • Gently undulating terrain (average slope of 6%) towards the coastline. • Rolling terrain with some significantly steeper slopes within the project area. • Elevations range from 10 to 130 meters above mean sea level (mamsl), with an average elevation of 55 mamsl. • "Whaleback" ridge crest extends from the Forest Inn area towards the northeast, with high points at 112-125 mamsl. • Low-lying coastal plain separated from the Indian Ocean by an elevated aeolian dune cordon. ▪ Visual Receptors: • The (WSP, 2024d)) defined the study area as a 10 km radius around the proposed mining area's physical footprint. The project area is situated on a low-level coastal plain characterized by a mix of afforestation and sugar cane farming. The area of influence includes industrial zones, road infrastructure (including the N2 freeway), residential and urban townships, tribal lands, and other mining operations. These natural and built features will both influence and be influenced by the visual impacts of the project. • Resident receptors in the study area include: – Residents of Port Durnford, Esikhaleni, and KwaDlangezwa. – People living in residential estate developments between the Port Durnford site and the existing Fairbreeze Mine site.	▪ To rehabilitate disturbed areas to blend in with the surrounding landscape, closure measures must be established to resonate with the existing topographical character of the project area. ▪ The slope of the terrain and soil types prone to erosion could make vegetation reestablishment challenging during closure of certain areas. ▪ Due to the relative flatness of the landscape, views in the area are being dominated by the mine dumps that can be seen from great distances. ▪ The mineral residue deposits will alter the local topography. Some of which will remain indefinitely post closure of the mining operation.

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
– Numerous farmsteads scattered throughout the landscape. – Residence in the Zini River Estate in Mtunzini. • The N2 highway and the R102 road traverse the length of the orebody, with the R102 located to the northwest and the N2 running through the center. Additionally, a railway line just south of the N2 also crosses the mining right area. These roads will convey large numbers of transient receptors across the study area, contributing to the overall visual impact.	
HYDROLOGY (WSP, 2024b)	
▪ Hydrology: • The Port Durnford project area is situated within a humid subtropical climate, classified as Cfa in the Köppen system. Average daily summer temperatures range between 30°C and 24°C, while winter temperatures range between 21°C and 12°C. The highest temperatures are consistently experienced in December and January, with an average daily temperature of 30°C, while the lowest temperatures occur in June and July, averaging 12°C. • Rainfall in the area is highest from October to March and lowest from April to September. The Mean Annual Precipitation (MAP) ranges between 1285 and 1293 mm. During the wettest month of February, 90% of monthly rainfall events do not exceed 302 mm, while in the driest month of July, 90% of rainfall events do not exceed 100 mm. The Mean Annual Runoff (MAR) is calculated to be 346 mm per annum, meaning approximately 27% of the MAP is redistributed as surface runoff. The highest runoff occurs in March, mainly due to antecedent soil moisture from February. The region's Mean Annual Evaporation is 1300 mm. ▪ Surface Water Users: • Land use in the study area includes commercial forestry (Eucalyptus), farming (sugar cane and other crops), estuaries, and neighbouring residential areas (eSikhawini and KwaDlangezwa). The Mhlathuze Local Municipality abstracts 6,696,000 m³ of water per year from Lake Qubhu to supply local communities and the University of Zululand. Eucalyptus and sugar cane are not irrigated, but other crops are. The Amanzamnyama and Mlalazi Rivers support the marine ecosystem in the uMlalazi estuary, while the Mzingwenya and Mhlatuze Rivers support the uMhlatuze estuary. ▪ Water Quality: • Baseline water quality in the vicinity of the project area shows general compliance with water quality guidelines, with some exceptions. The Mlalazi River, for instance, shows elevated levels of electrical conductivity and total dissolved solids near the estuary, likely due to sea tidal effects and intermixing with riverine flows. The Amanzamnyama River has elevated levels of aluminum, ammonia, and iron, which could be attributed to natural geology. The Mzingwenya River shows elevated levels of ammonia, possibly due to surrounding urban activity. Limited data for the Mhlatuze River indicates high salinity, nutrient, and microbiological impacts driven by industrial and urban activity, as well as wastewater discharges. ▪ Floodlines • The proposed mining activity is mostly outside the 1:100-year floodline, except for some non-perennial tributaries and the Amanzamnyama River. In the case of the Amanzamnyama River, the N2 highway will act as a barrier during flooding, and the drainage lines have been modified by forestry plantations. ▪ RSF Dam Breach Analyses: • RSF dam breach analyses indicated that a failure of RSF 9 would inundate the Ntuze River and its tributaries, the Mlalazi and Bhadi Rivers, the Ojinjini River, and ultimately the Mlalazi estuary. A failure of RSF C would inundate the Amanzamnyama River, nearby wetlands, and Qhubu Lake. ▪ Water Balance: • The complete Phase 2 mining operation is expected to last 33 years, with water balance varying by season and residue dam usage. During the wet season, an average of 142,000 m³/month of raw water is required from Mhlatuze, while during the dry season, 170,000 m³/month is needed.	▪ Any deterioration in water quality, flow or a change in the hydrological regime can have negative impacts on the freshwater systems, aquatic biodiversity, and downstream users. This is also relevant to long terms mine closure planning, specifically relevant to post-closure stormwater management planning and design. ▪ Surface water monitoring will be required during operations and post-closure to determine any adverse effects on the post-closure local water regime. ▪ The post-mining topography must ensure that the hydrological flow character of the rehabilitated mine site is compatible with that of the surrounding landscape and does not lead to localised erosion or ponding. ▪ The closure of all dams and impoundments must be executed with care to ensure that accumulated contaminants are not invertedly released into the receiving environment. ▪ The following closure impacts and risks can be expected: • Failure to address impacts to water resources may impede the ability of Tronox to obtain a mine closure certificate. • Mine-affected water could reach surface water systems impacting the water quality which in turn could affect aquatic life and the health of downstream water users.
BIODIVERSITY (WSP, 2024e)	
▪ Regional Biodiversity Context: • The project area is located in the Indian Ocean Coastal Belt Biome, with elements of the Forest Biome. This region is part of the Maputaland-Pondoland-Albany Hotspot, known for its rich biodiversity. According to the 2018 SANBI mapping, the project area includes four primary regional vegetation types: Northern Coastal Forest, Swamp Forest, Maputaland Coastal Belt, KwaZulu-Natal Coastal Belt, and Subtropical Alluvial Vegetation. These vegetation types are considered threatened, with conservation statuses ranging from Vulnerable to Critically Endangered. The area also includes two main modified habitat units (Timber Plantations and Sugarcane Fields) and four natural habitat units (Coastal Lowland Forest, Swamp Forest, riparian Woodland, and Grassland with Trees and Bush-clumps). • Regional Vegetation Types: The primary vegetation types in the study area include Northern Coastal Forest, Swamp Forest, Maputaland Coastal Belt, KwaZulu-Natal Coastal Belt, and Subtropical Alluvial Vegetation. • Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs): The KwaZulu-Natal Biodiversity Sector Plan (2016) identifies areas of high biodiversity importance or irreplaceability. Several patches of land in the study area are designated as CBA Irreplaceable, mostly aligned with forest	▪ The site-specific vegetation, along with the soils required to reintroduce appropriate species needs to be considered during rehabilitation and end land-use planning. ▪ As a biodiversity rich area, the endemic flora species should, as far as possible, be protected during operations and where disturbed utilised with rehabilitation, thereby promoting the re-establishment of endemic biodiversity and achieving visual/aesthetic objectives for closure. However, it is anticipated that the vast majority of the site will be returned to timber production, pasture, and/or other agricultural uses after mine closure and hence appropriate species should be applied during rehabilitation to facilitate the planned next land uses,

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
habitat. Smaller patches are designated CBA Optimal. The Mlalazi River and surrounding land are also designated as CBA Irreplaceable, CBA Optimal, or ES). These areas are critical for conservation planning and meeting biodiversity targets in KwaZulu-Natal. • Protected Areas: The project area is outside of protected areas but within 10 km of Umlalazi Nature Reserve, Ngoye Forest Reserve, Richards Bay Game Reserve, and uThukela Marine Protected Area. Portions of the study area are identified as Priority Focus Areas for protected area expansion, forming three north-south corridors linking the Ngoye Forest Reserve with Umlalazi Nature Reserve and coastal vegetation. • Threatened Ecosystems: The landscape includes areas of Least Concern undisturbed Grassland with Trees and Bush-clumps and Endangered ecosystems aligning with indigenous forest patches. • Site Ecological Importance (SEI): The project area includes various vegetation communities which has associated SEI. These include the following: Timber Plantations (Very low (VL)), Sugarcane Fields (VL), Swamp Forest (Very high (VH)), Coastal Lowland Forest (VH), Riparian Woodland (High), and Grassland with Trees and Bush-clumps (both regenerating and undisturbed) (low). ▪ Flora: • The project area hosts a diverse range of plant species, with the Poaceae family being the most represented, followed by Fabaceae, Asteraceae, and Rubiaceae. Indigenous taxa make up 76% of the species, while 24% are alien taxa. The most abundant growth forms are trees and woody shrubs, followed by herbs, graminoids, climbers, and ferns. • Several species of conservation concern (SCC) were recorded, including *Cassipourea gummiflua var. verticillata* (Vulnerable) and nationally protected trees like *Ficus trichopoda* and *Barringtonia racemosa*. The provincially protected *Crinum graminicola* was also recorded during the 2024 field survey. Up to 41 flora SCC could potentially occur in the study area, with some species having medicinal or traditional value. • Twenty-four alien invasive species (AIS) were recorded, mostly at low densities in natural habitats, except in disturbed areas near sugarcane fields where species like *Chromolaena odorata* and *Lantana camara* are common and locally abundant. ▪ Fauna: • Previous studies recorded 11 mammal species, including five species of conservation concern such as the Natal Red Duiker and Cape Clawless Otter. The 2022 field survey recorded three common mammal species: Vervet Monkey, Rusty-spotted Genet, and Slender Mongoose. Low mammal species count is likely due to subsistence bush-meat hunting. • Several mammal SCC have been recorded, including the Brown Hyaena, Serval, and Cape-Clawless Otter. The screening tool highlighted additional potentially sensitive species like the Rough-haired Golden Mole and Spotted-necked Otter, though none have been confirmed in the project area. ▪ Herpetofauna: • The project area is expected to host 37 amphibian and 53 reptile species, reflecting the high herpetofauna diversity of the KZN summer rainfall region. The herpetofauna survey confirmed 24 amphibian and 11 reptile species, including the Endangered Pickersgill's Reed Frog and another Endangered sensitive species. • The project area provides suitable breeding habitat and dispersal corridors for the Pickersgill's Reed Frog. It also includes large areas of indigenous forest likely utilized by the Endangered sensitive species and the Vulnerable Green Mamba. The Mlalazi River, bordering the mining area, has confirmed records of the Vulnerable Nile Crocodile, and a nearby coastal dune wetland is likely inhabited by the Vulnerable Variable Hinged-Terrapin. ▪ Avifaunal: • The avifaunal assessment for the Port Durnford project area relies heavily on data from the Southern African Bird Atlas Project 2 (SABAP2), which is contributed by citizen scientists. The proposed mining area is covered by three pentads (2850_3145, 2850_3150, and 2855_3145), each covering approximately 9 x 8 km. A total of 382 bird species have been recorded in these pentads, based on 577 bird checklists. Of these, 165 species were recorded in the mining area during surveys conducted by Coastal & Environmental Services (2008) and the current assessment. • Thirty-two of the 382 species recorded in the SABAP2 database for the relevant pentads are Red Data species. Additionally, 15 Red Data waterbird species were recorded during waterbird counts at the Mlalazi and Mhlatuze estuaries, and Lake Cubhu. Notably, the White-backed Night Heron, a Red Data species, has been recently recorded at the Mlalazi Estuary. • During the 2024 field survey, three SCC were recorded on-site: Greater Flamingo, Lesser Flamingo, and Southern Bald Ibis. Previous surveys by EkoInfo (2011) recorded additional threatened or Near Threatened species, including Secretarybird, White-bellied Bustard, Martial Eagle, African Grass Owl, and Half-collared Kingfisher. The national web-based screening tool also highlighted Secretarybird, White-bellied Bustard, African Grass Owl, Caspian Tern, and African Marsh Harrier as potentially sensitive features for the project area, although the latter two have not been confirmed on-site.	without posing any threats to the remaining natural vegetation communities within the vicinity of the site. ▪ The following closure impacts and risks can be expected: • Tronox may be required to implement additional measures to address ecosystem service impacts if mitigation measures prove inadequate. • Failure to address impacts to water resources may impede the ability of Tronox to obtain a mine closure certificate. • The lack of topsoil could compromise the development of vegetation on rehabilitated surfaces thereby contributing to additional biodiversity impacts. • Importing of topsoil/ growth medium will result in additional costs. in addition, inadequate placement of topsoil and the associated failed development of vegetation could result in slopes of dumps being prone to increased erosion and sediment washdown into the surrounding environment, causing long-term management interventions and associated costs. • Failure to achieve a sustainable post-closure land use could compromise the ability of Tronox to obtain a closure certificate. • Weeds and invader species will establish in the short term during the ecological succession process following restoration activities. • Bio-monitoring results may not accurately reflect the impacts of mining if the reference sites are not comparable to the impact sites.
GROUNDWATER (WSP, 2024f)	
Geology: ▪ The Port Durnford project area features a complex geological structure with ultramafic rocks and gneiss of the Natal Metamorphic Province in the west and north, overlain by sedimentary rocks of the Natal Group, shales and sandstones of the Ecca Group, and Quaternary deposits of the Maputaland Group forming coastal dunes. Key geological structures include thrust faults like the Mhlatuze and Mlalazi faults. Local geology includes lithologies of the Matigulu Group and Buhleni Gneiss, with significant mineral deposits in the Port Durnford Formation, overlain by the Kosi Bay and Berea-type red sands. **Aquifers:**	▪ Impacts to the geohydrological regime should be mitigated at closure. This includes mitigation to manage impacted groundwater quality and quantity. ▪ The following closure impacts is anticipated: • Permanent loss of aquifer functionality and therefore inability of external groundwater users to regain access to groundwater resources due to dewatering.

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
▪ Primary Intergranular Aquifer: Found in unconsolidated sediments (silts, sands, gravels) within coastal dune deposits. ▪ Secondary Intergranular and Fractured Aquifer: Found in sedimentary and metamorphic rocks with fissures, fractures, cracks, joints, and faults. ▪ Yields: Both aquifers have low to moderate yields (0.5 – 2 L/s). **Groundwater Flow:** ▪ Generally, flows towards the east and southeast, towards the Indian Ocean and Mlalazi River. ▪ Primary Aquifer: Unconfined with hydraulic conductivity of 0.1 – 10 m/day and yields below 2 L/s. ▪ Secondary Aquifer: Hydraulic conductivity of 0.1 – 0.001 m/day, higher values near dolerite contact and fault zones, yields 0.1 – 1.5 L/s. **Groundwater Quality:** ▪ Generally good, with some marginal to poor quality in boreholes along the site boundary. ▪ Electrical conductivity ranges between 0–150 mS/m. ▪ Locally present elements: Iron, manganese, aluminium, and lead. ▪ Low salinity suggests minimal impact from mining on groundwater and surface resources. **Groundwater Modelling:** ▪ Initial 10 years of mining: Simulated ingress ~3,500 m³/day. ▪ "Mining only" scenario: Average simulated ingress ~8,911 m³/day. ▪ Including backfilling and residue deposition: Total ingress 51 311 m³/day by 2065. ▪ Reduction in baseflow mostly insignificant; quick recovery of drawdown due to backfilling post closure. ▪ High recharge in sand aquifer and additional water from backfill/residue attenuates concentration in aquifer. This is the opposite of what is generally expected from contamination sources. Therefore, the residue and backfill material are not strictly sources of contamination. **Geochemistry of mineral residue (MSP & RSF tailings)** ▪ Mineralogy: • XRD analysis detected five crystalline mineral phases: Quartz (dominant), microcline, hematite, zircon, and rutile. • No pyrite or sulfide minerals detected, indicating low potential for acid generation. • No neutralizing carbonate phases; minor amounts of slow weathering alumina-silicates (microcline). • The overall mineralogy of the MSP and RSF tailings samples indicates insufficient short-term and long-term buffering capacity, but this is not a risk since with acid-generating minerals such as pyrite were not detected. ▪ Element Composition: • Selenium (Se) most strongly enriched (GAI ≥ 4). • Other metals and semi-metals below 12-fold enrichment factor. • Enrichment does not necessarily imply environmental risk; depends on solubility and reactivity. ▪ Acid Base Accounting (ABA): • Total sulfur percentage <0.01%, indicating limited potential for acid generation. • MSP and RSF tailings classified as Not Potentially Acid Generating (Non-PAG). ▪ Metal Leaching: • MSP, PWP and RFS tailings leachate classify as Neutral Mine Drainage (NMD), due to their low sulfate content, while Gypsum waste leachate classifies as Saline Drainage (SD) due to its relatively higher sulfate content • The results indicate that MSP tailings exceed the aquatic guideline for Al, Mn, Pb and Zn, meanwhile exceeding the marine and aquatic guidelines for Cd, Cu and Hg. RSF tailings exceed the aquatic guidelines for Pb and the marine and aquatic guidelines for Cd, Cu, Hg and Zn. PWP tailings exceed the aquatic guidelines for Pb and Zn and the marine and aquatic guidelines for Cd, Cu and Hg. Gypsum exceeds the aquatic guidelines for Mn, Pb and Se and the marine and aquatic guidelines for Cd, Cu and Hg. • All samples exceed aquatic and marine guidelines for Cd, Cu, Hg. ▪ Geochemical Modelling: • Operational Phase: RSF pore water and seepage driven by process water; Mn and Al exceed aquatic guidelines. • Post-Closure: Rainwater leaching fines in RSF; Cd exceeds both aquatic and marine guidelines, Cu exceeds aquatic guideline, Pb and Zn exceed marine guideline. • The model for the backfill post-closure is the same as during operations, and therefore with the same exceedances. ▪ Waste Classification: • RSF Tailings: Non-hazardous, Type 4 waste, requiring Class D barrier design. • MSP Tailings: Non-hazardous, Type 3 waste, requiring Class C barrier design.	• Deterioration of groundwater quality through groundwater contamination from contaminated areas and seepage from pollution sources.

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
• PWP Tailings: Non-hazardous, Type 4 waste, requiring Class D barrier design. • Gypsum Waste: Hazardous, Type 3 waste, requiring Class C barrier design; exceeds thresholds for TDS, sulfate, and manganese.	
Wetlands (WSP, 2024g)	
▪ According to the Wetland Impact Assessment Report, the desktop evaluation of wetlands within the proposed development footprint and surrounding areas revealed the presence of sixty (60) Hydrogeomorphic (HGM) units and three (3) estuarine regions have been identified. A field survey was conducted to validate the desktop findings and classify and delineate these within the study area. Based on the wetland delineation the following wetland characterises have been defined for each wetland unit within the study area: • Swamp Forests: – Swamp forests are wetlands permanently saturated with water and dominated by trees. They can be freshwater or saltwater swamps. Freshwater swamps are common inland, while saltwater swamps protect coastal areas. The swamp forest identified during the field survey was diverse in species but dominated by *Barringtonia racemosa*. The swamp forest at W12F-04 was relatively pristine, with minor eucalyptus plantation encroachment and infilling. In contrast, the swamp forest at W12-07B was significantly degraded, lacking much of the common canopy cover due to anthropogenic influences. • Seepage Wetlands: – Seepage wetlands were found throughout the study area, typically within sugarcane fields and eucalyptus plantations. These wetlands are likely saturated due to lateral and subsurface water input from the catchment, potentially linked to groundwater discharge. Observed impacts included gully formation caused by channelized flows, increasing flow velocity and erosion potential. The vegetation in these seepage wetlands consisted mainly of small sedges (*Cyperus* sp.) and lacked robust obligatory wetland vegetation like *Typha capensis* and *Phragmites australis*, especially in agricultural landscapes. • Channelled Valley Bottom Wetlands – The channelled valley bottom (CVB) wetland in the proposed Port Durnford study area covers approximately 463 hectares, spanning the W12F and W13B catchments. Located just south of the railway, the CVB system is fed by a network of seepage wetlands from the northern reaches. The wetland has a main channel running through its central regions. The western portion drains towards the Mlalazi Estuary, while the eastern portion drains towards Qhubu Lake, which eventually connects with the Mhlathuze Estuary. Seasonal fluctuations in discharge can alter the course of the channel, changing the wetland's shape. The wetland is dominated by dense stands of *Phragmites australis* and *Typha capensis*. ▪ Wetland functional assessment: The assessment of the present ecological state (PES) for the impacted wetlands ranged from E (A very large change in ecosystem processes and loss of natural habitat and biota but some of the remaining natural habitat features are still recognizable) to B (Mostly Natural with a few modifications), whereas the ecological importance and sensitivity (EIS) ranged between very high (Ecologically important and sensitive on a national or even international level. The biodiversity of these systems is usually very sensitive to flow and habitat modifications. They play a major role in moderating the quantity and quality of water of major rivers) to low (Ecologically important and sensitive on a provincial or local scale. The biodiversity of these systems is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water of major rivers.).	▪ Any deterioration in water quality, flow or a change in the hydrological regime can have significant negative impacts on the aquatic biodiversity and downstream users. This is also relevant to long term mine closure planning which if not appropriately managed may lead to contaminant release into surrounding water bodies, uncontrolled runoff into receiving water bodies resulting in erosion, and/or sedimentation in stream channels. ▪ Surface water monitoring will be required during operations and post-closure to determine any adverse effects on the post-closure local water regime. ▪ It is essential that the closure objectives be aligned to the baseline PES and IES, refer to the wetland impact assessment report (WSP, 2024g). ▪
AQUATICS (WSP, 2024h)	
▪ Regional Context • The quaternary catchments associated with the proposed project (W12F and W13B) are not designated as Freshwater Ecosystem Priority Area (FEPA) Water Management Areas. However, the larger screening area, including the upper reaches of the Mhlatuze and Mlalazi Rivers to the west of the project area, is classified as an Upstream Management Area. In these sub-quaternary catchments, human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas. ▪ Present Ecological State, Importance, and Sensitivity • The DWS 2016 Sub-Quaternary Reach (SQR) summary provides the Present Ecological State (PES), Ecological Importance Sensitivity (EIS) for each associated watercourse. The Mhlatuze SQR, approximately 17.9 km in length, is expected to host 29 fish species and 65 aquatic macroinvertebrate taxa. This SQR is impacted by erosion, sugarcane farming, residential areas, and sand and heavy metal mining. The Mzingwenya SQR, about 7.4 km long, is expected to host 28 fish species and 65 aquatic macroinvertebrate taxa, with impacts from urban residential activities, stormwater, roads, and commercial plantations. The Ntuze SQR, approximately 19.3 km long, is expected to host 28 fish species and 47 aquatic macroinvertebrate taxa, impacted by over-grazing, subsistence farming, and emerging sugarcane farming. No data was available for the Mlalazi SQR.	▪ Any deterioration in water quality, flow or a change in the hydrological regime can have significant negative impacts on the aquatic biodiversity and downstream users. This is also relevant to long terms mine closure planning. ▪ Surface water monitoring will be required during operations and post-closure to determine any adverse effects on the post-closure local water regime. ▪ It is essential that the closure objectives be aligned to the baseline PES and EIS. ▪ It is essential that the closure objectives be aligned to the baseline PES and EIS, refer to the wetland impact assessment report (WSP, 2024g). ▪

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
▪ Integrated Ecosystem Determination • EcoStatus is defined as the totality of features and characteristics of the river and its riparian areas that support natural flora and fauna and provide various goods and services. The integration of ecological conditions from riparian vegetation assessments and instream biological integrity (using the Macro-Invertebrate Response Assessment Index and Fish Response Assessment Index) indicated that the sampled reaches predominantly represented Largely Modified conditions. All assessed systems were Largely Modified, except the Ntuze River, which was Moderately Modified during the low flow survey. The riparian zone along the Ntuze River was largely natural, with sugarcane fields mostly 50 meters or more away from the riverbanks, resulting in the highest vegetation component score among the assessed systems.	
AIR QUALITY (WSP, 2024i)	
▪ Particulate Matter Monitoring: • The proposed mining operations at Port Durnford focus on particulate-related pollutants, specifically Particulate Matter (PM10, PM2.5, and dust fallout calculated as Total Suspended Particulates - TSP). Ambient air quality data was sourced from the nearest monitoring stations, as data from the South African Weather Service (SAWS) Mtunzini station was inadequate. Instead, data from the Richards Bay Clean Air Association (RBCAA) eSikhaleni station and the South African Air Quality Information System (SAAQIS) eSikhawini station, both located approximately 6 km from the site, were used. • Measured PM10 concentrations from January 2020 to December 2022 showed two exceedances of the 24-hour National Ambient Air Quality Standard (NAAQS) (75 µg/m³) at both the eSikhaleni and eSikhawini stations in June and July 2021. These exceedances remained compliant with the NAAQS, which allows up to four exceedances per calendar year. ▪ Dispersion Modelling • For Phase 1 operations, which will be intermittent (five days a week, twelve hours a day), emissions were quantified but not modelled. Phase 2 operations, expected to span from 2036 to 2069, were modelled in three scenarios based on the location of emission sources: – Phase 2 Scenario 1 (2036 – 2047) – Phase 2 Scenario 2 (2048 – 2053) – Phase 2 Scenario 3 (2054 – 2069) • For all Phase 2 scenarios, PM2.5 and PM10 concentrations are predicted to be well below the relevant NAAQS. The highest predicted concentrations are near the PWP site but are expected to remain near the source and not extend past the proposed fence line, staying below the NAAQS. • However, dust fallout rates for Phase 2 are predicted to exceed the National Dust Control Regulations residential standard at sensitive receptors within 1 km of the site boundary. The maximum fence line concentrations exceed the non-residential standard, with predicted exceedances extending up to 500 m north-northwest and south-southwest of the proposed boundary. The nearest sources contributing to these exceedances include the sand stockpiles. Notably, Tronox propose to rehabilitate and vegetate legacy stockpiles and backfilled • areas during the operational phase.	▪ Rehabilitated mine features that will remain post closure may continually contribute to dust emissions if not mitigated adequately (e.g., wind erosion from inadequately rehabilitated waste dumps, open pits). ▪ Some activities such as hauling, and material handling may continue temporarily at closure (during rehabilitation activities) but will be reduced significantly relative to operational activities.
SOILS, LAND USE AND CAPABILITY (RedEarth CC, 2024j)	
▪ Soil Profile: • Soil Forms: The study area has various soil forms including Hutton, Griffin, Clovelly, Oakleaf, Tukulu, Glenrosa, and Westleigh. These forms were classified based on their horizons, textures, and structures. • Soil Types: The soils within the study area were grouped into different types such as red apedal, yellow brown apedal, neocutanic, and hydromorphic soils. Each type was described in terms of its physical and chemical properties. • Soil Depths: Effective rooting depths varied across the study area, with some soils having depths greater than 180 cm, while others were shallower, particularly in areas with lithosols or hydromorphic soils. ▪ Land Capability • The land capability of the project is different based on its location and existing soil profiles. These include the following: – Arable Land: Areas classified as arable land had deep, well-drained soils with high agricultural potential. These areas were primarily found on crests and upper midslopes. – Grazing Land: Grazing land was identified on slopes greater than 6 degrees and in areas with shallower soils. These areas were less suitable for cultivation but supported native or introduced grass species.	▪ Failure to appropriately strip, transport, stockpile and manage topsoil (including separation of the upper layer of organic-rich growth medium from underlying subsoils), as well as inappropriate final placement during rehabilitation will result in a deficit at closure and the inability to achieve post-closure land capability objectives. ▪ Soil contamination should it occur will impede the ability to successfully rehabilitate disturbed footprints. ▪ Failure to adequately remove contaminated soils could negatively impact potential future land uses. ▪ Inadequate placement of topsoil resulting in failed vegetation establishment could result in slopes of dumps being prone to increased erosion resulting in long-term management interventions being required and increased costs/ liability. ▪ Failure to achieve a sustainable post-closure land use could compromise the ability of Tronox to obtain a closure certificate.

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
– Wilderness Land: This category included areas with little or no agricultural capability due to steep slopes, stony soils, or other limiting factors. These areas were recommended for conservation and wildlife habitats. – Wetlands: Wetlands were identified based on soil hydromorphy, presence of hydrophytic vegetation, and landscape position. These areas were classified as temporary, seasonal, or permanent wetlands. ▪ Present Land Use • Eucalyptus Plantations: The majority of the study area was covered by commercial eucalyptus plantations, which were well-maintained and supported high timber yields. • Grasslands: Grasslands were primarily found in wetland areas and were dominated by buffalo grass, often grazed by cattle. • Indigenous Bush: Indigenous bush areas were located in riparian zones and wetlands, providing important ecological functions and biodiversity. • Infrastructure: The area included roads, tracks, and other infrastructure supporting the forestry operations.	▪ Soil contamination will impede the ability to successfully rehabilitate disturbed footprints. ▪ Failure to adequately remove contaminated soils could negatively impact potential future land uses. ▪ Amongst the wide variety of potential next land use options proposed, it is anticipated that some land will be used for forestation, and others for crops and informal grazing land. This use of the Tronox properties post-closure is deemed to be the most appropriate in the regional context, and the most likely to be sustainable in the long term.
SOCIO-ECONOMIC CONTEXT (WSP, 2024k)	
▪ Geographic Setting • The project area is located within the King Cetshwayo District Municipality, spanning the Umhlatuze and Umlalazi Local Municipalities in KwaZulu-Natal Province. ▪ Population Dynamics • The population in the King Cetshwayo District has been increasing, with Umhlathuze ranked first in terms of population size. Significant growth has been observed across the municipalities from 2011 to 2022. ▪ Gender and Age • In 2016, the uMhlathuze Local Municipality had 187,287 females and 177,175 males. Female-headed households increased from 36.29% in 2001 to 40.70% in 2011. The population under 15 years has been declining, while the 15-64 age group has increased at both district and local levels. ▪ Households • The average household size in uMhlathuze increased from 3.95 in 2011 to 4.1 in 2022, with the number of households rising from 94,010 to 100,441. Projections estimate 115,330 households by 2022 and 205,745 by 2030 if the population grows by 5%. ▪ Economy • King Cetshwayo District has excellent agricultural conditions, with a dual economy of commercial and traditional agriculture. The uMhlathuze Local Municipality is the largest contributor to the district's GDP. A significant portion of the population earns less than R76,400 annually, with many in uMhlathuze earning less than R1,600 monthly. The municipality focuses on attracting investments, environmental sustainability, and enterprise development to drive economic transformation. ▪ Property Values • Mtunzini's tranquility, natural beauty, and environment attract residents and visitors. The town has grown rapidly over the past decade, with new housing developments responding to increased demand. Property prices in Mtunzini are relatively high compared to Richards Bay, Empangeni, and Eshowe, with tourism being a significant income source.	▪ To ensure integrated planning, the closure plan and the SLP should be aligned to ensure successful social transition at closure. ▪ Stakeholder expectations as well as local economic development in the area must be considered during land use planning. ▪ The ongoing success of closure outcomes following the closure of the mine will rely on local communities being empowered to operate and maintain any land use and remaining/relevant infrastructure, particularly that provided to support and improve closure outcomes. ▪ The visual appearance of the rehabilitated mine must be acceptable to surrounding residents and communities, through the creation of suitable final site topography and establishment of a suite of contextually appropriate land uses.
HERITAGE (APAC, 2024l)	
▪ Previous archaeological and heritage surveys identified numerous sites of archaeological and historical significance, including sites related to the Anglo-Zulu War. While many sites were of low significance due to prior impacts, several were of medium to high significance, warranting mitigation measures to minimize development impacts. The February 2023 assessment identified three new sites, indicating a rich cultural heritage in the area.	▪ None
RADIOLOGICAL SAFETY (AquiSim, 2024m)	
▪ The Radiological Public Safety and Impact Assessment for the Port Dunford Mine (AquiSim, 2024) aimed to ensure that members of the public living near the mine are not exposed to ionizing radiation levels exceeding regulatory compliance criteria for public protection. The assessment also evaluated the radiological impact as part of the S&EIR process. ▪ A systematic approach was employed, which included: • Defining the regulatory framework and technical basis of the assessment.	▪ None

DESCRIPTION	CLOSURE IMPLICATIONS/CONSIDERATIONS
• Describing the system. • Systematically defining public exposure conditions. • Analyzing the consequences of these exposure conditions. • Conducting a radiological impact assessment. ▪ The study concluded with a reasonable level of assurance that members of the public associated with any of the defined exposure conditions will not receive a total effective dose exceeding the public dose constraint of 250 µSv/year	

6 STAKEHOLDER ENGAGEMENT

6.1 STAKEHOLDER ENGAGEMENT AS PART OF EIA

Recorded issues and concerns raised by interested and affected parties (I&APs), during the EA process informed development of the closure plan. It must however be noted that limited inputs have been provided relating to mine closure to inform the closure objectives. Tronox would need to ensure effective stakeholder engagements, specifically focussed on mine closure, to inform future updates of this plan. This is important once Tronox moves closer to the end of LOM and final mine closure.

Table 6-1 provides a consolidated summary of the main issues and concerns raised during the EA processes applicable to the Port Dunford Mine.

Table 6-1: Closure related environmental and social Issues and concerns

Aspect	Issue / Concern Raised
Impact on properties	▪ Negative impact on proposed property developments in proximity to the Umlalazi River as a result of visual impacts. ▪ Decreasing property values as a result of visual impacts, air quality and noise. ▪ Decrease of property values in the Zini Estate. ▪ Clarity with regard to mining activities proposed within the lease area; and ▪ Suggested mitigation in the form of a tree screen to minimise visual impacts
Impact on economic activities	▪ Impact on agricultural activities being undertaken by properties in the lease area. ▪ Impact on development projects in the area including residential development, expansion, tourism and eco-tourism activities; and ▪ Impact on student accommodation activities which have already been developed on the directly affected farm portions.
Land ownership and land use rights	▪ Impact on Mondi Plantations. ▪ Need for compensation/intentions to be discussed with the affected landowners. ▪ Status of land claims in the project area and impact of these on the project including delays that may be experience. ▪ Potential for Penarrow and Waterloo to be a used as a buffer against mining activities; and ▪ Land use agreements for post-closure activities.
Job opportunities / recruitment	▪ Clarity regarding LED initiatives. ▪ Clarity regarding number of new employment opportunities. ▪ Procurement practises to recognise local companies. ▪ Need for there to be a focus on the employment of youth in the Mkhwanazi area. ▪ Historically employment practises.

Aspect	Issue / Concern Raised
	▪ Employment of locals required. ▪ Clarity required regarding employment requirements. ▪ Training of locals to be undertaken in advance. ▪ Automation of the mining process and implication in terms of job opportunities and experience of the local subcontractor. ▪ Registration of SMME with Tronox is a problematic process and expensive. ▪ Wages offered by the mining contractor to provide for a living wage. ▪ Preference given in terms of job opportunities to locals that are close to particular Indunas. ▪ Investment in projects that provide sustainable job opportunities; and ▪ Involvement of the Traditional Council in the Social and Labour Plan
Community benefits	▪ Need for benefits for the local community. ▪ Need for transformation in terms of company ownership and socio-economic contribution. ▪ Direct shareholding required for legitimate landowners/land rights users. ▪ Information requested with regard to CSI Projects, SLP Projects and how this benefit small businesses. ▪ Employment of immediately local people (i.e. within a 7 km radius); and ▪ Historically low number of people from Mkhwanazi area have been employed for the Fairbreeze operation.
Water	▪ Contamination of water supply. ▪ High existing potential for flooding in the area and the impact that this may have on the mining operation. ▪ Management of contamination impacts from the current Fairbreeze operations. ▪ Contamination of soils, water and air quality. ▪ Impact of additional water abstraction on the Mtunzini water supply. ▪ Mining method and anticipated water use. ▪ Flood and stormwater damage to drainage lines ultimately affecting the Umlalazi River; and ▪ Alignment with the Mhwanazi Master Plan for Climate Change is needed
Air Quality and Noise	▪ Air Quality and Noise Pollution. ▪ Need to re-evaluate air quality baseline data prior to the commencement of Phase 2. ▪ Health impacts as a result of air quality impacts. ▪ Impact on current agricultural activities on those properties in the Lease Area as a result of poor air quality; and

Aspect	Issue / Concern Raised
Biodiversity	▪ Impact on avifauna. ▪ Impact on the hydrology of coastal dunes. ▪ Historical issues with Fairbreeze rehabilitation and management practices. ▪ Minimisation of impact on biodiversity is required. ▪ Clarity regarding the need for biodiversity offsets. ▪ Need for an expansion of the biodiversity studies to include estuarine studies. ▪ Need to consider the Marine Protected Area. ▪ Need to assess estuarine impacts. ▪ Loss of natural coastal dune forest in the drainage lines within the lease area; and ▪ Need for appropriate silt management
Soil and Land Capability	▪ Next land use. ▪ Loss of agricultural potential, development in a Protected Agricultural Area and objection to the project as a result; and ▪ Topsoil balance required

7 RISK ASSESSMENT

7.1 METHODOLOGY

A risk is the potential for adverse negative effects that may be realized in the future with respect to achieving explicitly established and stated performance requirements. Risks can be avoided through the implementation of pre-emptive actions or mitigation measures. Risk analysis is a technique used to identify and examine risks in detail to determine the extent and relationships among them. Risks are classified and ranked according to significance for prioritisation by evaluating identified risks to estimate likelihood of occurrence, consequences of realization, recommend suitable mitigation and determine suitable timeframes for implementation of mitigation actions.

A screening level Environmental Risk Assessment (ERA) was undertaken as part of the compilation of this FCP. The risk assessment was aimed at informing the closure measures required to ensure a meaningful and sustainable post-closure legacy for the mine site after closure. Environmental and other risks associated with the closure of the proposed Port Dunford mining operations were gleaned from both the nature and scale of operations within the local and regional environmental and social context, from the current legislative environment within which closure will take place, and EA process currently being undertaken.

All identified risks were assessed on a 6x6 matrix of likelihood and consequence (see Appendix B the main drivers of each risk were identified, and the unwanted consequences of the risk were noted.

Each risk was assessed for its pre-mitigation foreseeable loss risk rating, following which mitigation measures were developed to reduce the risk. The risk item was then reassessed to determine if the mitigation measures had reduced the post mitigation risk rating to acceptable levels. The detailed environmental risk register for the proposed Port Dunford mining operations is presented in Appendix B.

7.2 ENVIRONMENTAL RISK ASSESSMENT FOR MINE CLOSURE

Table 7-1 provides the risk analysis that has been developed for the various risks associated with the decommissioning, rehabilitation and closure phase. This is the first closure plan submitted for the mine as a whole and therefore the risk assessment provided below does not contain an explanation of any changes to the risk assessment results, as required by the Regulation. Subsequent risk assessments undertaken as part of Port Dunford Mine closure planning will need to provide motivation for adjustments to the risk ranking or other changes to the risks assessment. The detailed risk assessments associated with the decommissioning, rehabilitation and closure phase are presented in Appendix 6.

Table 7-1 - Full Closure and Post Closure Risks Assessment

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
Air Quality (Dust & Fugitive Emissions)	▪ Transport and Demolitions of structures and dust generated during rehabilitation activities. ▪ Exposure of footprints	▪ Increase in fugitive dust emissions particularly due to an increase in particulate dust levels (PM10 and PM 2.5) during decommissioning and closure of the mine. ▪ Windblown dust from exposed unrehabilitated areas.	**Minor**	▪ Implementation of air quality management as part of the EMPr. This should include utilising a combination of watering and chemical stabilization. ▪ Planning decommissioning activities in consultation with local communities. ▪ When working near a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible. ▪ Identification of exposed areas not used for operations and revegetate to reduce the amount of ▪ dust available for wind entrainment. ▪ Ensure access control to exposed areas reducing activity and wind entrainment. ▪ Reduced speeds of vehicles over exposed surfaces to minimize vehicular entrainment. ▪ Where possible do not undertake material handling activities during windy conditions.	**Minor**	Limit disturbance to actual mining foot-print and Re-instatement of vegetative cover as far as possible.
Surface Water quality & quantity	▪ General decommissioning and rehabilitation activities ▪ Rehabilitation activities including spreading of topsoil and revegetation of disturbed footprints. ▪ Post-closure monitoring	▪ Sedimentation and siltation of nearby watercourses ▪ Contamination of surface water due to accidental spillages of hydrocarbon during rehabilitation activities.	**Moderate**	▪ Re-profile the rehabilitated landscapes to suit desired post mining land use as much as is practically possible. ▪ Demolition should be undertaken during the dry winter period to reduce sedimentation in the proximal watercourses since there will be minimal to no occurrence of rainfall during this period and ensure the immediate revegetation of cleared areas. ▪ Ensure that waste stockpiles are frequently collected and away from riverbanks. ▪ Minimise the footprint of disturbance, as far as practicable. Demarcate the proposed areas for rehabilitation and closure works to minimise the unnecessary expansion of the footprint of disturbance, movement of vehicles and machinery should be confined to designated haul and access roads, as far as practicable. ▪ Maintain the sediment and erosion control measures in place until the completion of demolition and rehabilitation activities to minimise entry of sediment into watercourses. ▪ Ensure that the existing SWMP infrastructure is still functional and can contain runoff from dirty areas.	**Minor**	Free draining closure/ final landform. Closure phase monitoring and inspection- erosion and vegetation growth. Clearly defined post closure land-use plan, including relevant slope gradients applicable to different land-capabilities. Develop a post-closure water balance and SWMP.

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
				▪ Strategic removal of surface infrastructure should be implemented so that potentially contaminated runoff is diverted away from designated clean water areas. This may be achieved by temporarily retaining stormwater infrastructure to divert dirty water from clean areas while the potentially contaminating sources are decommissioned. ▪ Use of accredited contractors for removal or demolition of infrastructure during decommissioning is recommended; this will reduce the risk of waste generation and accidental spillages. ▪ All mining personnel should be taught and trained to handle hazardous chemical waste to minimise spillages. The use of spill kits is highly recommended. All storage facilities should be bunded. ▪ Washing and servicing of vehicles and machinery should only be undertaken at designated, appropriately designed areas. ▪ Administer effective and timely clean-ups in the event of spillages occurring. ▪ Ensure maintenance and management of remaining infrastructure and stormwater infrastructure around the area to prevent water quality contamination from runoff from the remaining areas. ▪ Ensure that the infrastructure (e.g., PCD) are first emptied of all residual material before decommissioning. ▪ Ensure chemicals, reagents or hydrocarbons are stored on impermeable surfaces with appropriate containment structures. ▪ Surface water quality monitoring should continue to detect any potential sources of pollution and thereby enable remediation measure.		
Groundwater quantity and quality	▪ LOM Dewatering activities	▪ Groundwater level would have lowered during LOM due to dewatering activities. However. recovery of water levels (positive) post closure. Area planned to return to forestry after closure.	**Minor**	▪ This is a positive impact, as water levels will recover post closure. ▪ The groundwater model needs to be accurately calibrated during the operational phase. ▪ Continuation of the monitoring programme to establish post decommissioning trends.	**Minor**	Monitoring programme to establish post decommissioning trends.
	▪ Deterioration of groundwater quality due to mining activities	▪ Contamination of groundwater because of deposition of material into RSF 9, RSF C and deposition of material into pits as mining progresses.	**Moderate**	▪ Salinity of the residue to be placed on RSF 9 and RSF C was shown by the geochemistry study to be lower than the ambient groundwater quality. These facilities will be covered with topsoil and returned to forestry. ▪ Replace lost boreholes in backfill areas to check if there is any change in quality over time. All backfilled areas will be covered with topsoil and returned to forestry	**Minor**	Final landform design of RSF 9, RSF C and backfilled areas to be undertaken. This also to determine the required capping of the RSF's. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible.

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
Fauna and Flora	▪ Vegetation clearing and earth works during dismantling of infrastructure and rehabilitation ▪ Sedimentation of drainage features	▪ Establishment and spread of alien invasive species ▪ Sedimentation of drainage features	**Moderate**	▪ Control of alien invasive species should be conducted throughout the Decommissioning and Closure Phase, as per the AIS Control and Eradication Plan. As required, the plan should be updated to account for any operational/environmental changes. ▪ All disturbed/mined footprints that are not designated to return to commercial agroforestry, should be actively rehabilitated toward a natural forest state, as per the Forest Rehabilitation Plan. ▪ It is further recommended that in areas that are designated to return to commercial agroforestry, a network of corridors is delineated along drainage lines and across other areas, and actively rehabilitated toward a natural forest state, in order to serve as ecological corridors and promote landscape connectivity.	**Minor**	Ensure protection of identified natural areas. Forest Rehabilitation Plan to implemented Develop and implement biodiversity monitoring and action plan AIS Control and Eradication Programme to remain post closure Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.
Soil, Land Capability, and Land Use	▪ Rehabilitation of backfilled RSF C mining cells (repurposed Mining Pit) [Note: other Mining Pits were already rehabilitated during the Operational Phase	▪ Unacceptable soil erosion / depth due to proposed 1:3 (18.4o, terraced) side slopes and capping with 30cm of Topsoil (orthic A-horizon) only [directly overlying the sand capping proposed by the Mine for levelling and trafficability purposes]. ▪ Also, poor soil properties (fertility, compaction). ▪ Consequently, reduced Land Capability / Land Use potential, as compared with the pre-mining potential. ▪ Note: RSF C is situated very close to the LOM boundary (thus also influencing Extent of Impact).	**High**	▪ Current Significance assumes that soil erosion is reduced by re-grading side slopes to ideally ≤1:7 (8 °) [but not more than 1:5 (11.3°)]. Terracing is optional if side slopes are so reduced by correct reshaping. Slopes must be reduced as specified, from the proposed 1:3 (18.4° - terraced). ▪ Final rehabilitated Pit profiles (repurposed RSF C) should be whale-backed in shape, with the apex height being raised to approximately 15m above the original ground level. This height may be increased if side-slopes are maintained at ≤1:7. ▪ A Berm (and Toe Paddocks when the feature height exceeds ground level) surrounding the RSF must be established during rehabilitation, to trap sediment. ▪ Improve land capability and land use potential by Topsoiling (capping) with a 150cm (minimum) Reconstituted 'soil' layer (mixing ratio: 33% Fines: 77% Sand); and place a 30cm layer of previously stockpiled Topsoil (orthic A-horizon) over this reconstituted layer. ▪ Topsoiling operation conducted utilising tracked (rather than wheeled) machinery and utilise dedicated traffic routes, this in order to limit soil compaction. ▪ Wherever possible, practise rolling over rehabilitation topsoiling throughout the entire Life of Mine, where topsoil stripped in one area is immediately utilised to topsoil another area where deposition / backfilling has been completed. ▪ Analyse soil fertility and ameliorate as required. ▪ Initially Revegetate with locally indigenous (to the site) grasses to stabilise the surface soils, until such time as an alternative sustainable land use is implemented (e.g. Euclayptus). - Monitor/remove alien invasive vegetative species.	**Moderate**	Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible. Forest Rehabilitation Plan to implemented AIS Control and Eradication Programme to remain post closure Care and maintenance of rehabilitated footprint required for at least 5 year period to ensure successful restoration of mining affected areas.

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
				▪ Monitoring, maintenance, and repair work must be ongoing. ▪ SEQUENTIAL BACKFILLING & REHABILITATION: It is imperative that these operations continue throughout the Phase 2 Life of Mine.		
Hydropedology & Hydrology	▪ Rehabilitation of backfilled RSF C mining cells (repurposed Mining Pit) [Note: other Mining Pits were already rehabilitated during the Operational phase]	▪ Reduced vol. of infiltrated water reporting to the base of the Pit (vs. that pre-disturbance) due to: increased surface area (raised above surface) vs. that of the footprint, thus higher evapotranspiration losses from vegetation / wind. ▪ The Recharge and Interflow (derived from rainfall) flow pathways will vary within the RSF, based upon the grade of material utilised for backfilling as follows: • Fines grades sections. Interflow will dominate close to the surface on top of the fines grades (probable slow-mod infiltration rate in the dry state), a greater proportion of this moisture moving laterally downslope to the previous Pit edge, until encountering the surrounding Recharge (deep) soils whereafter this moisture will move vertically downwards. However, a Recharge (slow) component will also exist within the Fines grades; • Sand grades (internal starter walls, now buried) sections. Moisture will move rapidly downward as Recharge, thereafter, reconnecting with the underlying existing moisture flow pathways.	**High**	▪ Implement all Rehabilitation Mitigation Measures, as specified above. ▪ This will ensure that hydropedological / hydrological moisture flow pathways (although largely altered) underlying the site will be re-established post-rehabilitation. ▪ However, no mitigation is possible to ensure the volumes of sub-surface water moving as Recharge versus Interflow will be replicated. ▪ It is likely that only a slightly reduced volume (post-mitigation vs. pre-mitigation) of water will report to the downslope wetlands and streams from RSF C. This because infiltrating water will still migrate to the most low-lying slope positions due to gravitational action.	**Moderate**	

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
Soil, Land Capability, and Land Use	▪ All activities during decommissioning has a risk on agricultural potential and land capability. ▪ Land use will have been transformed to mining during operations at Tronox.	▪ Unacceptable soil erosion / depth, and poor soil properties (fertility / compaction). Only slightly reduced Land Capability / Land Use potential, as compared with the pre-disturbance condition. ▪ Such an occurrence would be due to failure (albeit partial) to conduct the following site rehabilitation procedures correctly, including: • non-removal of all rubble, scrap, impermeable surfaces (tar and paving), wastes, and potentially contaminated soils from site, for proper disposal. • non-achievale of correct PWP footprint reshaping, in order to be free draining and to tie into the surrounding topography, with final slopes of ≤1:7 (8°), also including the closing in of established clean and dirty water drains., and • failure to replace all of the previously stripped Topsoil's (30cm) and Subsoils (additional 150cm) over the reshaped area.	**Moderate**	▪ Demolish all infrastructure and associated foundations, concrete pads, tarred surfaces / paving; and remove rubble, scrap, waste material, and any potentially contaminated surface soils from site. ▪ Close in the clean and dirty water drains, utilising the soil berms immediately upslope (this being the material excavated during their construction). ▪ Reshape the associated Return Water Dam, remove contaminated sediments / soil, re-grade (re-shape) to slope ≤1:7 (8°), topsoil with soils removed during construction (Subsoils overlaid by Topsoil), ameliorate fertility, and re-vegetate. ▪ Re-grade (re-slope) the PWP footprint area to be free draining and to approximate the topography of the surrounding area (considering shape, and slope ≤1:7 (8°), before topsoiling). ▪ Replace 150cm (minimum) of the originally stripped and stockpiled Subsoils over the reshaped area. ▪ Then replace a 30cm layer of previously stockpiled Topsoil over this Subsoil layer. ▪ Topsoil operation conducted utilising tracked (rather than wheeled) machinery and also utilise dedicated traffic routes, this in order to limit soil compaction. ▪ Analyse soil fertility and ameliorate as required. ▪ Initially Revegetate only with locally indigenous (to the site) grasses to stabilise the surface soils, until such time as the selected sustainable land use is implemented (e.g. Eucalyptus). ▪ Monitor/remove alien invasive vegetative species.	**Low**	
Hydropedology and Hydrology	▪ Rehabilitation of PWP	▪ Non-archival of close to the pre-disturbance Hydropedological / Hydrological moisture flow pathways / water volume beneath the rehabilitated PWP site, due to failure to rehabilitate correctly.	**Moderate**	▪ Implement all Mitigation Measures, as specified for Impact above. ▪ This will ensure that the pre-disturbance hydropedological / hydrological moisture flow pathways underlying the site will be largely re-established post-rehabilitation.	**Low**	
Soils, Land Capability,	▪ Whole Mine site - post closure	▪ Failure to achieve pre-defined closure objectives,	**Moderate**	▪ Implement post closure monitoring and maintenance programmes that should be continued until such time	**Moderate**	

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
Land Use, and Hydropedology		and Tronox's Key Aims as follows: • safe and healthy post-mining environment, • economically viable and sustainable post-mining land use, • limited residual environmental Impacts, and • optimal post-mining social opportunities. ▪ Note: Mining Pits (Sand Tailings), RSF C and 9, and Sand Tails Dumps 8B and A-2 are all situated very close to the LOM boundary (thus also influencing Extent of Impact).		as all rehabilitated areas / facilities are demonstrated to be stable, non-erosive, non-polluting and sustainable in the long term (after Closure). Adaptive management practices may need to be implemented to ensure that all predefined Closure objectives have been achieved.		
Aquatics and wetlands	▪ The removal of infrastructure, as well as rehabilitation of potentially affected areas and aquatic ecosystems. ▪ Water quality and habitat modifications due to input of sediment and contaminants	▪ These activities will likely result in erosion and increased runoff in the areas near or in the associated watercourses (Amanzamnyama, Mhlatuze, Ntuze and Mlalazi Rivers). ▪ Water runoff during these activities may also be of poor quality which will also result in the deterioration of the quality of the affected ecosystems. ▪ Dirty water entering natural aquatic ecosystems from the Decommissioning activities and associated areas have the potential to alter water chemistry and degrade water quality of the affected systems. This will consequently affect the aquatic ecology and aquatic biota. ▪ Furthermore, the disturbance of vegetation and soils will likely facilitate the establishment and spread of alien invasive species.	**Moderate**	▪ The goal of mitigation should be to limit erosion and runoff from the footprint of the areas/infrastructure during infrastructure removal activities as well as during rehabilitation. The following measures are recommended to reduce associated impacts: • Removed or damaged vegetation areas should be revegetated as soon as possible. • Storm water must be diverted from decommissioning activities. • Water used during decommissioning should be kept onsite and not be allowed to freely flow into nearby watercourses. • Ensure the revegetation activities use appropriate indigenous plant species. • All invasive alien plant species should be removed and disposed of appropriately prior to development activities. Such development activity site should be inspected regularly during development activity to identify and remove emerging invasive alien plants (IAP) species. • The removal of alien vegetation should be undertaken manually by hand near sensitive areas. The use of heavy machinery should be kept to minimum near sensitive environments. • Fauna found within the development activity zone should be moved to the closest natural or semi-natural habitat zone away from the development activity site.	**Minor**	Ensure protection of identified natural areas. Forest Rehabilitation Plan to be implemented AIS Control and Eradication Programme to remain post closure Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
Socio-economic	▪ Decommissioning of the Port Durnford mine	▪ The major social implication associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. ▪ Social and labour unrest because of dissatisfaction at loss of employment followed by economic hardship and physical displacement of employees and/or exacerbated employment loss. ▪ Conflict in desired post-closure land use/s and unalignment with municipal SDF. ▪ Forced closure of suppliers, with further cumulative impact of loss of jobs / contracts and income	**Minor**	▪ The impacts associated with mine closure and decommissioning needs to be addressed in the SLP. Undertake investigations into long-term livelihood sustenance project creation incorporating Tronox to reskill and enable mine employees to be sustainable post closure. ▪ The SLP states that during downscaling and retrenchment, consultation with employees through their representative union will be affected by section 189A of the Labour Relations Act. ▪ Develop skills required for next land use through the SLP i.e. ecotourism etc. ▪ Establish a regional mine closure forum with neighbouring communities (Future Forum)	**Moderate**	Ensure adequate provision is made for closure liability and update annually for submission to DMRE. Optimise closure cost by integrating closure planning into LOM designs. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible.
Financial	▪ All decommissioning, rehabilitation and mine closure activities	▪ Failure to implement the final rehabilitation, decommissioning and closure plan (due to budget restraints and/or shortcomings). ▪ The following environmental consequences were considered: • Inadequate establishment of vegetation; Soil erosion and contamination; Loss of soil, land use and land capability; Siltation of rivers and streams; Failure to control alien and invasive plant species; Loss of biodiversity; Contamination of	**Moderate**	▪ Ensure that annual updates of the Financial Provision reflect true and accurate assessment of activities and impacts of mining operations at Tronox. ▪ Establish agreements for transfer/hand-over of buildings and/or infrastructure (including linear). ▪ Adjust the quantum of provisioning required based on the development of a detailed measurement of all infrastructure; and compile a measured bill of quantities. ▪ Liaise with the DMRE regarding adjustment of the quantum ▪ Undertake concurrent rehabilitation during operation of the mine, if possible ▪ Provided that sufficient monies are available, undertake concurrent rehabilitation of redundant infrastructure, using operational expenditure to reduce final quantum of liability at the end of LoM ▪ Develop and implement an internal rehabilitation approval/ relinquishment/ sign-off procedure to ensure that the scope of work has been completed. Scope of work to be aligned to legal obligations, closure plan	**Minor**	Ensure adequate provision is made for closure liability and update annually for submission to DMRE. Optimise closure cost by integrating closure planning into LOM designs. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible.

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
		surface water resources and Uncontrolled GW pollution plume migration ▪ The following Legal and Regulatory consequences were considered: • Failure to meet relinquishment criteria, as set out in the final rehabilitation, decommissioning and closure plan will result in the mine not being issued a closure certificate; and potentially posing risk to humans and animals • The following Social / Health and Safety consequences were considered: • Abandoned areas will be unsafe and pose a significant risk to humans and animals and Deterioration of structural integrity of unrehabilitated mine infrastructure could lead to human injury and/or fatalities		requirements and commitments/ conditions of other authorisations.		
Visual	▪ Visual Final mining footprints and remaining infrastructure	▪ Visual intrusion of decommissioning activities associated with a mine on the existing views of sensitive visual receptors in the surrounding landscape. ▪ Reduced post-closure visual appeal due to disrepair/unmaintained transferred infrastructure.	**Moderate**	▪ Exposed areas need to be reshaped and revegetated as soon as possible. This would significantly contribute to reestablishment of the scenic setting of the impacted landscape. Dust control measures implemented during operations should remain to minimise dust emissions from the area. ▪ The residual mineral residue deposits need to be sloped and vegetated as soon as possible. This would ensure the residual visual aesthetics of the area is re-established and therefore improve the scenic quality.	**Minor**	Final landform design of RSF 9, RSF C and backfilled areas to be undertaken. This also to determine the required capping of the RSF's. Concurrent rehabilitation aligned to an optimised LOM to be developed which proiritize rehabilitation as early as possible. Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.
Waste	▪ Demolition of infrastructure & Final Rehabilitation	▪ Generation and disposal of demolition waste on site ▪ Generation and disposal of hazardous waste/ decontamination of hazardous waste	**Moderate**	▪ Identify structures that can be beneficially re-used and establish agreements for transfer/hand-over. ▪ Demolish and remove concrete and/or brick structures and dispose of at a registered site and/or apply for	**Minor**	Develop a detailed decommissioning waste management plan

Aspect	Activity	Impact	Pre-mitigation Risk (Inherent Risk)	Suggested Mitigation Measures	Post-mitigation risk (Residual Risk)	Closure Options/Actions
		▪ Improper disposal of waste		necessary regulatory permits to dispose of demolition waste onsite ▪ Dismantle steel structures and sell salvageable scrap metal. ▪ All material recovered from the demolition of building structures will either be transported to a permitted disposal site, sold as scrap metal or made available to the local community as building materials – provided that the material is still in a satisfactory condition and pose no health risks. ▪ Dispose of hazardous waste at licenced facilities/ decontaminate waste		

7.3 RESIDUAL RISK ASSESSMENT

Residual risks (risks that remain at a significant or high-risk ranking, even after the implementation of initial mitigation measures) are derived from the Closure Planning Risk Assessment process above. These risks are expected to result in residual impacts that cannot necessarily be managed/ mitigated during the closure phase and if additional controls are not implemented, would remain after mine closure and significantly reduce the changes of successful relinquishment and issuance of a closure certificate. None of these risks had a high significance rating.

Various actions, such as rehabilitation of disturbed and/ or impacted areas, identifying practical closure objectives and assessing appropriate land uses all work towards minimising residual risk. The results of the risk assessment of these residual risks, and detail on proposed additional management measures are provided as part of the FCP. Working towards successful relinquishment, these additional controls and management actions would need to be implemented over a three- to five-year period following mine closure.

The most significant residual risks currently identified, after all closure measures have been implemented, by considering the information available, relate to the land capability of previously rehabilitated surfaces, specifically the mineral residue deposits and backfilled pit areas.

The primary potential environmental risk/ aspects that still pose a risk post closure are listed below:

- The long-term contamination of surface water quality in streams, rivers and wetlands downstream of the residual mineral residue facilities and backfilled pit footprints. Any material eroded from the side slopes of the residual mineral residue facilities can expose the mineral residue to the environment which can then be transported into downstream surface water resources.
- The previously rehabilitated footprints, completed as part of progressive rehabilitation and closure, are expected to be exposed to harsh climatic conditions which could result in erosion of the area. Without proper care and maintenance on these areas, this situation can be aggravated and compounded by climate change.

8 CLOSURE VISION, OBJECTIVE AND TARGETS

The project's closure vision, objective and targets for rehabilitation, decommissioning and mine closure, aim to reflect the local environmental and socio-economic context of the project, and to represent both the corporate requirements, the stakeholder expectations as well as the legislative framework and regulations.

8.1 CLOSURE VISION

With environmental context of the project and the feedback from the consultation process the vision for closure is as follows:

"To render a sustainable post-closure utilisation of land which is integrated into the current land uses aimed at leaving behind a positive post-mining legacy for the receiving community and our shareholders and ensuring the affected environment is non-polluting, stable, aesthetic and safe".

9 GUIDING PRINCIPLES FOR CLOSURE PLANNING

The guiding principles that have been adopted to direct/guide the final closure planning at Port Dunford mine are as follows:

- The closure measures conceptualised and stipulated in the closure plan for implementation will limit any potential adverse impacts of the closed site on the receiving environment, and thereby ensure that the quality of life of the surrounding communities is not compromised after closure by possible threats to the health and safety of people and their livestock.
- Closure measures will be sustainable under foreseeable natural events.
- Stakeholders will be engaged in a meaningful manner to solicit input to inform Tronox's closure planning, that should reflect local community requirements, priorities and preferences, as well as the requirements as stipulated in local and provincial planning programmes, e.g. IDPs.
- Concurrent rehabilitation and eventual closure-related rehabilitation of land disturbed by mining will be conducted to achieve pre-determined, post-closure/ next land uses acceptable to resident communities.
- Priority will be given to the use of locally available natural materials and/ or vegetation to support ecological functioning of the ecosystem. Moreover, the measures provided should be appropriate for a range of applications within a strongly seasonal, summer rainfall area characterised by sporadic drought and generally high temperatures.
- Suitable third parties will be identified and capacitated on care and management of rehabilitated mine land, and its proper use to achieve sustained use. Long-term land use agreements will be put in place to safeguard Tronox's interest. Preference will be given to local third parties who can integrate their farming or complementary land uses into that of Tronox's without placing negative strain of their current business models.
- Environmental monitoring will be implemented to assess dominant trends of key variables to understand significant risks. Information from monitoring will be regularly reviewed, and specialist inputs, advice and predictions will be sought to confirm post-closure risks and latent risks. Mitigation measures will be developed in line with specialist recommendations, and monitoring implemented to assess improvements.

9.1 DRAFT NATIONAL MINE CLOSURE STRATEGY

- Addressing phased nature of regional mine closure – realistic and achievable, high-level closure implementation/execution schedules need to be developed for each mine, to identify synergistic opportunities as well as potential constraints.
- Rehabilitation of land to fit-for-purpose condition – Tying in with the previous point, "fit-for-purpose" needs to be specifically articulated for each respective operation within the context of the identified regional closure demands.
- Collaborative regional development programmes/forums – the existing organisational structure for closure implementation identified in each FCP needs to be expanded assigning ownership for individual closure focus areas. Key respective external parties with whom Tronox's needs to interact on a regular and structured manner surrounding furthering of closure vision and strategic objectives needs to also be identified, and the manner and frequency of the interaction forums articulated.
- Closure demands for the respective mining regions in terms of the following and other metrices need to be 1) identified and understood, and 2) where possible indicatively quantified. The

individual FCPs need to unpack how the individual closure approaches are expected to contribute towards addressing these regional demands:

- Base flow contributions to respective watercourses within affected catchments
- Long-term water management/treatment plans, water make, qualities and possible collaboration opportunities
- Food security, agricultural output and food production
- Housing provision
- Social and community infrastructure
- Public open space and communal recreation facilities
- Job creation and employment opportunities
- Energy security and production contribution
- Reinstatement of areas of ecological functionality and habitat provision

- Regional planning mechanisms with neighbouring mining houses on biophysical, water management, social, economic, land use and planning aspects on which collaboration with is needed, and in-principal agreement on collective objectives, responsibilities, interaction mechanisms/forums, and in-principal outcomes need to be formulated for mining with mine-specific considerations articulated in each FCP.

9.2 REGIONAL COLLABORATION

- The above overarching regional collaboration mechanism needs to be brought down to mine-specific level and articulated in the respective FCP and unpacked in terms of the respective operation's respective LoM. Each operation must establish collaboration forum with internal (Tronox) and external (third-party) participants to manage and progress the data centre and planning, as context and decision-making tool for updating the regional strategy and feeding into respective FCP updates.
- Parallel to the above, a closure-focused spatial GIS "data centre" is in process of being developed and must be aligned with and integrate with the social, housing, and agricultural as well as municipal spatial planning tools/exercises. responsible for spatial mapping, stakeholder mapping, assessing the impacts of stakeholders on Tronox's and baseline socio-economic data collection.
- The mapping output from this database will serve as a critical planning tool which aids risk management and contributes to effective planning, knowledge sharing focused on:

  - Baseline environmental, socioeconomic, cadastral, and planning information collation and referencing
  - Risk identification
  - Opportunity identification
  - Issues and concerns of stakeholders
  - Long-term planning and decision-making prioritization
  - Interactive feedback and ongoing updates
  - Demolition, rehabilitation and closure system

10 MINE CLOSURE OBJECTIVES

The key rehabilitation, decommissioning and closure objectives are required to support the achievement of this post closure vision for sustainable land that aligns with environmental and social

standards. The following key closure objectives have been formulated to guide the closure measures to be implemented on site towards achieving the above closure vision:

- Creating a safe, physically stable rehabilitated landscape that limits long-term erosion potential and environmental degradation.
- Sustaining long term catchment yield and water quality.
- Focussing on establishing a functional post-closure landscape that supports the surrounding land uses and is aligned with regional planning.
- Interconnecting rehabilitated landscapes with surrounding regionally biologically diverse areas.
- Encouraging, where appropriate, the re-instatement of terrestrial and aquatic wetland biodiversity over time.
- Creating opportunities for alternative post-closure livelihoods by aligning to regional planning.
- Complying to local and national legal requirements.

11 CLOSURE MEASURES

The closure measures/actions developed for proposed Port Dunford mine are presented in the sections below, and cover:

- Infrastructural areas
- Mining areas
- General surface rehabilitation
- Surface water reinstatement
- Ps&Gs, Contingencies and additional allowances:
  - Preliminary and general
  - Contingencies
  - Additional studies
- Pre-site relinquishment monitoring and aftercare
  - Surface water quality monitoring (for a period of 5-years' post-closure)
  - Groundwater quality monitoring (for a period of 5-years' post-closure)
  - Rehabilitation monitoring of rehabilitated areas (for a period of 5-years' post-closure)
  - High intensity care and maintenance (for a period of 5-years' post-closure)
  - Low intensity care and maintenance (for a period of 5-years' post-closure)

Specific assumptions relating to the above and that have cost implications are listed in Section 16.2.

Closure measures are activity-specific actions that would need to be implemented by the mine at closure to mitigate environmental risks and negative environmental impacts as a result of mining. The closure criteria can therefore be regarded as a list of specific actions that form the basis of mine closure implementation and should be considered during the estimation of closure liability.

The prescribed closure actions that would need to be undertaken by the mine are described in Table 11-1 below. It should however be noted that these actions will also need to be supplemented by the EMPr commitments, including specialist investigation undertaken during the environmental approval process relating to actions required during decommissioning and closure phase.

Table 11-1 – Site-specific Closure Components

Closure Components	Descriptions
Processing plants, offices and administration buildings	▪ All remaining infrastructure will be demolished /dismantled. The current assumption is that no infrastructure will remain post-closure. Identify structures that have a potential post-closure beneficial re-use/re-purposing and establish agreements with identified stakeholders for transfer / handover. Only then will this assumption be removed. ▪ Prior to commencement of demolition all salvageable equipment/materials will be removed. The closure cost calculation will however exclude this monetary value of the salvable infrastructure. ▪ All pollution control dams, including stormwater management infrastructure will remain until such time that monitoring proves that surface water qualities are adequate for release into the natural watercourses. ▪ Concrete foundations will be excavated and/or demolished to 1 metre below ground level. If the structures extend more than 1 meter below ground level the remaining structure below this will be left insitu. All remaining inert equipment and demolition debris (if not contaminated) will be placed into the nearest general waste disposal facility (with permission). ▪ Once all the infrastructure is demolished the entire area will be re-shape and profiled to ensure the area becomes free draining. Once the disturbed area is reshaped and stabilised, if required, additional erosion, sediment and stormwater controls will be implemented to ensure medium, term protection until suitable establishment of vegetation cover. This will ensure adequate stabilisation of disturbed areas. ▪ Compaction needs to be alleviated. All disturbed topsoiled footprints need to be ripped to dept of approximately 300 – 500 mm. However, this will need to be based on site specific requirements ▪ The growth medium cover should be placed once the capping material has been installed. Topsoil cover should be applied to a depth of at least 300 mm. The soil that was removed and stockpiled prior to construction will be used for this. Apply general rehabilitation measures by applying suitable seed mix based on the planned post-closure land use and informed by specialist studies. This depended on the next land use. ▪ Disturbed surface areas will need to establish suitable vegetation over. Care and maintenance for approximately 5 years post rehabilitation is required to confirm the area has become self-sustaining.
Services and other linear infrastructure	▪ Fences: • Remove all fencing, including gates, not required to support the post-closure land use. • Demolish all concrete foundations/supports to 1 m below ground level. • Rip tracks along the fence and allow for natural re-vegetation. ▪ Power lines and pipelines: • Remove all on site power lines, except the main feed lines leading to Eskom's substation. ▪ Pipelines: • Remove all operational pipelines on surface. Underground pipelines will largely be left as is with exposed open ends closed-off and covered.

Closure Components	Descriptions
	▪ Roads: • The access road and internal roads will remain post closure.
Mineral Residue Deposits (MRD) (e.g. RSF 9, RSF C and deposition of material into pits)	▪ Re-grade rehabilitated areas to a slope not exceeding 4 degrees for arable land and 8 degrees for grazing land, with a recommended maximum of 6 degrees to prevent soil erosion. ▪ Ensure slope shapes blend with surrounding non-disturbed areas and are freely draining without blind depressions and hollows. The established slope grade and shape will be composed of sand tailings. Non-suitable soil types may also be utilised at this time. ▪ Once the area has been re-shape/profiled and suitable capping material installed. Additional erosion, sediment and stormwater controls must be implemented, if required, to ensure medium term protection until suitable establishment of vegetation cover. This will ensure adequate stabilisation of disturbed areas. The upper surface will be shaped to manage surface water run-off and thus to prevent the erosion of the outer slopes and the discharge or polluted solids to the natural streams. ▪ The growth medium cover should be placed once the capping material has been installed. Topsoil cover should be applied to a depth of at least 300mm. The soil that was removed prior to construction and stockpiled will be used for this. Apply general rehabilitation measures by fertilising and applying a suitable seed mix based on the planned post-closure land use and informed by specialist studies. ▪ MRD' footprint areas will need to establish suitable vegetation cover (based on desired next land use). ▪ Care and maintenance for approximately 5 years post rehabilitation is required to confirm the area has become self-sustaining. ▪ Undertake geotechnical investigations to determine long-term stability of rehabilitated MRD. post rehabilitation is required to confirm the area has become self-sustaining.
Waste handling and disposal	▪ Recycle waste that can be recycled/salvaged (e.g. steel) after decontamination. ▪ Decontaminate all process-related concrete demolition waste at dedicated demolition bays, and crush on site. ▪ Remove inert demolition waste and utilise for local backfilling of nearby open pits or other excavations. ▪ Transport remaining hazardous and contaminating materials and wastes to a suitably registered and licenced facility for disposal.
Post-closure monitoring	▪ Surface and groundwater monitoring is to continue post closure until the relinquishment criteria have been met/achieved. ▪ Rehabilitation monitoring to be undertaken until the relinquishment criteria have been met/achieved. ▪ Conduct care and maintenance of the rehabilitated areas over a five-year period.

12 REHABILITATION STRATEGY AND IMPLEMENTATION SCHEDULE

12.1 REDUCING LIABILITY THROUGH CONCURRENT REHABILITATION

It is well documented that the lack of concurrent rehabilitation and clear incentives to rehabilitate leads to inflated long-term liability and more significant environmental risks. In general, mining operations environmental liability increase progressively during operations until closure. The link between the application of concurrent rehabilitation and the need for closure rehabilitation is clear – where possible, application of concurrent rehabilitation is one of the best ways to ensure that closure rehabilitation requirements and costs are minimised.

Progressive closure results in a clear reduction in the financial assurance/provisions required for final rehabilitation, decommissioning and closure. Tronox needs to adopt the principle of "the earlier the better" to rehabilitation which substantially reduced future risks associated with closure of the Port Dunford Mine.

12.2 SPATIAL PROGRESSION PLAN

A comprehensive spatial progression plan must be developed to outline the timeline for decommissioning and rehabilitation activities throughout the LOM. This plan will specify when mining and infrastructure reach their end of life and when decommissioning and rehabilitation can commence. These projects will be executed in phases as areas become available. The current LOM schedule includes plans to backfill pits as they become available, allowing for the commencement of rehabilitation activities, including the mineral residue deposits (refer to Figure 4-6).

Although no spatial progression planning has been conducted as part of our current work, it is crucial that such planning is undertaken in the future. This spatial progression plan should be fully integrated into the annual revisions of this report. The mine closure schedule must be linked to the financial provision estimates and forecasts conducted annually. The schedule should identify areas available for decommissioning and rehabilitation.

13 FINAL POST CLOSURE LAND USE

As part of the closure strategy, various objectives have been established to ensure the affected environment can be rehabilitated to achieve long term sustainability. The identified next land use is therefore a function of the status of the land, feasibility of rehabilitation options that can be applied to certain infrastructure, changes of long-term success, and aligning to surrounding land uses. These factors ultimately aim to achieve the proposed next land use, aligned to the closure vision.

The disturbance of natural vegetation and soils and the subsequent deterioration of land capability is one of the most significant environmental impacts resulting from construction and operation of Port Durnford. In addition to the impacts on land capability and biodiversity, groundwater and surface water resources will also be affected by mining activities. The extent and severity of these impacts should be defined through implementation of monitoring programmes during operations.

The topography of the permanent sand dumps and RSFs is expected to change substantially within the context of the broader mining rights area, whereas that of the mined-out areas that will only be backfilled to pre-mining levels will remain relatively unchanged in the long run. The RSF sites and sand tails deposition areas will leave permanent elevated features on the landscape, with more uniform side slopes and pronounced flatter crest areas. It is anticipated that at least some land will be returned to forestation, where soil and slope conditions allow, with the remainder being used for crop production and as informal grazing land. In this regard, it would be required to determine the relinquishment criteria under which Mondi would again take over specifically the respective rehabilitated sand dumps and RSFs. The suitability of these areas for the purposes of again establishing timber plantations will be a function of slope in combination with nature and depth of cover material, as well as other factors such as erosion prevention and control. The pre-mining and post mining topographic surface is presented in Figure 13-1. The natural valleys and peaks are depicted by green and red respectively.

Amongst the wide variety of potential next land uses options proposed, it is anticipated that some land will be used for forestation, and others for crops and grazing land. The topography of the mined-out areas within the broader mining rights area is expected to change substantially. The RSF sites and sand tails deposition areas will leave permanent elevated features on the landscape. The pre-mining and post mining topographic surface is presented in. The natural valleys and peaks are depicted by green and red respectively. The elevated RSF dam walls and sand tails deposition areas become prominent features in the post mining landscape. Its further expected that as far practical the top surfaces of the RSF's and sand tails will be reinstated to forestation. Areas not suitable for forestation will be taken back to either arable or grazing land use based on land capabilities post closure.

This next land use of the mining area post-closure is deemed to be the most appropriate in the regional context, and the most likely to achieve long-term sustainability. Successful tree planting on reclaimed mine sites is well-documented, but there is limited information on productivity changes for sites mined and rehabilitated over several rotations of tree growth. Research at Hillendale has shown that intensive management, including storage and re-spreading of topsoil, can restore mined sites, though with reduced productivity. Successive rotations of commercial stands may improve long-term productivity.

Rehabilitation efforts at Hillendale have focused on improving the physical and nutritional properties of surface soil layers, which is beneficial in the short term, but long-term effects are uncertain as trees depend on subsurface water for sustained growth. Enhancing water retention in the top metre of soil and intercepting rainfall to compensate for infiltration losses is crucial for achieving reasonable timber yields. The large areas dedicated RSFs at the mine pose a concern due to the lack of information on their reforestation potential and management. This would need to be a key consideration in the future updates of the closure plan to ensure landform design are improved to enable effective next land use planning.

The majority of the mining areas will be returned to Mondi for reforestation. This process will be undertaken as rehabilitated areas become available throughout the LOM (refer to Figure 13-2). Therefore, the affected mining areas will be rehabilitated to primary "grazing" land capability, as defined by the Land Rehabilitation Guidelines of Southern Africa (MC, 2019). . Alinged to this and recommended by the soil specialist and the EIA, to improve land capability and land use potential capping with 150cm (minimum) reconstituted 'soil' layer (mixing ratio: 33% Fines: 77% Sand) prior to placement of 300 mm of topsoil is required to improve the long-term production potential of the post-

mining landscape. This implies a growth medium cover of a minimum of 300 mm on average across the footprints in preparation for revegetation using either commercial timber species or indigenous grass and plant species seed banks for rehabilitation. Tronox should also aim for a maximum side-slopes of less than 1:5, with less than 1:7 being optimal, to ensure productive and financially viable land capabilities and uses post-mining. It should be noted that the success of reforestation on these rehabilitated surfaces with the specified growth medium depth has not been confirmed. Therefore, further work will need to be undertaken during the LOM to prove the viability of applying only 300mm of growth medium on areas previously disturbed by mining activities.

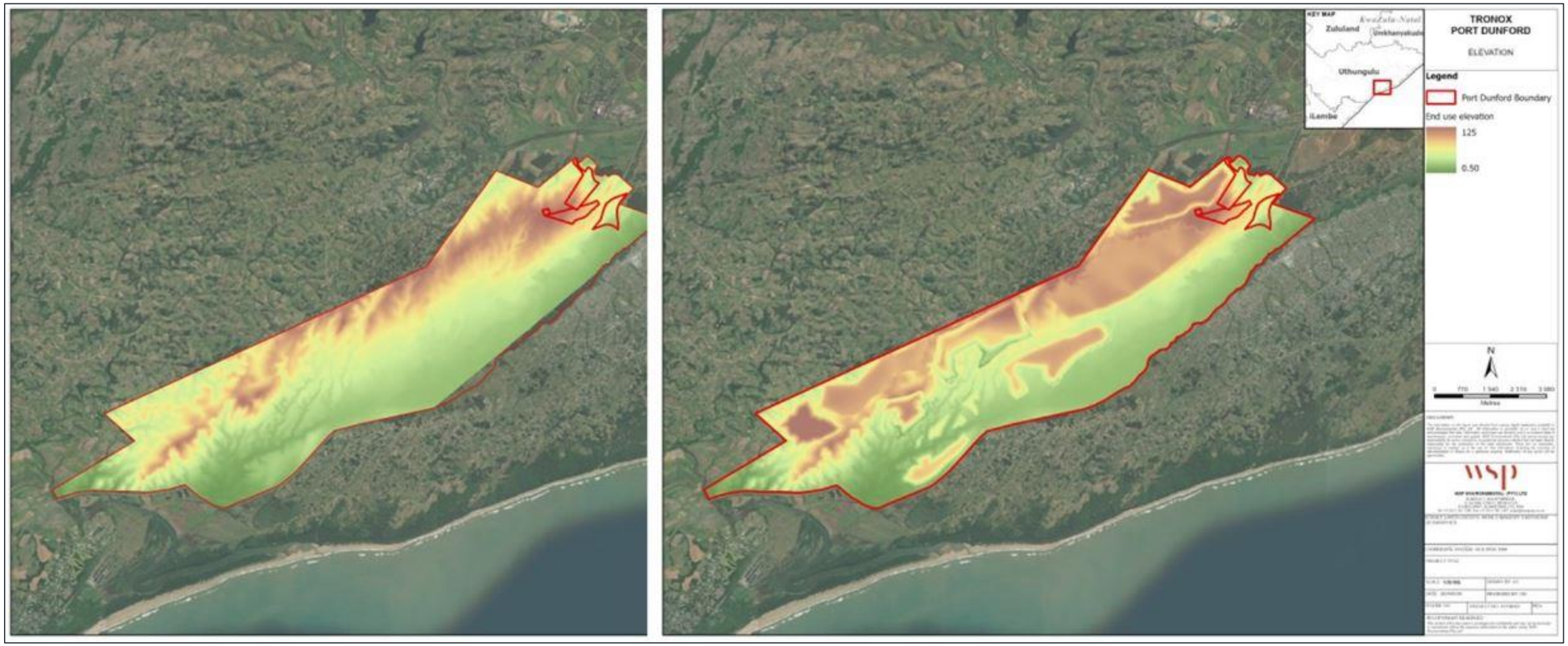

Figure 13-1 - Pre mining (LHS) and Post Mining (RHS) Topography

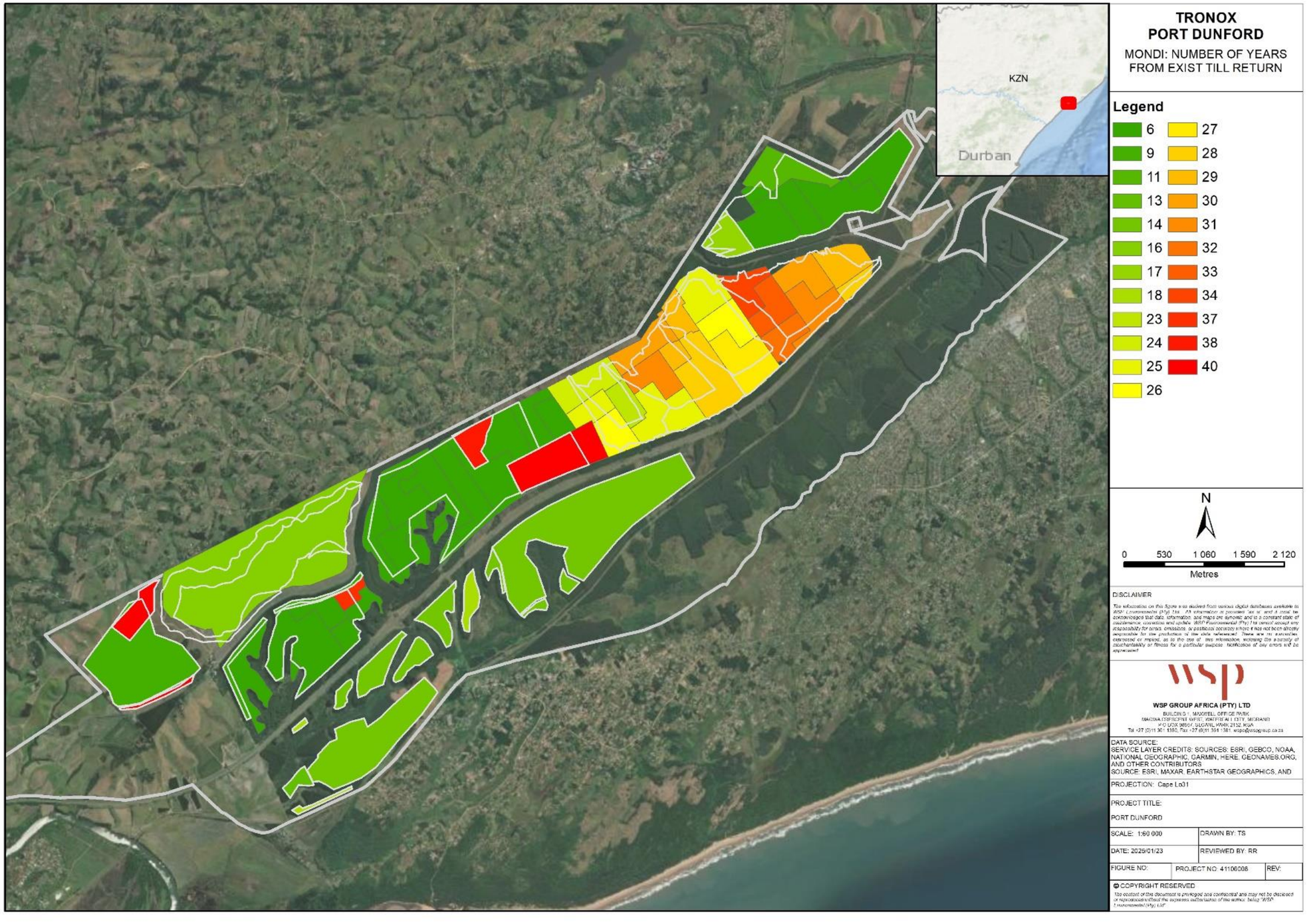

Figure 13-2 - LOM scheduling for return of mined areas for reforestation

14 CLOSURE MONITORING, AUDITING, AND REPORTING

Closure monitoring and reporting requirements have been detailed in Table 15-1 and are not repeated here. This monitoring and reporting programme will need to be refined in future updates of the closure plan as site relinquishment criteria are refined and the monitoring requirements to demonstrate compliance with the relinquishment criteria are aligned. While operational monitoring requirements are often legislated (as for example in the WUL), the transition into the post-closure monitoring period often requires a review of the monitoring plans and programmes and an adjustment to ensure that they are suited to monitoring rehabilitation success prior to application for closure.

Table 14-1 below outlines the key internal, external, and legislated audits that are required to demonstrate the success of closure criteria/measures implemented during final closure. Formal auditing usually continues throughout the post-closure monitoring period, until issuance of a closure certificate. The frequency of non-legislated audits may be modified during the post-closure period in consultation with the relevant stakeholders.

Table 14-1 - Schedule for internal, external and legislated audits

Type of audit	Name of audits	Responsibility	Frequency of audits	Approach taken to address and close out audit findings
Internal	Water Use Licence audit	Site Environmental coordinators	Annual	Internal audit findings are captured in the site Environmental Management System (EMS), where actions are assigned for implementation, and closeout. Resources (people and funds), and timeframes, are assigned to all audit findings, and progress is tracked on an EMS platform
	Legal compliance audit	Permitting specialist	Every 2nd year	
	Environmental Performance Audit	Site Environmental coordinators	Annual	
	GN704 water audit	Water specialist	Annual or every 2nd year	
External	Audit of the Port Dunford mine closure plan and closure costs	External closure and rehabilitation specialist	Annually	External audit findings are captured in the site EMS, where actions are assigned for implementation, and closeout. Resources (people and funds), and timeframes, are assigned to all audit findings, and progress is tracked on an EMS platform
	Audit of the annual rehabilitation plan and costs	External closure and rehabilitation specialists	Annually (aligned with Tronox budget preparation)	
	Water Use License audit	External water consultant	Annual	
	Legal compliance audit	External legal compliance consultant	Every 2nd year	
	Environmental Audits	External environmental consultant	Annually (comprises of old EMPr PAR and audit of	

Type of audit	Name of audits	Responsibility	Frequency of audits	Approach taken to address and close out audit findings
			environmental authorizations)	
	ISO14001 EMS audit	External EMS consultant	Annual	
	GN704 water audit	Appointed water consultant	Annual or every 2nd year	

15 SITE RELINQUISHMENT CRITERIA

Relinquishment criteria are the agreed standards that must be met to facilitate lease relinquishment. These include physical, biophysical and socio-economic parameters and are generally defined through engagement with regulators and other external stakeholders.

Relinquishment criteria play a vital role in demonstrating that the decommissioning of the mine and rehabilitation of mined land can be self-sustaining in terms of the predetermined post-mining land use with similar management inputs required for similar land use units. In terms of the NEMA Financial Provision Regulations, each site is required to develop a site-specific relinquishment criterion. The relinquishment criteria should be aligned with the closure objectives, closure measures as mentioned in Section 10 and 11 of this report.

Initial site relinquishment criteria have been developed for proposed Port Dunford mine and are shown along with monitoring requirements in Table 15-1 below. These criteria will need to be refined in future annual updates of the FCP knowledge gaps are filled and as closure planning is progressed. The development of sound site relinquishment criteria is essential because they provide the yardstick by which the success of closure criteria can be measured, and upon which an application for closure will be approved. These criteria will need to be refined in consultation with the authorities, and other stakeholders, so that there is agreement on the metrics by which successful closure can be measured.

Table 15-1 - Proposed monitoring programme and preliminary site relinquishment criteria

Monitoring aspects	Monitoring objectives	Frequency and period of monitoring	Sampling analysis and parameters to be monitored	Reporting	Corrective action/ adaptive management
Surface water					
In-stream surface water quality	▪ To monitor surface water quality, to track water quality changes over time and to assess if these changes are related to the Port Dunford mining activities, to implement mitigation measures if required.	▪ Collect surface water samples monthly for chemical analysis by an accredited laboratory. ▪ Monitoring will continue for at least 5-years post-closure (or until a closure certificate is issued).	▪ South African Bureau of Standards (SABS) analysis is to be undertaken for samples collected from the monitoring points at the mine site as stipulated in the IWWMP, and WUL. ▪ South African National Standards (SANS) analysis is to be undertaken for samples collected from the monitoring points located at the siding area as stipulated in the IWWMP, and WUL. ▪ In-field measurements are made for pH and Electrical Conductivity (EC) (as a minimum) when samples are collected – to allow for immediate corrective action.	▪ Results and findings will be compiled into a monthly site water quality monitoring report, with attached laboratory results. ▪ Surface water quality monitoring reports and data will be submitted to the authorities monthly.	▪ Investigate the cause of any non-compliance in surface water quality leaving the site (using the source – pathway – receptor model) and address the contaminant source with improved rehabilitation and/ or appropriate mitigation measures.
In stream surface water flow	▪ To monitor surface water quality, to track water flow volume changes over time and to assess if these changes are related to the Port Dunford mining activities, to implement mitigation measures if required.	▪ Conduct in stream surface water monitoring annually.	▪ Measure in stream flow.	▪ To be included as part of the surface water quality monitoring report.	▪ A dedicated assessment of the increased for decreased flow is needed – to be followed by appropriate corrective action.
Biomonitoring	▪ To monitor the health and ecological integrity of aquatic life in surrounding catchment systems, and to track changes over time with the intention of assessing changes in relation to changing water quality and other potential mining impacts.	▪ Conduct aquatic bio-monitoring surveys annually. ▪ Biomonitoring will continue for at least 5-years post-closure (or until a closure certificate is issued)	▪ The SASS 5 bio-monitoring methodology is used to determine the aquatic health and ecological integrity of stream biodiversity. This approach includes an assessment of habitat availability for aquatic macro invertebrates (Integrated Habitat Assessment System), Fish Response Assessment Index as well as diatoms.	▪ Results and findings will be reported in an aquatic health assessment report delivered after each assessment.	▪ Investigate the cause of any bio-monitoring results that do not reflect improving trends in biodiversity or ecological health.
Groundwater					
Groundwater quality	▪ To monitor ground water quality in both natural aquifers and mine workings, to track water quality changes over time and to assess if these changes are related to the Port Dunford mining activities, so as to implement mitigation measures if required. ▪ Groundwater quality monitoring will be undertaken to establish the following: • The impact of mine dewatering on the surrounding wetlands. • Groundwater inflow into the open pit areas.	▪ Groundwater samples will be collected quarterly for chemical analysis by an accredited water laboratory and to determine groundwater levels. ▪ Monitoring of boreholes will continue for at least 5-years post-closure (or until a closure certificate is issued).	▪ Groundwater samples will be sent to an accredited water laboratory to be analysed for full South African Bureau of Standards (SABS) analysis for samples collected from the monitoring points at the mine site. ▪ Full South African National Standards (SANS) analysis is to be undertaken for samples collected from the monitoring points.	▪ Results and findings will be compiled into a quarterly water quality monitoring report, with attached laboratory results. ▪ An annual compliance water quality monitoring report will be compiled and submitted to the authorities for evaluation and comment.	▪ Investigate the cause of any non-compliance in borehole water qualities (using the source – pathway – receptor model) and develop appropriate mitigation measures to reduce the generation of contamination at source where possible, or to contain or intercept polluted groundwater movement towards sensitive receptors where this is necessary.

Monitoring aspects	Monitoring objectives	Frequency and period of monitoring	Sampling analysis and parameters to be monitored	Reporting	Corrective action/ adaptive management
	• Groundwater quality trends. • The rate of groundwater recovery • Extent of possible contaminated groundwater plumes (providing data to confirm groundwater models and inform contaminant "source-pathway-receptor" analysis). • Potential contaminated groundwater does not impact surrounding groundwater users (neighbouring communities).				
Groundwater levels	▪ To monitor the piezometric (water table) levels in all boreholes, to determine the dewatering impacts of mining, and to measure the rate of recharge to underground workings in closed mining areas.	▪ Groundwater levels measured quarterly. ▪ Monitoring will continue for at least 5-years post-closure (or until a closure certificate is issued).	▪ The groundwater level is to be measured at the mines monitoring points.	▪ Results and findings will be compiled into a quarterly site groundwater water report.	▪ Reassess and revise groundwater management plan for the Port Dunford mine to manage and mitigate possible water contamination.
Surface rehabilitation					
Concurrent surface rehabilitation progress	▪ To monitor rehabilitation performance by measuring appropriate land parameters that allow the calculation of rehabilitation progress and rehabilitation backlogs, and to plan annual rehabilitation activities and to budget for the implementation of the plan.	▪ All progressive mining disturbance and rehabilitation progress on site will be monitored on a monthly basis by accurate survey measurement, with rehabilitation performance data being consolidated for reporting on an annual basis.	▪ The following land parameters are monitored to inform rehabilitation planning and performance assessment: • Company owned and company managed land (ha). • Areas altered for mineral extraction activities (ha). • Areas unavailable for rehabilitation (infrastructure areas) (ha). • Area available for rehabilitation (ha). • Total area rehabilitated (ha) and outstanding backlog.	▪ Rehabilitation performance will be reported annually to Tronox and DMRE (as per the requirements of the Financial Provisioning Regulations, 2015 (as amended)).	▪ Ensure that rehabilitation backlog is addressed so that the mine is compliant with commitments made in the annual rehabilitation plan, otherwise this may result in a penalty given by DMRE.
Land capability	▪ To monitor post-closure land capability on rehabilitated areas, to compare performance against EMPr commitments.	▪ The land capability assessment will typically be a once-off exercise completed on rehabilitated land units (as these becomes available for assessment).	▪ Conduct a post-closure land capability assessment on rehabilitated areas (using a 100 m x 100 m grid), that includes measurement of the following key parameters for cover soils: • slope angle • soil depth • bulk density • soil pH • soil salinity • soil fertility (using typical agricultural analysis).	▪ Findings will be reported in a post-closure land capability report, after each assessment where achieved land capability will be compared with EMPr commitments.	▪ Modify rehabilitation plan to address any losses in land capability and report these in the annual rehabilitation plan or modify the post-closure land use plan to align with achieved post-closure land capability.
Soil fertility	▪ To achieve basal soil fertility levels that will support a self-sustaining vegetation cover (within 5 – 10-	▪ Annually for the five years, and every three years thereafter until fertility targets met.	▪ Determine the fertility level in rehabilitated soils by collecting	▪ Findings will be reported in a soil fertility report, after each assessment.	▪ Apply adequate soil amelioration (physical and chemical) to provide a sustainable vegetation cover in

Monitoring aspects	Monitoring objectives	Frequency and period of monitoring	Sampling analysis and parameters to be monitored	Reporting	Corrective action/ adaptive management
	years of completion of rehabilitation).		representative soil samples for laboratory analysis. ▪ Submit soil samples to an accredited soil laboratory to analyse for: • pH (KCl) • salinity (as electrical conductivity in mS/cm or resistance in Ω) • Fertility: P as Bray 1 and K • Organic carbon (Walkley Black) • Major cations: Ca, Mg and Na • Cation exchange capacity (CEC).		support of the post-closure land use.
Surface erosion	▪ To monitor rehabilitated areas for soil erosion to ensure that a self-sustaining vegetation cover is established that will minimise soil loss through raindrop impact and rainfall runoff erosion.	▪ Annually for the first three years, and every three years thereafter until fertility targets met.	▪ Visual inspections of newly rehabilitated areas, to determine areas of erosion or potential erosion (noting areas of sheet, rill or gully erosion).	▪ Findings will be reported in an internal rehabilitation report after each assessment.	▪ Eroded areas will be stabilised by infilling and reshaping, and by establishing vegetation on the repaired areas/ bare patches, as required.
Wetland	▪ Wetland condition monitoring ▪ Wetland vegetation monitoring ▪ Wetland erosion and sedimentation monitoring	▪ Three-year intervals ▪ Erosion and sedimentation monitoring to take place annually	▪ Wetland health ▪ Wetland vegetation ▪ Fixed point photography for the erosion and sedimentation monitoring	▪ Annual report	▪ To inform surface water and sediment management protocol
Estuarine	▪ Water quality (including discrete samples) ▪ Sediment quality	▪ Water quality annually for at least five years. ▪ Increate water and sediment quality every two year	▪ In situ -tempretaure, salinity, pH. Dissolved oxygen, tubidity, chlorophyll ▪ Suspended sediment consentrations, disoved nutrients ▪ Grain size, total organic carbon, metals	▪ Annual reporting and to be supplemented every second year with increate water and sediment quality	▪ To inform surface water and sediment management protocol
Vegetation establishment composition and basal cover	▪ To ensure the even establishment of perennial species in the seed mix. ▪ To monitor the emergence and transition to dominance of perennial species in years two and three. ▪ To ensure perennial species persist in the rehabilitated landscape.	▪ Monitoring of vegetation establishment, species composition and basal cover will be done annually for the first three years, and then every three years thereafter. ▪ Visually inspect rehabilitated pastures annually. ▪ In year three and then every three years thereafter, assess species composition, abundance and cover at fixed point survey sites.	▪ Annual visual inspections for a period of five years on rehabilitated land to ensure that seed establishment has been successful and any germination or establishment failures (through poor seed quality, seed application, drought etc.) are noted. ▪ Successional changes in pasture species composition and abundance will be recorded visually for three years. ▪ In year three, fixed point vegetation monitoring sites will be established (one every 50 ha as a minimum), and the line transect or quadrat method will be used to determine species composition, species abundance and plant basal cover.	▪ Findings will be reported in a rehabilitation report after each assessment.	▪ Over seed any areas where seed germination has failed (and where soil conditions have proved to be suitable). ▪ Apply appropriate adaptive management strategies to correct any deterioration in the pasture species composition and abundance (e.g., review defoliation /fertilisation practices and modify according.

Monitoring aspects	Monitoring objectives	Frequency and period of monitoring	Sampling analysis and parameters to be monitored	Reporting	Corrective action/ adaptive management
Forest rehabilitation Plan	▪ To be developed to help restore the forests that were cleared during mining	▪ To be specified by the relevant specialist	▪ To be determined by the relevant specialist	▪ The plan must contain a monitoring component so that the rehabilitation performance can be assessed and reported on.	▪ Review and update based on specialist recommendations
Invasive alien species	▪ To eradicate or control declared Category 1, 2 and 3 invader species on both rehabilitated land and on unmined areas within the mining rights area. ▪ To minimise the threat posed by invasive species to reinstated pasture lands, as well as natural ecosystems and habitats, and biodiversity. ▪ To increase the potential for natural systems to deliver improved ecological goods and services.	▪ Annually for the first three years after establishment of pastures on rehabilitated land (or weed clearance on virgin land), then every three years at least until closure.	▪ Conduct a visual inspection for invasive species over the site on a biannual bases for five years, focussing on areas where invasive species have been previously eradicated, and on rehabilitated areas where placed soils were stripped from areas that were infested with invasive species before mining.	▪ Findings will be reported in a rehabilitation report after each assessment.	▪ Review eradication/control measures and modify to improve effectiveness.
Mammals	▪ A monitoring programme for forest-dwelling mammals of SCC should be developed for the study area to assess the presence of mammal SCC, to estimate their population size, to determine their range-use/distribution and ▪ The findings of the monitoring should be used to inform the development of species-specific management plans for the Mining Rights Area.	▪ Annual monitoring during pre-construction, operational and closure phases.	▪ Assess and understand the presence of mammal SCC in the MRA, to estimate their population size, to determine their range-use/distribution.	▪ Annual monitoring report	▪ To inform biodiversity management within the MRA
Air quality	▪ To monitor reduction of fallout dust emanating from rehabilitated mining and infrastructures areas following the successful establishment of vegetation on these areas.	▪ Annually for five years, or until target reached.	▪ Use will be made of single dust buckets to monitor dust fallout, and where indicated bi-directional buckets will be installed to monitor imported and exported dust.	▪ Findings will be reported annually in an air quality assessment report.	▪ Improve vegetation cover on rehabilitated areas by either improving soil fertility, by over-seeding where cover is low, and by providing interim wind control measures (wind nets), where required, until the desired vegetation cover is achieved that reduces dust load to below threshold levels.
Radiation monitoring	▪ After mining operations have been completed, continued radiation monitoring is required and should focus on ensuring the long-term safety of the site. This includes assessing residual radiation levels to confirm they are within safe limits, preventing environmental contamination, and protecting public health.	▪ The radiological monitoring programme includes monitoring of surface water, groundwater, sediment, environmental radon, as well as dust fallout, including the frequency and type of analysis. Monitoring points that are part of the monitoring programme (above) coincide with the monitoring programme for the environmental pathways (e.g., soils surface water and groundwater). This should continue for at least 5-years post-closure (or until a closure certificate is issued).	▪ Perform gamma radiation and dose rate surveys on a grid basis of all previously rehabilitated areas. ▪ Collect soil samples at selected locations that coincide with selected locations that represent potentially hot-spot areas identified during the operational gamma radiation surveys for full-spectrum radioanalysis of the U-238, U-235 and Th-232 decay chains. ▪ Collect surface water, groundwater and sediment samples on an upstream and downstream basis that	▪ Findings will be reported annually in a radiation monitoring report.	▪ Apply adaptive management practices should the presence of radioactive material be found emanating from the mining operation.

Monitoring aspects	Monitoring objectives	Frequency and period of monitoring	Sampling analysis and parameters to be monitored	Reporting	Corrective action/ adaptive management
			is representative of the mining operation area for full-spectrum radioanalysis of the U-238, U-235 and Th-232 decay chains.		

16 CLOSURE COST ASSESSMENT

16.1 METHODOLOGY

The quantum of financial provision for Tronox Port Dunford Mine has been estimated using available information and current high-level mine closure objectives as described in this report. The basis of the methodology is aligned with the requirements detailed in regulation 6 of the NEMA Financial Provisioning Regulation, 2015. These regulations prescribe the required minimum content as follows: "a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required." The regulation further outlines that closure cost estimation must include the following:

1. An explanation of the closure cost methodology.
2. Auditable calculations of costs per activity or infrastructure; and
3. Cost assumptions.

Cognisance has also been given to the MPRDA Regulations and Guidelines for Evaluation of the Quantum for Closure Related Financial Provision for a Mine issued by DMRE (January 2005) and other relevant industry guidelines. The aim is however to align with the NEMA financial Provisioning Regulation, 2015.

Only the schedule closure cost scenario for phase 2 was undertaken in November 2024. The estimate therefore excludes the initial closure liability for the operation. Assumptions regarding specific aspects or considerations that are expected to directly influence the closure liability estimation are documented under Section 16.2. The following steps were followed in deriving the closure cost estimate:

- Gather relevant project background information to inform the 2024 closure costing assessment
- Confirm and verify planned battery limits for the project, based on the outcomes of the document review and project description.
- Conduct a risk assessment of direct, indirect and combined impacts to the receiving physical, biological or social environment, which may require mitigation or management to be considered
- Obtain unit rates for planned infrastructure dismantling/demolition, water management, decontamination, general surface rehabilitation, monitoring and maintenance and other related mine infrastructure, and related aspects in consultation with contractors and demolition practitioners
- Apply the verified battery items in the WSP closure cost model
- Calculate the closure costs for the scheduled scenario, by including the confirmed closure measures in WSP's costing model (including demolition of all infrastructure, rehabilitation of mining landforms, general surface rehabilitation, and post-closure monitoring)
- Allow for specific provisions for post-closure monitoring and aftercare-related matters
- Include additional narratives for the assumptions and qualifications made for each cost item based on the above

16.2 ASSUMPTIONS AND EXCLUSIONS

The following assumptions have been developed for the Project:

- The overall closure costs for the site comprise several cost components. The closure costs only address surface rehabilitation, decommissioning of infrastructure and the final closure and control of the site required to attain the predetermined post mining land use with acceptable environmental and socio-economic effects. This equates to outside (third-party) contractors establishing on site and conducting the suite of closure related work, ranging from initial infrastructure demolition and surface rehabilitation to the monitoring/control and corrective action to ensure the desired rehabilitation related outcomes. Other components of the overall costs such as staffing of the site after decommissioning, the infrastructure and support services (e.g., power supply, etc.) for this staff as well as workforce matters such as separation packages, re-training /re-skilling, etc. are not considered in the closure costs assessment. The only exception is a nominal allowance for access control and security during closure implementation, although this must not be viewed as a comprehensive/full allowance.
- Based on the above, dedicated contractors would be commissioned to conduct the surface rehabilitation, demolition, and closure related work on the site. This would, inter alia, require establishment costs for the contractors and hence, the allowance for preliminary and general (P&Gs) in the closure costs.
- Cost model will be compiled to adequately cover the aspects that have cost implications arising from the Final Rehabilitation, Decommission and Mine Closure Plan. Accordingly, the models will be structured in terms of the categories listed below:
    - Infrastructural areas
    - Mining areas
    - General surface rehabilitation
    - Surface water reinstatement
    - Ps&Gs, Contingencies and additional allowances
        - Preliminary and general
        - Contingencies
    - Pre-site relinquishment monitoring and aftercare
        - Surface water quality monitoring (for a period of three years' post-closure)
        - Groundwater quality monitoring (for a period of five years' post-closure)
        - Rehabilitation monitoring of rehabilitated areas (for a period of five years' post-closure)
        - Low intensity care and maintenance (for a period of five years' post-closure)
- As a general principle, handover of any infrastructure to third parties at closure was only considered in the closure costs if an agreement is in place with the relevant third party; should no such agreement be in place, it will be assumed that the infrastructure will be demolished at closure. However, potential exceptions to this standard will be evaluated on a case-by-case basis, where

such infrastructure is deemed highly likely be sold before or at closure or has been earmarked for transfer as part of any formalised commercial redevelopment scheme.

- The closure costs updates were conducted within the context of the envisaged post-closure land use expected to be implemented after final closure. However, the costs only address material requirements to enable the likely post-closure land use to be feasibly implemented after closure and does not include the costs of establishing the post-closure land use, other than where such is considered part-and-parcel of the closure process or required to mitigate a residual impact after closure.
- The closure costs were only computed for the scheduled closure situation (2069). The mine-wide unscheduled closure costs will be updated annually once the MR is granted.
- Infrastructure aspects:
  - All infrastructure to be sold or potentially be transferred to third parties were included in costing model with detailed narratives and yes/no options.
  - Concrete and uncontaminated demolition waste will be disposed down the nearest available open pit unless indicated otherwise. Allowances for average load and haul distances to allow for transport of the demolition waste for these purposes were made as required.
  - Nominal allowances for the transport and disposal of an amount of hazardous material/waste at an appropriately licensed disposal facility were made.
  - Recoverable steel and other salvageable items will be transported to an on-site salvage yard for sorting and screening and was costed for, however, in accordance with international accounting practices, no cost off-sets due to possible salvage of dismantled infrastructure were considered.
  - The Eskom main switchyard and associated powerlines and sub-stations are excluded from costing and will be transferred at Closure.
  - The access road and internal roads will remain post closure.
- Mining Aspects:
  - It is anticipated that RSF Site C will be operational for 27.5 years and reach full capacity in 2064. Thereafter, the site will be backfilled in 2069, affording the facility 4 years to dry out and stabilise. Once backfilled the site will be rehabilitated with topsoil and returned to the Landowner (lessee) thereafter.
  - Allowance has only been made for the reprofiling, topsoiling and revegetation of the surface areas of the mineral residue deposits (specifically RSF C) and remaining backfilled pits in 2069.
  - It's assumed that final RSF C embarkment would have been shaped and progressively rehabilitated during LOM for the scheduled closure scenario.
  - No backfilling cost has been included it assumed that this will form part of operational expenditure.
  - No coarse sand capping of RSF facilities has been allowed for. Once the feasibility design is completed, an update of the closure cost will need to be undertaken. This update will also inform future revisions of the closure plan.

- General surface rehabilitation:
  - Provision had previously been made for the demolition of remnant infrastructure footings and bases identified during the 2024, as well as for shaping, ripping and re-vegetation of disturbed areas associated with these.
  - No river diversion has been constructed or will be reinstated post closure.
- P&G, contingencies and additional allowances
  - Allowance has been made for the inclusion of P&Gs at 15%, contingencies at 10% for the infrastructure and mining aspects.
  - No allowance has been made to conduct several additional studies in support of the closure process.
- Pre-site relinquishment monitoring and aftercare
  - Allowance for potential post-closure surface- and groundwater quality monitoring on a monthly and quarterly basis.
  - No allowance for additional post-closure/treatment for surface-and groundwater Assumed that post closure water treatment or management will not be required, as outlined in the Geohydrological study.
  - Allowance for rehabilitation monitoring of the rehabilitated areas for a five-year period, as well care and maintenance of rehabilitated areas post-closure.

16.3 ACCURACY LEVEL

The closure cost estimate for this project has been prepared in accordance with the guidelines set forth by the NEMA Financial Provisioning Regulations and the International Council on Mining and Metals (ICMM). This estimate is classified as a Class 5 estimate, reflecting a conceptual level of accuracy typically associated with the initial stages of project (closure) development. The Class 5 classification, as defined by the ICMM and the Association for the Advancement of Cost Engineering (AACE), indicates an accuracy range of -20% to -30% on the low side and +30% to +100% on the high side, based on the current level of project definition and available data. This estimate incorporates high-level planning, broad cost categories, and appropriate contingency allowances to ensure a preliminary financial provision for mine closure and rehabilitation. Regular reviews and updates will be conducted to refine the estimate as the project progresses, and more detailed information becomes available. For more details on the estimating classes, please refer to Table 16-1 below. In terms of the NEMA Financial Provisioning Regulations the estimate can be considered a conceptual estimate with an accuracy of ±50%.

Table 16-1 - Estimating Classes and Accuracy Ranges

Estimate class	Level of project definition	End usage	Estimating methodology	Expected accuracy range	Estimate type
Class 5	0% to 2%	Screening or feasibility	Stochastic (factors or models) or judgement	Low: -20% to -50% High: +30% to +100%	Pre-feasibility or screening, conceptual or trade-off study

Estimate class	Level of project definition	End usage	Estimating methodology	Expected accuracy range	Estimate type
Class 4	1% to 15%	Concept study or feasibility	Primarily stochastic	Low: -15% to -30% High: +20% to +50%	Feasibility, concept study or advanced conceptual
Class 3	10% to 40%	Budget authorization or control	Mixed but primarily stochastic	Low: -10% to -20% High: +10% to +30%	Preliminary or budget authorization and/or control
Class 2	30% to 70%	Control or bid/tender	Primarily deterministic	Low: -5% to -15% High: +5% to +20%	Definitive, control or bid/tender
Class 1	50% to 100%	Check estimate or bid/tender	Deterministic	Low: -3% High: +15%	Detailed, check estimate or bid/tender

16.4 CLOSURE COST SUMMARY

The closure costs are structured according to the format routinely used for the presentation of closure costs for mine sites as per the following categories:

- Infrastructural areas
- Mining areas
- General surface rehabilitation
- Surface water reinstatement
- Ps&Gs, Contingencies and additional allowances
- Pre-site relinquishment monitoring and aftercare

The final closure (scheduled) liability considers a planned mine closure event according to the overall mine plan. The scheduled closure of operations considered the following LoM projections:

- LOM operation: 2069
- It is anticipated that RSF Site C will be operational for 27.5 years and reach full capacity in 2064. Thereafter, the site will be backfilled in 2069, affording the facility 4 years to dry out and stabilise. Once backfilled the site will be rehabilitated with topsoil and returned to the Landowner (lessee) thereafter.
- Scheduled closure cost allows for areas mined and backfilled between 2063-2071.

The scheduled closure costs for Tronox Port Dunford, as of November 2024, is summarised in Table 16-2. The scheduled closure liability quantum assumes successful implementation of concurrent rehabilitation of disturbed areas during LOM and the decommissioning of mining operations at the end of their respective planned LOM.

Table 16-2 – Scheduled LOM Closure cost summary at closure

	Closure Component	Scheduled closure
1	**Infrastructural aspects**	R14 924 765.83
2	**Mining areas**	R307 043 155.28
3	**General surface rehabilitation**	R6 660 645.45
4	**Surface water reinstatement**	R144 921.26
	Sub-Total 1:	**R328 773 487.82**
5	**Pre-site relinquishment aspects**	
5.1	Surface water quality monitoring	R572 035.20
5.2	Groundwater quality monitoring	R1 633 311.43
5.3	Rehabilitation monitoring of rehabilitated areas	R1 988 048.01
5.4	Care and maintenance - low intensity	R11 238 245.20
5.5	Care and maintenance - high intensity	R0.00
	Sub-Total 2:	**R15 431 639.84**
6	**P&Gs, Contingencies and Additional Allowances**	
6.1	Preliminary and general	R49 316 023.17
6.2	Contingencies	R32 877 348.78
	Sub-Total 3:	**R82 193 371.96**
	Grand Total Excl. VAT. (Sub-total 1 + 2 + 3):	**R410 966 859.78**

17 ORGANISATIONAL CAPACITY

It is critical that roles and responsibilities for the effective planning, implementation, monitoring and revision of the closure process are clearly defined and provided for Port Durnford mine project is ultimately responsible for ensuring compliance with all the provisions of the Right and associated plans, as well as other relevant legal requirements. Tronox, as the holder of the mining rights must ensure knowledge and understanding of the applicable legislation, guidelines and industry best practices. The following organisational capacity is required:

- **Internal closure champion**: A suitably qualified person(s) who will be accountable for the following:
  - Driving the ongoing development, refinement and implementation of the closure plan.
  - Resourcing and implementing the plan.
  - Ongoing management and monitoring requirements to support the closure plan.
  - To ensure the integration of the rehabilitation and closure activities with general operational activities; and
  - Ensure legal compliance and deliver on commitments.
- **Internal social champion:** A suitably qualified person(s) who will be accountable for the following:
  - Develop and implement training strategies for internal training.

- Develop and implement effective communication with all stakeholders.
- Develop and implement a stakeholder forum to promote information and idea sharing regarding closure related aspects and/or ensuring meaningful contributions to existing forums; and
- Continually develop the relationship with I&APs, to promote the social licence to operate and close and decommission.

- **Independent Environmental Assessment Practitioner**: This individual will be appointed to ensure compliance with the requirements of the mine closure plan and specifically to undertake the following tasks:
  - Undertake the prescribed independent auditing; and
  - Undertake period review and assessment of accumulated monitoring data and provide recommendations for review and amendment of the closure planning where applicable.
- **Internal or external specialists**: The monitoring of the implementation of the closure process and the subsequent revisions, adjustments and alterations will in many cases need to be conducted by suitably qualified specialists (e.g. soils and agricultural specialist, biodiversity and wetland specialist, ground and surface water specialists, engineering and landform design specialists). Relevant specialists should be identified, and budgets provided for the scope of work to align with the obligations presented in this closure plan

Further education, training and capacity building is critical to ensure that the production activities align with evolving internally accepted best practice and research. In this regard the Tronox should ensure that regular review of international best practice is undertaken and where applicable implemented throughout the project programme. It is recommended that the internal resource responsible for managing and implementing the closure and rehabilitation activities join available peer networks, affiliations and organisations. It needs to be recognised that closure planning needs to start early within the project lifecycle and continued as an integral component of the operations.

18 AMENDMENTS TO THE CLOSURE PLAN

This document, presents the FCP for proposed Port Dunford mine, as aligned with the requirements of the Financial Provisioning Regulations. This closure plan will be reviewed and updated annually, to include new information made available through new studies and improved understanding of operations and the planned transition to closure.

19 CONCLUSIONS AND RECOMMENDATIONS

Closure planning is a dynamic process that is to be aligned and integrated with overall mine planning and mine operations, requiring regular review and development to consider changes in legal obligations, corporate requirements, community expectations, technical knowledge, as well as in terms of advancements in the mine closure discipline. To ensure that closure planning remains consistent and integrated, a Closure Steering Committee should be established after the commencement of operations. This committee will, at minimum, have the following responsibilities:

- Implementing the closure strategy and integrating closure planning into the overall project and mine planning

- Ensuring that the FCP is developed, resourced, implemented and revised as necessary
- Ensuring suitable focus is given in the closure planning process to rehabilitation research, socio-economic and community development and to stakeholder consultation.

If mine and closure planning can be proactively undertaken, this will not only facilitate seamless transfer from operations to closure, but also has the potential to yield substantial benefits to the communities in terms of community development programs aimed to facilitate self-sustaining livelihoods and related services for community functioning post mine closure, and the re-skilling and training of mine employees to pursue alternative employment or career opportunities during the closure period in preparation for closure.

If capacity building and jointly agreed assistance programmes have been agreed to from the start, and if the sustainability prospects or aspects of social interventions have been carefully considered, then when the challenges emerge at closure there should be few unpleasant surprises and a well-established working relationship between the project and the community will be in place to address these as they arise.

Key recommendations of the closure plan:

- This closure plan will need to be reviewed and updated annually, to include new information made available through new studies and improved understanding of operations and the planned transition to the next land use.
- Only the scheduled closure cost for areas mined and backfilled between 2063-2071 have been provided in this report. However, it does not include any provisions for final coarse sand capping of the RSF site. Once the feasibility design and EIA is completed, an update of the closure cost will need to be undertaken. Including a coarse sand capping layer offers several benefits, such as providing an additional protective barrier and enhancing the rooting depth for plants, which is crucial if the areas are to be restored to commercial forestation. This measure would be essential if current soil profiles are found to be inadequate for meeting the relinquishment/success criteria for the desired next land use. However, if the feasibility design and EIA studies determine that this coarse sand capping layer is necessary, it could impact the current closure criteria and result in associated cost increases. This requirement will need to inform future revisions of the closure plan.
- Tronox should aim for maximum side-slopes rehabilitation of mineral residue deposits of less than 1:5, with less than 1:7 being optimal, to ensure productive and financially viable land capabilities and uses post-mining. If slopes are designed with angles less than 1:5, this would pose a significant risk post-closure concerning the post-mining land use and issues arising from increased runoff and erosion, which could further impact the environment. Although not recommended, if slope angles are to be designed with slopes of less than 1:5 in certain areas, special attention must be given to the rehabilitation measures adopted for these slopes. These measures should include specific erosion control strategies to prevent long-term risks from manifesting. This requirement will need to inform future revisions of the closure plan.

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Appendix A

NEMA GNR 1147 APPENDIX 3 REQUIREMENTS AND ASSOCIATED SECTIONS WHERE THEY ARE FORMALLY ADDRESSED

REQUIRED CONTENT OF CLOSURE PLAN ACCORDING TO NEMA: EIA REGULATION, 2014 (APPENDIX 5 OF GN R. 982, AS AMENDED)

Requirement	Section in Report
Content of closure plan:	
(1) A closure plan must include:	
(a) details of— (i) the EAP who prepared the closure plan; and (ii) the expertise of that EAP.	Refer Section 1.4 of this report
(b) closure objectives.	Refer Section 8 of this report
(c) proposed mechanisms for monitoring compliance with and performance assessment against the closure plan and reporting thereon.	Refer Section 14 of this report
(d) measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including a handover report, where applicable.	Refer Section 7 and 11 of this report
(e) information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity.	Refer Section 7 and 11 of this report
(f) a description of the manner in which it intends to— (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure. (ii) remedy the cause of pollution or degradation and migration of pollutants during closure. (iii) comply with any prescribed environmental management standards or practices; and (iv) comply with any applicable provisions of the Act regarding closure.	Refer Section 7 and 11 of this report
(g) time periods within which the measures contemplated in the closure plan must be implemented.	Refer Section 4 of this report
(h) the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of closure.	Refer Section 4, 7, 8 and 11 of this report
(i) details of all public participation processes conducted in terms of regulation 41 of the Regulations, including— (i) copies of any representations and comments received from registered interested and affected parties. (ii) a summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments. (iii) the minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants. (iv) where applicable, an indication of the amendments made to the plan as a result of public participation processes conducted in terms of regulation 41 of these Regulations.	Refer Section 6 of this report

(j) where applicable, details of any financial provision for the rehabilitation, closure and on-going post decommissioning management of negative environmental impacts.	Refer Section 16 of this report

REQUIRED CONTENT OF THE FINAL REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN ACCORDING TO GNR 1147, 2015 (APPENDIX 4 OF GN R. 1147)

No.	Requirement	Relevant Section
Annual Rehabilitation Plan – Appendix 1		
3.1	Details of the: 3.1.1 specialist or specialists that prepared the plan. 3.1.2 professional registrations and experience of the specialist or specialists. 3.1.3 applicant or holder, including but not limited to the name, physical address, postal address and contact details; and 3.1.4 timeframes of implementation of the current, and review of the previous mitigation and rehabilitation activities;	Section 1.4
3.2	The pertinent environmental and project context highlighting issues which are different to those indicated and considered in the final rehabilitation, decommissioning and mine closure plan which relate directly to the planned annual mitigation and rehabilitation activity (e.g., drought, machine failure or anormaly);	Section 5
3.3	Results of modelling impacts for the proceeding 12 months with a view to informing mitigation and rehabilitation activities going forward;	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.
3.4	An identification of activities not undertaken, and targets not met in the rehabilitation experienced in the preceding 12 months;	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.
3.5	Any risks which materialised or anomalies which impacted on the environment over the preceding 12 months, and how these were incorporated into the risk model for the operations;	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.
3.6	Details of the planned progressive mitigation and rehabilitation activities or measures for the forthcoming 12 months, including those which will address the shortcomings contemplated in paragraph 3.4 above or which address the risks which materialised or were identified from monitoring in the preceding 12 months, and including: 3.6.1 if no areas are available for progressive rehabilitation concurrent with mining, an indication to that effect and motivation why no progressive rehabilitation can be undertaken. 3.6.2 where areas are available for progressive rehabilitation the following must be tabulated: 3.6.2.1 the nature or type of activity and associated infrastructure to be undertaken. 3.6.2.2 planned remaining life of the activity and impact under consideration. 3.6.2.3 area already disturbed or planned to be disturbed in the period under review. 3.6.2.4 percentage of the area already disturbed, including the bulking factor and volume of material stockpiled. 3.6.2.5 percentage of the area to be disturbed and anticipated bulking factor and volume of material for stockpiling.	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.

No.	Requirement	Relevant Section
	3.6.2.6 area and volume of material available for progressive mitigation and rehabilitation activities. 3.6.2.7 percentage of the area disturbed and volume of material identified in paragraph 3.6.2.4 above and on which progressive mitigation and rehabilitation activities can be undertaken. 3.6.2.8 notes to indicate why total available or planned to be available areas differs from area already disturbed or planned to be disturbed. 3.6.2.9 notes to indicate why progressive rehabilitation will not be undertaken on the full available or planned to be available area. 3.6.2.10 the pertinent closure objectives and performance targets that will be addressed in the forthcoming 12 months of operations, which objectives and targets are aligned to the final rehabilitation, decommissioning and mine closure plan. 3.6.2.11 details of mitigation and rehabilitation activities planned on the area the forthcoming 12 months. 3.6.2.12 description of the relevant closure design criteria adopted in the annual mitigation and rehabilitation activities and the expected final sustainable end state of land once all mitigation and rehabilitation activities are complete for the activity or aspect:	
3.7	A site plan indicating at least the total area disturbed, area available for rehabilitation and the area to be rehabilitated per aspect or activity'	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.
3.8	A review of the proceeding 12 months of mitigation and rehabilitation activities, indicating comparison between activities planned and actual mitigation and rehabilitation implemented, which should be tabulated and as a minimum contain; 3.8.1 area planned to be rehabilitated during the period under review. 3.8.2 actual area rehabilitated 3.8.3 if variance between planned and actual exceeds 15%, motivation indicating reasons for the inability to rehabilitate the full area	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.
3.9	Costing, based on market related figures, including: 3.9.1 an explanation of the closure cost methodology 3.9.2 auditable calculations of costs per activity or infrastructure. 3.9.3 Cost assumptions; and 3.9.4 monitoring and maintenance costs likely to be incurred during the period of execution of the progressive rehabilitation.	This is a new project; no operational activities have commenced as yet. Therefore, annual rehabilitation is not applicable currently.
Final Rehabilitation, Decommissioning and Mine Closure Plan – Appendix 2		
3.1	Details of 3.1.1 the person or persons that prepared the plan. 3.1.2 the professional registrations and experience of the person or persons who prepared the plan 3.1.3 the applicant or holder, including but not limited to the name, physical address, postal address and contact details;	Section 1.4
3.2	The context of the project, including but not limited to: 3.2.1 mineral/s to be or being mined, mining method, area already mined or to be mined in the case of a greenfields site, the backlog in rehabilitation if relevant, annual extraction rate, overall extraction rates, life of mine and any material information and issues that have guided the development of the plan; 3.2.2 an overview of:	Section 4

No.	Requirement	Relevant Section
	3,2,2,1 the environmental context, including but not limited to air quality, quantity and quality of surface and groundwater, land, soils, terrestrial and aquatic biodiversity. 3.2.2.2 the social context that may influence closure activities and post-mining land use or be influenced by closure activities and post-mining land use; and 3.2.2.3 other mining activities within a 20 km radius of the mining area;	
3.3	Stakeholder issues and comments that have informed the plan;	Section 6
3.4	The mining plan and schedule for full approved operations, including: 3.4.1 appropriate description of the mine plan. 3.4.2 drawings and figures to indicate how the mine develops. 3.4.3 what areas are disturbed and will be disturbed; and 3.4.4 how infrastructure and structures (including ponds, residue stockpiles etc.) develop during operations;	Section 4
3.5	Details of preferred sustainable end state of the operations including: 3.5.1 the legal and governance framework and interpretation of these requirements for the closure design principles. 3.5.2 a description of sustainable end state and post mining economy to be achieved, objectives and targets, which objectives and targets must reflect the local environmental and socio-economic context, the regulatory and corporate requirements and stakeholder expectations. 3.5.3 a description and evaluation of alternative closure and post closure options where these exist, that are practical with socio-economic context; and 3.5.4 environmental opportunities and constraints in which the operation is located:	Section 3 Section 13
3.6	Findings of an environmental risk assessment and modelling process leading to the most appropriate closure strategy, including: 3.6.1 a description of the risk assessment methodology including risk identification and quantification, to be undertaken for all areas of infrastructure or activities or aspects for which an applicant and holder has the responsibility to mitigate an impact or risk at closure. 3.6.2 an identification of receptors most sensitive to potential risks and the monitoring of such risks with a view to informing mitigation and rehabilitation activities. 3.6.3 an identification and modelling of conceptual closure strategies to avoid, manage and mitigate the impacts and risks. 3.6.4 a reassessment of risks to determine whether, after the implementation of the closure strategy, the latent risks have been avoided and/ or how it has resulted in avoidance, rehabilitation and management of impacts and whether this is acceptable to the mining operation and stakeholders. 3.6.5 an explanation of changes to the risk assessment results, as applicable in annual updates to the plan; and 3.6.6 design principles for achieving the closure objectives, including the proposed final sustainable end state which is appropriate, feasible and possible to implement, and which meets the principles of sustainable development, including: 3.6.6.1 description of appropriate and feasible final post-mining land use for the project area. 3.6.6.2 a map of the proposed final sustainable end state of the land. 3.6.6.3 a motivation for the preferred closure option within the context of the risks and impacts that are being mitigated. 3.6.6.4 a definition and motivation of the closure and post-closure period, taking cognisance of the probable need to implement post-closure monitoring and maintenance for a period sufficient to demonstrate that the risks threshold criteria have been achieved; and 3.6.6.5 details associated with any ongoing research on closure options and post mining economy options.	Section 7 Section 8 Section 10 Section 11 Section 16

No.	Requirement	Relevant Section
	3.6.7 closure actions, including: 3.6.7.1 a detailed description of the assumptions made to develop closure actions in the absence of detailed knowledge on site conditions, potential impacts, material availability, stakeholder requirements and other factors for which information is lacking. 3.6.7.2 the development and documentation of a description of specific technical solutions related to infrastructure and facilities for the preferred closure option, which must include all areas, infrastructure, activities and aspects associated with mining for which the mine has the responsibility; and 3.6.7.3 the development and implementation of plans to address threats and opportunities and any uncertainties associated the proposed closure actions, which will be used to identify and define any additional work or research that is needed to reduce the level of uncertainty. 3.6.8 a schedule of actions for the annual rehabilitation plan, and the final rehabilitation, decommissioning and mine closure plan which will ensure mitigation, rehabilitation and management of impacts including ongoing pumping and treatment of extraneous water: 3.6.8.1 linked to the mining work programme, if greenfields, or to the current mine plan, if brownfields, including assumptions and schedule drivers; and 3.6.8.2 including a spatial map, showing planned spatial progression throughout operations. 3.6.9 an indication of the organisational capacity that will be put in place to implement the plan, including: 3.6.9.1 organisational structure as it pertains to the plan 3.6.9.2 responsibilities; and 3.6.9.3 training and capacity building that may be required to build closure competence. 3.6.10 an indication of gaps in the plan, including an auditable action plan and schedule to address the gaps. 3.6.11 closure and risk threshold criteria for each activity or infrastructure in relation to environmental aspects with auditable indicators. 3.6.12 the closure costs based on cost estimates for operations, or components of operations as follows: 3.6.12.1 costing, calculated using market related figures and current value of money and no discounting or net present value calculations. 3.6.12.2 costs must be calculated for the rehabilitation, maintenance and long-term monitoring being undertaken on all disturbed areas and associated environmental impacts 3.6.12.3 costs calculations must be based on rehabilitation, maintenance and long-term monitoring of activities undertaken by third party. 3.6.12.4 where appropriate, a differentiation between capital, operating, replacement and maintenance costs. 3.6.12.5 the closure costs estimation must include cost assumptions and auditable calculations of costs per activity or infrastructure; and 3.6.12.6 cost estimates for operations, or components of operations as follows:	

<table>
<tr><th>No.</th><th>Requirement</th><th>Relevant Section</th></tr>
<tr><td></td><td>
<table>
<tr><th>End of life of operation (or components of operation) from year of assessment</th><th>Design effort</th><th>Degree of accuracy in cost estimation</th></tr>
<tr><td>> 30 years</td><td>Pre-Conceptual / Class 5 Estimate / up to 2% of complete definition</td><td>-50% to + 50%</td></tr>
<tr><td>10 to 30 years</td><td>Conceptual / Pre-feasibility / Class 4 Estimate / up to 15% of complete definition</td><td>-30% to + 30%</td></tr>
<tr><td>5 to 10 years</td><td>Preliminary / Feasibility / Class 3 Estimate / up to 40% of complete definition</td><td>-20% to + 20%</td></tr>
<tr><td>Less than 5 years</td><td>Detailed Designs / Bid / Tender / Class 2 estimate up to 75% of complete definition</td><td>-10% to + 10% (or less)</td></tr>
<tr><td colspan="3">*The calculations for operations with 5 or less years must include a line item for carrying out specialist studies up to Detailed Design effort to improve the degree of accuracy to +/- 10% as well as contingency to ensure sufficient funds for closure by third party. Motivation must be provided to indicate the accuracy in the reported number and as accuracy improves, what actions resulted in an improvement in accuracy</td></tr>
</table>
3.6.13 the estimated costs must be expressed for each year based on the rate of extraction and extent of disturbed area.
3.6.14 the risk modelling and the calculation of closure cost estimation must be updated annually during the operation's life to reflect known developments, including changes from the annual review of the closure strategy assumptions and inputs, scope changes, the effect of a further year's inflation, new regulatory requirements and any other material developments.
3.6.15 monitoring, auditing and reporting requirements contemplated in these Regulations.
3.6.16 schedule of reporting requirements contemplated in these Regulations; and
3.6.17 motivations for any amendments made to the final rehabilitation, decommissioning and mine closure plan, given the monitoring results in the previous auditing period and the identification of gaps as above.
</td><td></td></tr>
<tr><td colspan="3">Environmental Risk Assessment Plan (Scheduled closure) – Appendix 3</td></tr>
<tr><td>3.1</td><td>Details of:
3.1.1 the person or persons that prepared the plan.
3.1.2 the professional registrations and experience of the person or persons who prepared the plan.
3.1.3 the applicant or the holder including but not limited to: name, physical address, postal address, contact details; and
3.1.4 rights, permits, licences and authorisations associated with the operation including the right or permit number, environmental authorisation number, and similar details of all other authorisation received e.g. water use licence, waste management licence, etc.</td><td>Section 1.4</td></tr>
<tr><td>3.2</td><td>Details of the assessment process used to identify and quantify the post-closure and possible latent risks including:
3.2.1 a description of risk assessment methodology inclusive of risk identification and quantification.
3.2.2 substantiation why each risk will occur post closure, including why the risk was not or could not be mitigated during progressive mitigation and rehabilitation or during the implementation of the final rehabilitation, decommissioning and mine closure plan.
3.2.3 a detailed description of the drivers that could result in the manifestation of the risks after closure.
3.2.4 a description of the expected timeframe in which the risk is likely to manifest, typically as expected years after closure, and the duration of the impact, including motivation to support these timeframes.
3.2.5 a detailed description of the triggers which can be used to identify that the risk is imminent or has manifested, how this will be measured and any cost implication thereof.
3.2.6 results and findings of the risk assessment or risks which will occur post-closure; and
3.2.7 an explanation of changes to the risk assessment results as applicable in annual updates to the plan.</td><td>Section 7</td></tr>
<tr><td>3.3</td><td>Management activities, including-</td><td>Section 7 and 14</td></tr>
</table>

<table>
<tr><th>No.</th><th>Requirement</th><th>Relevant Section</th></tr>
<tr><td></td><td>3.3.1 monitoring results and findings, which informs adaptive or corrective management and/ or risk reduction activities.

3.3.2 an assessment of alternatives to mitigate or manage the impacts once the risk has become manifested, which must be focussed on practicality as well as cost of the implementation; and

3.3.3 a detailed description of how the alternative will be implemented;</td><td></td></tr>
<tr><td>3.4</td><td>Calculation of costs for implementing the alternatives to manage and monitor latent impacts until the agreed risk threshold is reached using market related figures and the current value of money and no discounting or net present value calculations which must –

3.4.1.1 include costs to determine whether the risk is imminent or has manifest are to be included in the assessment as there are monitoring costs likely to be incurred during the implementation of the strategy to manage or mitigate the impacts once the risk has become manifest.

3.4.1.2 be based on the management, mitigation, rehabilitation, maintenance and long-term monitoring of activities undertaken by the third party;

3.4.1.3 be calculated for the management, mitigation, rehabilitation, maintenance and long-term monitoring of latent impacts for all disturbed areas and associated environmental impacts.

3.4.1.4 include the costs for the management, mitigation, rehabilitation, maintenance and long-term monitoring of activities for the latent impacts must include costs assumptions and auditable calculations of costs per activity or infrastructure.

3.4.1.5 include the risk modelling and the calculation of post closure cost estimation must be updated annually during the operation's life to reflect known developments, including changes from the annual review of the closure strategy assumptions and inputs, scope changes; and

3.4.1.6 include the cost estimates for modelling and calculation of post-closure costs must be calculated using accuracy estimations as follows:

<table>
<tr><th>End of life of operation (or components of operation) from year of assessment</th><th>Design effort</th><th>Degree of accuracy in cost estimation</th></tr>
<tr><td>> 30 years</td><td>Pre-Conceptual / Class 5 Estimate / up to 2% of complete definition</td><td>-50% to + 50%</td></tr>
<tr><td>10 to 30 years</td><td>Conceptual / Pre-feasibility / Class 4 Estimate / up to 15% of complete definition</td><td>-30% to + 30%</td></tr>
<tr><td>5 to 10 years</td><td>Preliminary / Feasibility / Class 3 Estimate / up to 40% of complete definition</td><td>-20% to + 20%</td></tr>
<tr><td>Less than 5 years</td><td>Detailed Designs / Bid / Tender / Class 2 estimate up to 75% of complete definition</td><td>-10% to + 10% (or less)</td></tr>
<tr><td colspan="3">*The calculations for operations with 5 or less years must include a line item for carrying out specialist studies up to Detailed Design effort to improve the degree of accuracy to +/- 10% as well as contingency to ensure sufficient funds for closure by third party. Motivation must be provided to indicate the accuracy in the reported number and as accuracy improves, what actions resulted in an improvement in accuracy</td></tr>
</table>
</td><td>Section 16</td></tr>
<tr><td>4</td><td>Part 2

Context for the environmental risk assessment report for unscheduled closure

For unscheduled closure, the contents of Part 1 – 3.1 to 3.3.4 (inclusive of 3.3.4) apply as well as the calculation of costs for implementing the activities to manage and monitor latent impacts until the agreed risk threshold is reached using market related figures and the criterial identified for scheduled closure based on –

4.1 an assessment of latent impacts for the current disturbed area as well as the disturbance for the next 12 months of operation; and

4.2 costs associated with the management, mitigation, rehabilitation and monitoring of latent impacts for the existing extent of the area disturbed until the risk threshold is reached based on costs for technologies immediately available, including water treatment technologies.</td><td>N/A</td></tr>
</table>

REQUIRED CONTENT OF A CLOSURE PLAN IN TERMS OF REGULATION 62 OF THE MPRDA REGULATIONS

Requirement	Section in Report
62. A closure plan contemplated in section 43(3)(d) of the Act…must include….:	
A description of the closure objectives and how these relate to the prospecting or mine operation and its environmental and social setting;	Refer Section 8 of this report
A plan contemplated in regulation 2(2), showing the land or area under closure;	Refer Section 1 and 2 of this report
A summary of the regulatory requirements and conditions for closure and documented in the environmental management plan;	Refer Section 3 of this report
A summary of the results of the environmental risk report and details of the identified residual and latent impacts;	Refer Section 7 of this report
A summary of the results of progressive rehabilitation undertaken.	Refer Section 12 of this report
A description of the methods to decommission each prospecting component and the mitigation or management strategy proposed to avoid, minimize and manage residual or latent impacts.	Refer Section 7,8, 9, 10 and 11 of this report
Details of long-term management and maintenance expected;	Refer Section 11 of this report
Details of the proposed closure cost and financial provision for monitoring, maintenance and post closure management;	Refer Section 16 of this report
A sketch plan drawn at the appropriate scale describing the final and future land use proposal and arrangements for the site;	Refer Section 13 of this report
A record of interested and affected parties consulted;	Refer Section 6 of this report and refer to EIA
Technical appendices, if any.	N/A

Appendix B

SCREENING LEVEL ENVIRONMENTAL RISK ASSESSMENT

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
Air Quality (Dust & Fugitive Emissions)	1) Transport and Demolitions of structures and dust generated during rehabilitation activities. 2) Exposure of footprints	Increase in fugitive dust emissions particularly due to an increase in particulate dust levels (PM10 and PM 2.5) during decommissioning and closure of the mine. Windblown dust from exposed unrehabilitated areas.	4	2	**8 (Risk level 3)**	Implementation of air quality management as part of the EMPr. This should include utilising a combination of watering and chemical stabilization. Planning decommissioning activities in consultation with local communities. When working near a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible. Identification of exposed areas not used for operations and revegetate to reduce the amount of dust available for wind entrainment. Ensure access control to exposed areas reducing activity and wind entrainment. Reduced speeds of vehicles over exposed surfaces to minimize vehicular entrainment. Where possible do not undertake material handling activities during windy conditions.	2	2	**4 (Risk level 3)**	Implement requirements of SLP and ensure future updates of the SLP is aligned/integrated into closure planning Clearly defined post closure land-use plan, aiming to align with adjacent and regional land-uses.
Surface Water quality & quantity	• Decommissioning and removal of infrastructure • Rehabilitation activities including spreading of topsoil and revegetation of disturbed footprints. • Post-closure monitoring	1) Sedimentation and siltation of nearby watercourses Contamination of surface water due to accidental spillages of hydrocarbon during rehabilitation activities. 2) This will allow for the detection of any residual water quality impacts and enable immediate measures where required.	3	4	**12 (Risk level 2)**	Re-profile the rehabilitated landscapes to suit desired post mining land use as much as is practically possible. Demolition should be undertaken during the dry winter period to reduce sedimentation in the proximal watercourses since there will be minimal to no occurrence of rainfall during this period and ensure the immediate revegetation of cleared areas.	3	3	**9 (Risk level 3)**	Limit disturbance to actual mining foot-print and Re-instatement of vegetative cover as far as possible.

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
Surface Water quality & quantity	• General decommissioning and rehabilitation activities (i.e., use of haul roads, handling of material and waste products) • Post-closure monitoring	Contamination of surface water due to spillages of hydrocarbons during rehabilitation activities This will allow for the detection of any residual water quality impacts and enable immediate measures where required.	3	4	**12 (Risk level 2)**	• Ensure that waste stockpiles are frequently collected and away from riverbanks. • Minimise the footprint of disturbance, as far as practicable. Demarcate the proposed areas for rehabilitation and closure works to minimise the unnecessary expansion of the footprint of disturbance, movement of vehicles and machinery should be confined to designated haul and access roads, as far as practicable. • Maintain the sediment and erosion control measures in place until the completion of demolition and rehabilitation activities to minimise entry of sediment into watercourses. • Ensure that the existing SWMP infrastructure is still functional and can contain runoff from dirty areas. • Strategic removal of surface infrastructure should be implemented so that potentially contaminated runoff is diverted away from designated clean water areas. This may be achieved by temporarily retaining stormwater infrastructure to divert dirty water from clean areas while the potentially contaminating sources are decommissioned. • Use of accredited contractors for removal or demolition of infrastructure during decommissioning is recommended; this will reduce the risk of waste generation and accidental spillages. • All mining personnel should be taught and trained to handle hazardous chemical waste to minimise spillages. The use of spill kits is highly recommended. All storage facilities should be bunded. • Washing and servicing of vehicles and machinery should only be undertaken at designated, appropriately designed areas. • Administer effective and timely clean-ups in the event of spillages occurring. • Ensure maintenance and management of remaining infrastructure and stormwater infrastructure around the area to prevent water quality contamination from runoff from the remaining areas. • Ensure that the infrastructure (e.g., PCD) are first emptied of all residual material before decommissioning. • Ensure chemicals, reagents or hydrocarbons are stored on impermeable surfaces with appropriate containment structures. • Surface water quality monitoring should continue to detect any potential sources of pollution and thereby enable remediation measure.	3	3	**9 (Risk level 3)**	Free draining closure/ final landform. Closure phase monitoring and inspection- erosion and vegetation growth. Clearly defined post closure land-use plan, including relevant slope gradients applicable to different land-capabilities. Develop a post-closure water balance and SWMP.
Groundwater quantity	LOM Dewatering activities	Groundwater level would have lowered during LOM due to dewatering activities. However. recovery of water levels (positive). Area will return to forestry after closure.	3	2	**6 (Risk level 3)**	This is a positive impact, as water levels will recover	2	2	**4 (Risk level 3)**	Monitoring programme to establish post decommissioning trends.

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
Groundwater quality	Deterioration of groundwater quality due to mining activities	Contamination of groundwater because of deposition of material into RSF 9, RSF C and deposition of material into pits as mining progresses.	3	4	**12 (Risk level 2)**	Salinity of the residue to be placed on RSF 9 and RSF C was shown by the geochemistry study to be lower than the ambient groundwater quality. Lining of the facility will further reduce impacts on the aquifer. These facilities will be covered with topsoil and returned to forestry. Replace lost boreholes in backfill areas to check if there is any change in quality over time. All backfilled areas will be covered with topsoil and returned to forestry	2	2	**4 (Risk level 3)**	Final landform design of RSF 9, RSF C and backfilled areas to be undertaken. This also to determine the required capping of the RSF's. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible.
Fauna and Flora	Vegetation clearing and earth works during dismantling of infrastructure and rehabilitation Sedimentation of drainage features	Establishment and spread of alien invasive species Sedimentation of drainage features	3	4	**12 (Risk level 2)**	• Control of alien invasive species should be conducted throughout the Decommissioning and Closure Phase, as per the AIS Control and Eradication Plan. As required, the plan should be updated to account for any operational/environmental changes. • All disturbed/mined footprints that are not designated to return to commercial agroforestry, should be actively rehabilitated toward a natural forest state, as per the Forest Rehabilitation Plan. • It is further recommended that in areas that are designated to return to commercial agroforestry, a network of corridors is delineated along drainage lines and across other areas, and actively rehabilitated toward a natural forest state, to serve as ecological corridors and promote landscape connectivity.	1	4	**4 (Risk level 3)**	Ensure protection of identified natural areas. Forest Rehabilitation Plan to implemented Develop and implement biodiversity monitoring and action plan AIS Control and Eradication Programme to remain post closure Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.
Soil, Land Capability, and Land Use	Rehabilitation of backfilled RSF C mining cells (repurposed Mining Pit) [Note: other Mining Pits were already rehabilitated during the Operational Phase	Unacceptable soil erosion / depth due to proposed 1:3 (18.4o, terraced) side slopes and capping with 30cm of Topsoil (orthic A-horizon) only [directly overlying the sand capping proposed by the Mine for levelling and trafficability purposes]. Also poor soil properties (fertility, compaction). Consequently reduced Land Capability / Land Use potential, as compared with the pre-mining potential. Note: RSF C is situated very close to the LOM boundary (thus also influencing Extent of Impact).	5	4	**20 (Risk level 1)**	• Current Significance assumes that soil erosion is reduced by re-grading side slopes to ideally ≤1:7 (8 °) [but not more than 1:5 (11.3°)]. Terracing is optional if side slopes are so reduced by correct reshaping. Slopes must definitely be reduced as specified, from the proposed 1:3 (18.4° - terraced). • Final rehabilitated Pit profiles (repurposed RSF C) should be whale-backed in shape, with the apex height being raised to approximately 15m above the original ground level. This height may be increased provided that side-slopes are maintained at ≤1:7. • A Berm (and Toe Paddocks when the feature height exceeds ground level) surrounding the RSF must be established during rehabilitation, to trap sediment. • Improve land capability and land use potential by Topsoiling (capping) with a 150cm (minimum) Reconstituted 'soil' layer (mixing ratio: 33% Fines : 77% Sand); and • Place a 30cm layer of previously stockpiled Topsoil (orthic A-horizon) over this reconstituted layer. • Topsoiling operation conducted utilising tracked (rather than wheeled) machinery and also utilise dedicated traffic routes, this in order to limit soil compaction. • Wherever possible, practise rolling over rehabilitation topsoiling throughout the entire Life of Mine, where topsoil stripped in one area is immediately utilised to topsoil another area where deposition / backfilling has been completed. • Analyse soil fertility and ameliorate as required. - Initially Revegetate with locally indigenous (to the site) grasses to stabilise the surface soils, until such time as an alternative sustainable land use is	3	4	**12 (Risk level 2)**	Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible. Forest Rehabilitation Plan to implemented AIS Control and Eradication Programme to remain post closure Care and maintenance of rehabilitated footprint required for at least 5 year period to ensure successful restoration of mining affected areas.

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
						implemented (e.g. Euclayptus). - Monitor/remove alien invasive vegetative species. • Monitoring, maintenance, and repair work must be ongoing. • SEQUENTIAL BACKFILLING & REHABILITATION: It is imperative that these operations continue throughout the Phase 2 Life of Mine.				
Hydropedology & Hydrology	Rehabilitation of backfilled RSF C mining cells (repurposed Mining Pit) [Note: other Mining Pits were already rehabilitated during the Operational phase]	Reduced vol. of infiltrated water reporting to the base of the Pit (vs. that pre-disturbance) due to: increased surface area (raised above surface) vs. that of the footprint, thus higher evapotranspiration losses from vegetation / wind. The Recharge and Interflow (derived from rainfall) flow pathways will vary within the RSF, based upon the grade of material utilised for backfilling as follows: - Fines grades sections. Interflow will dominate close to the surface on top of the fines grades (probable slow-mod infiltration rate in the dry state), a greater proportion of this moisture moving laterally downslope to the previous Pit edge, until encountering the surrounding Recharge (deep) soils whereafter this moisture will move vertically downwards. However, a Recharge (slow) component will also exist within the Fines grades; - Sand grades (internal starter walls, now buried) sections. Moisture will move rapidly downward as Recharge, thereafter reconnecting with the underlying existing moisture flow pathways.	5	4	**20 (Risk level 1)**	• Implement all Rehabilitation Mitigation Measures, as specified above. • This will ensure that hydropedological / hydrological moisture flow pathways (although largely altered) underlying the site will be re-established post-rehabilitation. • However, no mitigation is possible to ensure the volumes of sub-surface water moving as Recharge versus Interflow will be replicated. • It is likely that only a slightly reduced volume (post-mitigation vs. pre-mitigation) of water will report to the downslope wetlands and streams from RSF C. This because infiltrating water will still migrate to the most low-lying slope positions due to gravitational action.	4	3	**12 (Risk level 2)**	Final landform design of RSF 9, RSF C and backfilled areas to be undertaken. This also to determine the required capping of the RSF's. Forest Rehabilitation Plan to implemented AIS Control and Eradication Programme to remain post closure Develop and implement Post Closure Land Management and Monitoring Plan. Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.
Soil, Land Capability, and Land Use	All activities during decommissioning has a risk on agricultural potential and land capability. Land use will have been transformed to mining during operations at Tronox.	Unacceptable soil erosion / depth, and poor soil properties (fertility / compaction). Only slightly reduced Land Capability / Land Use potential, as compared with the pre-disturbance condition. Such an occurrence would be due to failure (albeit partial) to conduct the following site rehabilitation procedures correctly, including: - non-removal of all rubble, scrap, impermeable surfaces (tar and paving), wastes, and potentially contaminated soils from site, for proper disposal. - non-achievale of correct PWP footprint reshaping, in order to be free draining and to tie into the surrounding topography, with final slopes of ≤1:7 (8°), also including the closing in of established clean and dirty water drains., and - failure to replace all of the previously stripped Topsoils (30cm) and Subsoils (additional 150cm) over the reshaped area.	4	4	**16 (Risk level 2)**	• Demolish all infrastructure and associated foundations, concrete pads, tarred surfaces / paving; and remove rubble, scrap, waste material, and any potentially contaminated surface soils from site. • Close in the clean and dirty water drains, utilising the soil berms immediately upslope (this being the material excavated during their construction). • Reshape the associated Return Water Dam, remove contaminated sediments / soil, re-grade (re-shape) to slope ≤1:7 (8°), topsoil with soils removed during construction (Subsoils overlaid by Topsoil), ameliorate fertility, and re-vegetate. • Re-grade (re-slope) the PWP footprint area to be free draining and to approximate the topography of the surrounding area (considering shape, and slope ≤1:7 (8°), before topsoiling). • Replace 150cm (minimum) of the originally stripped and stockpiled Subsoils over the reshaped area. • Then replace a 30cm layer of previously stockpiled Topsoil over this Subsoil layer. • Topsoil operation conducted utilising tracked (rather than wheeled) machinery and also utilise dedicated traffic routes, this in order to limit soil compaction. • Analyse soil fertility and ameliorate as required. • Initially Revegetate only with locally indigenous (to the site) grasses to stabilise the surface soils, until	3	3	**9 (Risk level 3)**	

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
						such time as the selected sustainable land use is implemented (e.g. Eucalyptus). • Monitor/remove alien invasive vegetative species.				
Hydropedology and Hydrology	Rehabilitation of PWP	Non-achieval of close to the pre-disturbance Hydropedological / Hydrological moisture flow pathways / water volume beneath the rehabilitated PWP site, due to failure to rehabilitate correctly.	4	4	**16 (Risk level 2)**	• Implement all Mitigation Measures, as specified for Impact 3 above. • This will ensure that the pre-disturbance hydropedological / hydrological moisture flow pathways underlying the site will be largely re-established post-rehabilitation.	3	3	**9 (Risk level 3)**	
Soils, Land Capability, Land Use, and Hydropedology	Whole Mine site - post closure	Failure to achieve pre-defined closure objectives, and Tronox's Key Aims as follows: - safe and healthy post-mining environment, - economically viable and sustainable post-mining land use, - limited residual environmental Impacts, and - optimal post-mining social opportunities. Note: Mining Pits (Sand Tailings), RSF C and 9, and Sand Tails Dumps 8B and A-2 are all situated very close to the LOM boundary (thus also influencing Extent of Impact).	3	4	**12 (Risk level 2)**	• Implement post closure monitoring and maintenance programmes that should be continued until such time as all rehabilitated areas / facilities are demonstrated to be stable, non-erosive, non-polluting and sustainable in the long term (after Closure). • Adaptive management practices may need to be implemented to ensure that all predefined Closure objectives have been achieved.	3	4	**12 (Risk level 2)**	
Aquatics and wetlands	The removal of infrastructure, as well as rehabilitation of potentially affected areas and aquatic ecosystems. Water quality and habitat modifications due to input of sediment and contaminants	These activities will likely result in erosion and increased runoff in the areas near or in the associated watercourses (Amanzamnyama, Mhlatuze, Ntuze and Mlalazi rivers). Water runoff during these activities may also be of poor quality which will also result in the deterioration of the quality of the affected ecosystems. Dirty water entering natural aquatic ecosystems from the Decommissioning activities and associated areas have the potential to alter water chemistry and degrade water quality of the affected systems. This will consequently affect the aquatic ecology and aquatic biota. Furthermore, the disturbance of vegetation and soils will likely facilitate the establishment and spread of alien invasive species.	4	4	**16 (Risk level 2)**	The goal of mitigation should be to limit erosion and runoff from the footprint of the areas/infrastructure during infrastructure removal activities as well as during rehabilitation. The following measures are recommended to reduce associated impacts: -Removed or damaged vegetation areas should be revegetated as soon as possible; -Storm water must be diverted from decommissioning activities; -Water used during decommissioning should be kept onsite and not be allowed to freely flow into nearby watercourses; and -Ensure the revegetation activities use appropriate indigenous plant species. -All invasive alien plant species should be removed and disposed of appropriately prior to development activities. Such development activity site should be inspected regularly during development activity to identify and remove emerging invasive alien plants (IAP) species. - The removal of alien vegetation should be undertaken manually by hand near sensitive areas. The use of heavy machinery should be kept to minimum near sensitive environments. - Fauna found within the development activity zone should be moved to the closest natural or semi-	2	4	**8 (Risk level 3)**	Ensure protection of identified natural areas. Forest Rehabilitation Plan to implemented AIS Control and Eradication Programme to remain post closure Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
						natural habitat zone away from the development activity site.				
Socio-economic	Decommissioning of the Port Durnford mine	1) The major social implication associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. 2) Social and labour unrest because of dissatisfaction at loss of employment followed by economic hardship and physical displacement of employees and/or exacerbated employment loss. 3) Conflict in desired post-closure land use/s and unalignment with municipal SDF; 4) Forced closure of suppliers, with further cumulative impact of loss of jobs / contracts and income	3	2	**6 (Risk level 3)**	1) The impacts associated with mine closure and decommissioning needs to be addressed in the SLP. Undertake investigations into long-term livelihood sustenance project creation incorporating Tronox to reskill and enable mine employees to be sustainable post closure. 2) The SLP states that during downscaling and retrenchment, consultation with employees through their representative union will be affected by section 189A of the Labour Relations Act. 3) Develop skills required for next land use through the SLP i.e. ecotourism etc. 4) Establish a regional mine closure forum with neighbouring communities (Future Forum)	4	4	**16 (Risk level 2)**	Ensure adequate provision is made for closure liability and update annually for submission to DMRE. Optimise closure cost by integrating closure planning into LOM designs. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible.
Financial	All decommissioning, rehabilitation and mine closure activities	Failure to implement the final rehabilitation, decommissioning and closure plan (due to budget restraints and/or shortcomings). The following environmental consequences were considered: •Inadequate establishment of vegetation; Soil erosion and contamination; Loss of soil, land use and land capability; Siltation of rivers and streams; Failure to control alien and invasive plant species; Loss of biodiversity; Contamination of surface water resources and Uncontrolled GW pollution plume migration The following Legal and Regulatory consequences were considered: •Failure to meet relinquishment criteria, as set out in the final rehabilitation, decommissioning and closure plan will result in the mine not being issued a closure certificate; and Potentially posing risk to humans and animals The following Social / Health and Safety consequences were considered: •Abandoned areas will be unsafe and pose a significant risk to humans and animals and Deterioration of structural integrity of unrehabilitated mine infrastructure could lead to human injury and/or fatalities	4	4	**16 (Risk level 2)**	1) Ensure that annual updates of the Financial Provision reflect true and accurate assessment of activities and impacts of mining operations at Tronox. 2) Establish agreements for transfer/hand-over of buildings and/or infrastructure (including linear); 3) Adjust the quantum of provisioning required based on the development of a detailed measurement of all infrastructure; and compile a measured bill of quantities. 4) Liaise with the DMRE regarding adjustment of the quantum 5) Undertake concurrent rehabilitation during operation of the mine, if possible 6) Provided that sufficient monies are available, undertake concurrent rehabilitation of redundant infrastructure, using operational expenditure to reduce final quantum of liability at the end of LoM 7) Develop and implement an internal rehabilitation approval/ relinquishment/ sign-off procedure to ensure that the scope of work has been completed. Scope of work to be aligned to legal obligations, closure plan requirements and commitments/ conditions of other authorisations.	2	2	**4 (Risk level 3)**	Ensure adequate provision is made for closure liability and update annually for submission to DMRE. Optimise closure cost by integrating closure planning into LOM designs. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible.

Aspects	Activity	Consequence/unwanted event	Probability (likelihood)	Consequence rating (severity)	Risk level (pre-mitigation)	Closure action	Probability	Consequence rating	Risk level (post-mitigation)	Closure Options/Actions
Visual	Visual Final mining footprints and remaining infrastructure	1) Visual intrusion of decommissioning activities associated with a mine on the existing views of sensitive visual receptors in the surrounding landscape. 2) Reduced post-closure visual appeal due to disrepair/unmaintained transferred infrastructure.	4	3	**12 (Risk level 2)**	1) Exposed areas need to be reshaped and revegetated as soon as possible. This would significantly contribute to reestablishment of the scenic setting of the impacted landscape. Dust control measures implemented during operations should remain to minimise dust emissions from the area. 2) The residual mineral residue deposits need to be sloped and vegetated as soon as possible. This would ensure the residual visual aesthetics of the area is re-established and therefore improve the scenic quality.	2	2	**4 (Risk level 3)**	Final landform design of RSF 9, RSF C and backfilled areas to be undertaken. This also to determine the required capping of the RSF's. Concurrent rehabilitation aligned to an optimised LOM to be developed which priority rehabilitation as early as possible. Care and maintenance of rehabilitated footprint required for at least 5-year period to ensure successful restoration of mining affected areas.
Visual	Visual Final mining footprints and remaining infrastructure	1) Visual intrusion of decommissioning activities associated with a mine on the existing views of sensitive visual receptors in the surrounding landscape. 2) Reduced post-closure visual appeal due to disrepair/unmaintained transferred infrastructure.	4	3	**12 (Risk level 2)**	1) Exposed areas need to be reshaped and revegetated as soon as possible. This would significantly contribute to reestablishment of the scenic setting of the impacted landscape. Dust control measures implemented during operations should remain to minimise dust emissions from the area. 2) The residual mineral residue deposits need to be sloped and vegetated as soon as possible. This would ensure the residual visual aesthetics of the area is re-established and therefore improve the scenic quality.	2	2	**4 (Risk level 3)**	Develop a detailed decommissioning waste management plan

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