**Avonbank Mineral Sands Project**

**Environment Effects Statement**

**Chapter 27 – Glossary, Abbreviations and AcronymsGraphical user interface, website

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# Glossary, Abbreviations and Acronyms

## Glossary

Definitions of specific terms used in the Environment Effects Statement are provided in Table 27‑1.

Table 27‑1: Definitions

| Term | Definition |
| --- | --- |
| Annual exceedance probability | The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year. |
| Aquifer | A formation of rock or sediment that is saturated with water and sufficiently permeable to transit quantities of water to wells and springs. |
| Avonbank Demonstration Trial | A pilot mining, processing and rehabilitation trial was undertaken at Avonbank between 2019–2022. A 'test pit' was excavated and a 'pilot plant' was established. A 'rehabilitation trial' was undertaken as part of the Avonbank Demonstration Trial. |
| Background conditions | The conditions present in an area prior to the commencement of a specific activity. |
| B-double truck | A truck and trailer combination consisting of a prime mover coupled with two trailers. |
| Biodiversity | The variety of all life forms, plants, animals, fungi, protists (including algae) and bacteria, their encoded genes, and the ecosystems of which they form a part. |
| Co-disposal | Mixing of two materials (coarse sand and fine tailings) for disposal. |
| Community stakeholder | Community stakeholders encompass groups, stakeholders or individuals that include potentially affected parties, interested community organisations and government bodies. Community stakeholders typically have a direct link (physical, social, historical, cultural, and/or political) with the Project or the area in which the Project will operate. Refer also to Stakeholder. |
| Compliance obligations | The legal requirements that an organisation has to comply with and other requirements that an organisation has to or chooses to comply with. |
| Contingency | Refer to corrective action. |
| Continual improvement | An ongoing effort to improve environmental performance. |
| Control | A control is any measure or action that modifies or regulates risk. Controls include any policy, procedure, practice, process, technology, technique, method or device that modifies or regulates risk. |
| Corrective action | An action to eliminate the cause of a non-conformity to prevent recurrence. |
| Cultural Heritage Management Plan | A three-tiered framework for the assessment of Aboriginal cultural heritage. A CHMP describes the existing environment by identifying existing or potential Aboriginal places, describes how proposed works can avoid or minimise impacts, and establishes management conditions and contingency measures to guide the proposed works which must be followed. |
| Cumulative impact | Cumulative impacts are the successive, incremental and combined direct and indirect impacts of project development. They arise from compounding additional activities of a project or other non-related projects. As with indirect impacts, cumulative impacts may be separated from the project in location or time. |
| Cyclone | Mining equipment that removes fines from the ore. The process comprises a cylindrical upper section and lower conical sections down which tailings fall and rotate, with coarser material being separated by the resulting centrifugal forces. |
| Development extent | An area that comprises the proposed mining licence area (MIN), the WIM Base Area (WBA) and the power/water minor utilities corridor from the terminal stations to the WBA. It excludes the product transport route from the WBA to Portland and the Port of Portland. |
| Dewatering | Process of pumping or draining water from an excavation, mine void, aquifer or other material. |
| Direct impact | Impacts that are linked to Project aspects where there is an immediate cause and effect relationship. |
| Disturbance/ disturbed area | Areas where topsoil has been stripped (removed with machinery) as a result of Project activities. |
| Ecological Vegetation Class (EVC) | A vegetation classification is described through a combination of its floristic composition, life form and ecological characteristics, and its association with particular environmental attributes. EVCs may include one or more floristic community that occurs across a biogeographic range and has similar habitat and ecological processes operating. |
| Effect | Any change that a project or activity may cause in the environment that is an outcome, result or consequence to the environment bought about by some force, project or action. |
| Effective dose (radiation) | A measure of dose that takes into account both the type of radiation involved and the radiological sensitivities of the organs and tissues irradiated. The measurement unit is the sievert. |
| Environment | The environment comprises the physical, biological, heritage, cultural, social, health, safety and economic aspects of human surroundings, including the wider ecological and physical systems within which humans live. |
| Environmental aspect or aspect | Project related activities, conditions, infrastructure or products that can interact with the environment that the organisation has control or influence over. |
| Environmental condition | The state or characteristic of the environment as determined at a certain point in time. |
| Environmental management system (EMS) | A set of interrelated or interacting elements of an organisation to establish environmental policies and objectives and processes to achieve those objectives. |
| Environmental objective | An outcome to be achieved that is consistent with the EMS environmental policy and compliance obligations. Performance standards are established to measure or assess if the objective has been achieved. |
| Environmental performance | The performance related to the management of environmental aspects. |
| Environmental policy | The intentions and direction of an organisation related to environmental performance committed to by management. |
| Environmental value | Environmental value in the *Environment Protection Act 2017* means a use, an attribute or a function of the environment. |
| Exclusion zones | Exclusion zones within the development extent aim to protect certain features, including vegetation and heritage sites. No clearing or topsoil disturbing activities can be undertaken within these areas. |
| Flocculant | A chemical added to slurried ore during processing to remove excess water and to produce thickened fine tailings. |
| Gangue minerals | Commercially worthless material surrounding or closely mixed with a wanted mineral in an ore deposit. |
| General Environmental Duty | A person or organisation engaging in an activity that may give rise to risk of harm to human health or the environment from pollution or waste must minimise those risks so far as reasonably practicable. |
| Gravity separation | Gravity concentration process using water and spirals to separate the heavy target minerals from the lighter minerals |
| Groundwater | Any water contained in or occurring in a geological structure or formation or an artificial landfill below the land surface. |
| Haul trucks | Heavy vehicles used for the transportation of materials. |
| Heavy Mineral Concentrate | Material containing mineral sands, including zircon, rutile, ilmenite, leucoxene, and rare-earth bearing minerals. |
| Ilmenite | Titanium-iron oxide mineral with the chemical symbol of FeTiO3; a form of titanium dioxide (TiO2) principally used to produce pigments and used in commercial applications such as paints, plastics, toothpaste, sunscreen and white paper industries. |
| Impact | A change to the environment, whether adverse or beneficial, wholly or partially resulting from the Project's environmental aspects. |
| Indicator | The measurable representation of the condition or status of operations, management or conditions. |
| Indirect impact | Those impacts that are linked to Project aspects and may occur at different locations and at different times. There may not be an immediate cause and effect relationship. |
| Inherent risk | A deviation from an expected outcome that has a level of uncertainty, which can be characterised in terms of consequence and likelihood. Assumes key project design avoidance and engineering controls are in place. |
| Interested party | A person or organisation that can affect or be affected by or perceive itself to be affected by a decision or activity. |
| LA90 | LA90 represents the noise level exceeded for 90% of a measurement period. |
| LAeq | A-weighted, equivalent continuous sound level that is the constant noise level that would result in the same total sound energy being produced over a given period. |
| Lden | Noise assessment indicator that represents the sound pressure level corrected according to the period of the day. L stands for ‘level‘, d for ’day‘, e for ’evening‘, and n for ’night‘. |
| Leucoxene | Form of titanium dioxide (TiO2) is principally used to produce pigments. |
| Listing Advice Statements | A listing advice statement is a notifiable instrument that sets out the grounds that a species, community, or process is eligible to be included in, transferred within, or omitted from a list. |
| Matters of national environmental significance | Nine matters of national environmental significance (MNES) are defined in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The listed MNES in the EPBC Act include threatened species and communities, environments of national and global importance and nuclear actions. |
| Mine-contact water | Water that has been in contact with the active mining area or disturbed area, such as process water or stormwater run-off from within the operational areas. |
| Mining footprint | Represents the area that will be mined for ore over the life of mine. |
| Mining licence | The spatial extent of the proposed mining licence and the scope of works to be included in the mining licence. The scope of the mining licence will include all mining, primary processing and works incidental to mining within an area covered by the mining licence to be granted under the *Mineral Resources (Sustainable Development) Act 1990*. |
| Mining unit plant | A primary processing mobile plant approximately 10 metres wide by 10 metres long and 5 metres high that is located where the ore is mixed with water to form a slurry which is pumped to the Wet Concentrator Plant. |
| Mitigation measures | A hierarchy of measures to minimise, rehabilitate or offset Project related adverse impacts. Controls apply a similar hierarchy, and in this EES refers to those measures applied in the Project risk assessment and associated environmental management system. |
| Monitoring | To supervise, continually check and/or critically observe to determine the status of a system, a process or an activity. Monitoring is undertaken to assess whether or not required or expected performance standards are being achieved. |
| Moving hole (mining method) | Mining method enabling progressive rehabilitation over the life of the Project. The mining method involves the direct return of tailings and overburden into mined cells as the mining front advances. |
| Naturally Occurring Radioactive Material | Naturally Occurring Radioactive Material (NORM) is the term used to describe materials containing radionuclides that exist in the natural environment. |
| Non-conformity | Non-fulfilment of a requirement. Non-conformity relates to requirements in the AS/NZS ISO14001:2016 standard, the environmental management system, and requirements that an organisation establishes for itself. |
| Offsets | Offsets compensate for biodiversity losses as a result of impacts on native vegetation or habitat for threatened species or communities. A native vegetation offset consists of a site that protects existing patches of native vegetation and large trees and could involve planting new native vegetation. |
| Operational area | Areas within the development extent where topsoil has been disturbed and not yet rehabilitated. |
| Performance standard | A benchmark level against which a particular EMS environmental objective can be assessed. |
| Process | A set of interrelated or interacting activities which transforms inputs into outputs |
| Process water dam | Dam constructed to receive and store water from the process water circuit for re-use. |
| Project area | The area at Avonbank which comprise the mine and processing facilities, as shown in Chapter 2. This area formed the basis for most impact assessment studies. It was later refined as the project was further developed and avoidance measures were developed. |
| Project implementation | Putting the Project plan into effect and covering all phases of the Project. |
| Protected matters search tool | The Protected Matters Search Tool (PMST) is a Department of Climate Change, Energy, Environment and Water interactive website that can be used to generate a report which provides guidance on MNES or other matters protected by the EPBC Act in a selected area of Australia. |
| Rare earth mineral | Group of minerals with atomic numbers ranging from 57 to 71, including monazite and xenotime that are rare to find in economic concentrations and used in magnets and electronic components; a by-product of HMC production having applications including mobile phone technology, medical applications, temperature magnets used in windfarms, and electric vehicle batteries. |
| Rehabilitation | The return of a disturbed area to a safe, stable and sustainable end land use. The rehabilitation is considered to be complete once the rehabilitation objectives have been achieved. |
| Residual impact | Used within the EES impact assessments to refer to change to the environment, whether adverse or beneficial, wholly resulting from the Projects activities with avoidance and mitigation measures in place. |
| Residual risk | A deviation from an expected outcome that has a level of uncertainty, which can be characterised in terms of consequence and likelihood. Assumes all controls are in place. |
| Risk | A risk represents a deviation from an expected outcome that has a level of uncertainty that can be characterised in terms of consequence and likelihood. Risk is often expressed in terms of a combination of the consequences of an event or environmental aspect and the associated likelihood of occurrence. |
| Risk assessment | An assessment of the level of risk associated with identified potential hazards relating to environmental aspects. The risk assessment is based on consideration of the consequence of the hazard occurring and the likelihood of the occurrence, using a risk matrix to then categorise the risk as low, medium, high or extreme. |
| Sand tailings | Non-economic sands produced when separating mineral sands from the ore in the wet concentrator plant. |
| Sensitive receptor | An environmental or social asset, entity, condition, attribute, value or function that may be reasonably expected to be impacted by changes resulting from the Project activities. It includes the physical, biological, heritage, cultural, social, health, safety and economic aspects of human surroundings, including the wider ecological and physical systems within which humans live. |
| Significance | An attribute describing the importance of an impact. |
| Site | A term commonly used to refer to the area in which an activity is occurring or building/infrastructure is situated. |
| Soil horizon | One of the series of distinct layers found in a vertical cross-section of any well-developed soil, grouped primarily into O, A, B, and C horizons. |
| Soil unit | Soil defined by common characteristics observed vertically and horizontally. Terminology commonly used in mine and rehabilitation planning. |
| Source-Pathway-Receptors | Any change to the environment which results in a complete linkage between the Project related source activity or condition and a sensitive receptor. |
| Spirals | Wet separation equipment used for gravity separation. |
| Stakeholder | Person or group affected by or concerned with an issue. |
| Study area | The spatial extent of the study which encompasses source activities and plausible pathways to sensitive receptors. |
| Subsoil | Soil layers below the topsoil, often denoted as the B horizon, within the soil profile that lies immediately below the topsoil, or A horizon. |
| Technical Reference Group (TRG) | Group of officials convened by the Department of Environment, Land, Water and Planning (DELWP) to provide guidance over the assessment process for the Project. |
| Topsoil | The uppermost soil horizon containing organic matter removed and retained for mine void rehabilitation. |
| Waste | Waste includes solid, liquid, gaseous or radioactive matter that is deposited, discharged, emitted or disposed of into the environment, including greenhouse gases, in a manner that alters the environment. |
| Wet Concentrator Plant | Processing facility where the target mineral sands to are separated to produce a Heavy Mineral Concentrate (HMC). |
| WIM Base Area (WBA) | WBA includes the secondary processing plant and ancillary infrastructure. |
| Work plan | A work plan must be approved under the *Mineral Resources (Sustainable Development) Act 1990* prior to work commencing on a mining licence. The work plan details the mining activities, associated risks and includes a risk management plan, community engagement plan and rehabilitation plan. |
| Zircon | A heavy mineral is used in industry, including for ceramics applications such as tiles, bathroom fixtures and tableware and high-tech applications such as joint replacements, for abrasion resistance and solid oxide fuel cells. |

## Acronyms and Abbreviations

Abbreviations and acronyms used in the Environment Effects Statement are expanded in Table 27‑2.

Table 27‑2: Acronyms and abbreviations

| Acronym/Abbreviations | Definition |
| --- | --- |
| AADT | Average Annual Daily Traffic |
| ABS | Australian Bureau of Statistics |
| ADWG | Australian Drinking Water Guidelines |
| AEP | Annual Exceedance Probability |
| AHD | Australian Height Datum |
| ANCOLD | Australian National Committee on Large Dams |
| APAC | Air Pollution Assessment Criteria |
| AQAC | Air Quality Assessment Criteria |
| AQIA | Air Quality Impact Assessment |
| AQMP | Air Quality Management Plan |
| ARPANSA | Australian Radiation Protection and Nuclear Safety Agency |
| ARTC | Australian Rail Track Corporation |
| BCM | Bank Cubic Metre |
| BGL | Below ground level |
| BGLC | Barengi Gadjin Land Council |
| BOM | Bureau of Meteorology |
| CEP | Community Engagement Plan |
| CFA | Country Fire Authority |
| COPC | Chemicals of Potential Concern |
| CRG | Community Reference Group |
| CRS | Chromium Reducible Sulfur |
| CHMP | Cultural Heritage Management Plan |
| dBA | Decibels |
| DBHHA | David Bannear Historic Heritage and Archaeology |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water |
| DELWP | Department of Environment, Land, Water and Planning |
| DFS | Definitive Feasibility Study |
| DMS | Donald Mineral Sands |
| DoT | Department of Transport |
| EE Act | *Environment Effects Act 1978* |
| EES | Environment Effects Statement |
| EESCP | EES Consultation Plan |
| EIA | Economic Impact Assessment |
| EMM | EMM Consulting Pty Ltd |
| EMP | Environmental Management Plan |
| EMS | Environmental Management System |
| EPA | Environment Protection Authority |
| EP Act | *Environment Protection Act 2017* |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* |
| EP Regs | *Environment Protection Regulations 2021* |
| ERM | Environmental Resources Management |
| ERS | Environment Reference Standard 2021 |
| EVC | Ecological Vegetation Class |
| FFG Act | *Flora and Fauna Guarantee Act 1988* |
| FFMP | Flora and fauna management plan |
| FTE | Full-Time Equivalent |
| GDE | Groundwater Dependent Ecosystem |
| GDES | Groundwater dependent ecosystems and species |
| GED | General Environmental Duty |
| GHG | Greenhous Gas |
| GL | Gigalitre |
| GSP | Gross State Product |
| GTP | Green Travel Plan |
| GWIA | Groundwater Impact Assessment |
| GWMP | Groundwater Management Plan |
| GWMWater | Grampians Wimmera Mallee Water |
| ha | Hectare |
| HHIA | Historic Heritage Impact Assessment |
| HHRA | Human Health Risk Assessment |
| HMC | Heavy Mineral Concentrate |
| HML | Heavy Mass Load |
| HMP | Heritage Management Plan |
| HMS | Heavy Mineral Sands |
| HOTS | Horsham Terminal Station |
| HPS | Horsham Planning Scheme |
| HRC | Horsham Rural City |
| HRCC | Horsham Rural City Council |
| HV | High Voltage |
| HVAS | High-Volume Air Sampler |
| IARC | International Agency for Research into Cancer |
| ICRP | International Commission of Radiological Protection |
| IBRA | Interim Biogeographic Regionalisation for Australia |
| ILCR | Incremental Lifetime Cancer Risk |
| ILUA | Indigenous Land Use Agreement |
| JORC | Joint Ore Reserves Committee |
| LACA | Land Access and Compensation Agreement |
| LGA | Local Government Area |
| LOS | Level of Service |
| LPIA | Land Use and Planning Impact Assessment |
| LPS | Loxton Parilla Sands |
| LV | Low Voltage |
| LVIA | Landscape and Visual Impact Assessment |
| M | Million |
| MIN | Mining Licence |
| MNES | Matters Of National Environmental Significance |
| MOU | Memorandum of Understanding |
| MPS | Municipal Planning Strategy |
| MRLs | Maximum Residue Levels |
| MRSD Act | *Mineral Resources (Sustainable Development) Act 1990* |
| MRSDMI Regs | *Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019* |
| MSP | Mineral Separation Plant |
| MUP | Mining Unit Plant |
| NHMRC | National Health and Medical Research Council |
| NEPM | National Environment Protection Measures |
| NORM | Naturally Occurring Radioactive Mineral |
| NVMP | Noise and Vibration Management Plan |
| OB | Overburden |
| OHS | Occupational Health and Safety |
| OSOM | Oversize Overmass |
| P&E Act | *Planning and Environment Act 1987* |
| PASS | Potentially Acid Sulfate Soil |
| PASSMP | Potentially Acid Sulfate Soil Management Plan |
| PCRZ | Public Conservation and Recreation Zone |
| PEM | Protocol for Environmental Management |
| PFAS | Perfluoroalkyl and Polyfluoroalkyl Substances |
| PHN | Public Health Network |
| PM | Particulate Matter |
| PoP | Port of Portland |
| PoPL | Port of Portland Pty Ltd |
| PPE | Personal Protective Equipment |
| PPF | Planning Policy Framework |
| PRV | Pressure Relief Valve |
| PSI | Preliminary Site Investigation |
| PWD | Process water dam |
| PZ | Port Zone |
| QA | Quaternary Aquifer |
| RAP | Registered Aboriginal Party |
| RCP | Representative Concentration Pathway |
| RCS | Respirable Crystalline Silica |
| RL | Retention Licence |
| RMP | Radiation Management Plan |
| RoG | Rain on Grid |
| ROM | Run of Mine |
| ROMP | Rehabilitation Operations Management Plan |
| RTIA | Road Traffic Impact Assessment |
| RRA | Radiation Risk Assessment |
| RRP | Rehabilitation Research Plan |
| RUSLE | Revised Universal Soil Loss Equation |
| SCO | Specific Controls Overlay |
| SEIFA | Socioeconomic indexes for areas |
| SESW | South East Soil and Water |
| SG | Specific Gravity |
| SIA | Social Impact Assessment |
| SLIA | Soils and Landform Impact Assessment |
| SOP | Standard Operating Procedures |
| SUZ | Special Use Zone |
| SWMP | Surface Water Management Plan |
| t | Tonnes |
| TDS | Total Dissolved Solids |
| TEC | Threatened Ecological Community |
| THM | Total Heavy Mineral |
| TMP | Traffic Management Plan |
| tpa | Tonnes per annum |
| TRG | Technical Reference Group |
| TSF | Tailing Storage Facility |
| T and T | Tonkin and Taylor Pty Ltd |
| UoA | University of Adelaide |
| VAF | Victorian Aquifer Framework |
| VHM | Valuable Heavy Mineral |
| Vpd | Vehicles per day |
| VTWBC | Victorian Temperate Woodland Bird Community |
| WBA | WIM Base Area |
| WCMA | Wimmera Catchment Management Authority |
| WCP | Wet Concentrator Plant |
| WHO | World Health Organisation |
| WIFT | Wimmera Intermodal Freight Terminal |
| WIM | WIM Resource Pty Ltd |
| WMIS | Water Measurement Information System |
| WMP | Waste Management Plan |
| WSM | Wimmera Southern Mallee |
| WSMRGP | Wimmera Southern Mallee Regional Growth Plan |
| µGy/h | Micrograys per hour |
| µSv | Microsieverts |