ENVIRONMENTAL CONSULTING CASE STUDY

Supporting Vanadium Mine Environmental Compliance Through Collaboration

CHALLENGE

A proposal for an Australian vanadium mine required a thorough understanding of complex emissions in order to foster environmental compliance.

SOLUTION

Trinity completed comprehensive air quality, noise and Scope 1-3 greenhouse gas assessments for the ground-breaking vanadium project including collaborative workshops on the process emissions.

RESULT

After the highly involved process the Trinity team presented complete Air and Noise Management Plans specifying the measures necessary to achieve compliance.

A proposal for an Australian vanadium mine required a thorough understanding of complex emissions in order to foster environmental compliance. The project included extracting ore by shallow open-cut mining and processing into vanadium pentoxide (V_2O_5) and alumina. Vanadium, a rare earth mineral, is in high demand for steel and batteries.

Processing includes screening, scrubbing, sizing, dewatering, flotation, drying, roasting, leaching, filtration, solvent extraction, precipitation and other chemical transformations. Trinity Consultants Australia was brought in to provide specialist environmental monitoring and modelling services.

Trinity completed comprehensive air quality, noise and greenhouse gas assessments for the ground-breaking vanadium project. The mine's work included mining and mineral processing to produce high-grade vanadium pentoxide. Trinity completed collaborative workshops with processing engineers to discuss innovative new mineral processing methods, reaction chemistry, emissions produced and the likely effectiveness of good practice control measures. Also included was H_2SO_4 production by elemental sulfur burning.

The team prepared a detailed carbon footprint for the mine through detailed analysis of Scope 1, Scope 2 and Scope 3 transport emissions with four scenarios of abatement measures including reaching carbon neutrality.

After the highly involved process the Trinity team presented complete Air and Noise Management Plans specifying the measures necessary to achieve compliance including:

- Reduction of nighttime activities near homesteads
- Design of proactive noise, dust, gas and meteorology monitoring programs
- Source controls on roasting and de-ammoniation plant

Trinity also installed monitoring instruments and trained staff in their use, including high volumes sampler, low volume sampler, meteorological station, dust gauges, and a third octave noise monitoring station.

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