

Esperance Mineral Concentrate Enhancement Project



BACKGROUND

Esperance Port has been handling bulk nickel concentrates since 1967. Much of the circuit currently used to handle the product is old and has been used for other purposes, including the loading of iron ore.

Concerns about the environmental performance of the circuit have generated the need to develop a world-class bulk sealed system for the export of nickel sulphide concentrate from Esperance Port.

A working group convened by the Office of Development Approval Coordination (ODAC) assessed all the technically feasible options for upgrading the existing circuit to manage the handling of bulk nickel concentrates at the Port. Six options were defined by the group.

The project selected includes the upgrade of existing assets to continue to handle nickel concentrates in the short term until a new storage facility and handling circuit can be built, which has a time frame of about two years.

An Alliance – known as the ESP Alliance – has been formed comprising representatives of the Esperance Port Authority and Bilfinger Berger Services (Australia) who will be responsible for delivering the project.

OBJECTIVES OF THE ESP ALLIANCE

- Improve environmental compliance during the handling of concentrates at the Port of Esperance to meet the targets provided in the Port's Environmental License.
- Establish an alliance between the Esperance Port Authority and engineering consultants Bilfinger Berger Services to accelerate the delivery of the project and overcome high risk situations where there is time constraints that present challenges for traditional contract approaches.
- Deliver the project on time and budget.

PROPOSED WORKS

The proposed scope of works relates to nine separate projects, each being handled by an individual project team under the flexible management umbrella of the Alliance.

The scope of works include

Project 1: Ship loader remedial works

This work will eliminate or significantly reduce fugitive dust emissions from a number of sources associated with the ship loader located on berth two:

- From the conveyor that leads to the ship loader;
- From three transfer points along this part of the circuit to the ship loader;
- From the top the loading chute; and
- From a ship's hold.

The works include:

- Sealing conveyors and transfer points;
- Installing additional scrapers, skirts and washing systems to keep belts clean and to minimise carryback of product; and
- Installing a fit-for-purpose chute that may include dust extractors and negative pressure.

Progress to 6th February 2009

Consultant engineers WBM and dust control specialists, Mideco, are progressing the design for the ship loader remedial works. This includes design scoping for –

- dust control systems for the ship loader;
- new telescopic loading chute; and
- wind guards are being installed on the loader to ameliorate fugitive dust emissions.

Dust control measures are being designed for the shiploader and connecting conveyors on Berth two. This includes new scrapers and curtains being installed to reduce air movements in the conveyors and enclosing open conveyors and transfer points.

Project 2: Dust management system upgrade

This work will eliminate or significantly reduce fugitive dust emissions from other locations on the concentrate circuit.

The works include:

- Installing dust extracting measurers at identified emission points;
- Creating negative pressure environments;
- Minimising dust flow;
- Installing new and modifying existing dust filtration equipment; and
- Changing operational techniques.

Progress to 6th February 2009

The Alliance is working with dust control suppliers to identify and develop new and upgraded dust management systems for the Port's concentrate inloading, storage and outloading circuit. Various options are being assessed, including new storage sheds, conveyors and shiploaders.

Project 3: Conveyors, chutes and transfer points remedial works

This work will prevent or minimise fugitive dust from conveyors, chutes and transfer points along the concentrate circuit.

The works include:

- Installing or modifying primary, secondary and tertiary scrapers on the circuit;
- Installing or modifying belt washing systems;
- Enclosing conveyor belts;
- Optimising transfer chute configuration; and
- Installing or modifying skirts and dust curtains on transfer points.

Progress to 6th February 2009

All equipment necessary for this project is being sourced with some installation already completed. Existing equipment will be replaced with best available technology.

Project 4: New plant and equipment procurement

Plant used in the concentrate circuit are front-end loaders to handle concentrates in the storage sheds and forklifts that move kibbles/containers carrying kibbles from rail wagons and discharge the contents into the tippler.

This project will consider the following before the equipment is purchased:

- Exhaust emissions;
- Fitness for the project;
- Fuel Consumption;
- Remote control; and
- Cost of purchase.

Progress to 6th February 2009

Specifications for new front-end loaders and forklift trucks are being prepared, and suppliers have been contacted. A technical panel has been established to review new technologies for remote operated front-end loaders to be used in the storage sheds.

Project 5: Tippler installation project

It is proposed to standardise the transport of concentrates into the Port in 30 tonne half height, sealed containers that can be transported by both road and rail. This will replace the current use of eight tonne kibbles that are railed into the Port and road trains whereby the product is discharged using side tippers. The new containers will be emptied at the Port in a sealed system to effectively manage dust emissions.

The works include:

- Designing, constructing and commissioning a tippler that will receive 30 tonne half height containers by both road and rail;
- Installing dust control facilities in the tippler;
- Providing a hardstand area adjacent to the tippler to store and handle containers; and
- Providing a system that will enable full containers to be unloaded from rail wagons and trucks while empties are simultaneously loaded.

Because of the complexity of this project it is likely that the tippler will be built and commissioned offsite, dismantled and then reassembled and recommissioned at the Port.

Progress to 6th February 2009

Negotiations are underway to acquire a suitable container tippler that has been designed and construction commenced. The proposed tippler will handle 30-tonne half height containers.

Project 6: Kibble remedial works

Concentrates will continue to be delivered to the Port in eight tonnes kibbles until the tippler has been installed and commissioned at the Port (Project 5).

The works include:

- Maintaining and cleaning of kibbles to prevent fugitive dust from escaping the unloading bay;
- Repairing or changing loose fitting or damaged tarps on the kibbles;
- Cleaning spillage immediately with vacuum trucks and road sweepers; and
- Maintaining dust extractor system on existing hopper to minimise or eliminate dust emissions at point of discharge of concentrate from kibbles.

Progress to 6th February 2009

Engineers are designing an enclosure at the existing tippler unloading area that will provide a controlled environment for unloading operations. This will eliminate a source of airborne emissions.

Engineers are also looking at the feasibility of replacing the existing rolled tarpaulins on the kibble with a hard cover that will seal the kibble to prevent any product escaping during transport.

Project 7: General installation works

This project deals with a range of works that do not require detailed design work.

The works include:

- Recladding of storage facilities and conveyors modules; and
- Replacing of scrapers and skirts in conveyor circuits.

Progress to 6th February 2009

These works have started and include recladding of conveyor galleries and transfer towers, replacing sheeting, sealing floors, walls, apertures and roofs to stop fugitive dust from escaping. Sealing between purlins and corrugated roof sheeting has begun. In addition, a structural survey is underway to identify the integrity of all structures in the concentrate circuit. This will identify structures or parts of structures that need to be repaired or replaced.

Project 8: New facility project

This project will deliver a new concentrate storage facility that will enable a number of customers to discharge mineral concentrates by road and rail in 30 tonne half height containers and to load the product on ships to the size of a Panamax in all weather conditions.

The works include:

- Developing a design for an integrated storage facility that will receive, store and outload concentrates to a ship on berth two; and
- Constructing the state-of-the art facility and associated conveyor systems that will eliminate fugitive dust emissions.
- Arranging the shed bay configuration to suit the in-go, out-go logistics as well as the permutations of product mix of five types of concentrate over a client base of at least seven parties.

Progress to 6th February 2009

Detailed design work on the new storage facility has not started. However, the Port's current strategic planning study has identified the location, size and configuration of the infrastructure. The storage infrastructure will be 270 metres long by 70 metres wide, and will be able to accommodate up to seven products from five different customers.

Project 9: Commercial management to minimise dust emissions

The control of fugitive dust at the Esperance Port begins at the mine site where the concentrate is produced. This project deals with the commercial arrangements between the Port and customers that relate to quality of the concentrate delivered to and stored at the Port.

ESP Alliance personnel are in regular contact with the nickel producers.

Further Activities

The Alliance will next week call for registrations of interest from local tradesmen and supplies who want to be involved in the project.

An advertisement will be placed in the local newspaper and an email address established for the project where local people can send their CVs or capability statements.