



Pilbara Air Quality Program. State of the art dust controls.



BHP is a world-leading resources company. Our principal iron ore operations are based in the Pilbara region of Western Australia and comprise of an integrated system of four processing hubs and five mines connected by more than 1,000 kilometres of rail infrastructure and two port facilities located at Port Hedland.

Our sustainability approach

Sustainability is our first charter value. It means putting health and safety first, being environmentally responsible and supporting the communities in which we operate.

The wellbeing of our people, the community and the environment is considered in everything we do.

We understand that minimising the environmental impact of our operations is important to the communities where we operate and are committed to making a positive contribution to a sustainable future for all.

To ensure the growth of our iron ore business is sustainable, environmental objectives have shaped the nature of our operational activities and the environmental controls and management practices that we have in place.

We continue to work closely with government and industry to deliver dust management controls and support strategic land-use planning to reduce community exposure.

We have invested \$400m in environmental controls over the last 10 years. Specific dust controls are in place at each step in our port operations and these are closely regulated and operate continuously to eliminate and mitigate dust emissions.

These controls include:

- Car unloading facilities are enclosed and fitted with dust extraction and collection systems
- Conveyors are equipped with bulk ore conditioning sprays to maintain moisture levels and belt wash stations to minimise ore carryback that can lead to dust emissions
- Transfer chutes are enclosed and selected transfer stations are fitted with a dust extraction system or fogging system
- The operating height of ore stackers is minimized and boom sprays operate to suppress dust
- Stockyard water cannons are used to prevent the ore on the surface of stockpiles from drying out to minimise dust lift-off
- Ore reclaimers are fitted with boom sprays to reduce the potential for dust emissions
- Lump rescreening plants are fitted with dust extraction systems and are either fully or partially enclosed
- Open areas are treated to reduce the potential for wind generated dust
- All major roads are sealed
- Relocating crushing and screening away from Port operations and back into the mines

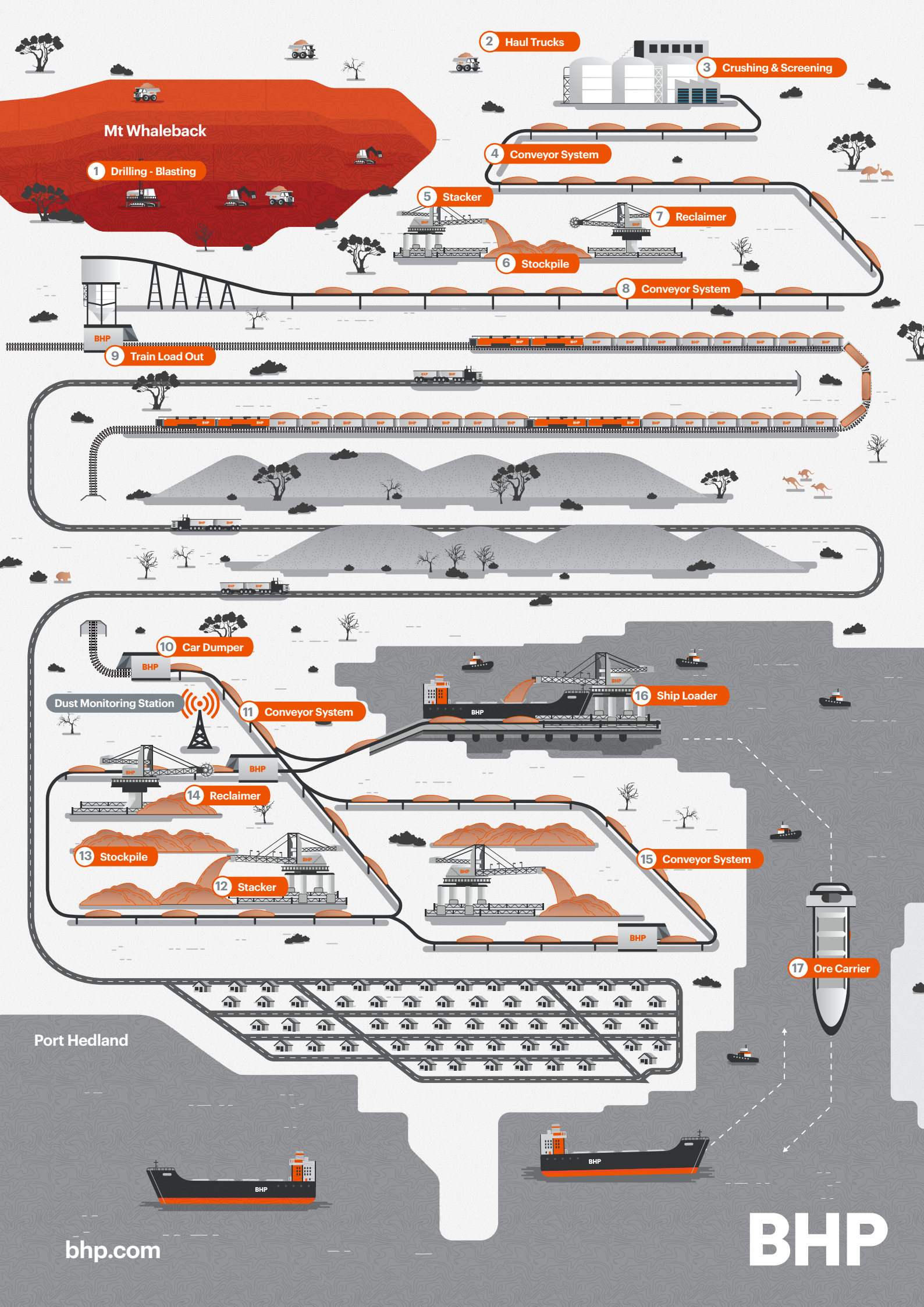
- Decommissioning the old North Yard and related infrastructure
- Direct to Ship loading of a significant portion of ore arriving from our mines, reducing the potential for dust emissions through ore handling.

We are committed to continuing to improve dust management performance and plan to invest up to a further \$300M over the next five years to improve air quality and reduce dust emissions across our Pilbara operations.

The Pilbara air quality program will build a solid foundation for the sustainable future of our operations and involves:

- the construction of wind fences at port operations, a method that has been proven to significantly reduce the potential for dust lift-off from stockpiles.
- trialling with a view to at-scale construction of vegetation barriers to capture dust in the West End in Port Hedland, in partnership with Curtin University and Greening Australia;
- Implementation of operational dust control projects across our entire Pilbara supply chain, such as moisture management systems, ore conditioning and monitoring infrastructure, and improvements across our existing controls at our mines and port.

Individual projects will still be subject to all necessary internal and State Government approvals.



Mt Whaleback

1 Drilling - Blasting

2 Haul Trucks

3 Crushing & Screening

4 Conveyor System

5 Stacker

6 Stockpile

7 Reclaimer

8 Conveyor System

9 Train Load Out

10 Car Dumper

Dust Monitoring Station

11 Conveyor System

16 Ship Loader

14 Reclaimer

13 Stockpile

12 Stacker

15 Conveyor System

17 Ore Carrier

Port Hedland

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Pictographic Reference

1. Drilling - Blasting

Blasts are controlled and optimised for explosive content to ensure efficiency of earth breakage. This prevents over use of explosive and reduces dust generation.

2. Haul Trucks

Additives are used to treat haul roads to minimise dust generation. There are daily routines to water all haul roads as well as the additive application.

3. Crushing and screening

Dust Collectors trap dust particles by filtering them through a large cloth filter. Clean air is then vented out. Belt skirts are installed on conveyor shuttles to prevent dust.

4. Conveyor System

Bulk Ore Conditioning sprays installed along the conveyor system use spray nozzles to add moisture to the ore.

5. Stacker

Boom sprays are installed on Stackers to suppress the dust lift off that can occur as the ore is stacked on to stockpiles. Stacker luff system minimises drop height.

6. Stockpile

Water cannons spray water on the stockpiles to prevent lift off of dust particles.

7. Reclaimer

Boom sprays are fitted on either side of the Reclaimer bucket wheel to suppress dust when it operates.

8. Conveyor system

Conveyor systems are fitted with Bulk Ore Conditioning Sprays to add moisture to the ore as it travels across the belts. The transfer stations between conveyors are fully enclosed to contain dust particles as they move from one conveyor to another.

9. Train Load Out

Sprays are fitted on the top of the train load out to prevent dust lift off. Additionally discharge sprays at the gates on the Train Load Out allow additional moisture to be added whilst loading every wagon.

10. Car Dumper

Car dumpers are fully enclosed and negative pressure is maintained during unloading of ore. Dust extraction / collectors and scrubbers operate to capture dust, venting clean air. Moisture analysers operate in real time triggering bulk ore conditioning sprays on downstream conveyors to maintain moisture content above the dust threshold.

11. Conveyor systems

Belt scrapers and /or plough fitted to conveyors for preventing carry back. Over 80 Belt Wash Stations Installed on site to clean belts. Bulk Ore Conditioning sprays installed along the conveyor system use spray nozzles to add moisture to the ore. Transfer chutes between conveyors are fully enclosed. BHP conveyor belts have a troughed-belt profile (as opposed to a flat-belt profile) that provide a natural wind shield. Fogging and dust collectors are installed at specific transfer points.

12. Stacker

Boom sprays are installed on Stackers to suppress the dust lift off that can occur as ore the ore is stacked on to stockpiles. Stacker luff system minimises drop height. New proposed wind fences at FI and SY which will act as a wind shield to this equipment.

13. Stockpile

325 Water cannons spray up to 25L/s water onto stockpiles to prevent lift-off of dust. BHP applies suppressants to static stockpiles, to prevent dust lift off associated with wind erosion. New proposed wind fences designed to reduce wind speed resulting in less wind erosion.

14. Reclaimer

Boom sprays are fitted on either side of the reclaimer bucket wheel to suppress dust when it operates. New proposed wind fences designed to reduce wind speed resulting in less wind erosion.

15. Conveyor system

Same as 11.

16. Ship Loader

Boom sprays are installed to suppress the dust lift off that can occur as ore is loaded into a ship hold. Boom luff height is actively managed to minimise drop height.

17. Ore Carrier

Individual hatches are closed once loading is completed.



The Pilbara's high heat, areas of sparse vegetation and the coast contribute to a naturally dusty environment. To help minimise industry contribution to this problem, we have a range of controls in place.

These include:

- **77 Bulk Ore Conditioning (BOC) Sprays** spray approximately 3L/s water over the ore on belt conveyors within the plant.
- **325 Water cannons** spray up to 25L/s water onto stockpiles to prevent lift-off of dust .
- **Belt Wash Stations** are installed to clean any excess dust off belts.
- **Boom sprays** are installed on Stackers, Reclaimer and Ship loader boom tips.
- **Dust collectors** on site act like a giant vacuum cleaner with loose dust sucked into a chamber where water is added. Solids drop out to waste and clean vapour is vented from stack.
- **Water carts** used across both sites to wet down open areas and unsealed roads.
- Ongoing program to **seal open areas and roads**.
- Procedures to **shut down plant equipment** in high dust events.

Did you know?

Data gathered from our monitors is used, in conjunction with weather forecasts, to plan each day's loading activities. We change or reduce the operation of equipment to avoid or minimise potential contribution to elevated dust conditions on a case-by-case basis.

We monitor dust levels on a 24-hour basis and adjust our operations accordingly.

If you have any questions about our operations please contact - **1800 421 077**

To learn more about our world leading dust mitigation strategies scan this code.

