

Port Talbot Steelworks: Decommissioning Process and Environmental Oversight.

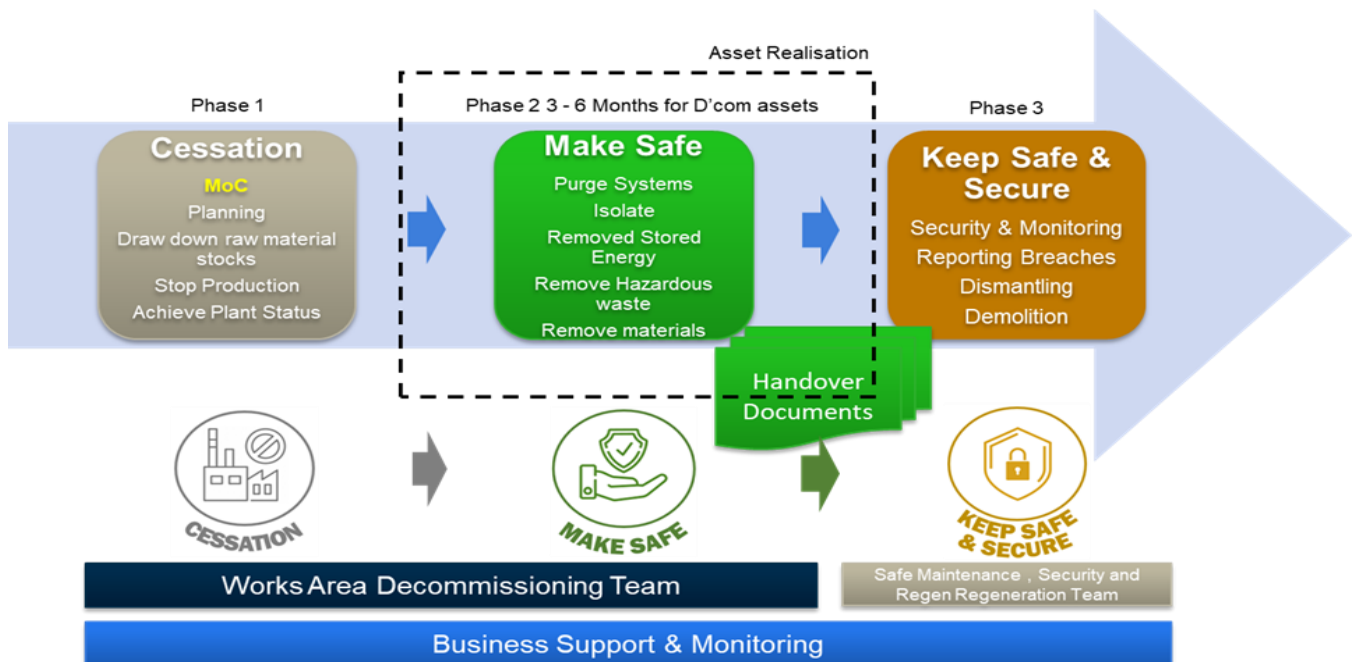
As part of a major transformation toward greener steelmaking, Port Talbot Steelworks began transitioning from traditional coal and iron ore based production to Electric Arc Furnace (EAF) technology. This required the safe retirement of heavy industrial assets—such as blast furnaces, coke ovens, sinter plant, power plant boilers and other associated infrastructure—through a meticulously planned and executed decommissioning process. This was not only vital for health and safety but also a key requirement for government funding tied to sustainable redevelopment. Within the BOS plant, many elements are decommissioned such as the vessels and the desulphurisation plant where some secondary assets are mothballed for use within EAF production as are Casters 1 and 3.

The decommissioning process has been governed by a formal Decommissioning Framework Standard—which outlines how to stop operations, make assets safe, and hand them over for either mothballing, demolition, or future regeneration. A significant number of these assets are environmentally sensitive, and therefore decommissioning was planned with environmental integrity at its core.

A Phased and Safe Approach.

The decommissioning was delivered in three structured phases:

- 1. Cessation** – Shutting down industrial assets in a controlled, safe manner.
- 2. Make Safe** – Identifying and eliminating hazards (e.g., draining chemicals, isolating energy systems).
- 3. Keep Safe** – Ensuring long-term safety through inspections, documentation, and environmental monitoring until final site use is determined.



This approach has involved over 150 personnel from engineering, operations, safety, and environmental disciplines working across seven industrial zones.

Environmental Considerations.

Environmental protection has been a guiding principle throughout. Decommissioning activities were informed by more than 5,000 individual hazard actions stemming from 98 detailed hazard studies.

Specific environmental priorities included:

- Ceasing industrial effluent discharges from the coke ovens, blast furnaces, and power plants.
- Managing potential land and water contamination.
- Ensuring accurate documentation and safe management of materials such as asbestos and fuel residues, with controls in place and registers handed over to the Keep Safe team.
- Addressing site biodiversity risks such as invasive species (e.g., knotweed).
- Implementing control plans for Legionella during water system deactivation.
- Communicating with local communities and regulators when short-term emissions might arise from cessation of processes.
- Identifying materials such as air conditioning refrigerants and oils contained in electrical switchgear which might need to be removed and disposed of by specialist contractors.

To meet stringent regulatory expectations, the project adhered to legal requirements (e.g., CDM and COMAH) and consulted relevant environmental checklists including those covering sealed radiation sources, land contamination, and effluent impacts.

Documentation and Governance.

Each decommissioned area was accompanied by a “Handover File” documenting asset status, remaining hazards, hazard studies, safety actions, and environmental controls. These files enable long-term monitoring, regulatory compliance, and accountability.

The effort included 1,700 isolation and immobilisation procedures, all verified by authorised personnel with photographic and engineering evidence. Examples are shown below which demonstrate that the assets decommissioned within the heavy end plants cannot be brought back into operation. This was also required as part of the Grant Funding Agreement with the UK Government.

Keep Safe and Next Steps.

A dedicated “Keep Safe” team is established to maintain a safe status quo until long-term redevelopment or demolition. This team will manage safety inspections, secure high-value asset disposals, and continue environmental compliance.

The demolition phase will follow once appropriate contractors are selected. This will be conducted in compliance with environmental legislation and best practice to ensure minimal impact on the surrounding community and ecosystem.

This initiative reflects a leading example of industrial decommissioning done responsibly—protecting both people and the environment while paving the way for a lower-carbon steelmaking future in South Wales.

Assets decommissioning activities.

The following list of actions explain the primary methods used to decommission the assets. In order to achieve these action, the processes were ceased, initial plant status achieved and isolations conducted with permits issued. Once assets were isolated, they were immobilised / disconnected from electricity net to prevent (accidental) use of assets; typical methods used were e.g. cut and cap of electrical supply cables to equipment, tension removal for conveyor belts by cutting the belts or removing them and positively disconnection of pipe lines with a line of sight created by removing valve or cutting pipe sections out.

The following section provides decommissioning details with selected photographs to demonstrate that the assets have been rendered inoperable with confirming its current status.

Energy Power Plant – Margam A, Margam B, Margam C and Service Boilers.

All Margam Boilers 3, 5, 6 & 7 & Service House Boilers 4&5 : Boilers drained. Feed water, steam pipes and fuels supplies decommissioned and positively disconnected. Dosing systems removed. Ancillary electrical equipment decommissioned.



Photo: Blast Furnace Gas supply to Boiler 3 decommissioned

- Margam A and C Turbo Alternators : All steam supplies decommissioned. All electrical power cables decommissioned.



Photo: no 6 TA electrical cables cut and capped and 11 bar steam superheater capped

- Margam C Demineralisation Plant : All inlet water feeds, including Afan Ffrwyd, Dock and Recovered Demineralised Water supplies, isolated and disconnected. Hydro Tanks drained. Chemical Dosing Tanks have all been drained and flushed.



Photo : Water supply pipe cut to Demineralisation Plant decommissioned

Blast Furnaces 4 and 5.

Before the Blast Furnaces were permanently shut down, a method was chosen that avoided the complex and costly process of removing the molten iron at the bottom, known as salamander tapping. Instead, the furnace was allowed to cool naturally with the remaining material inside. This decision was based on safety and cost considerations, but it has significant consequences for the future usability of the furnace.

The current state of the furnaces makes restarting the furnaces extremely difficult, if not impossible. The cooled contents, if reheated, can cause structural damage and pose serious risks, including leaks and accelerated wear on refractory. As a result, the furnaces are effectively permanently out of service, with around 1,000 tonnes of solid iron remaining at the bottom.

- Furnace structure and water cooling systems; all water systems drained, pumps and motors decommissioned and furnace open to atmosphere.
- Process gas containing assets such as stoves, gas plant and transport pipe lines; all purged, blanked to create system separation and where possible open to atmosphere.



Photo : process gas pipelines cut and blanked with line of sight

- Cast houses and ancillary assets; all assets immobilised and troughs and ponds filled up with stones.



Photo : water separation pond and slag runner filled up with stone

Coke ovens and By Products Plant.

The decommissioning of the Morfa Coke Ovens involved a carefully planned shutdown process that included halting coke production and transitioning the gas transport pipe lines and other gas containing assets to a safe, inert state using nitrogen. As the ovens were emptied and not refilled, gas production gradually ceased, and all associated systems—including pipelines, gas coolers, gas washers and vessels—were isolated and purged.

Coke ovens are not designed to be cooled down for long periods of time and the resulting temperature drop in the battery caused cracking in the refractory linings and movement of gas pipes connected to the battery due to thermal stress. This caused a potential hazardous situation and as such many of these assets were dismantled to prevent structural collapse (see photos below).

With the refractory compromised and the key process infrastructure dismantled, the assets are no longer in a condition that would support a safe or viable restart, effectively marking the end of their operational life.

- The entire coke making plant— doors, machines, heating systems, gas and water networks—have been fully drained, immobilised and secured as part of decommissioning. Coke cars and locomotives have already been scrapped via internal Regeneration team.



Photo: hydraulic pump removed from battery machine



Photo: removal of unstable gas pipes from the battery top

- All process gas pipework has been purged with nitrogen with positive line breaks in place. Where required (for safety reasons) pipe sections were kept under nitrogen blanket and plans are in place for pipe internals cleaning and/or sections to be removed.



Photo: section of process gas transport removed

- All gas vessels have been purged (Naphthalene, Benzole and Ammonia Washers, Detarrers, Void Coolers) and are air vented.
- The Benzole stripping plant has been purged and has been cleaned of residual flammable materials. Many pipe sections of the plant have been removed in order to support effective cleaning operation.
- BET plant; The process has ceased and the plant is being drained down (status June 2025, expected completion July 2025). Aerators, pumps and dosing equipment decommissioned and all electrically cut and capped.

Sinter plant and blending area.

The Sinterplant assets with the iron ore blending assets and all ancillary supporting equipment have been decommissioned. The sinterstrand (rotating unit for baking sinter) with ignition hood, product cooler and product conveyors have been immobilized and large numbers of coolings trays and conveyor belts have been removed.



Photo: drive chain removed, screen drives disconnected, mixer immobilized

- Conveyors: Head chutes have been cleaned down. The belts have been removed or cut and clamped in some places. All conveyors have been electrically decommissioned.



Photo: dead weights cable cut, conveyor belt secured

Steel Plant.

The following main process related assets have been taken out of operation as they are no longer required in the future of EAF (Electrical Arc Furnace) steel making process. These have all been fully decommissioned by at least electrical supplies been cut and capped and movements restricted by mechanical means.

- Hot Metal Preparation : all services have been disconnected and decommissioned. The fume hoods have been removed from the asset. Hydraulic system has been drained and hydraulic hoses have been disconnected and removed.

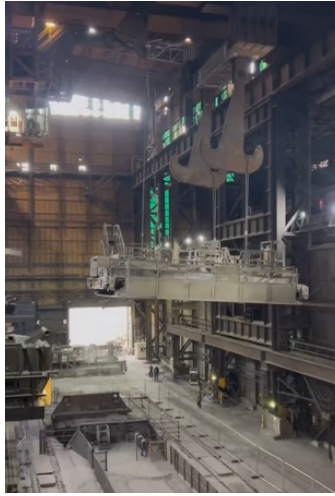


Photo: Desulphurisation Asset Fume Hood being removed

- Convertors / vessels; disconnected from services and lower hood above vessel removed



Photo: lower hood being removed from vessel

- The following other main assets in the Primary Steelmaking Plant that have been fully decommissioned are ; BOS gas recovery system, Lime Plant, Ladle Pits, Fume extraction, Clarifiers, Steel Transfer Cars and several cranes.
- The following main assets in the Secondary Steelmaking Plant that have been fully decommissioned are; CAS-OB1, RH vacuum degasser, Manganese fume extraction, RH preheater installation and RD preheater installation.
- Caster 2 and its water treatment plant have all been fully electrically and mechanically decommissioned. All watersystems have been drained and process water inlet to the water treatment plant has been cut and capped. Hydraulic systems including tanks have been drained and oil removed.
- The following main assets have been mothballed as they will be used in the EAF steel making configuration. That means that the installations have been isolated (under permits padlocked) and maintained awaiting the return in operation. These are; RD degasser, CAS OB2, Caster 1 and 3.

Iron ore unloading.

In the harbour area all the unloading, transport and ore/coal handling assets have been fully decommissioned.

- Unloaders 3, 4 and 5; assets secured in place by rail clamps and chocks with the grabs been removed. The unloaders motors have been electrically decommissioned. The unloader hydraulic system and accumulators has been drained of oil with hoses removed. Orders have been placed to dismantle and remove all 3 Unloaders and will be completed by November 2025.



Photo: Unloader 4 clamped to rails

- Conveyors : Any deadweights have been lowered to the ground and for the majority of the conveyors the belts have been removed. Conveyors have been electrically decommissioned.



Photo: Conveyor 804, coupling in drive removed and Conveyor 801 electrical supply cut and capped



Photo : section of conveyor structure removed in stockyard area for CDM perimeter fencing.

- Stackers: The stackers are positioned at the safest position at end of the stockyards and physically isolated. The stackers have been electrically decommissioned.



Photos: Conveyor Belt removed from Ore Stacker