HAZELWOOD DEMOLITION PROJECT
Demolition Timeline
ENGIE Hazelwood's Demolition Manager, Tom McDowall, is an expert in a very specialised field.

His experience in demolition of large-scale projects spans almost 30 years and this extensive knowledge is now focused on delivering a safe and successful outcome for the Latrobe Valley community.

Tom’s experience in the demolition of large-scale buildings has taken him to projects in Queensland, Western Australia, NSW and Victoria, as well as overseas. He knows that successful demolition requires more than just the bringing down of infrastructure. He has brought his extensive experience in construction, decommissioning and dismantling of complex commercial and industrial facilities in the mining, oil and gas construction sectors to the Hazelwood Rehabilitation Project.

This includes whole-of-life asset closure project management, development of closure planning and asset recovery, asbestos management system, civil earthworks and delivery at the operational back-end.

“I started the early part of my career here in the Latrobe Valley, working on scaffolding projects within the power industry and continued to work on and off in the region over past decades,” he recalled.

“Being appointed to the role of the demolition phase of the Hazelwood Rehabilitation Project is an honour. To manage the respective demolition of this 54-year-old power station will certainly be a highlight of my career.”

Tom’s vision is to see the safe and successful delivery and execution of the Demolition Project.

“My values are safety first every time, inclusion of community and proactive engagement with all stakeholders,” he said.

“In past months I have met with many stakeholders, including regulator representatives, our elected members at all levels of government and have enjoyed hosting community members at a range of activities including Café Conversations and Focus Groups.

“Everyone we do not only include but also return Hazelwood to the local community as a safe, stable and sustainable area for use by generations to come.”

“Introduction from Tom
Decommissioning

Decommissioning is a managed process to retire a facility that is no longer needed as safely and securely as possible. During decommissioning, hazardous materials, equipment or structures are removed and/or contained so that the facility does not become a site hazard in the future. The closure of the Hazelwood Power Station is being carried out in five stages: Shutdown, Decommissioning, Awaiting Demolition, Demolition and Rehabilitation, while adhering to all relevant regulatory and legislative requirements. Decommissioning is a systematic approach imperative to any successful demolition. At Hazelwood Power Station, this included further draining, containment of hazardous materials, disconnecting of electrical supplies, further cleaning, securing the site, managing ongoing security, closing buildings and ensuring salvage activities. Detailed surveys were undertaken during the decommissioning phase to validate and update the existing registers of hazardous materials, such as asbestos. These activities ensure the demolition of remaining facilities will be undertaken in a safe and environmentally responsible manner.

Station Decommissioning

Decommissioning activities in the Station were managed in two phases. Phase 1 started immediately after closure on 1 April 2017 and finished in June of that year. Phase 2 began in August 2017 and was completed before the end of May 2018. The massive job of decommissioning the Station was completed thanks to more than 150,000 man-hours. Led by 17 full time ENGIE decommissioning team employees and contractors from over 25 companies, including key contractor partner Fluor, the mammoth task of decommissioning the plant was carried out in a systematic approach.

Phase 1 activities included the de-energising of major plant and equipment, and comprehensive cleaning of the large boilers and the crusher house. More than one million litres of oil was safely removed from the site.

Phase 2 saw the mechanical isolation of plant to remove all energy sources as well as disconnecting all electrical supplies within the Power Station.

This included the disconnection and removal of the overhead cables used to send electricity from the Station to the nearby AusNet Switchyard. Critical infrastructure, such as the services equipment, remains in place with the site monitored and patrolled by security services.

The task of decommissioning was significant with some –

- 1.3 million litres of oil removed from site
- 1,086 plant permits issued
- 366 decommissioned rooms within the Power Station buildings
- 198 safety walks completed
- 1,050 cables cut and approximately 600 batteries removed as part of electrical de-energisation

Mine Decommissioning

Decommissioning in the Mine continues as plant and equipment become redundant. Decommissioning of some large mining equipment (LME) and conveyors has already been completed with oil and gases removed and the plant cleaned.

Awaiting Demolition

Following decommissioning, the Power Station has been awaiting demolition. The stage has involved the tendering of work and the awarding of the demolition contract. Extensive consultation with regulators was also undertaken around the final condition of the site.

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What is demolition

Demolition work is a specialised activity that demands specialist skills and experience. All demolition work requires that pre-planning activities are carried out before the demolition works and managed through the process for compliance with the current Victorian legislative framework and the WorkSafe Compliance Code – Demolition 2018. The Australian standard (AS 2601 – 2001) also provides advice and guidance on a range of controlled demolition methods so that the risk:

(a) to the health and safety of the public and site personnel and occupiers of the adjoining premises;
(b) of damage to the immediate environment; and
(c) of damage to adjoining premises, will be minimised.


Demolition of the former Hazelwood Power Station and Mine has started, with preliminary works well underway, after the commercial contract was awarded to Delta Group. Demolition is expected to take up to three years to complete.

The early stages of demolition will see the removal and clearing of asbestos material. Asbestos removal is known as the physical removal of the asbestos material. The independent hygienist, engaged by Delta, will inspect and certify that asbestos removal has been completed. This process is defined as “the asbestos material has been cleared and the works area has been made safe”. Once this has been done, it then allows the demolition crew to enter the area and continue work.

Asbestos material will be transported from the Power Station site along a 1.3 kilometre designated haul route to the Asbestos Containment Area. The repurposed Ash Pond facility is 170 metres wide and 195 metres long and is designed to accommodate 150,000 cubic metres of asbestos material.

The methodology for the removal of the larger structures within the Power Station, such as the chimneys and the boilers, along with the Large Mining Equipment in the Mine, is subject to further scope and planning works.

Across Australia, Delta Group diverts more than four million tonnes of construction and demolition waste from landfill, with more than 90 per cent recycled as 21st Century building materials. Delta Group has a strong track record of supporting and developing local labour skills in the Latrobe Valley, through its heavy plant and equipment rental division (Delta Rent). It already has 40 operators and 13 maintenance personnel working at Hazelwood – all recruited from the Latrobe Valley community.

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A safety management plan for the demolition will be developed in collaboration between ENGIE Hazelwood and Delta Group. Delta Group is required to perform all demolition works in accordance with the legislative framework for the industry as well as the Occupational Health and Safety Act. Workplace representatives will be involved during the planning and execution phases of the demolition project.
To assist in the systematic demolition of the Power Station, associated buildings and infrastructure, the demolition sequence has been structured to ensure the 'safe, stable and sustainable' demolition of the zones.

By categorising similar areas of plant and infrastructure into zones, such as Zone 4 Station coal plant, they are defined in a logical, geographical and physical package which allows for activities to be carried out safely without compromising adjoining structures.

This permits work on plant and infrastructure that needs to be separated from adjoining zones to be undertaken safely, with minimal risk and avoiding interferences.

The Power Station precinct has been divided into 10 zones.

Zone 7, Offsite Water Structures, exists to support the operation of the Power Station however this infrastructure is located outside the Power Station perimeter fence.
April 2019 - May 2019

Following the awarding of the contract to complete demolition activities at the site of the former Hazelwood Power Station and Mine, Delta Group commenced mobilisation.

Preliminary planning will see the contractors’ village constructed, with onsite amenities available for the demolition contractors. Temporary power has been reinstated to allow for lighting and the recommissioning of goods lifts and the Turbine House overhead crane.

Milestones

- Preliminaries and Planning
  - Set up contractors’ village
  - Establish site temporary services

- Zone 1 (Turbine House)
  - Temporary services / lighting
  - Commission overhead crane
  - Division 6 auditing

- Zone 2 (Boiler House)
  - Temporary services / lighting
  - Commission goods lifts

1. Blast zone preparation
2. Asbestos removal
3. Demolition of structure
4. Roof sheet removal
5. Stripout complete
6. Asbestos cleared
7. Demolition completed
8. Slab / Hardstand removed
9. Debris cleanup
10. Civil works (piles / footings)
11. Structural steel installation

Asbestos test location
Overhead crane
Temporary power supply

HSCC associated works

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Asbestos removal will be undertaken in the large coal Slot Bunker, with removal activities occurring inside the Turbine House, precipitator and chimney zone. The commencement of the stripout of the Turbine House will commence in addition to the large scope of asbestos removal.

Milestones

- **Zone 1 (Turbine House)**
  - Commence asbestos removal (internal only).
  - Commence Turbine Hall stripout.
  - Install new emergency access to HSCC building.
- **Zone 2 (Boiler House)**
  - Asbestos removal Boiler House 3 and 4 (BH3 & BH4).
- **Zone 3 (Precipitators and Chimneys)**
  - Commence asbestos removal of Induced Draft (I.D.) fans, ducting and precipitators associated with BH3.
- **Zone 4 (Station Coal Plant)**
  - Asbestos removal Slot Bunker.
  - Commence and / or complete asbestos removal of Crusher Houses.
- **Zone 10 (Emergency Access)**
  - Install new emergency access stairs and doors.
August 2019 - September 2019

The delicate task of separating the Hazelwood Switchyard Control Centre (HSCC) building slab from the Turbine House of the Power Station will commence. This will also include upgrading and strengthening works.

The complete demolition of the Induced Draft (I.D.) fans, ducting and precipitators, located adjacent to the chimney structures, will occur on Stages 3 and 4 of the Boiler House. Adjacent to Stage 4, the Crusher House, which fed the coal that was transported along the conveyor to Stage 3, will be removed. This will be the first of the three Crusher Houses to be demolished in this sequence.

Milestones

- **Zone 1 (Turbine House)**
  - Asbestos removal completed.
  - Removal of turbines associated with Boiler Houses 3 and 4 (BH3 & BH4) completed.
  - Complete demolition of slabs adjoining to the HSCC building.
  - Commence HSCC upgrade and strengthening works.

- **Zone 2 (Boiler House)**

- **Zone 3 (Precipitators and Chimneys)**
  - Commence asbestos removal of I.D. fans, ducting and precipitators associated with BH1 & BH2.
  - Complete demolition of I.D. fans, ducting and precipitators associated with BH3.
  - Complete demolition of I.D. fans, ducting and precipitators associated with BH4.

- **Zone 4 (Station Coal Plant)**
  - Ongoing asbestos removal of Slot Bunker.
  - Commence and complete demolition BH4 conveyor.
  - Commence demolition of BH3 conveyor.
  - Complete demolition of Crusher Houses.

- **Zone 10 (HSCC Building and Easements)**
  - Complete slab separation adjoining to the HSCC building.
  - Commence HSCC upgrade and strengthening works.
The demolition of the large concrete pedestal that once housed the turbine generators in Stage 4 will be completed, with turbines from Stage 2 to be removed.

The complex engineering task of separating the Hazelwood Switchyard Control Centre (HSCC) building from the Power Station will commence.

**Milestones**

- **Zone 1** (Boiler House)
  - Commence separation demolition to the HSCC building.
  - Removal of turbines associated with Boiler House 1 and 2 (BH1 & BH2) completed.
  - Demolition of pedestal associated with BH4 complete.

- **Zone 2** (Boiler House)

- **Zone 3** (Precipitators and Chimneys)
  - Complete asbestos removal and demolition of I.D. fans, ducting and precipitators associated with BH1.
  - Complete demolition of I.D. fans, ducting and precipitators associated with BH2.
  - Commence chimney blast preparation.

- **Zone 4** (Station Coal Plant)
  - Complete demolition of BH2 & BH3 conveyor.
  - Ongoing demolition of Slot Bunker.

- **Zone 5** (Admin, Water Treatment, Stores, Workshops and Miscellaneous)
  - Commence and/or complete asbestos removal.

- **Zone 10** (HSCC Building and Easements)
  - Complete HSCC strengthening works.

**Sequence**

- **October 2019 - November 2020**

- **Stage 1:** Demolition completed
- **Stage 2:** Easements removed
- **Stage 3:** Civil works (piles/footings)
- **Stage 4:** Structural steel installation
- **Stage 5:** Asbestos cleared
- **Stage 6:** Demolition of structure
- **Stage 7:** Slab/ Hardstand removed
- **Stage 8:** Drop out complete
- **Stage 9:** Roof sheet removal
- **Stage 10:** Debris cleanup
- **Stage 11:** Blast zone preparation
Preparation will begin for the removal of the eight Power Station chimneys, an iconic landmark in the Latrobe Valley. Seven months on from the commencement of demolition activities, the Power Station chimneys will be removed from the horizon, with the task of clearing up the chimney waste commencing from the northern end of the demolition site.

Ongoing asbestos removal will occur in the Boiler House for Stages 3 and 4, with the concrete pedestals (Stage 3 and 4) to be demolished.

**Milestones**

- **Zone 1** (Turbine House)
  - Demolition of pedestal associated with Boiler House 3 and 4 (BH3 & BH4) complete.
  - Complete roof sheet removal adjoining Hazelwood Switchboard Control Centre (HSCEC) as part of separation.
  - Complete all strengthening and cladding works (barring located internally of HSCEC building but shown externally for clarity).

- **Zone 2** (Boiler House)

- **Zone 3** (Precipitators and Chimneys)
  - Complete ID fans and precipitators demolition.
  - Complete-demolition of ID fans, ducting and precipitators associated with BH1.
  - Commence and complete chimney blasts.
  - Cleanup of chimney waste.

- **Zone 4** (Station Coal Plant)
  - Complete demolition of Slot Bunker and associated conveyors.
  - Complete demolition of BH1 conveyor.
The Hazelwood Power Station and Mine is in Victoria’s Latrobe Valley, 150km east of Melbourne. The 1,600 MW (megawatt) coal-fired Power Station was supplied with brown coal from the adjacent Mine.

At its peak, Hazelwood supplied up to 25 per cent of Victoria’s energy requirements and more than five per cent of Australia’s total energy demand. Hazelwood’s technical specifications at a glance:

### Power Station Type
Hazelwood was a thermal brown coal (lignite) fired power station.

### Chimney Stacks
The eight concrete chimneys at Hazelwood are all 137 metres high.

### Turbines
- **Stage 1 units 1 and 2:** The turbines on this stage consisted of a high-pressure cylinder and a combined intermediate/low pressure/low pressure cylinder.
- **Stages 2-4 units 3-8:** The turbines on these stages consisted of a high-pressure cylinder and double flow.

### Generators
The generators at Hazelwood were two-pole synchronous machines, direct coupled to the associated turbine. They used water and hydrogen cooling.

### Output
Hazelwood Power Station comprised eight generating units providing a nominal output of 1,600 MW. Annual generated electricity output peaked at 12,000 GWh (gigawatt hour), meeting up to 25 per cent of Victoria’s electricity needs.

### Boilers
Hazelwood had eight Babcock and Wilcox manufactured natural circulation water tube boilers. The 60-metre high boilers were semi outdoor construction with water walls, superheaters, economizers and boiler casing blows suspended on integral arches.

### Water Source
Water for the steam cycle was provided from Moondarra Reservoir, south of Erica and underwent a demineralisation treatment process on site before being used to generate steam in the boilers and drive the turbines.

### Fuel Source
Hazelwood Power Station used lignite or brown coal sourced from the Hazelwood Mine. It was around 62 per cent moisture at extraction and was delivered to the Power Station via an extensive network of conveyors and concrete storage bunkers.

### Cooling
Hazelwood used the adjacent man-made Hazelwood Cooling Pond (HCP) (volume 30,000 megalitres) to circulate and cool water for reuse in the Power Station’s thermal water cycle. Water for the HCP was supplemented from a number of sources including Station and Mine drainage systems and artesian water extracted to ensure Mine stability.

### Dredgers
Hazelwood Mine excavated coal using bucket wheel dredgers. The Mine had four coal digging dredgers and another dredger removing topsoil material called overburden.

### Production
Up to 17 million tonnes of coal was extracted annually to fuel Hazelwood Power Station.

### Land
Hazelwood occupies 6,000 hectares of land in total.
**FAQs**

**How do we know demolition will be done safely?**
ENGIE Hazelwood operates under the health and safety philosophy of ‘Safety First’ and is fully committed to providing a safe and healthy workplace for everyone, focused on eliminating injuries and protecting our people from harm. The Safety Management System at Hazelwood has been established around a demolition code of practice and principles. This code contains a risk management process that involves identifying hazards associated with demolition work, assessing and controlling sites associated with demolition work and in the case of asbestos, ensuring asbestos is managed in a way that will not result in the release of asbestos fibres into the atmosphere.

**How will dust be minimised?**
Dust generated by demolition processes will be mitigated before, during and after structure felling by the extensive use of water sprays and pre-fell wetting. The felling of major structures will be conducted with consideration of weather conditions to assist in the management of fugitive dust.

**What happens to all the material, other than asbestos, that results from demolition?**
It is specified in the scope of work that a minimum of 95 per cent of all material from demolition is recycled. A comprehensive waste management plan will be in place. The successful contractor must account for every cubic metre of demolition waste and where it will go.

**How much asbestos is in the Power Station site?**
The power industry used many materials containing asbestos as it was a very effective thermal insulator. During the Hazelwood Power Station's later operating life, much of the asbestos containing material was removed and disposed of in approved landfills on site.

Post closure, ENGIE has undertaken an extensive hazardous materials survey, called a Division 6 audit. This audit not only identifies the material onsite but also the type and volume of the material. We have calculated that there is approximately 75,000 square metres of asbestos containing waste.

**Is asbestos removed from the Power Station before demolition occurs?**
The intention of ENGIE Hazelwood is to remove all asbestos material progressively from structures prior to the demolition. The appointed demolition contractor will develop a plan to remove identified asbestos material.

**Will all the removed asbestos be stored at the onsite containment area?**
Yes, all material will be safely managed onsite.

**Can you explain how the asbestos will be put in the asbestos containment area?**
Material will be placed in the asbestos containment site by mechanical means.

**Is there any risk of asbestos escaping to the air during demolition?**
Asbestos removal processes are highly regulated by WorkSafe and supported through related regulations. The controls put in place during demolition to prevent dust escaping to the air are designed to ensure that asbestos fibres are not released into the atmosphere. In the event of a detection of an unidentified airborne fibre, further stringent procedures for containment, decontamination and clean-up will be put in place.

**How do we know that asbestos fibres won't escape into the air?**
An extensive air monitoring program will be undertaken during the removal of asbestos to evaluate the effectiveness of the removal controls in place. WorkSafe Victoria has very strict protocols to ensure that all controls in place are effective.

**Will there be an onsite testing laboratory or will asbestos fibre results have to be sent away for analysis?**
An asbestos sample will be conducted on site at ENGIE Hazelwood by a National Association of Testing Authorities (NATA) accredited laboratory, managed and operated by the hygienist.