



Hazelwood Rehabilitation Project

Boiler House Stage 4 Controlled Blast Fell Event – 20 November 2020
Environmental Monitoring Results for Dust, Asbestos and Noise.



Summary of Results.

ENGIE and Delta Group have conducted an environmental monitoring program to monitor and measure the impacts on the air and surrounding environment arising from the controlled Stage 4 Boiler House blast fell event on Friday 20 November 2020 at 11.44am, as required under ENGIE's EPA section 30A Approval, issued for the demolition and clean up works associated with Hazelwood Power Station demolition.

The monitoring program has demonstrated that:

- ✓ With reference to the EPA AirWatch Criteria, the monitoring results have confirmed that the air quality was of a GOOD standard with reference to PM_{2.5} and PM₁₀ at monitored boundary locations post the Stage 4 Boiler House demolition.
- ✓ During the Stage 4 boiler house fell event, the noise levels monitored reached a maximum of 160 dB(L) measured at a distance of 240 metres from actual demolition site but within the site boundary, with noise attenuation occurring over distance to give a measured noise level at the town boundary of Morwell and Churchill of 130dB(L) and 128 dB(L) respectively, both below the recommended OHS Noise standard of 140 dB(L).
- ✓ With respect to the Asbestos monitoring program, all monitoring results were below the laboratory detection limit of 0.01 fibres/mL of air in general accordance with the OHS Regulations 2017. S.R. No. 22/2017 and Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)]. That is, there were no positive asbestos detection results anywhere onsite at those sites outside the immediate boiler fell exclusion zone.

Table of Contents

Summary of Results.	i
1 Introduction	1
2 Environmental Monitoring Results.	2
2.1. Particulate Matter.	2
2.1.1. Monitoring Locations during Stage 4 Boiler House Fell Event.	2
2.1.2. EPA AirWatch Standards.	2
2.1.3. Particulate Matter (Dust) Monitoring Results.	2
2.2. Asbestos Monitoring Program.	4
2.2.1. Methodology.	4
2.2.2. Monitoring Locations.	4
2.2.3. Asbestos Monitoring Program Results.	4
2.3. Noise Monitoring Program.	4
2.3.1. Noise Monitoring Test Results.	5
3 Monitoring Program Conclusions.	6
Appendix A - Dust Monitoring Program Locations.	7
Appendix B - Noise Monitoring Locations.	8

1 Introduction

On 20 November 2020, Delta Group (under a demolition contract with ENGIE Hazelwood) undertook demolition works upon the Stage 4 Boiler House at Hazelwood Power Station at 12:44 hrs via a controlled blast fell event.

Regrettably, the demolition event effected only a partial collapse of the Stage 4 Boiler House structure, with ~ 50% of the structures remaining in situ (partially or fully upright) post the detonation of explosive felling charges.

As at the date of producing this report pursuant to the EPA Victoria s.30A approval, an engineering and structural assessment is being undertaken by Delta Group to plan for the safe demolition and felling of the remaining structures.

An internal structure fire post the demolition event, in an elevated section of the remaining structures, resulted in a plume of visible smoke emanating from the structure for approximately 3 hours, until Fire Rescue Victoria (FRV) extinguished the fire through the use of a helicopter / water bucket facilitated dousing of the structure.

EPA Victoria was notified by ENGIE Hazelwood of the fire by telephone and an EMV / Vic Emergency App air quality advisory was issued at the time to advise local communities of the event.

Emissions monitoring, including dust, noise and asbestos, were undertaken in the period leading up to the event, during and post the event.

The meteorological conditions required under approval of the Section 30A application were as follows:

- Demolitions may occur two (2) hours after sunrise and two (2) hours before sunset;
- The ambient air quality at the closest online EPA air monitoring station (Morwell South) is GOOD.

At the time of the Boiler House 4 fell event, the following conditions were recorded:

- Date: 20 November 2020 at 12:44 Hrs;
- EPA air quality at Morwell South was: GOOD.

Therefore, ENGIE Hazelwood (through its demolition contractor Delta Group) met the pre-conditions for the blast fell event, set out within the s30A Approval.

2 Environmental Monitoring Results.

2.1. Particulate Matter.

Particulate matter (PM) refers to particles suspended in the air and is a measure of the amount of dust that is present in the air. The sizes of PM that are monitored when looking at air quality emissions are PM_{2.5} and PM₁₀. This relates to the size of the particles, with PM_{2.5} relating to particles that are 2.5 microns or smaller and PM₁₀ relating to particles that are 10 microns or smaller.

2.1.1. Monitoring Locations during Stage 4 Boiler House Fell Event.

Monitoring of PM_{2.5} and PM₁₀ occurred at seven fixed locations around the Hazelwood site for the measurement of particulate matter.

The locations of the monitors are outlined in Appendix A.

Particulate Matter data for monitoring locations DG1, DG6, DG7 and DG8 are reported within this report and represent those monitoring locations directly downstream of the demolition site, considering the prevailing weather conditions.

2.1.2. EPA AirWatch Standards.

When evaluating air quality on a 60-minute average basis, the average concentration of PM_{2.5} and PM₁₀ over an hour is compared to the EPA air quality categories, these categories are as per the table below:

EPA Hourly AirWatch Quality Categories

	Good	Moderate	Poor	Very Poor	Hazardous
PM _{2.5} (µg/m ³)	<27	27-62	62-97	97-370	≥370
PM ₁₀ (µg/m ³)	<40	40-80	80-120	120-140	≥240

2.1.3. Particulate Matter (Dust) Monitoring Results.

Following the Stage 4 Boiler House fell event, concentrations of PM_{2.5} and PM₁₀ were measured to be below the 60-minute average EPA AirWatch Category defined as GOOD at boundary monitoring locations DG1, DG6, DG7 and DG8 respectively and as geographically shown in Appendix A.

The 60-minute rolling average PM_{2.5} and PM₁₀ particulate time plots are shown in Figure 1 and Figure 2 below.

The air quality at these monitoring locations was considered to have met a GOOD status with reference to the EPA AirWatch Quality Category with reference to PM_{2.5} and PM₁₀ as described above.

Figure 1. PM_{2.5} Particulate Matter 60-minute rolling average time plot.

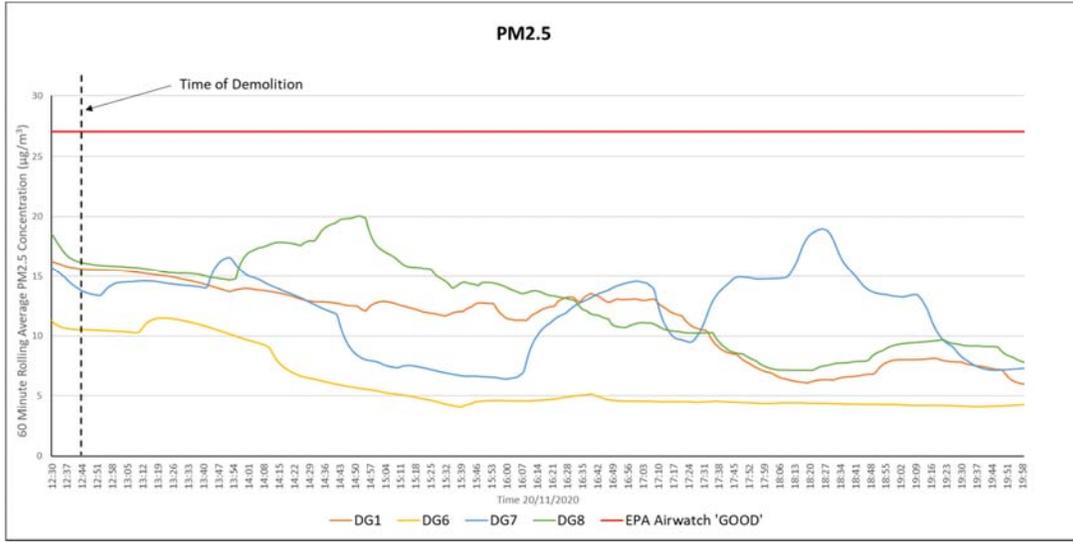
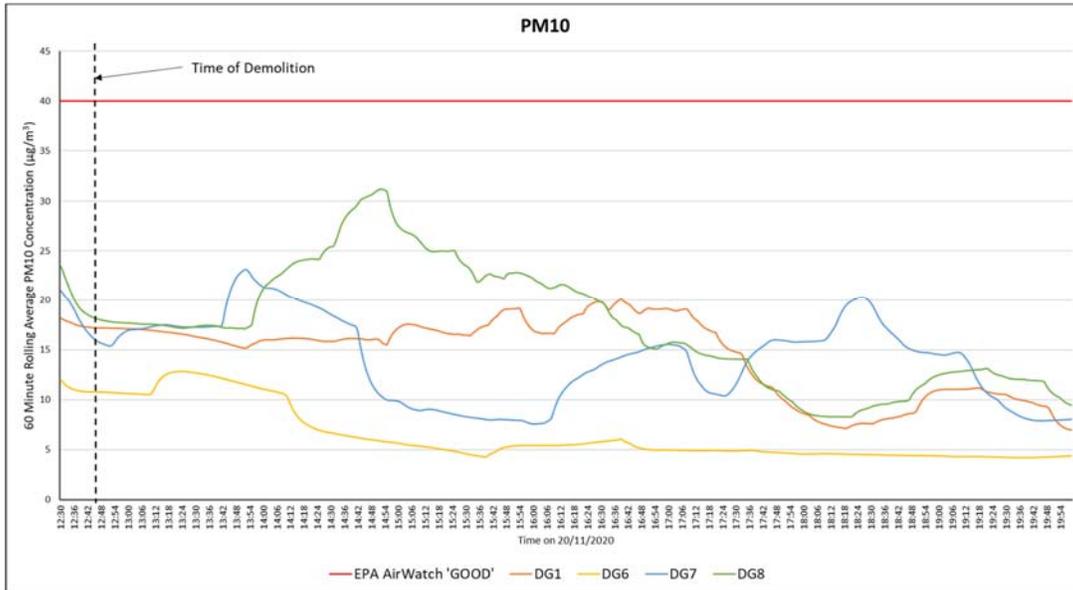


Figure 2. PM₁₀ Particulate Matter 60-minute rolling average time plot.



2.2. Asbestos Monitoring Program.

The Boiler House 4 structures contained non-friable asbestos-containing materials through various known components and locations within the structure. The materials, such as bonded asbestos containing gaskets were deemed not reasonably practicable or safe to be removed, therefore demolition has occurred with these known materials in-situ.

The asbestos containing components shall be separated and isolated during subsequent clean up activities and disposed of in the onsite Asbestos containment cell.

2.2.1. Methodology.

Asbestos monitoring was undertaken by independent Occupational Hygienist specialist consultants at multiple locations across the site. The asbestos monitoring was conducted in accordance with the Australian Safety and Compensation Council's Guidance Note for the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003(2005)].

2.2.2. Monitoring Locations.

A total of 44 monitoring locations were established across the site including the premises boundary for the day of the Stage 4 Boiler House fell event. Of these, 24 monitors were not recoverable from within the demolition exclusion zone, due to access restrictions imposed following the demolition fell event.

The available monitors were collected and analysed immediately following the fell event and represented monitoring on and around the premise's boundary.

An updated version of this report will be produced and supplied to EPA Victoria, reflecting additional results from within the exclusion zone, once safe access is obtained.

2.2.3. Asbestos Monitoring Program Results.

The 44 monitoring sites were located throughout the Site to verify the effectiveness of the controls.

All monitoring results were below the laboratory detection limit of 0.01 fibres/mL of air in general accordance with the OHS Regulations 2017. S.R. No. 22/2017 and Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)].

That is, there were no positive asbestos detection results anywhere onsite at those sites outside the immediate boiler fell exclusion zone.

2.3. Noise Monitoring Program.

A requirement of EPA Licence No.46436 for the ENGIE Hazelwood site is that ENGIE Hazelwood must ensure that:

- There are no emissions of noise and/or vibrations from the premises which are detrimental to either the environment and the wellbeing of persons and/or their property in the area around the premises.

However, it was acknowledged in a Section 30A application to the EPA that there would be an unavoidable short-term noise event arising from both the detonation of the explosive felling charges, as well as from the falling of the boiler house structure.

Noise monitors were placed at the closest public locations as per the Environmental Management Plan (EMP), with additional monitors placed around site to determine noise levels at different areas around and beyond the site boundary. Locations of the additional monitors are presented in *Appendix B*. Noise was monitored in real time, by independent Occupational Hygienists.

2.3.1. Noise Monitoring Test Results.

During the Stage 4 boiler house fell event, monitored noise levels reached a maximum of 160 dB(L) measured at an immediate distance of 240 metres, being directly adjacent to the demolition works (and an area in which access was largely excluded), with noise attenuation occurring over distance to give a measured noise level at the site / town boundaries of Morwell and Churchill of 130dB(L) and 128 dB(L) respectively, both below the recommended OHS Noise standards for demolition works of this nature.

The Table below details the noise levels monitored at several locations:

Location (Refer to Appendix B)	Distance from Demolition Site (m)	OHS Noise Standard	Measured Level dB(L)
MP1	240	NA	160
MP2	565	NA	150
MP3	750	NA	148
MP4	1400	NA	144
MP5 (Churchill Town Boundary)	2940	140 dB(L) _{peak}	128
MP6	310	NA	154
MP7	1150	NA	143
MP8 (Morwell South Town Boundary)	2900	140 dB(L) _{peak}	130
MP9	3650	NA	126
MP10	3065	NA	121
Morwell South Elgin Street	3540	140 dB(L) _{peak}	128

NA = Not Applicable.

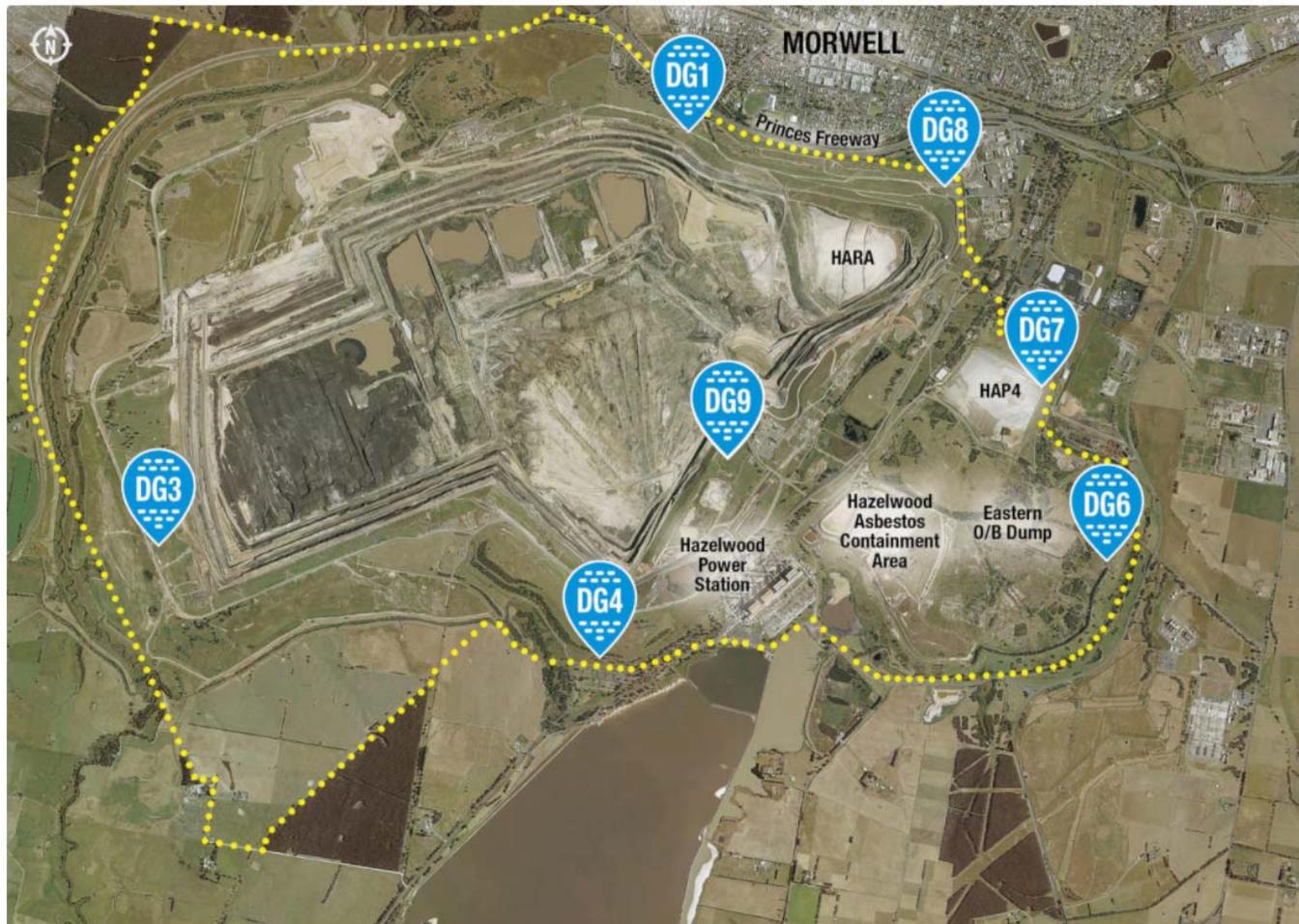
3 Monitoring Program Conclusions.

ENGIE Hazelwood and its principal demolition contractor Delta Group have conducted an environmental monitoring program to monitor and measure the impacts on the air and land environment, as required under ENGIE's EPA section 30A approval, issued for the demolition of the Stage 4 Boiler House and clean up works associated with Hazelwood Power Station.

The monitoring program has demonstrated that:

- ✓ With reference to the EPA AirWatch Criteria, the monitoring results have confirmed that the air quality was of a GOOD standard with reference to PM_{2.5} and PM₁₀ at monitored boundary locations post the Stage 4 Boiler House demolition.
- ✓ During the Stage 4 boiler house fell event, the noise levels monitored reached a maximum of 160 dB(L) measured at a distance of 240 metres from the demolition site, (and an area in which access was largely excluded) with noise attenuation occurring over distance to give a measured noise level at the site / town boundary of Morwell and Churchill of 130dB(L) and 128 dB(L) respectively, both below the recommended OHS Noise standard of 140 dB(L).
- ✓ With respect to the Asbestos monitoring program, all monitoring results were below the laboratory detection limit of 0.01 fibres/mL of air in general accordance with the OHS Regulations 2017. S.R. No. 22/2017 and Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)]. That is, there was no positive asbestos detection results anywhere onsite outside the immediate boiler fell exclusion zone.

Appendix A - Dust Monitoring Program Locations.



Appendix B - Noise Monitoring Locations.



MP = measuring point