Air Quality and Dust Management Plan (AQDMP)

Willyama High School

Radium Street, Broken Hill NSW 2880

NSW Department of Educat on
Report No.: 50485R01 - Rev04
February 2025

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Report No.: 50485_R01 - Rev04
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1. INTRODUCTION

EnviroScience Solutions Pty Ltd (ESS) was engaged by NSW Department of Education to prepare an Air Quality and Dust Management Plan (AQDMP) for the Demolition of Willyama High School, including onsite crushing of waste materials (particularly concrete and blockwork), that adequately identifies, assesses and manages the air quality and dust impacts expected from the demolition, sufficient for inclusion in the Review of Environmental Factors (REF) Assessment & Determination Report.

1.1. Purpose and Objectives

This AQMP outlines the measures to be implemented during the demolition of Willyama High School, to minimise air pollution, manage dust emissions, and comply with all relevant NSW environmental and workplace safety regulations. The plan ensures that the demolition activities:

- Minimize air pollution impacts on the surrounding environment and community.
- Prevent exceedances of NSW air quality standards for particulate matter (PM_{10} and $PM_{2.5}$).
- Manage hazardous materials like asbestos, lead-based paints, and silica dust.
- Protect the health of workers, nearby residents and local fauna and flora.
- Meet local council, EPA, and SafeWork NSW requirements.

To meet these objectives, this AQMP will include the following:

- A Review of the local meteorological conditions.
    - Ensure that the air quality and dust impacts on the nearest sensitive receptors, local community and site personnel are managed and monitored during demolition works.
    - Provide recommendations to minimise and/or reduce the impacts to sensitive receptors.
    - Recommend airborne air monitoring for the community, the environment and site personnel during the demolition works.

1.2. Site Description

The site is located at Radium Street, Broken Hill, NSW 2880, which is on the northern perimeter of the town and approximately 2.8km from the centre of town.

The property is described as Lot 5858, DP 757298 and covers an area of approximately 8.1 hectare (ha).

The site was established as a High School in 1974 and has been operating for 51 years.

In early 2024, the school faced a significant mould outbreak, leading to its closure in mid-January. Due to the level and category of the mould infestation coupled with the inherent building design, the decision is considered to demolish and rebuild the school. During the deconstruction, students and staff have been temporarily relocated to a replacement site comprising demountable buildings, located at 95 Kaolin Street, adjacent to Broken Hill High School.

The existing site consists of three main segments. The buildings that are set to be demolished are situated in the middle of the site and incorporates demolition of the entire school and associated infrastructure.

The Southern portion of the site consists of the school sporting fields, which consist of well irrigated and maintained grass. The Northern portion of the site transitions into arid, semi-desert terrain characteristic of the region, which includes sparse vegetation and dry open spaces.

Initial scoping of contractors have proposed to have a site office and amenities located in one of the existing structures of the school, directly south west of the main school building during demolition. They have also identified an area designated for crushing activities, directly north of the main school building and intend to use McGowen Lane (East of the main building) for heavy vehicle, large plant and equipment access to the site.

A Site Location Plan is presented as Figure 1 and a Site Layout Plan is presented as Figure 2.

Figure 1 : Site Location

Figure 2 : Site Compound Layout

1.2.1. Surrounding land Use

Direction from site	Land Use
North	Immediately to the north of the site is scrubland which generally appears to be unmanaged arid, semi-desert terrain characteristic of the region, which includes sparse vegetation and dry open spaces
South	Rural Commercial and Residential Properties
East	Rural Commercial and Residential Properties
West	Rural Commercial and Residential Properties

Table 1: Site Surrounding Area

Below is an image outlining the sensitive receivers within a 1km radius of the project site, however air monitoring and appropriate dust control measures adopted on site should ensure that that dust and contaminants of concern remain within the boundary of the school perimeter.

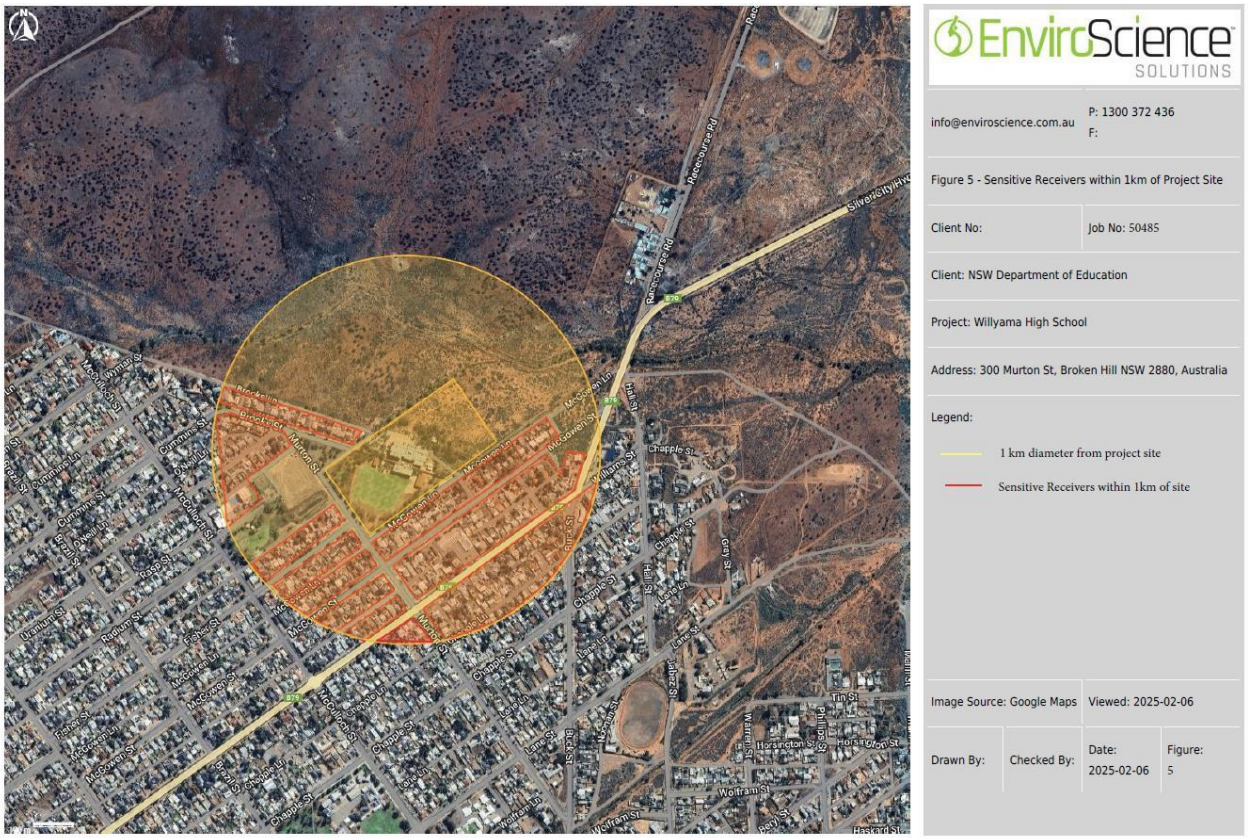


Figure 3 : Sensitive Receivers Map

2. ENVIRONMENTAL REQUIREMENTS

2.1 Regulatory Framework

This plan complies with the following NSW regulations and guidelines:

Given the expected duration of the demolition, a combination of standards will be referenced and potential contaminants will be measured according to relevant regulatory frameworks.

- Environmental Protection
  - Protection of the Environment Operations Act 1997 (POEO Act) – Prohibits air pollution beyond acceptable levels.
  - NSW EPA Construction Site Dust Guidelines – Provides best practices for managing dust during demolition.
  - National Environment Protection (Ambient Air Quality) Measure (NEPM) – Sets air quality standards for PM_{10} and $PM_{2.5}$.
  - Local Council Environmental & Development Consent Conditions – Additional dust control requirements may be imposed.
- Occupational Health & Safety
  - Work Health and Safety Act 2011 (WHS Act) – Requires protection of workers from hazardous dust exposure.
  - SafeWork NSW – Asbestos & Hazardous Materials Regulations – Governs removal and management of asbestos before demolition.
  - Workplace Exposure Standards for Airborne Contaminants – Sets worker exposure limits for dust, asbestos, and silica.

2.2 Air Quality Criteria - NEPM

The National Environment Protection Measure for Ambient Air Quality (Australian Government, 2001) sets the national air quality standards for emitted pollutants. The specific ground-level concentration impact assessment criteria are presented in Table 2 below that will be adopted are detailed below.

Pollutant/Contaminant of Concern	Averaging Period	NSW EPA Air Quality Criteria (Max concentration standard)
PM_{10}	24 hours	50 µg/m³ (NEPM Standard)
$PM_{2.5}$	24 hours	25 µg/m³ (NEPM Standard)
Inhalable Dust	8 hours	10 mg/m^3
Contaminant Hazardous Material of Concern	**Averaging Period**	**Workplace Exposure Standards for Airborne Contaminants**
Airborne Asbestos Fibres	Daily, duration of asbestos removal works and during any unexpected finds	<0.01 fibres/ml (SafeWork NSW)
Respirable Crystalline Silica (RCS)	Daily, duration of demolition and crushing activities	<0.05 mg/m^3 (SafeWork NSW)

Table 2: Adopted site levels criteria for possible airborne contaminants during the project

2.1.1. Asbestos air monitoring

During removal works and at the completion of removal works, airborne asbestos monitoring must be conducted by a suitably qualified person and/ or a Licenced Asbestos Assessor (LAA) or Occupational Hygienist. Samples collected will be compared to the National Occupational Health and Safety Commission's Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition (NOHSC:3003(2005)) (SafeWork Australia, 2005). The below Table 3 provides relevant control levels and required actions during asbestos monitoring works. Potential Air monitoring locations are shown in Figure 4, these are to be amended on site at the overall supervision and recommendations of the Occupational Hygienists and at their discretion to reflect daily activities.

During asbestos removal works, air monitoring will take place, but not limited to:

- Decontamination unit
- Plant operator cabins
- Lunch, crib and office areas
- Immediate perimeters of removal locations
- Waste storage
- Egress routes
- Adjacent to the closest neighbouring receptors

Control Level (Airborne Asbestos Fibres/ml)	Control / Action
<0.01	Continue with current control measures
≥0.01	Stop removal work, review, investigate and implement further control measures
≥0.02	Stop removal work, find cause and notify SafeWork NSW. Works not to re-commence until levels are below 0.01 fibres/ml

Table 3: Asbestos Fibres Control levels and required actions

2.1.2. Inhalable and Respirable Dust (including Respirable Crystalline Silica)

The methodology applied for personal respirable dusts are consistent with Australian Standards *AS2985-2009* & *AS3640–2009.* Results are compared to *Safe Work Australia* publication, *Workplace Exposure Standards for Airborne Contaminants* and relevant NSW legislation. All samples obtained will be transported to a National Association of Testing Authorities (NATA) accredited laboratory for analysis to determine the post sampling filter respirable dust fraction masses with additional analysis for Respirable Crystalline Silica.

The monitoring, sampled from the breathing zones of identified personnel, provides a *'snap-shot'* of individual worker exposures related to the works during works and are indicative of dusts present on the day of sampling only. Additionally, the results should be used to gather baseline data and go toward understanding the potential magnitude for worker dust exposures. This should assist the management team to determine and implement preventative ongoing health strategies and form a position on compliance with Work Health & Safety legislative requirements regarding airborne contaminants.

EnviroScience Solutions conduct licenced airborne dust sampling (inhalable, heavy metals, respirable & respirable crystalline silica fractions) at all workplaces, including engineered stone manufacturing facilities and mines & petroleum sites, consistent with the following legislative and other requirements under NSW Resources Regulator Licence number **MLA00017341**.

- NSW Work Health & Safety Regulation, 2017;
- NSW Work Health & Safety (Mining & Petroleum Sites) Regulation, 2022;
- Australian Standard AS 2985–2009*, Workplace atmospheres—Method for sampling and gravimetric determination of respirable dust*;
- Australian Standard AS 3640–2009*, Workplace atmospheres—Method for sampling and gravimetric determination of inhalable dust*;
- *Workplace exposure standards for airborne contaminants, 2022;*
- *Guidance on the interpretation of workplace exposure standards for airborne contaminants;* and
- Dust sampling trains are set-up consistent with OEM (SKC) and external laboratory requirements.

The airborne dust sampling methodology follow occupational hygiene better practice for personal sampling where, an atmospheric personal sample is taken from the worker within the breathing zone.

All personal airborne dust samples are taken from the start of a chosen shift, or as close as practicable, until the end of shift or, at least 80% of the total shift cycle. Attended sampling should dictate where sampling be deemed most effective therefore, an area as close as practicable to the locations where workers are operating. All samples are appropriately logged, indicating pump number, sample head type (e.g. inhalable / respirable cyclone), filter type (25mm – PVC membrane filter), sample train calibration prior to and following sampling completion, appropriately secured, and transported as soon as practicable to the chosen NATA accredited laboratory for analysis of the reportable dust fraction. Subsequently the relevant dust concentration must be calculated and reported (e.g. inhalable, respirable and / or respirable crystalline silica). It should be noted that, any sample suspected of being obtained incorrectly, **must**, be discarded and taken again

Respirable Dust

Respirable dusts tend to measure between 0-7µm and are 100% respirable at 0µm and approximately 10% respirable at 7µm according to ISO 7708 sampling efficiency curve. Some hazardous substances have been identified as being a component of respirable dust and further laboratory analysis is required to determine the concentration if present. Respirable dust fractions are dusts that are capable of depositing in the lower alveolar lung regions, with potential to impact on gas exchange to the blood system.

Real time personal and area monitoring will be undertaken to ensure on a daily basis that levels are being effectively managed.

Respirable Crystalline Silica

Silica is a naturally occurring widely abundant mineral that forms the major component of most rocks and soils and is known as silicon dioxide. Crystalline silica is also known as free silica and dust particles, which are small enough to penetrate deep into the lung, are termed respirable (Safe Work Australia, 2013). According to the International Agency for Research on Cancer (IARC) crystalline silica is classified as a Group 1 human carcinogen.

Chronic silicosis may occur during worker exposures to elevated concentrations of respirable dust containing crystalline silica and can lead to silicosis, that manifests as fibrotic changes to the lungs typically

after 10-30 years of exposure but can also develop in the short term with extremely high exposures (acute / accelerated silicosis).

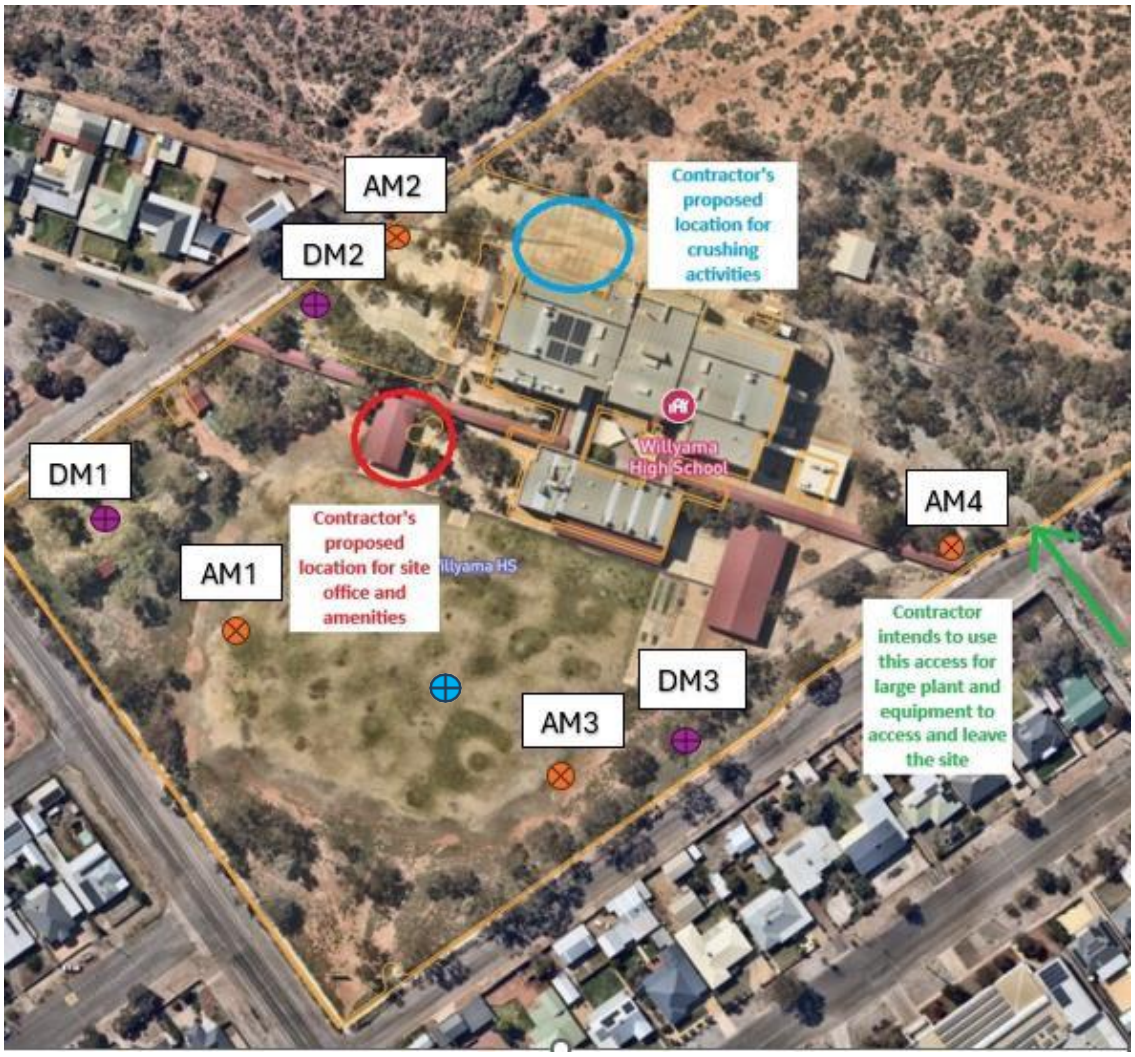
Silicosis causes a slow progressive fibrosis of the lungs and impairment of the lung function and is an irreversible lung disease that potentially can lead to permanent disablement and early death, this is made more severe for exposed workers that smoke (WorkSafe Queensland, 2018).

Control Level (Respirable Crystalline Silica mg/m^3)	Control / Action
<0.02	Continue with current control measures
≥0.025	Stop removal work, review, investigate and implement further control measures
≥0.05	Stop demolition or crushing activities, find cause and notify SafeWork NSW. Works not to re-commence until levels are below 0.02 fibres/ml

Table 4: Respirable Crystalline Silica (RCS) control levels and required actions

Environmental Monitoring Locations

Below is an image (refer to Figure 4 below) for the daily air monitoring locations in relation to the sensitive receptors surrounding the site.



AM – Asbestos Air Monitoring Locations/Respirable Crystalline Silica (RCS)

DM – Real Time Particulate Dust Monitors ($PM_{2.5}$ and PM_{10})

Real Time Wind Speed Anemometer

Figure 4 : Environmental Air Monitoring Locations

2.1.3. Real Time Dust Monitoring

Real-time dust monitoring is essential to assess particulate matter (PM) concentrations, ensure regulatory compliance, and implement mitigation measures if exceedances occur. Table 5 outlines dust control levels and required actions.

Three (3) real time particulate samplers will assist with the proactive management of dust. Located to the east, south and west of the proposed work locations adjacent to the nearest sensitive receptors alert values have been developed to trigger the reduction or cessation of works.

The *National Environment Protection (Ambient Air Quality) Measure, schedule 2* indicates the criteria level of particles PM_{10} and $PM_{2.5}$ for a one (1) day period, shown in table 5 below.

Pollutants	Period of time	Maximum Concentration Standard
Particle PM10	24 Hours	50 µg/m^3
Particle PM 2.5	24 Hours	25 µg/m^3

Table 5: Dust Monitoring Criteria

EnviroScience Solutions has adopted the following control levels and required actions for this real time dust monitoring, shown in table 6 below.

It is recommended that a real time wind speed anemometer be placed on the oval.

Particulate Fraction	Control Level	Action Required
PM $_{2.5}$	<12.5 µg/m^3	Green: Continue with current control measures
	≥12.5 µg/m^3	Amber: Review, Investigate and Implement additional control measures
	≥18.75 µg/m^3	Red: Stop Works, Review, Investigate and Implement additional control measures
PM $_{10}$	<25 µg/m^3	Green: Continue with current control measures
	≥25 µg/m^3	Amber: Review, Investigate and Implement additional control measures
	≥37.5 µg/m^3	Red: Stop Works, Review, Investigate and Implement additional control measures

Table 6: Control Levels and required actions for AM16 – Realtime Dust Analysis

2.3 Mitigation Measures Requirements

The mitigation measures relevant to this site and demolition works are as follows:

- An Air Quality and Dust Management Plan (this plan) be prepared and implemented. The AQDMP will include:
  - Potential sources of air pollution, hazardous materials and contaminants of concern that may become airborne during demolition and crushing activities
  - Air quality management objectives consistent with any relevant published EPA guidelines and Safework Australia.
  - Mitigation and suppression measures need to be implemented.
  - Methods to manage work during strong winds or other adverse weather conditions.
  - A progressive rehabilitation strategy for exposed surfaces.
  - Shadow watering strategies will be employed adjacent to operating plant
- Due to the rural location of the site, it is recommended that background Real Time Dust Monitoring for PM_{10} and $PM_{2.5}$ is undertaken prior to site establishment to gain an understanding of background dusts in the area.
- All plant and equipment will be ensured to comply with Part 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2002.*
- All delivery vehicles will be covered sealed and appropriately during transportation.
- Dust suppression techniques will be utilised in response to visible dust, such as watering dusty work areas and stockpiles.
- If stockpiles are intending to remain on-site for an extended period of time application of dust suppressants maybe required to minimise airborne dust.

3. EXISTING ENVIRONMENT

The following sections summarise what is known about factors influencing air quality impacts and management associated with the site and surrounding area.

3.1. Region and Sensitive Receivers

Please refer to Figure 5 and 6 for a visual depiction of average wind speeds and directions in the area. A map of sensitive receivers is represented as Figure 3. The sensitive receivers are the local residents in the area. Typically, wind direction is from the south and the closest residential buildings north of the site are

approximately 600m from the project site which is generally considered outside the impact zone of 500m. There are residential buildings within 100m of the project site to the west, south and east, which are all considered sensitive receivers, although they are typically upwind of crushing activities. Broken Hill Public School is situated approximately 900m south of the project site which is considered outside of the impact zone.

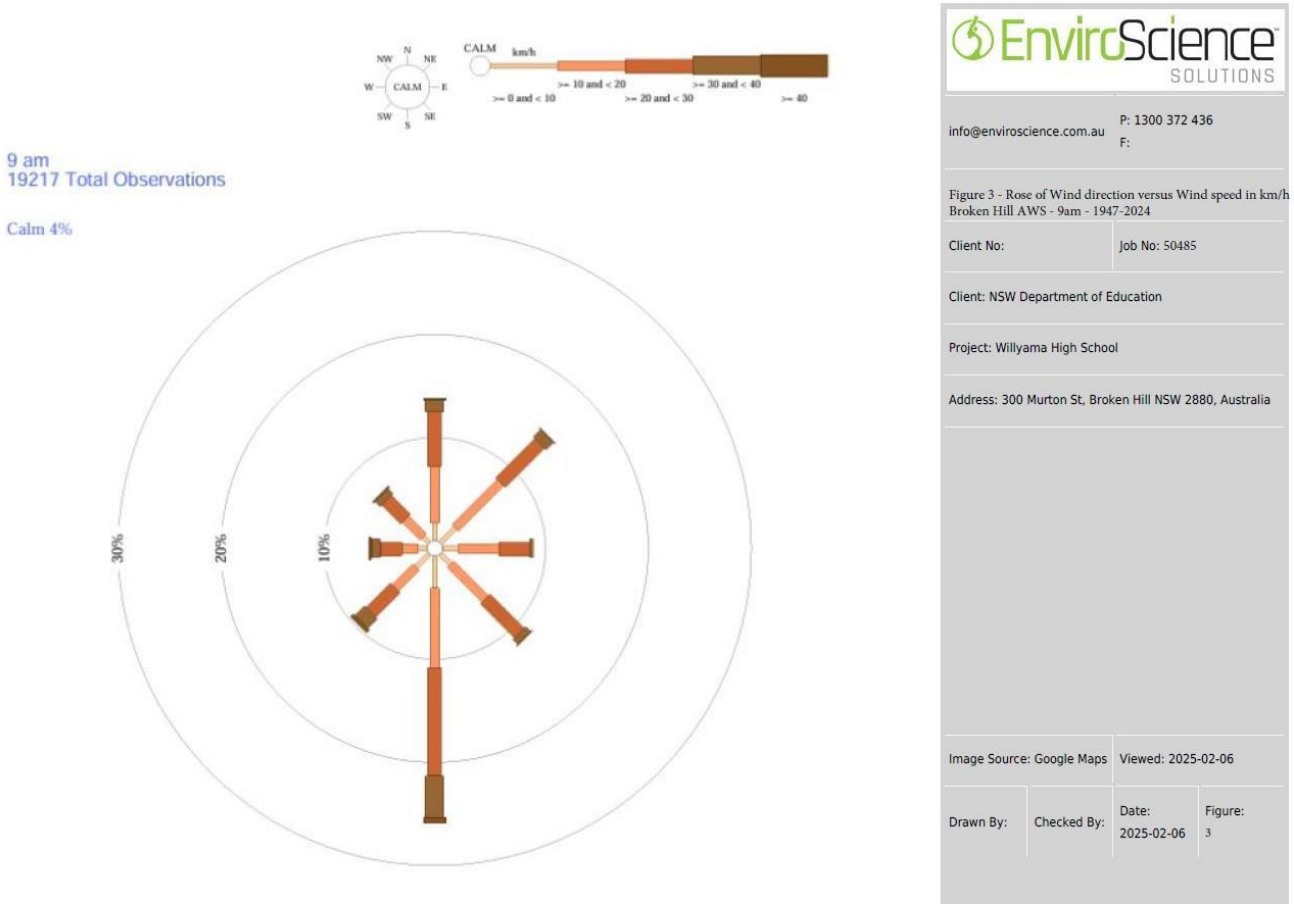


Figure 5 : Average Wind Speeds and Directions 9:00am

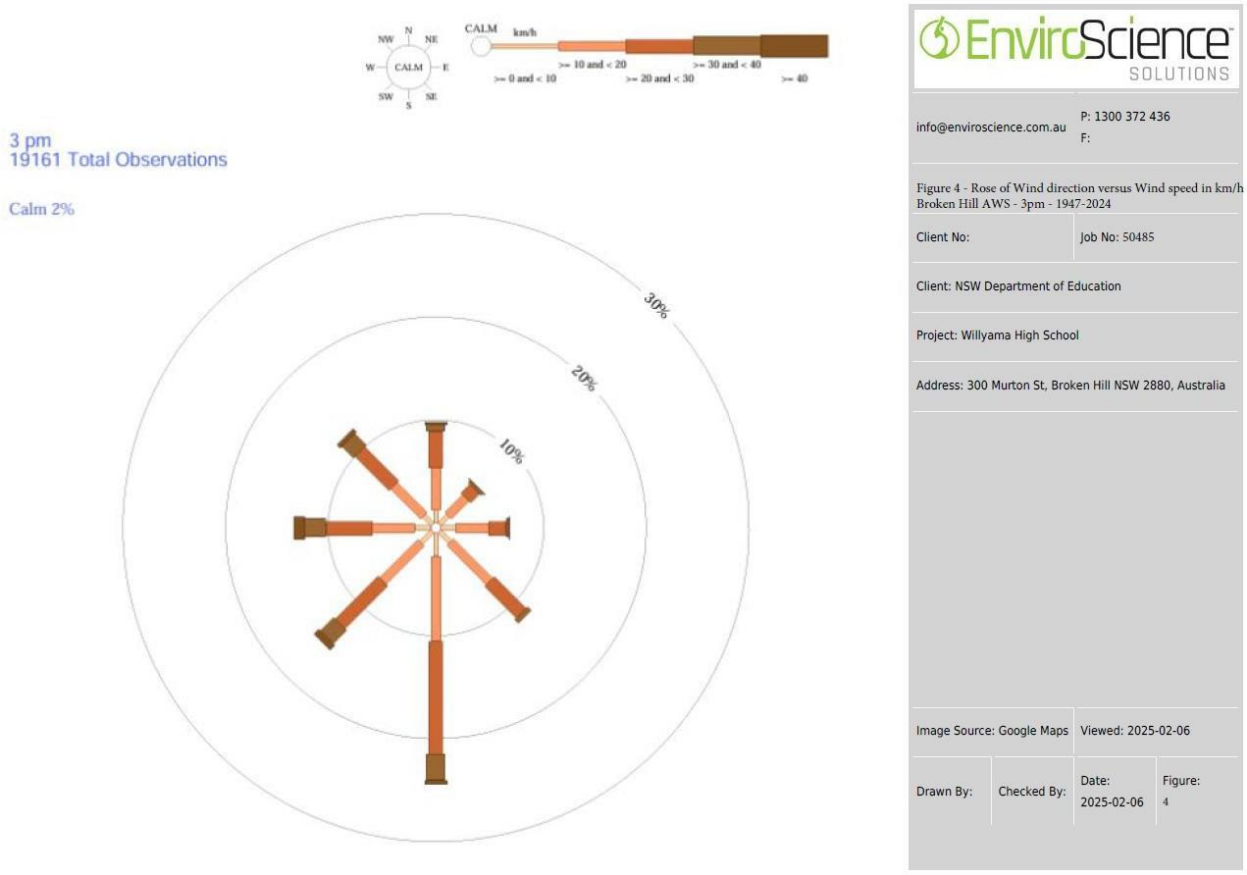


Figure 6 : Average Wind Speeds and Directions 3:00pm

3.2. Local Meteorological Conditions

3.2.1. Air Quality Records

A search of the National Pollutant Inventory was undertaken on the 06 February 2025. Search results of substances emitted to the air within the Broken Hill LGA during the 2022-2023 reporting period identified eight (8) facilities emitting substances in the area. The closest identified source of air pollution is the project is the Essential Energy Mica Street Water Treatment Plant, approximately 2.6km southwest of the project site.

3.2.2. Rainfall, soil dryness and wind

Local meteorology and wing conditions affect air quality and the dispersion of any air pollutants due to a combination of the following factors:

- Wind direction – determines whether dust and suspended particles are transported in the direction of the sensitive receivers.
- Wind Speed – influences the potential suspension and drift resistance of particles.
- Rainfall – rainfall that wets the surface of the soil and reduces the risk of dust generation.

Climate data for the Project area was obtained from the Bureau of Meteorology (BOM) station located at Broken Hill Airport AWS (station number 047048), located approximately 6.6km from the project site. The data is presented in Table 7 below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Rainfall (mm)	28.9	18.7	21.6	20.6	19.5	15.2	17.1	17.9	21.1	25.4	21.7	20.6	248.6
Mean number of rain days >1mm	2.4	1.7	1.9	1.8	2.5	2.4	2.8	2.8	2.5	2.8	2.6	2.1	28.3
Mean number of clear days	12.7	14.4	14.2	12.3	10.9	11.3	7.8	8.8	11.5	10.8	11.4	11.2	137.3
Mean 9am wind speed(km/h)	21.0	20.3	18.3	16.7	13.5	13.4	14.1	17.0	20.2	21.6	21.3	20.9	18.2
Mean max temp (°C)	33.8	32.5	29.1	24.4	19.1	16.0	15.6	18.0	21.9	25.6	28.9	31.8	24.7

Table 7: Monthly Climate data averages for BOM station 047048 (Broken Hill Airport)

Average wind speed and direction plots for Broken Hill AWS between 1947 and 2024 were obtained from the BOM at both 9am and 3pm. The figures are presented as Figure 5 and Figure 6. Both the 9am and the 3pm data indicate the predominant wind direction for the area is from the South.

On-site the Beaufort scale will be used as a guide to monitor and sometimes cease works due to the increased potential generation of dust. Beaufort Number 6 is generally the point at which consideration of cessation of works should occur.

It is recommended that a real time wind speed anemometer be placed on the oval.

Beaufort Number	Wind Speed (miles/hour)	Wind Speed (km/hour)	Wind Speed (knots)	Description	Wind Effects on Land
0	<1	<1	<1	Calm	Calm. Smoke rises vertically.
1	1-3	1-5	1-3	Light Air	Wind motion visible in smoke.
2	4-7	6-11	4-6	Light Breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	12-19	7-12	Gentle Breeze	Leaves and smaller twigs in constant motion.
4	13-18	20-28	11-16	Moderate Breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	29-38	17-21	Fresh Breeze	Small trees begin to sway.
6	25-31	39-49	22-27	Strong Breeze	Large branches are in motion. Whistling is heard in overhead wires. Umbrella use is difficult.
7	32-38	50-61	28-33	Near Gale	Whole trees in motion. Some difficulty experienced walking into the wind.
8	39-46	62-74	34-40	Gale	Twigs and small branches break from trees. Cars veer on road.
9	47-54	75-88	41-47	Strong Gale	Larger branches break from trees. Light structural damage.
10	55-63	89-102	48-55	Storm	Trees broken and uprooted. Considerable structural damage.
11	64-72	103-117	56-63	Violent Storm	Widespread damage to structures and vegetation.
12	>73	>117	>64	Hurricane	Considerable and widespread damage to structures and vegetation. Violence.

Table 8: Beaufort Scale of Wind Strength

3.2.3. Soil Characteristics

The soils in the Project area are characterised as Sodosols. Sodosols have a distinct subsoil (B horizon) marked by an accumulation of sodium. This high sodium concentration, accompanied with a number of factors such as, a significant clay component in the subsoil, low organic matter, low nutrient levels, and low water holding capacity causes the soil structure to be weak. When these soils are disturbed by wind and construction activities, fine particles may become airborne more easily, potentially contributing to dust and air quality issues.

4. ENVIRONMENTAL ASPECTS AND IMPACTS

4.1. Demolition Activities

Emissions to the atmosphere during demolition of the school structures that could result in adverse impacts to air quality are typically divided into two categories:

- Dust (Respirable, Inhalable, Silica)
- Fibres (Asbestos)
- Aerosols (Exhausts including Generators)

Key aspects of the project that could result in dust emissions include:

- Demolition of existing structures
- General Earthworks
- Vegetation clearing
- Bulk Earthworks
- Material handling including stockpiling, material loading and material haulage.
- Vehicle movements over unpaved surfaces
- Wind erosion of exposed areas and temporary stockpiles
- Uncovered vehicle loads
- Onsite crushing of waste materials (particularly concrete and blockwork)

Air emissions, other than dust, which may be generated by demolition activities include:

- Vehicle and plant exhaust emissions, which may be excessive if vehicles and plant are poorly maintained.

- Odours/gases released during:
  - Excavations of organic or contaminated materials
  - Storage of wastes onsite
  - Transportation of wastes offsite
  - Handling of chemicals, waste and hazardous materials
  - Spray painting

4.2. Factors likely to affect dust generation

In addition to inherent risks of specific construction activities creating the potential to generate dust, a number of other environmental factors also affect the likelihood of dust emissions. These factors include:

- Wind direction – determines whether dust and suspended particles are transported in the direction of the sensitive receivers.
- Wind speed – determines the potential suspension and drift resistance of particles.
- Soil type – As previously mentioned in section 3.2.3, more erodible soil types have an increased soil or dust erosion potential. (such as the Sodosols in the area)
- Soil moisture – Increased soil moisture reduces soil or dust erosion potential.
- Rainfall or dew – rainfall or heavy dew that wets the surface of the soil and reduces the risk of dust generation.

4.3. Impacts

The potential impacts on air quality will depend on a number of factors. Impacts will be dependent on the nature and extent of the demolition activities and their interaction with the natural environment. Potential impacts that may be caused from demolition activities include:

- Deposition of dust on surfaces where it may cause damage and/or lead or a need for increase cleaning or repair.
- Aesthetic effects that arise from visible airborne dust plumes and from deposits on dust surfaces.
- Need for increased maintenance of air filtering systems.
- Potential adverse health of effects of workers and surrounding residents, including eye, nose and throat irritation from inhalation of fine particles.
- Impacts on residential sensitive receivers, including impacts on living areas, swimming pools and general amenities.

- Impacts to local flora and fauna.
- Complaints from the public relating to dust or odours.

5. ENVIRONMENTAL MITIGATION AND MANAGEMENT MEASURES

Processes to be implemented to mitigate adverse impacts on air quality are outlined below:

General

- It is recommended that crushing activities take place North (downwind) of the main structures. Please refer Figure 2 for proposed Site Layout and proposed location for crushing activities.
- Training will be provided to all project personnel, including relevant sub-contractors on best air quality control practices and the requirements from this plan through inductions, toolboxes and targeted training. The training will also highlight the level of competency expected during the processing, handling, movement and storage of materials and substances used to carry out the activity to ensure impacts to air quality are minimised.
- Training of on-site personnel about the health effects of the hazardous materials likely to be encountered on site. (main contaminants of concern are asbestos, silica and dust.
- All demolition activities will be planned and undertaken to avoid, where practicable, the generation of dust and vehicle emissions.
- Weather forecasts for the project duration to be emailed/discussed with Project Manager, highlighting any potential risks, including high wind speeds and extended periods of dry weather.
- All delivery vehicles will have covered loads during transportation.
- Vegetation or other materials will not be burnt on site.
- Any paint, emulsion or spraying works will be rescheduled if planned to occur during periods of high winds.
- Shadow watering will be implemented, following the arm of the excavators and keep materials moistened and minimise the generation of dust particles.
- All stockpiles to wetted down, covered or dust suppression application applied.

Dust Emissions

- Due to the rural location of the site, it is recommended that background Real Time Dust Monitoring for PM_{10} and $PM_{2.5}$ is undertaken prior to site establishment to gain an understanding of background dusts in the area.

- Dust suppression techniques will be utilised in response to visible dust, such as watering dusty work areas and stockpiles.
- Sequencing of works will be managed to reduce the time of exposure of disturbed surfaces, as far as practicable.
- During dry and windy conditions, demolition and crushing activities will be monitored for the generation of wind-blown dust and modified or stopped as necessary as per the Beaumont Scale and through real time anemometer monitoring.
- Where required and possible, utilise erosion prevention products such as Dustbloc on access roads to reduce dust from travelling vehicles and plant.
- A water cart/truck will be available for dust suppression purposes during demolition, crushing and during any other times necessary.
- Loader and excavator operators to minimise the drop heights of loads into trucks and stockpiles.
- Cover unsealed site access roads with densely graded road base where practicable if dust is excessive.
- Vehicles will adhere to speed limits when driving on site and construction traffic will be restricted to designated roadways as per the contractors construction management plan.
- Should excessive dust be observed anywhere on or near the project site, actions to minimise the generation of dust will be implemented. This may include, but not limited to, increasing groundcover or watering.

Gaseous emissions

- All plant and equipment will be ensured to comply with Part 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2002.*
- Smoky emissions will be kept within the standards and regulations under the *Protection of the Environment Operations Act 1997.*
- Maintain all vehicles and construction equipment in good working order to prevent excessive exhaust emissions in accordance with the manufacturer's specification to comply with all relevant legislation.
- Turn machinery and vehicles off when not in use.
- Mobile plant pre-start inspection forms will include checks for emissions.
- If vehicle or equipment emissions are visible for greater than 10 continuous seconds, plant will be repaired/maintained prior to reuse on site.

6. COMPLIANCE MANAGEMENT

6.1. Training

All employees, contractors and staff working on site will undergo site induction training relating to air quality management and dust suppression. The training will include:

- Locations of sensitive receivers
- Stockpile management
- Truck load coverage
- On site speed limits
- Maintenance of equipment and vehicles to reduce emissions
- Health effects of the contaminants of concern.

Targeted training will also be provided to personnel with a key role in air quality management. Example training topics include:

- Erosion control methodology and maintenance
- Planning for high wind events
- Planning for shutdown periods and weekends.

6.2. Monitoring and Inspection

Regular monitoring and inspections will be undertaken during demolition and crushing activities. Monitoring and inspections will include but not limited to:

- Daily visual monitoring during works in order to proactively manage any uncontrolled dust emissions.
- Weather data at the premises, including rainfall measured and recorded in millimetres per 24 hour period at the same time each day, as well as real time wind speed.
- Constant air monitoring during demolition and crushing activities, specifically $PM_{2.5}$, PM_{10}, and Silica
- Asbestos Air Monitoring during asbestos removal works.

6.3. Licences and permits

The Scope of Works as well as the CEMP/ Demolition plans will outline required licenses and permits.

6.4. Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this plan, REF and other relevant approvals, licences and guidelines.

6.5. Reporting

Asbestos clearance reports will be delivered upon completion of removal works, on a as needs basis in order for demolition works to proceed in a timely manner.

Monthly reports will be provided for the duration of the demolition works to the client. Non-conformances/ exceedances of real time dust monitors will be reported to the site manager and implementation of further control measures will be undertaken.

Upon completion of the demolition a final report summarising findings throughout the duration of the project will be prepared.

Daily air monitoring results will be provided at pre-starts and toolbox talks. All results will be provided to the client, the contractor and other stakeholders as agreed. On-site air monitoring results will be published in the contractor's lunchroom and be available for other stakeholders that visit site.

7. Review and improvement

7.1. Continous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

7.2. AQMP update and amendment

Changes to the Demolition Plan may result in the need to update or revise this Plan. This will occur as needed.

Only the Site Manager, Clients Representative in conjunction with the Independent Occupational Hygienist, or delegate, has the authority to change any of the Air Quality Management Plan documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure.