

Air Quality and Dust Management Plan (AQDMP)

Tamworth Hospital

31 to 35 Dean Street, Tamworth NSW 2340



Health Infrastructure
Report No.: 51269_R01
May 2025

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1. INTRODUCTION

EnviroScience Solutions Pty Ltd (ESS) was engaged by Health Infrastructure to prepare an Air Quality and Dust Management Plan (AQDMP) for Tamworth Palliative Care Project (WCEoLP) in Tamworth Hospital. The Tamworth Palliative Care Project is an extension on their Nioka unit which is co-located with a general medical inpatient unit on the ground level of the existing Acute Services Building (ASB) to improve their Palliative Care beds for the Hunter New England Local Health District. If the expansion includes demolition and onsite crushing of waste materials, it must adequately identify, assess, and manage the expected air quality and dust impacts from the demolition, ensuring sufficient detail 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 construction in Tamworth Hospital, 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 (PM₁₀ 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 31 to 35 Dean Street, Tamworth, NSW 2340, which is on the northern perimeter of the town and approximately 2.4km from the centre of town.

The property is described as Lot 1 Deposited Plan (DP) 1181268 and covers an area of approximately 20.76 hectare (ha) with the site area being approximately 0.15ha (figure 2) with zoning of R1- General Residential.

Tamworth Hospital was originally built in 1860. However, the Hospital underwent a major redevelopment project which commenced in 2013 and was completed in 2015. The Tamworth Palliative Care Project expands the Nioka unit, which is co-located with a general medical inpatient unit on the ground floor of the existing Acute Services Building (ASB). This extension aims to enhance palliative care bed availability for the Hunter New England Local Health District.

The new footprint will provide six perimeter single bedrooms with staff support areas, and a new staff station. A single-story palliative care development will encompass the following areas below:

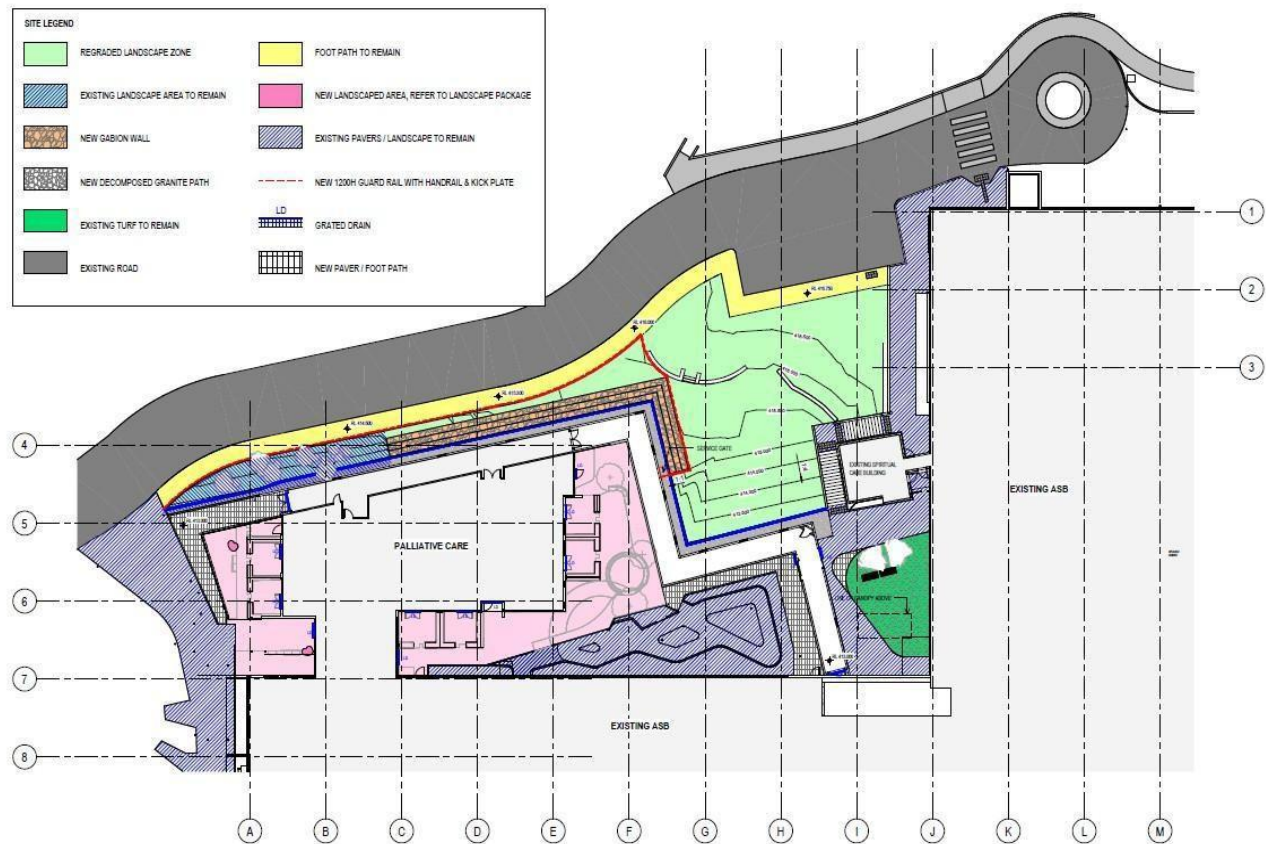
- Six (6) Bedrooms with Patio and Ensuites;
- Dining/Recreation, Lounge, Toilet;
- Laundry & Ablution Room;
- Overnight Room;
- Two (2) Staff Stations, Clinical Office;
- Staff Room, Meeting Room;
- Medication, Clean & Dirty Utility Rooms;
- Two (2) Storage Rooms; and
- Bay Areas: Beverage, Handwashing, Linen, Equipment, Trolleys.

Courtyards will surround the new unit, and the extension includes an enclosed link corridor back into the ASB lift lobby within the ASB.

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



Figure 1 : Site Map



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HEALTH INFRASTRUCTURE
NSW Health
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Project
**WORLD CLASS END OF
LIFE PROGRAM -
TAMWORTH PALLIATIVE
CARE**

Revision
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Drawing
SITE PLAN

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Figure 2 : Site Compound Layout

1.2.1. Surrounding Land Use

Direction from site	Land Use
North	To the north of the hospital is White Box- White Cypress Pine- Silver-leaved Ironbark grassy open woodlands with sparse vegetation (ID 589)*
South	Rural Commercial and Residential Properties
East	Rural Commercial and Residential Properties
West	Rural Commercial and Residential Properties

Table 1: Site Surrounding Area

*Trees Near Me NSW ID: <https://www.treesnearme.app/explore>

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 Tamworth Hospital perimeter.

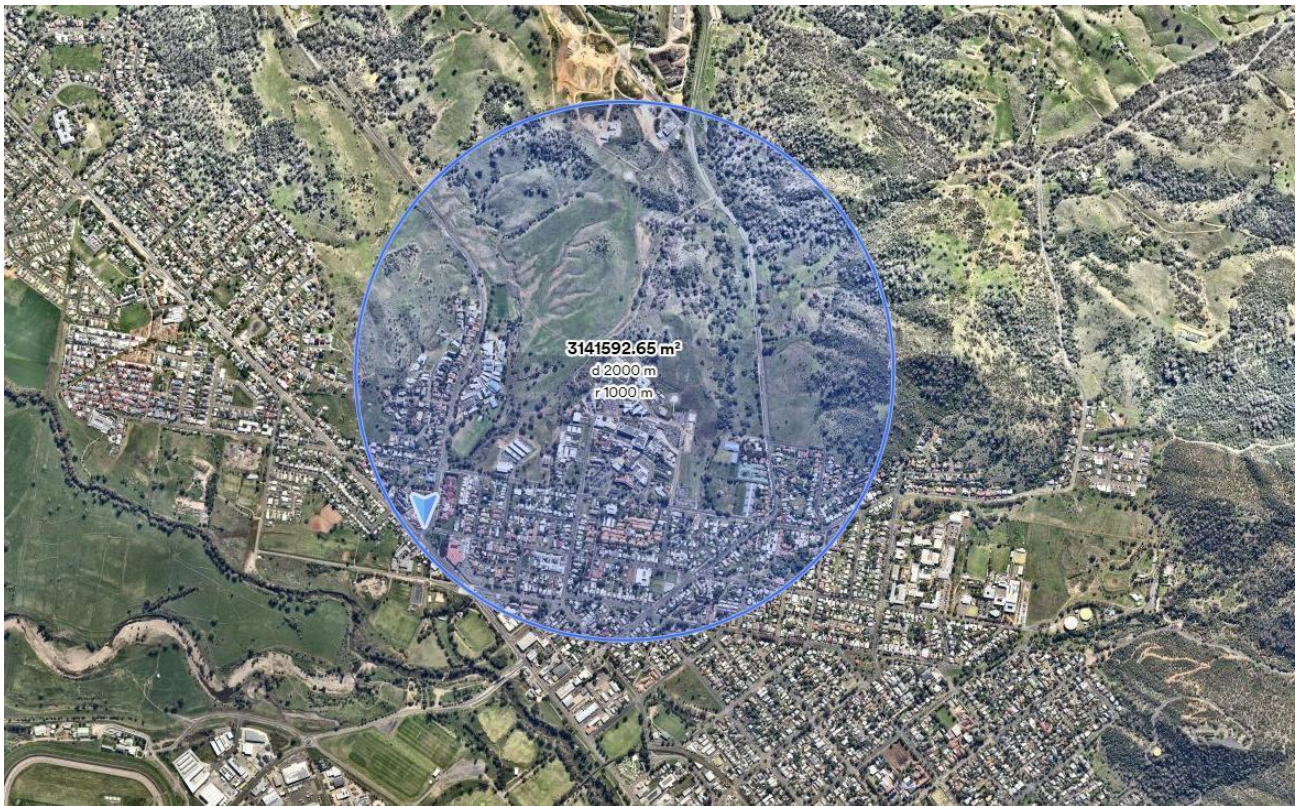


Figure 3: 1km radius of Project Site



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 PM₁₀ 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/m ³ (NEPM Standard)
PM _{2.5}	24 hours	25 µg/m ³ (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. Respirable and Respirable Crystalline Silica (RCS) Dusts

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 0-7 μ m and are 100% respirable at 0 μ m and approximately 10% respirable at 7 μ m 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).

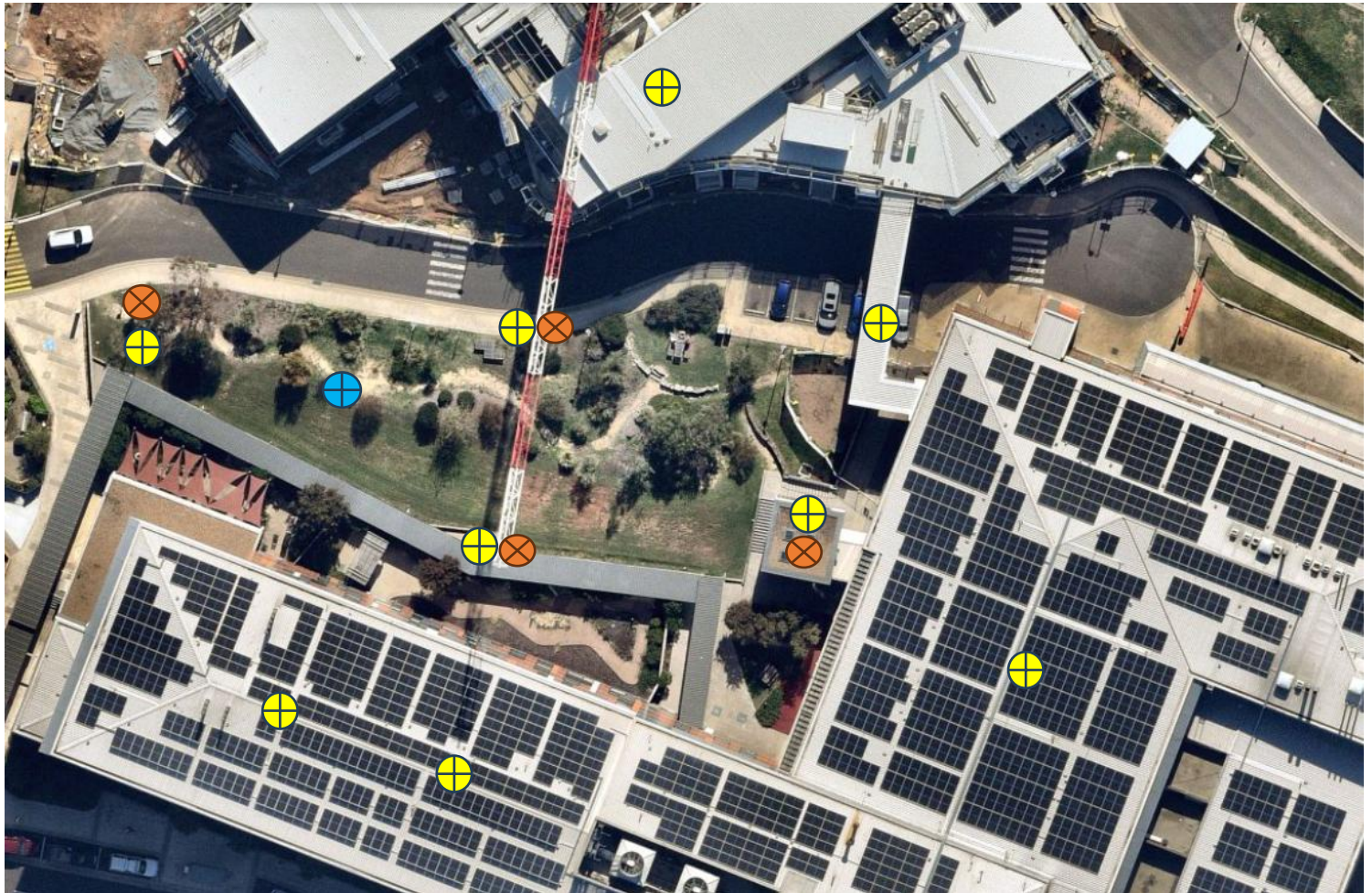
Silicosis causes a slow progressive fibrosis of the lungs and impairment of the lung function and is an irreversible lung disease that potentially can lead to permanent disablement and early death, this is made more severe for exposed workers that smoke (WorkSafe Queensland, 2018).

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 PM₁₀ and PM_{2.5} for a one (1) day period, shown in table 5 below.

Pollutants	Period of time	Maximum Concentration Standard
Particle PM ₁₀	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 western site perimeter.

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 PM₁₀ 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 Figures 5 and 6 for visual representations of the average wind speeds and directions in the area. A map showing the sample locations is provided in Figure 3. Wind typically originates from various directions, with no single prevailing direction. The sensitive receivers include adjacent hospital occupants and local residents, who are predominantly located to the south of the site.

3.2. Local Meteorological Conditions

3.2.1. Air Quality Records

A search of the National Pollutant Inventory was undertaken on June 30, 2024. Search results of substances emitted to the air within the Tamworth LGA during the 2023-2025 reporting period identified thirty-two (32) facilities emitting substances in the area.

The closest identified source of air pollution is the AMM Poultry NSW PTY LTD (Ammonia), approximately 50.4km southwest of the project site, and Ampol Tamworth Depot (Xylenes, Toluene.

Ethylbenzene, Total Volatile Organic Compounds, n-Hexane) approximately 8.4km south-east of the project site.



Rose of Wind direction versus Wind speed in km/h (07 Feb 1992 to 10 Aug 2024)

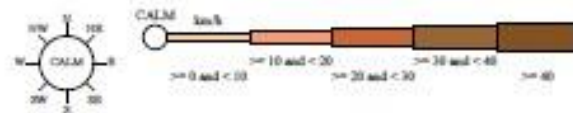
Custom time selected, refer to attached note for details

TAMWORTH AIRPORT AWS

Site No: 055325 • Opened Jan 1992 • Still Open • Latitude: -31.0742° • Longitude: 150.8362° • Elevation 394m

An asterisk (*) Indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



9 am
11174 Total Observations

Calm 6%

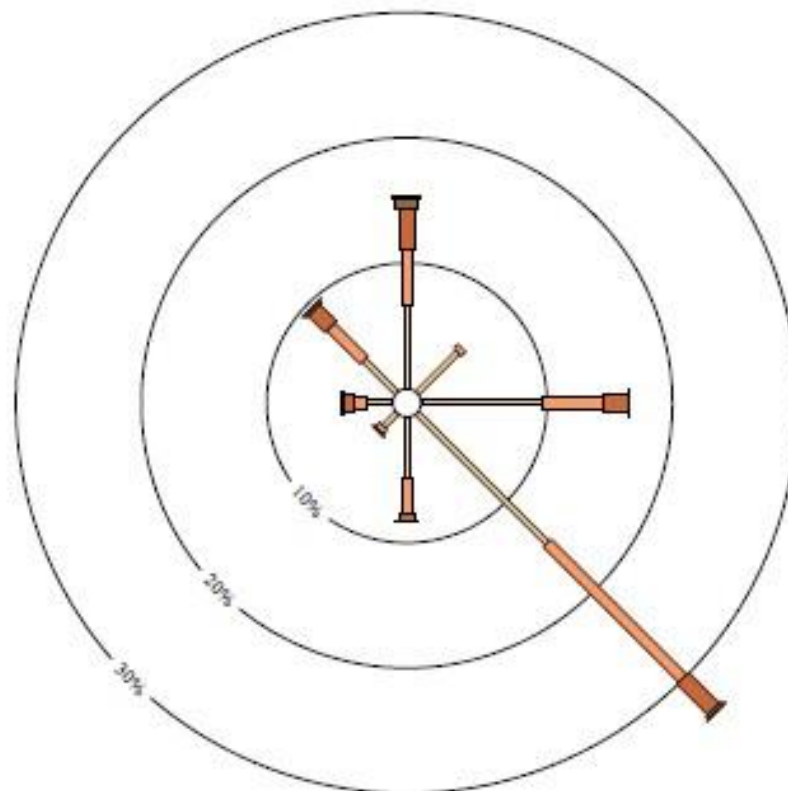


Figure 5: Bureau of Meteorology- Rose of Wind direction versus Wind Speed in km/h at 9am (07 February 1992 to 10 August 2024)



Rose of Wind direction versus Wind speed in km/h (07 Feb 1992 to 10 Aug 2024)

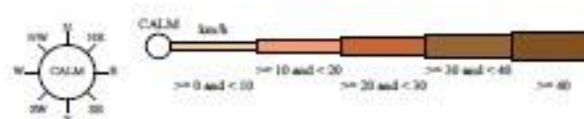
Custom times selected, refer to attached note for details

TAMWORTH AIRPORT AWS

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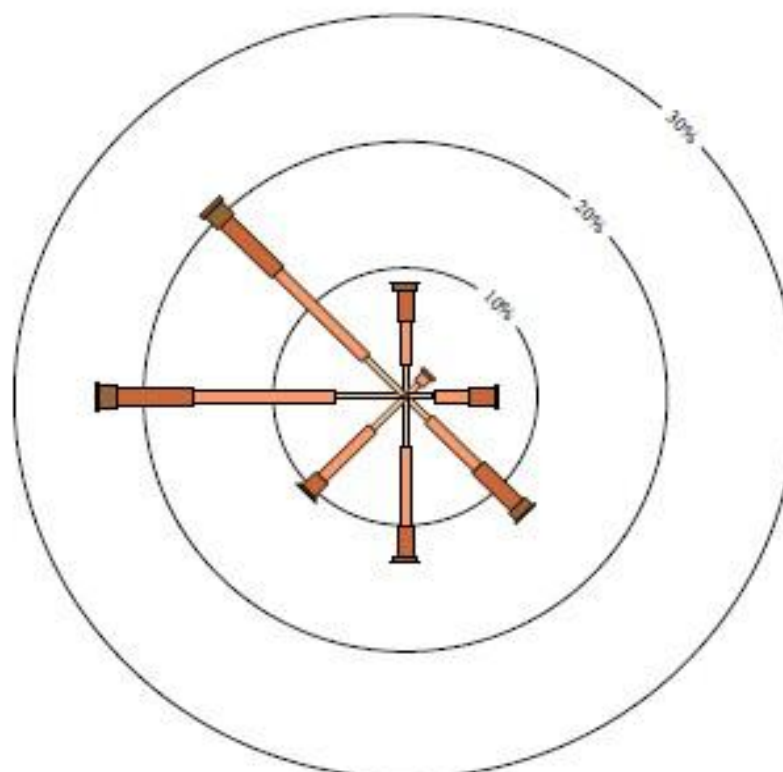
An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



3 pm
11220 Total Observations

Calm 1%



**Figure 6: Bureau of Meteorology- Rose of Wind direction versus Wind Speed in km/h at 3pm
(07 February 1992 to 10 August 2024)**

3.2.2. Rainfall, soil dryness and wind

Local meteorology and wind 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 Tamworth Airport AWS (station number 055325), located approximately 9.7km from the project site. The climatic data from 1992-2025 is presented in Table 7 below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean Rainfall (mm)	61.5	70.4	66.7	30.1	29.4	54.8	40.9	39.4	45.4	57.7	83.1	77.1	656.9
Mean number of rain days >1mm	5.4	5.7	5.3	2.9	3.5	5.3	5.0	4.2	4.7	5.6	7.0	6.3	60.9
Mean number of clear days	na	na	na	na	na	na	na	na	na	na	na	na	na
Mean 9am wind speed(km/h)	12.9	12.2	11.6	9.9	9.5	9.1	9.3	10.2	11.5	12.8	13.1	12.5	11.2
Mean max temp (°C)	33.0	31.7	29.4	25.4	20.8	17.0	16.5	18.6	22.1	25.7	28.6	30.9	25.0

Table 7: Monthly Climate data averages for BOM station 055325 from 1992-2025 (Tamworth Airport)



Average wind speed and direction plots for Tamworth AWS between February 1992 and August 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 West, and South-East.

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 soil at Tamworth Hospital consists of residual clays and weathered siltstone and sandstone. It includes silty sand (SM), sandy silt clay (SM), or clayey silt (SM) with low plasticity, typically brown to dark brown, containing fine organic materials and varying amounts of fine to coarse gravel. When disturbed by wind or construction activities, fine particles may become airborne more easily, potentially contributing to dust and air quality concerns.

4. ENVIRONMENTAL ASPECTS AND IMPACTS

4.1. Demolition Activities

Emissions to the atmosphere during demolition of 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 to a need for increased 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

- 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 PM₁₀ 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}, PM₁₀, 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. Continuous 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 procedures.