Air Quality

Watch the video explanation

INTRODUCTION

This factsheet helps to explain the results of the Air Quality Impact Assessment (AQIA) and how air quality will be managed and monitored at the Woodlawn Advanced Energy Recovery Centre (ARC). It also explains how air quality is assessed and managed in Australia.

ARC AIR QUALITY IMPACT ASSESSMENT AT A GLANCE

Independent experts have carried out a detailed assessment of the predicted impact of the ARC on local air quality and any potential impacts to human health and the environment. The AQIA has shown the following results:

- The predicted air quality levels for the ARC are well below the limits set by the NSW Environment Protection Authority (EPA).
- The introduction of the ARC will not significantly change the current air quality from the Woodlawn Eco Precinct.
- The project has adopted the best available technology for controlling air pollutant emissions.
- The air quality impact at sensitive locations (schools, residential areas, agriculture, etc.) is predicted to be negligible.
- It is predicted the ARC will not generate odour, as it has been specifically designed to prevent odour emissions.

The predicted air quality levels for the ARC are well below the limits set by the NSW Environment Protection Authority.

REGULATION

There are strict rules on managing air quality

The NSW Government has implemented a strict set of rules relating to the management of environmental impacts from energy recovery facilities, including air quality. These rules are independently overseen and regulated by the Environment Protection Authority to ensure the safety of local people and the environment.

The ARC is required to meet current international best practice standards for emission control technology. In addition, the NSW Government updated its NSW Energy from Waste Policy Statement with a set of air quality criteria that is the most stringent in the world. These standards were reviewed by the NSW Chief Scientist, then adopted for the ARC project by being applied to the air quality assessment undertaken for the EIS.

AIR QUALITY IMPACT ASSESSMENT

Detailed air quality and health assessments have been undertaken as part of the planning process, and are available in Chapter 8.1 of the EIS.

Any Air Quality Impact Assessment (AQIA) completed in NSW is required to follow guidelines from the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales. This covers five primary components:

1. **Baseline analysis** of 'sensitive receivers' (e.g. residential properties, schools, churches, etc.) in the surrounding region. Real-world local and regional monitoring data is gathered to assess trends in current air pollution concentrations and weather conditions.
2. **Meteorological modelling** of the local terrain, land surface and elevation.
3. **Air pollution emission rate calculations** to model emission dispersion.
4. **Atmospheric dispersion modelling** to predict atmospheric emission dispersion specific to the surrounding environment.
5. An **air quality impact assessment** is then prepared to present the results of the findings of the above assessments.

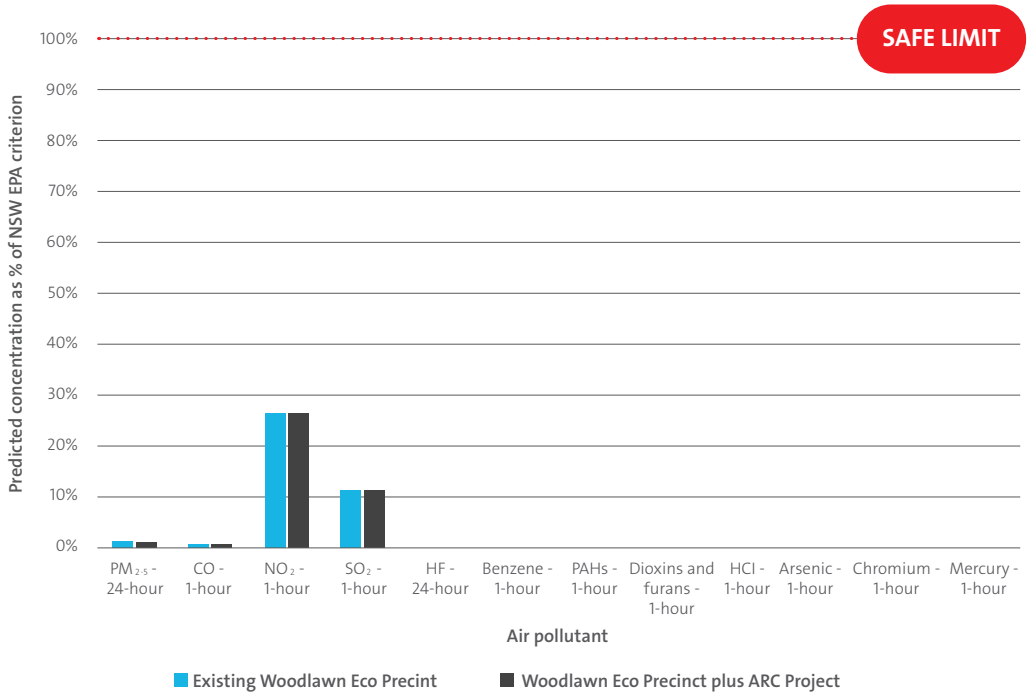
A CLOSER LOOK AT THE ARC ASSESSMENT UNDERTAKEN:

Three emission scenarios were developed for the ARC and the impacts of each were modelled. These included two 'reference case' scenarios using 12 months of real-world emissions data from a comparable operating Veolia-owned Energy from Waste facility in Staffordshire in the United Kingdom.

The first represents expected emissions from the ARC under normal operations, and the second represents maximum (worst case) emissions. In addition, a third scenario represents the 'regulatory case', which adopted the new stringent emission limits documented in the NSW Energy from Waste Policy Statement (EPA 2021a).

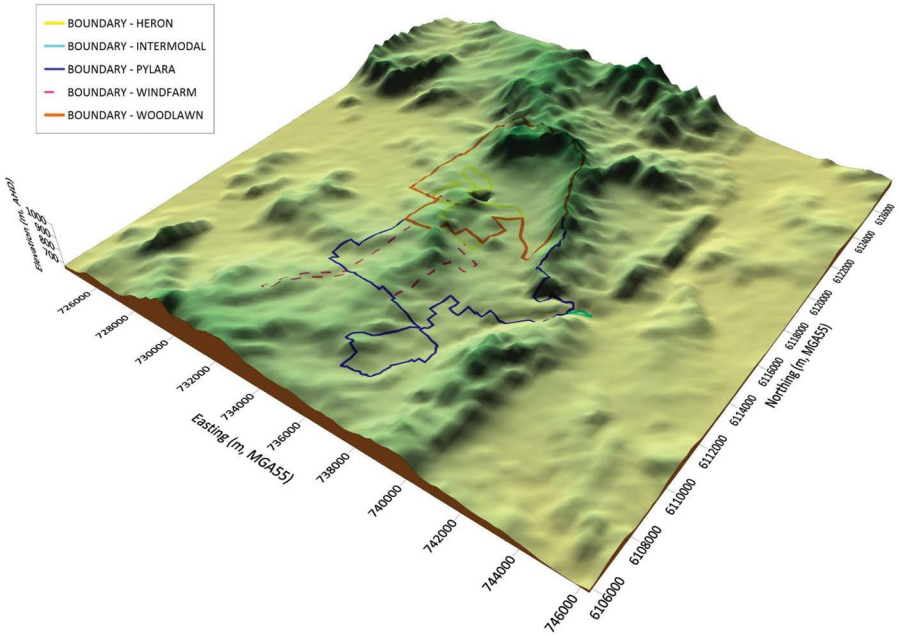
To account for local conditions surrounding the Eco Precinct, the assessment included the development of a site specific model using three-dimensional terrain datasets, land cover data, and meteorological datasets from the Eco Precinct weather station. This allowed the prediction of ARC emissions dispersion in the conditions experienced in the local area. The Air Quality Impact Assessment found that for all modelling scenarios, including the maximum worst case, the introduction of the project will not significantly change air quality impacts currently associated with the Eco Precinct.

The graph below shows the predicted concentration of different air pollutants from the ARC, as a percentage of the NSW EPA Environment Protection Authority's permitted relevant impact assessment criteria.

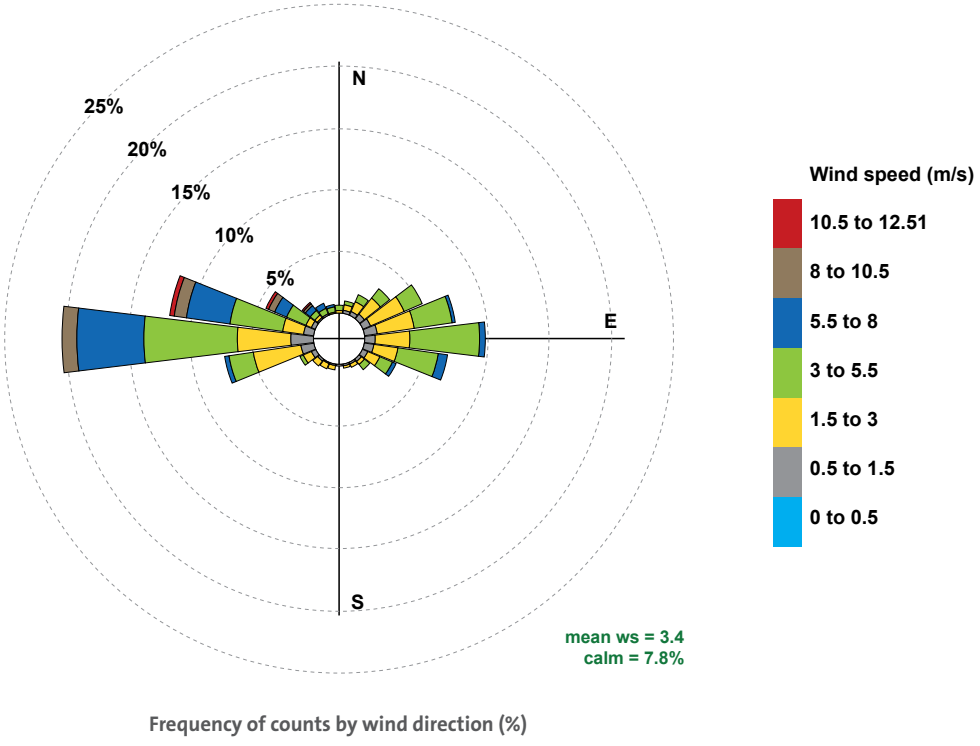


The AQIA also found that air quality impacts associated with the Woodlawn Eco Precinct are minor at surrounding sensitive assessment locations, including homes, farms and the local school.

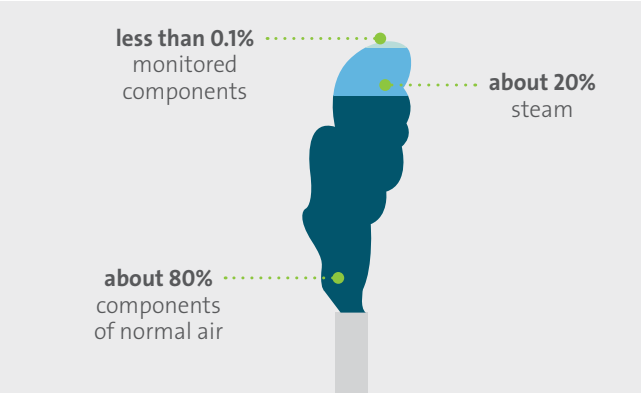
Figure 1 presents the three dimensional terrain surrounding the Woodlawn Eco Precinct. This terrain was used as input to the modelling to influence predicted wind speed and direction across the region and the predicted dispersion of air pollution emissions.



The Eco Precinct meteorological station records parameters such as wind, temperature, and rainfall. Long term records from the Eco Precinct meteorological station were analysed to understand prevailing winds in the area. The wind rose plot in figure 2 shows the frequency of recorded wind speed and direction (wind blowing from). There is a dominance of westerly and easterly air flow and this has been incorporated into the dispersion modelling for the Woodlawn ARC project air quality impact assessment.



What comes out of the stack?
Almost 80 percent of what comes out of the stack is made up of components of normal air, such as nitrogen, oxygen, argon and carbon dioxide. About 20 percent is steam, which may be visible during certain weathers. Less than 0.1 percent of emissions are compounds that need to be monitored against health guidelines.



Mitigations
The ARC will implement a range of emission mitigation technologies and practices, including:

- Diversion of all flue gas through a sophisticated baghouse containing filter bags to remove particulates
- The injection of hydrated lime to neutralise acid gas formation
- The injection of activated carbon to adsorb chemicals
- A fully enclosed tipping hall with fast opening doors, negative pressure extraction and an odour filtration system to minimise odour emission release

MONITORING

Air quality will be continuously monitored and results published.

Veolia currently undertakes air quality monitoring in and around the Woodlawn Eco Precinct to ensure air quality in the surrounding areas is not adversely affected by operations. If the project is approved, this monitoring will be extended to include the ARC, with likely three air quality monitoring stations being installed; one upwind of the Eco Precinct, one downwind of the Eco Precinct and one in the town of Tarago.

The ARC design includes a flue gas treatment system to manage air emissions during operation. In line with environmental regulations, the ARC will have continuous emission monitoring systems in place which will automatically react to changes in flue gas conditions.

This ensures the combustion and cleaning processes remain efficient and adaptable, and that operating staff are alerted and can quickly respond to changing circumstances.

We expect to remain within our licenced limits, and to demonstrate that, emissions from the facility will be monitored continuously, with the results closely scrutinised by the EPA.

Veolia will make emissions monitoring data available to the EPA in real time, as required by the NSW Energy from Waste Policy Statement. Details of the regular air quality reports are also required to be published on the Woodlawn Eco Precinct website.

FOR FURTHER INFORMATION

If you would like to find out more about how air quality will be managed at the ARC, or would like to talk to one of our team, please contact us via:

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