AMBIENT AIR QUALITY

ASSESMENT REPORT

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This report provides an evaluation of ambient air quality at 1492 Ferntree Gully Road, Knoxfield, Australia, aimed at gaining deeper insights into the prevailing atmospheric conditions. The purpose of such assessments is to measure pollution levels, identify sources of emissions, assess potential health implications, and track air quality trends over time. These evaluations are crucial for reviewing the effectiveness of previous environmental measures and detecting new areas of concern. They serve as an important tool for data-driven decision-making and shaping future strategies.

COMPANY OVERVIEW

Ecotech is a renowned company engaged in mining activities, with a particular focus on iron ore extraction. Operating within Australia, the company strictly complies with the Victorian Environment Protection Authority (EPA) regulations. As part of its licensing conditions, Ecotech is obligated to conduct regular environmental monitoring to ensure compliance with the Australian National Environmental Protection Measure (NEPM). The company's primary environmental surveillance efforts are centered around tracking particulate matter (PM10), gaseous pollutants, and meteorological factors.

OBJECTIVE

The main goal of this assessment is to systematically analyze and interpret air quality while focusing on two critical aspects: Continuous Emissions Monitoring System (CEMS) and Ambient Air Quality. This evaluation ensures a comprehensive understanding of air pollution levels, their sources, and potential environmental impacts. The following methodologies are applied:

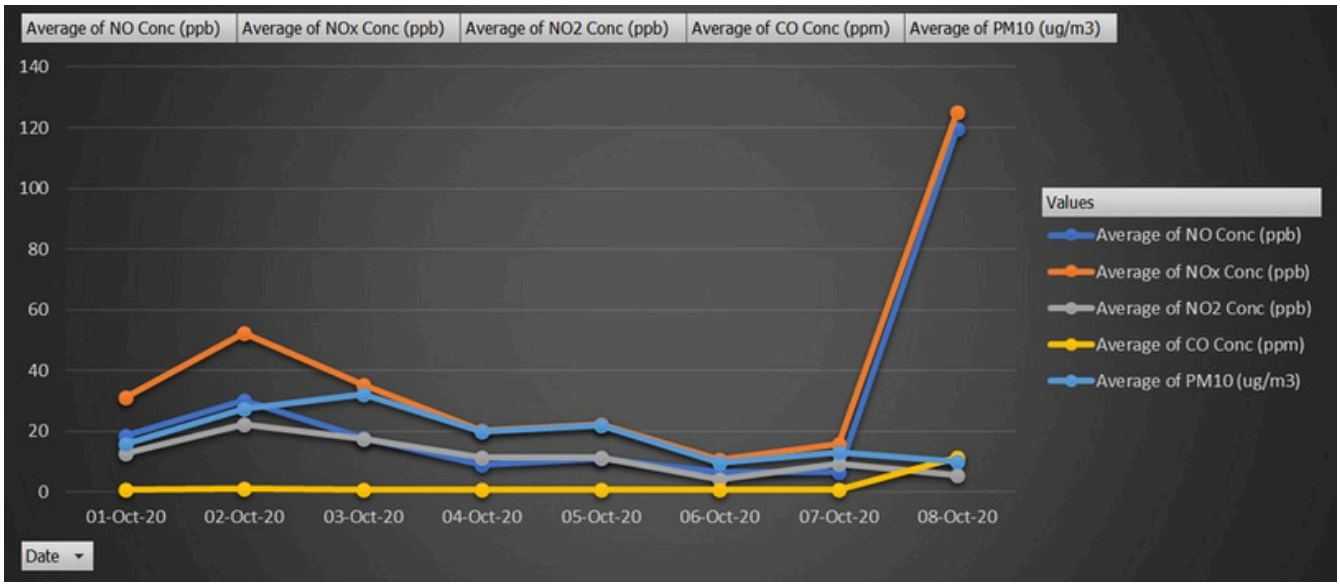
- Continuous Emissions Monitoring System (CEMS): Analyzes real-time emissions data to track pollutant levels, ensuring compliance with environmental regulations and identifying trends in industrial emissions.
- Ambient Air Quality: Measures key air pollutants, including particulate matter (PM10), carbon monoxide (CO), and nitrogen dioxide (NO2), to assess fluctuations in air quality. Carbon Monoxide (CO): Measured in 8-hour
- intervals to monitor long-term exposure patterns and identify pollution sources. Nitrogen Dioxide (NO2): Monitored hourly to capture short-term
- variations and assess potential health risks. Particulate Matter (PM10): Analyzed on a daily basis to evaluate trends and detect changes in pollution
- levels over time.

WEEKLY REPORT ON AIR QUALITY DATA ANALYSIS

Daily Measurements of Key Pollutants Over the Course of a Week

This report provides an overview of air quality data, focusing on Continuous Emissions Monitoring System (CEMS) parameters and ambient air pollutants. The table below presents the daily average concentrations of key pollutants recorded over a one-week period. The analysis includes Nitric Oxide (NO), Nitrogen Oxides (NOx), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), and Particulate Matter (PM10).

Row Labels	Average of NO Conc (ppb)	Average of NOx Conc (ppb)	Average of NO2 Conc (ppb)	Average of CO Conc (ppm)	Average of PM10 (ug/m3)
01-Oct-20	18.35814025	31.06026329	12.70212363	0.726989688	15.80852083
02-Oct-20	30.1881117	52.4029219	22.21481317	0.924896686	27.48136806
03-Oct-20	17.74653606	35.37187342	17.62533885	0.890629492	32.17505556
04-Oct-20	8.855672138	20.08345868	11.22778682	0.817714534	19.81751389
05-Oct-20	10.92571713	22.18781092	11.26209492	0.767271731	21.80956944
06-Oct-20	6.503432622	10.79011265	4.286680425	0.661272153	9.467875
07-Oct-20	6.633738955	15.7915454	9.157806655	0.748776713	13.18070139
08-Oct-20	119.512742	125.067433	5.5546744	11.21845495	10.02569231
Grand Total	**14.84797147**	**27.44209792**	**12.59412734**	**0.857887926**	**19.89927452**



OBSERVATIONS

- NO, NOx, and NO_2 concentrations varied significantly over the monitoring period, indicating potential influences such as industrial emissions, vehicular traffic, and atmospheric conditions.
- The highest NO and NOx concentrations were recorded on October 8, 2020, which may be linked to increased emissions from nearby sources or unfavorable weather conditions that prevented pollutant dispersion.
- PM10 concentrations fluctuated throughout the monitoring period, likely and influenced by traffic, industrial activity, construction work, meteorological factors. The highest PM10 concentration was observed on
- October 3, 2020 (32.18 µg/m³), which could be attributed to higher vehicular movement, industrial activities, or stagnant air conditions that prevented pollutant dispersion. A significant decline in PM10 levels was noted on October
- 6, 2020 (9.47 µg/m³), possibly due to favorable weather conditions, reduced emissions, or pollution control measures. Carbon Monoxide (CO) levels remained low for most of the week, except for October 8, 2020, when there
- was a noticeable spike (11.22 ppm), indicating a possible emission event. The overall weekly average PM10 concentration was 19.90 µg/m³, which remains within permissible limits set by environmental regulations.
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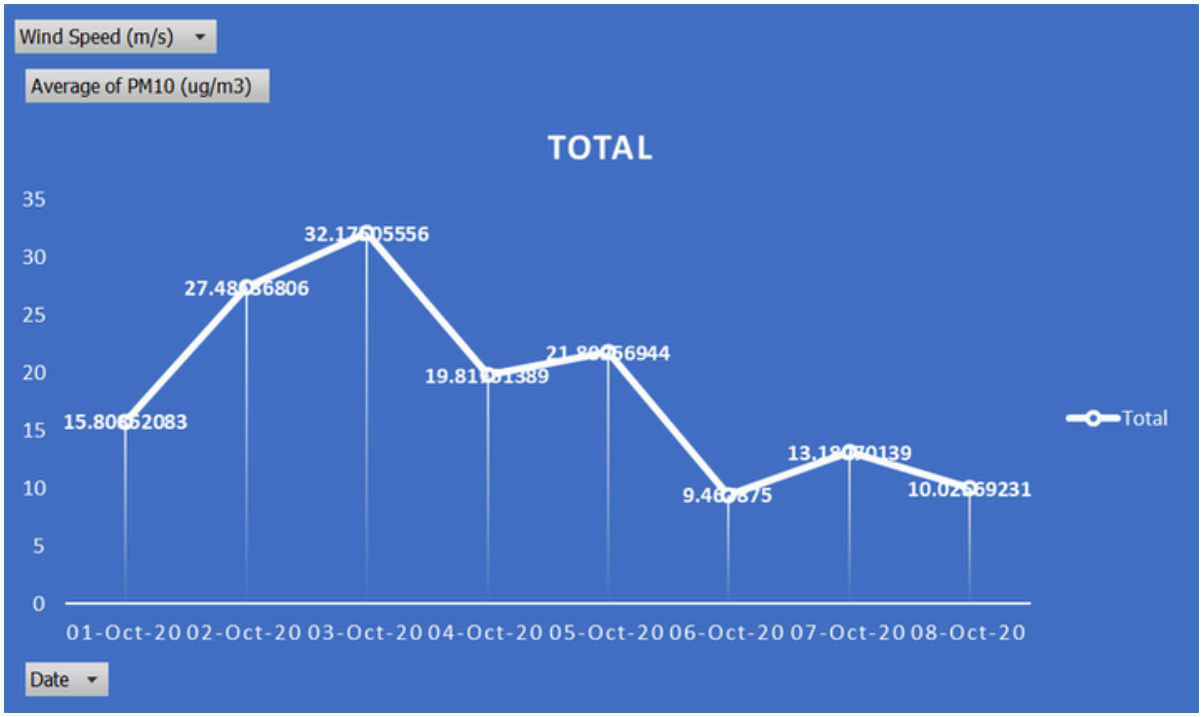
AMBIENT AIR ANALYSIS

Weekly Report on Particulate Matter (PM10) Data Analysis

The following table presents the daily average PM10 concentrations (µg/m³) recorded over the monitoring period, categorized by date. Wind speed, industrial activities, and meteorological conditions likely influenced the observed variations.

Wind Speed (m/s) (All)	
Row Labels	**Average of PM10 (ug/m3)**
01-Oct-20	15.80852083
02-Oct-20	27.48136806
03-Oct-20	32.17505556
04-Oct-20	19.81751389
05-Oct-20	21.80956944
06-Oct-20	9.467875
07-Oct-20	13.18070139
08-Oct-20	10.02569231
Grand Total	**19.89927452**



OBSERVATIONS

- PM10 concentrations varied significantly throughout the monitoring period, influenced by vehicular emissions, industrial activities, and meteorological conditions. The highest PM10 concentration was recorded on October 3,
- 2020 (32.18 µg/m³), which may be due to increased traffic, industrial emissions, or weather conditions favoring pollutant accumulation. A sharp decline in PM10 levels was observed on October 6, 2020 (9.47 µg/m³), likely
- resulting from favorable meteorological conditions, lower pollution sources, or improved dispersion due to wind speed. The average PM10 concentration over the week was 19.90 µg/m³, indicating moderate air quality conditions
- during the monitoring period. All recorded values remained within regulatory limits, ensuring that air pollution levels were not hazardous to
- public health.

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CONCLUSION

- The ambient air quality at the monitored location remained within regulatory standards for NO, NO_2, NO_x, CO, and PM10 throughout the assessment period. PM10 concentrations fluctuated over the week but remained below the
- permissible limit of 50 µg/m³, with the highest recorded value being 32.18 µg/m³ on October 3, 2020.

- CO levels exhibited expected variations, potentially influenced by atmospheric conditions and local emissions sources. The data collected
- through Continuous Emissions Monitoring System (CEMS) and ambient air quality analysis provides valuable insights for future monitoring, air quality management, and policy decisions. Regular monitoring and proactive
- mitigation strategies will be essential to maintaining air quality within safe limits and minimizing environmental risks.