



Existing Air Quality Monitoring Networks: Background

Adam Gilligan, Regional Director North

The NSW Environment Protection Authority protects our environment and community – our air, waterways, land and health of the community – by working with communities, government and business.

NSW EPA

Leader

Partner

Protector

We hold people and organisations to account through:

Licensing | Monitoring | Regulation | Enforcement

PARTICLE MATTER - SIZE AND POLLUTION MEASUREMENT EXPLAINED – EXAMPLE, THE HUNTER REGION.

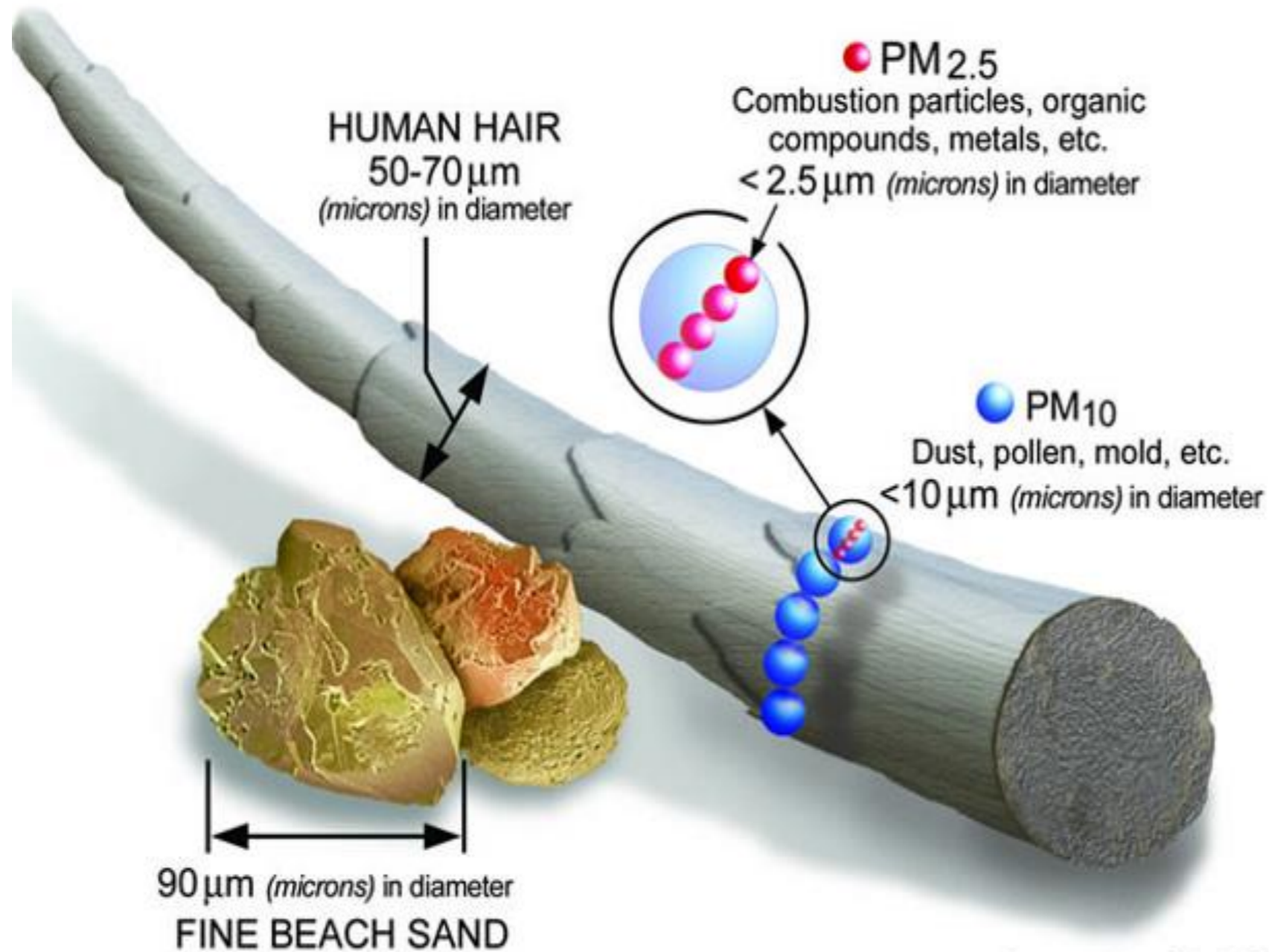


Image courtesy of the U.S. EPA

Particle size is measured in micrometres or μm.

1 μm = 1 millionth of a metre

PM_{2.5} ≤ 2.5 μm diameter

PM₁₀ ≤ 10 μm diameter

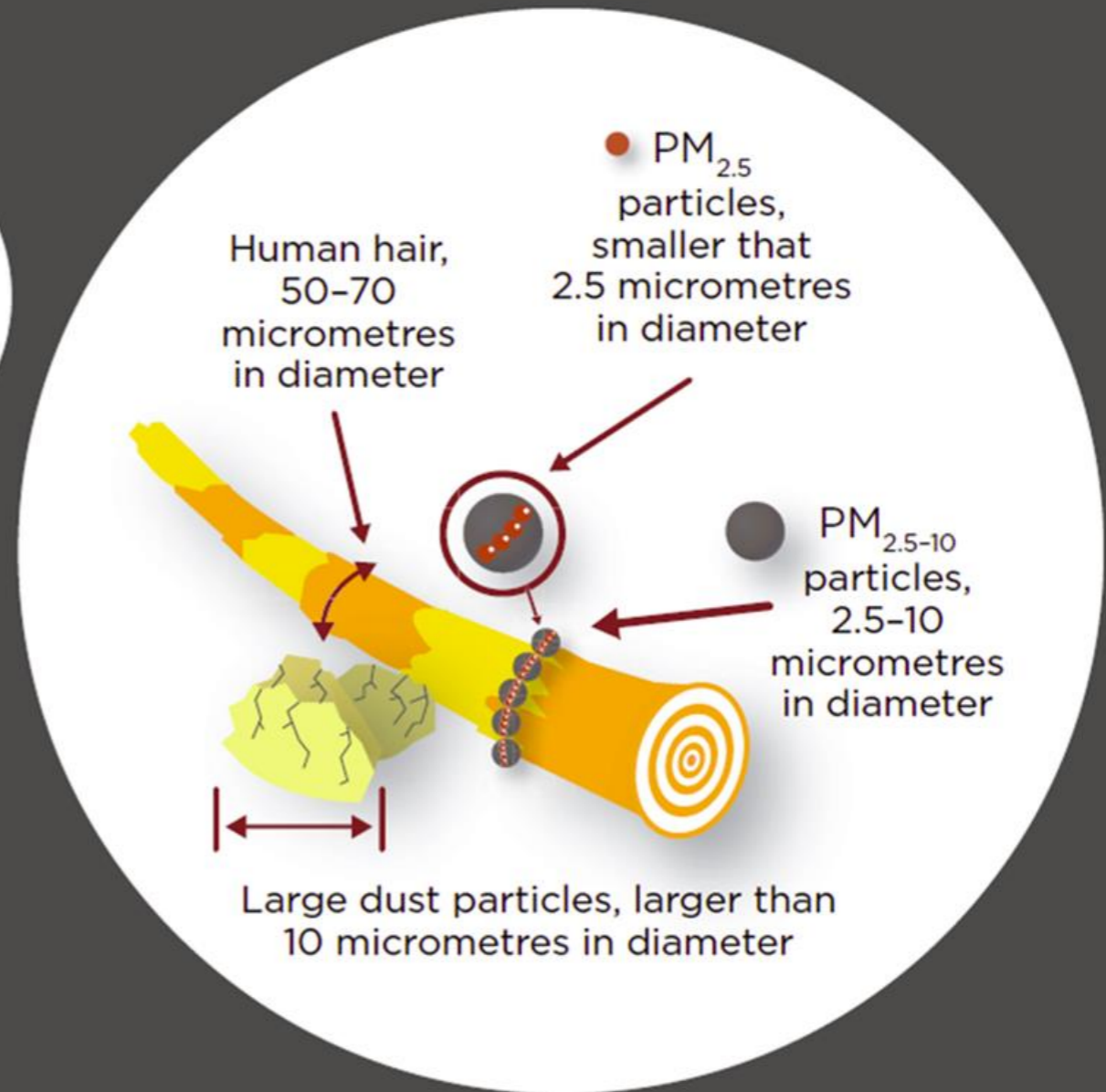
PARTICLE MATTER – WHY SIZE MATTERS

Health effects

Small particles $PM_{2.5}$ and $PM_{2.5-10}$ cause the most concern for human health. They are invisible to the naked eye and can be inhaled into the lungs.



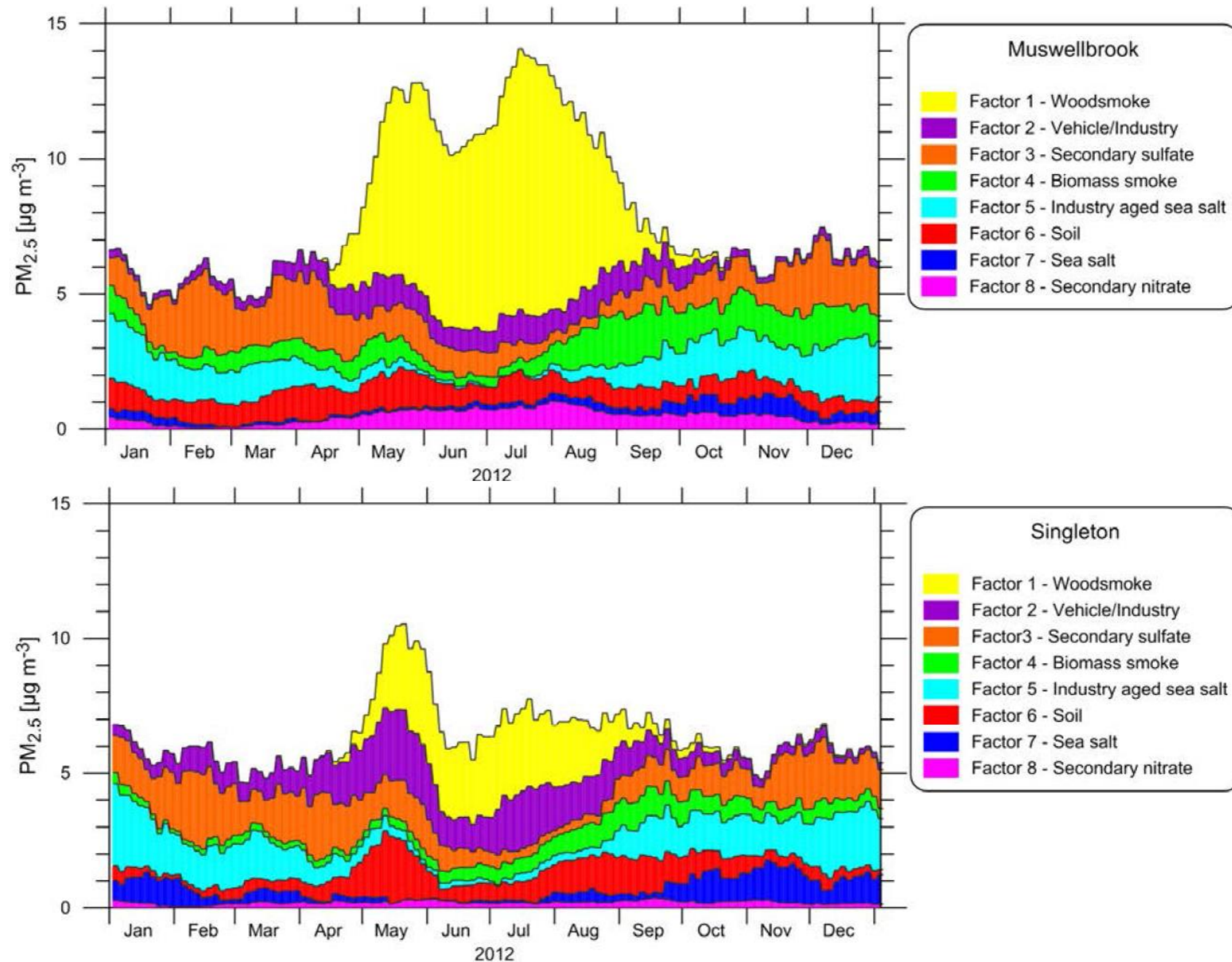
The elderly, children and people with existing heart and lung problems are most at risk.

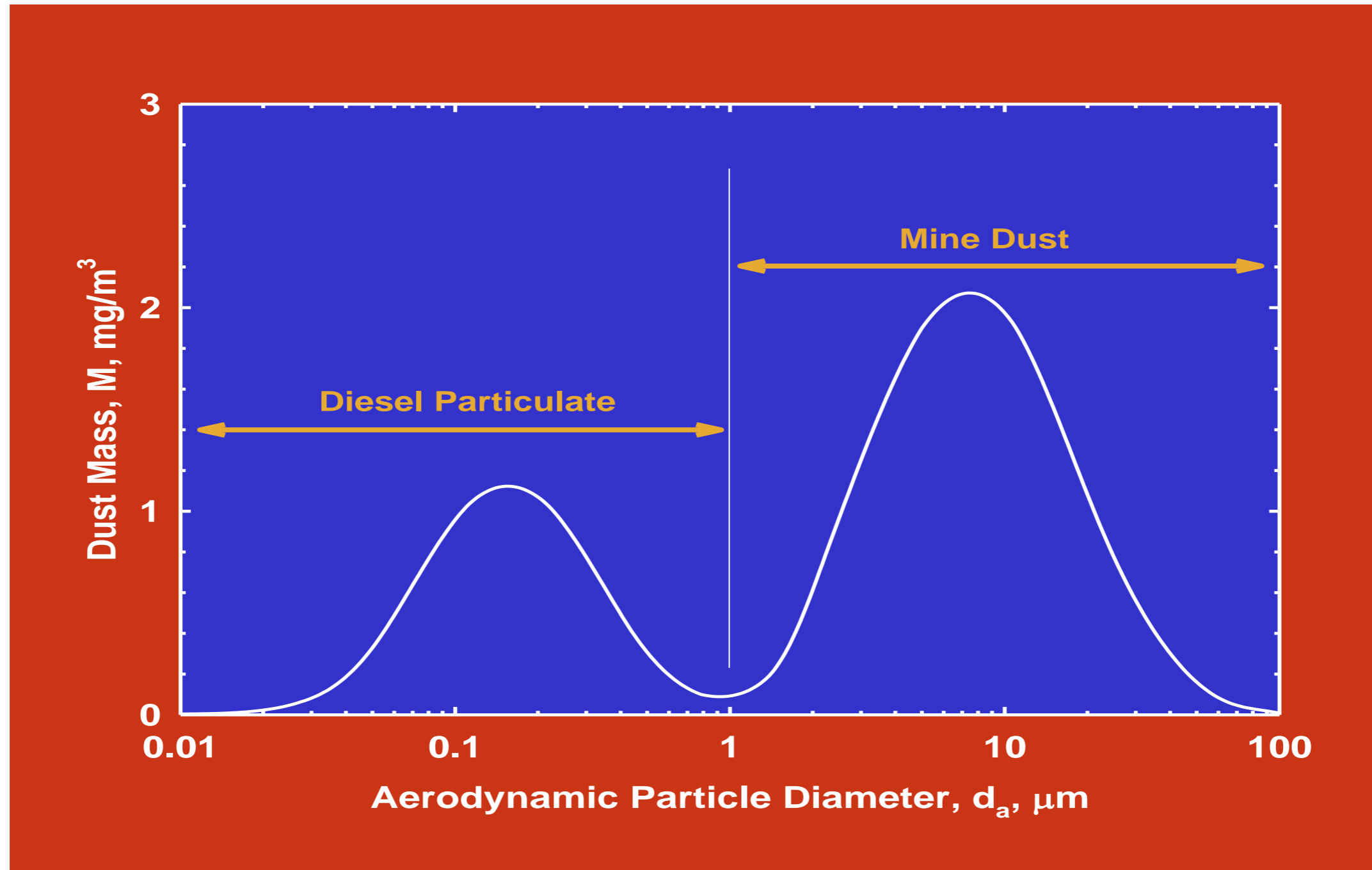


UPPER HUNTER FINE PARTICLE CHARACTERISATION STUDY

- WHERE PARTICLES COME FROM

1/2





EPA IMPACT ASSESSMENT CRITERIA

PM_{10} annual = $25 \mu\text{g}/\text{m}^3$

PM_{10} 24 hour = $50 \mu\text{g}/\text{m}^3$

$PM_{2.5}$ annual = $8 \mu\text{g}/\text{m}^3$

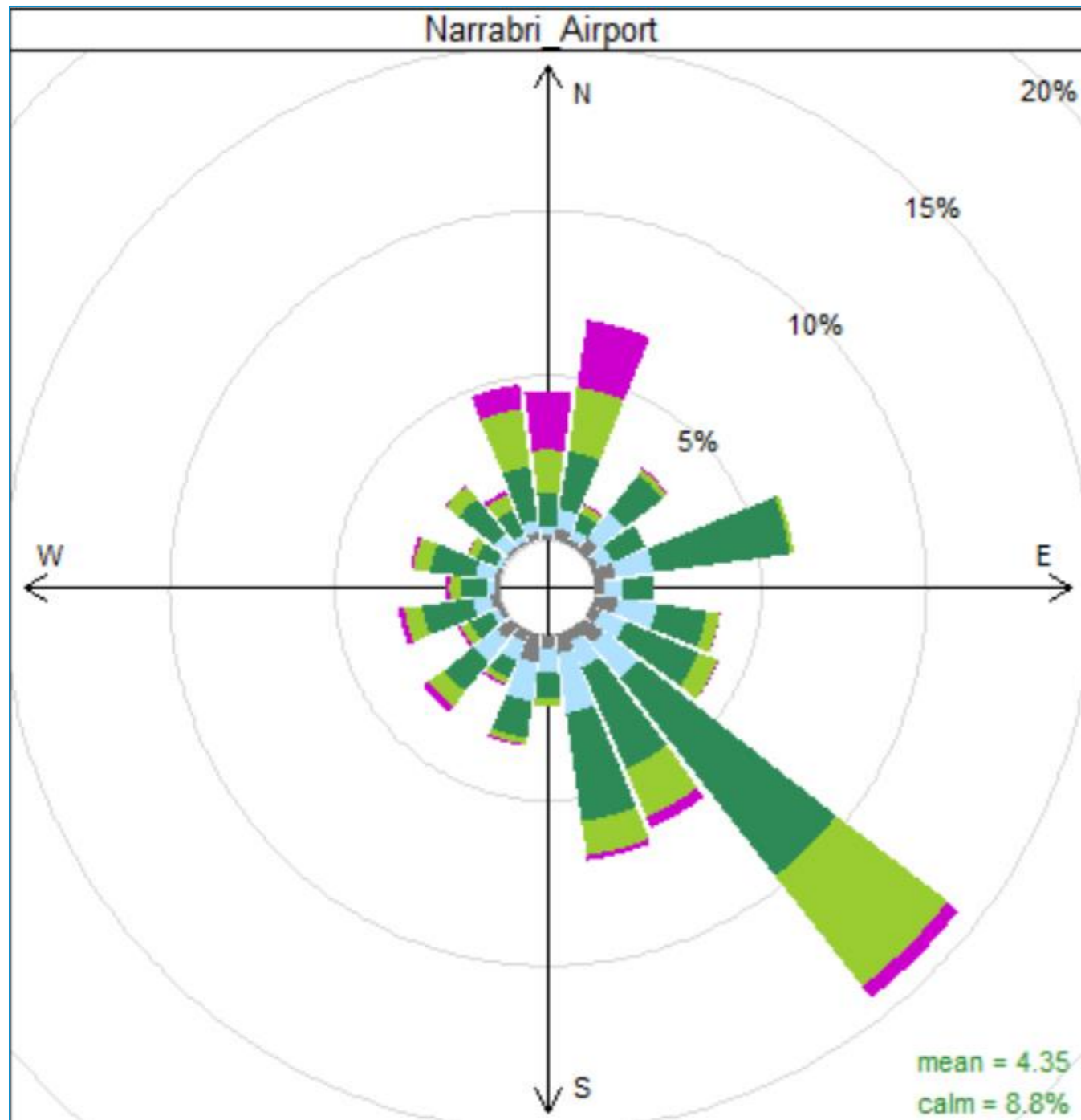
$PM_{2.5}$ 24 hour = $25 \mu\text{g}/\text{m}^3$

TSP annual = $90 \mu\text{g}/\text{m}^3$

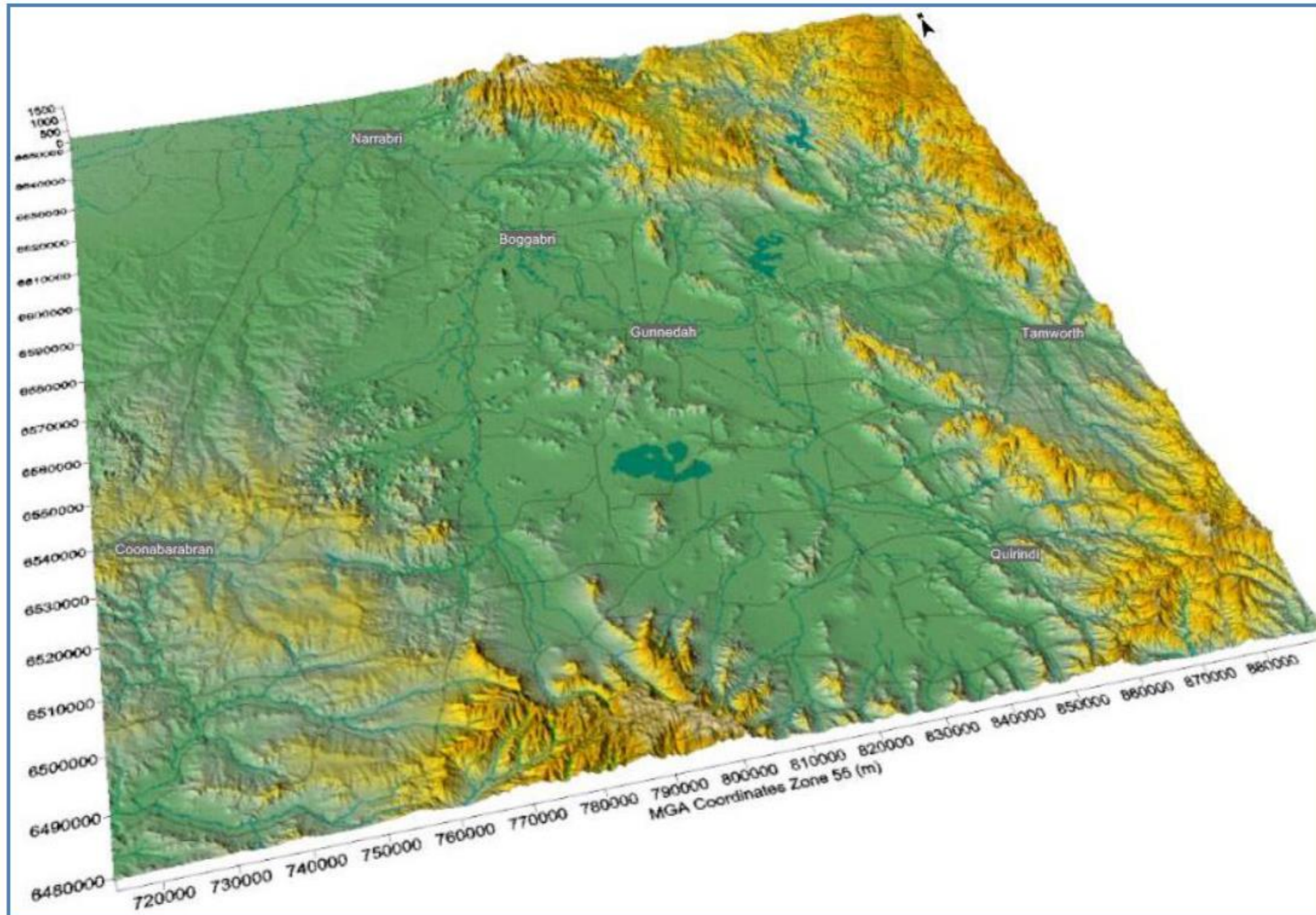
Dust deposition annual = $4 \text{ g}/\text{m}^3/\text{month}$

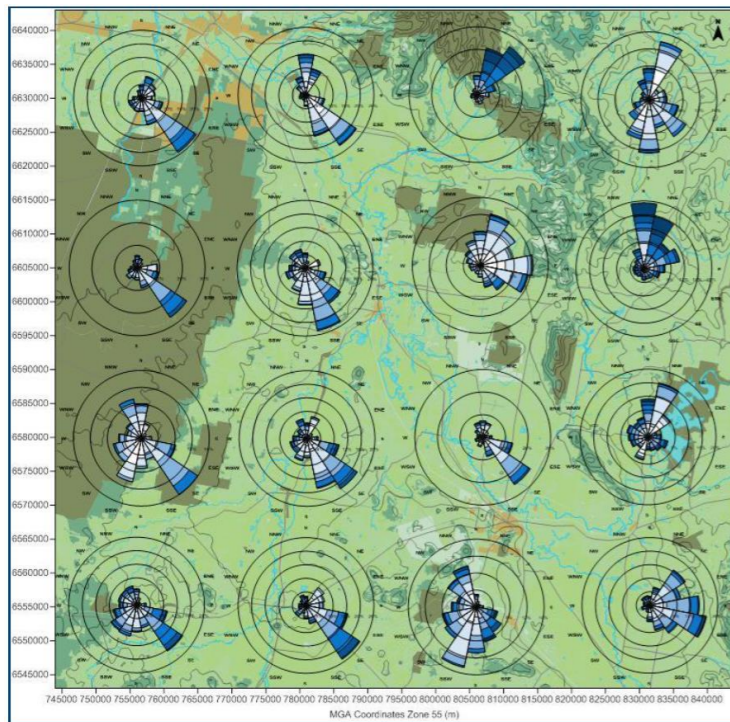


WHAT IS A WIND ROSE?

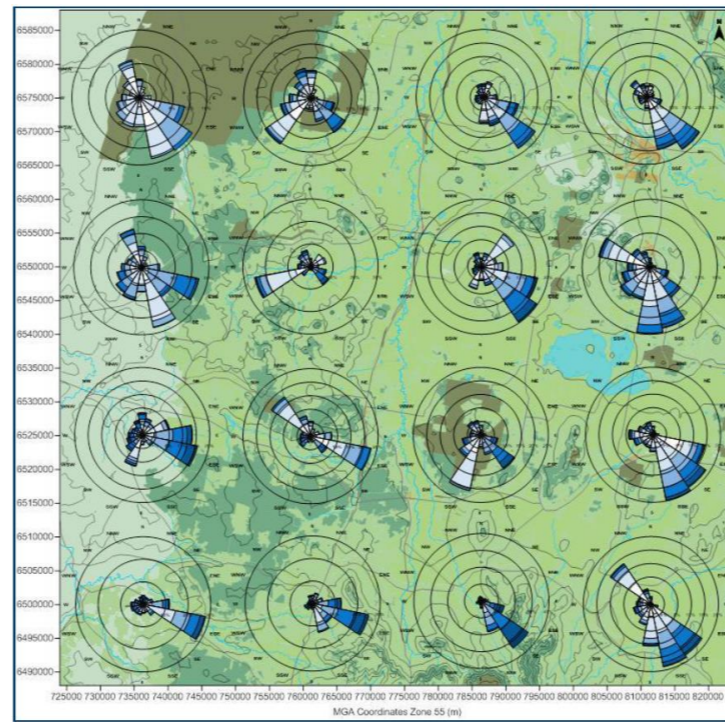


- ❖ Bars indicate the direction from which the wind blows
- ❖ Bar length indicate frequency. The longest bar, shown here pointing to the south-east, indicates the wind was most often from the south-east
- ❖ Colours indicate wind strength. Hot pink on the outer edges of the bars depicts the strongest wind

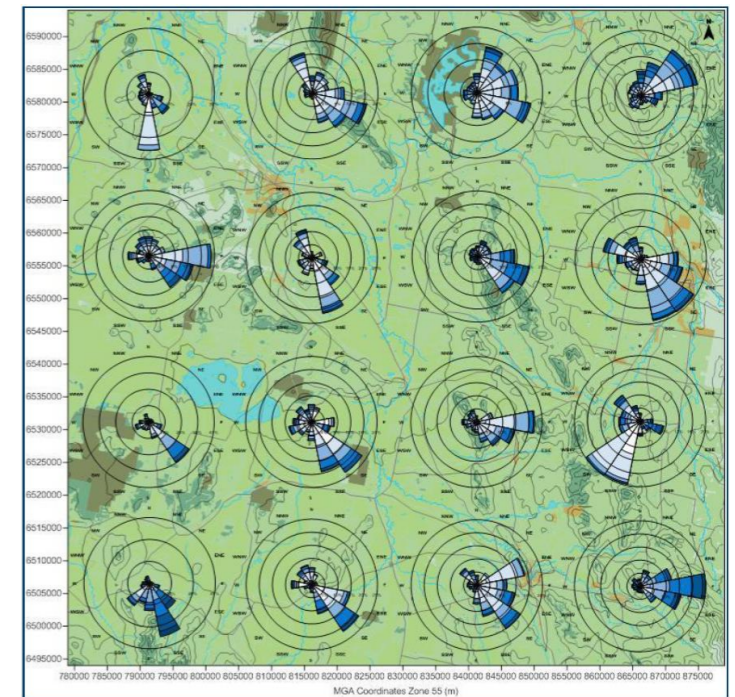




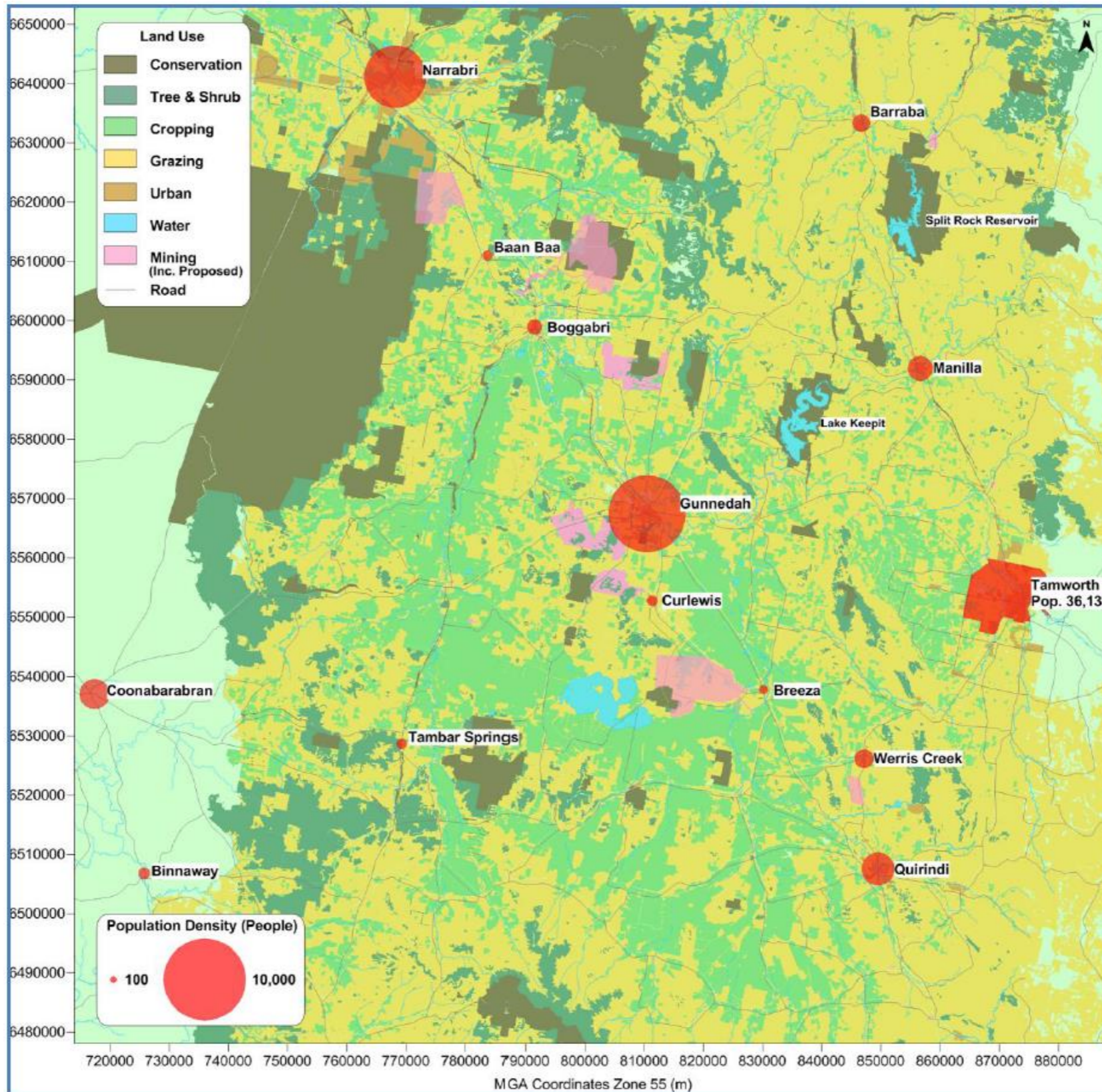
Modelling Domain 1:
Gunnedah to Narrabri



Modelling Domain 2:
Gunnedah to Quirindi



Modelling Domain 3:
Coxs Creek catchment (background)



NAMOI REGION AIR QUALITY – WHAT WE HAVE ALREADY DONE

PLUS INTERIM MEASURES

1. Investigated wind patterns, population and emissions at 'Todoroski' and 'Rambol'
2. Published industry air quality data on:
 - Wil-gai (Boggabri)
 - Breeza (Curlewis, Caroonna)
 - Maules Creek
 - Werris Creek
3. Publication of Namoi regional air quality review of seasonal results July 2015 to May 2017
4. Data QA/QC processes aligned with those used by OEH for the public monitoring networks
5. Weekly PM₁₀, PM_{2.5}
6. PM₁₀, PM_{2.5} levels are within EPA guidelines except during bushfires and dust storms

APPROACH OF THE EPA

Our focus:

Upwind and downwind Mine Monitoring Optimisation, paying particular attention to measuring emissions. Aiming for continuous PM_{10} by relying on the network for receiver monitoring

Our method:

Open, respectful relationship development with stakeholders.
Transparent, honest, timely communication and information provision to facilitate community-supported network designs

Questions and comments

